

# **University of Washington**

## **2008-2010**

### **General Catalog**



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 2005 was almost 43,000, including its campuses in Bothell and Tacoma, of which 26,000 were undergraduates and the balance were in professional and graduate programs. Almost 90 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 2005 was 3.69. In 2005, the full-time teaching faculty of the University numbered approximately 3,500 members.

#### **Message from the President**

##### **Mark Emmert**



**More than two centuries ago, Benjamin Franklin said, "An investment in knowledge always pays the best interest." Here at the University of Washington, a vibrant and diverse academic community makes that investment every day in an environment distinguished by innovation, collaboration, and a commitment to excellence.**

**As one of the nation's leading public research universities, the UW is uniquely positioned to take on the most complex challenges of our time. Our faculty, students, and staff work together across disciplines to make discoveries that transform and enrich the lives of people throughout our state, our region, and the world.**

# University of Washington Administration

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V'ella Warren, Vice President for Finance and Facilities  
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K.J. (Gus) Kravas, Vice Provost for Special Programs  
Eric S. Godfrey, Vice Provost for Student Life  
James A. Severson, Vice Provost for UW TechTransfer  
Todd Mildon, University Registrar

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## ACADEMIC CALENDAR

2008-2009

### Autumn Quarter 2008

Classes begin ..... September 24  
Last day of instruction ..... December 5  
Final examinations ..... December 8-12

### Winter Quarter 2009

Classes begin ..... January 5  
Last day of instruction ..... March 13  
Final examinations ..... March 16-20

### Spring Quarter 2009

Classes begin ..... March 30  
Last day of instruction ..... June 5  
Final examinations ..... June 8-12  
Commencement ..... June 13

### Summer Quarter 2009

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

2009-2010

### Autumn Quarter 2009

Classes begin ..... September 30  
Last day of instruction ..... December 11  
Final examinations ..... December 14-18

### Winter Quarter 2010

Classes begin ..... January 4  
Last day of instruction ..... March 12  
Final examinations ..... March 15-19

### Spring Quarter 2010

Classes begin ..... March 29  
Last day of instruction ..... June 4  
Final examinations ..... June 7-11  
Commencement ..... June 12

### Summer Quarter 2010

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

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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/](http://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 student'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).

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The University of Washington General Catalog is produced by the Office of the Registrar at the University of Washington,  
[gencat@u.washington.edu](mailto:gencat@u.washington.edu).

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## 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 under the direction of the Assistant Provost for Equal Opportunity, Dr. Helen Remick, University of Washington, Equal Opportunity Office, Box 354560, 4045 Brooklyn Avenue Northeast, Seattle, WA 98195, 206-685-3263/V or 543-6452/TTY.

Additional information concerning the equal opportunity and affirmative action policies and procedures, including complaint procedures, is in the Operations Manual, D46.1, D46.2, D46.3, and D46.4, and the UW Handbook, Vol. IV, p. 44.

Information on reasonable accommodation for students with disabilities is available from the following offices: for classroom and academic-related accommodation, call Disabled Student Services, 206-543-8924/V, 206-543-8925/TTY, or email at [uwdss@u.washington.edu](mailto:uwdss@u.washington.edu); for other non-academic related information and accommodation, call Disability Services Office, 206-543-6450/V, 206-543-6452/TTY, or email at [access@u.washington.edu](mailto:access@u.washington.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.

# Undergraduate Admission

admit.washington.edu

## Contact Information:

1. *On the Internet/Email:* Search our website, or, to get connected and stay informed throughout the application process, sign up for HuskyPass — <https://admit.washington.edu/HuskyPass>.

Email and other contact information are available at <http://admit.washington.edu/Contact>.

2. *By Telephone:* To speak with office staff or to schedule an appointment, call 206-543-9686 during office hours (below).

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 to make an appointment: 206-543-9686.

Schmitz Hall is bounded by 41st St. NE, 15th Ave. NE, Campus Parkway NE, and University Way NE (The Ave). <http://admit.washington.edu/Visit/Directions>

Wheelchair access is on NE 41st.

### Office Hours:

- Monday – Friday, 8:00 am – 5 pm Pacific Time (except state holidays)
- Monday – Friday, 10:30 am – 5 pm Pacific Time (except state holidays) **during the application season** (~December through March)

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 performance 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 essays and short narrative of activities, is important in the individualized application review. Because the University receives about 20,000 freshman applications every year, this process takes time to complete. Some admission decisions are made as early as December, while others are made as late as the end of March. 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.

### Minimum Requirements

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

1. Submit official admission test scores from either SAT or ACT
2. Complete a college-preparatory high school program to *minimally* include the following subjects:

## Core Subject Requirements

## Years Required

ENGLISH	4 years
MATHEMATICS	3 years
SOCIAL SCIENCE	3 years
FOREIGN LANGUAGE	2 years
SCIENCE	2 years
FINE, VISUAL, OR PERFORMING ARTS	0.5 years
ACADEMIC ELECTIVES	0.5 years

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

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

## Grading Restrictions

In general, you must attain at minimum a passing grade (including 'D') to satisfy a core subject requirement. Also acceptable is a grade of 'Pass' in a course taken on a 'Pass/Not Pass' basis. However, if you are completing core subjects through college course work you are strongly encouraged to choose a letter or numerical grade, because you may later want to apply core 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 requirement: specific restrictions on grading apply. See the Mathematics section.

## English Composition/Literature

### 1. IF TAKEN IN HIGH SCHOOL

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

- One of the four years 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 years 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-year English core 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

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

A test score from the Test of English as a Foreign Language (TOEFL) or the Michigan Language Test (MLT) 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

This alternative is applicable only to students with a significant amount of transfer credit.

All three of the following must be satisfied:

- 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.
- 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).

- Two additional units of English, which may be satisfied by high school or college courses.
  - The high school years must be in composition or literature courses, in English or the student's first (native) language.
  - The college courses must be in college-level composition and literature \*in English\*. A unit is five credits on a quarter system or three credits on a semester system.

## **Mathematics**

### **1. IF COMPLETED IN HIGH SCHOOL**

Three years of study 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 years of study 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.

## **Foreign Language**

### **1. IF COMPLETED IN HIGH SCHOOL**

Two years of study are required. The two years must be completed in the same language.

Note: The foreign language requirement will be considered satisfied for applicants who complete their education through the seventh 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 UK, 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 foreign language course taken in the eighth grade may satisfy one year 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 quarter of language in college is considered equivalent to one year in high school. Applicants who have never studied a foreign language will need to complete ten quarter credits of a single foreign language. However, an applicant who studied French for one year 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.

## **Science**

### **1. IF COMPLETED IN HIGH SCHOOL**

Two years of science are required. Applicants must complete one full year- both semesters in the same field-of the basic principles of biology, chemistry, or physics, with a laboratory experience. The second year of science may be completed in any course that satisfies your high school's graduation requirement in science.

Two years of agricultural science are equivalent to one year of science.

### **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 year or one trimester of study 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 yearbook.

## 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, Foreign Language, Science, and the Arts — beyond the minimum number of years specified. An additional half-year of study 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 at their local high school and receive college credit. Some well-known dual enrollment programs include Seattle's Matteo Ricci College and Hawaii's Running Start program.

### **ADMISSION**

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. Dual-enrollment applicants must submit test scores and must satisfy the UW core subject requirements outlined above.

### **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, January 15, regardless of the number of college credits you have taken or will have taken.
- December 1 is the priority date for scholarship consideration and the deadline to apply to the Honors Program.
- If you are starting college after you leave high school, contact Admissions for counseling. You may be a freshman or transfer applicant.

### **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**

The UW will grant full transfer credit for Running Start courses if they are college level and recorded on a college transcript. All UW restrictions on transfer credit apply.

### **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. Keep in mind the December 1 priority date for freshman admission.

## **Transfer Applicants**

### **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 core subject requirements (see Freshman Admission)
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.

- The University of Washington Seattle will commit 30% of the spaces available annually for new undergraduates to qualified Washington community college transfer students.
- 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 will remain 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.

## International Applicants

An applicant's academic performance, generally measured by grades, is a major factor in the admissions decision. We do not consider applicants with grades below a C average. Although there is no specific grade point requirement for admission to the UW, to be competitive, applicants should rank in the top fifteen percent of students successfully completing secondary school in your country. Transfer and postbaccalaureate applicants should present university or college records of high quality, at least a B average or better is recommended to be competitive.

- Students educated in the British system, in which grades are based on comprehensive national exams, must submit the official O-level, HKCEE, or GCSE Certificate by the application deadline of January 15. Students receiving official exam certificates in the spring of 2008 will not be eligible for admission consideration until the next year.
- Students who are completing an advanced level exam certificate (GCE A-levels, Abitur, IB Diploma, HKALE, STMP, etc) may be given admission priority over candidates who meet only minimum qualifications. Students submitting official advanced level exam certificates may also receive college-level credit upon admission to the University.
- For transfer applicants who have completed less than one year of college-level course work by the January 15 application deadline, the Office of Admissions will give the strongest weight to your high school records. To be competitive,

however, you will also need to show a strong academic performance in the college courses completed by the application deadline. Admission priority will be given to transfer students who have completed more than one year of college-level course work by the application deadline.

- If you have completed more than one year of college-level course work, the Office of Admissions will primarily consider grades in college-level courses from all accredited colleges and universities attended. All transfer applicants are still required to submit official secondary school transcripts, to verify that all core subject requirements have been completed.
- International transfer students attending WA state community colleges are encouraged to submit winter quarter grades. Although this is not a requirement, the information may help in the review of your application.
- For postbaccalaureate applicants, the Office of Admissions uses all grades earned at accredited institutions prior to the completion of the first bachelor's degree. Grades from community college course work, graduate study, or any course work taken after the first bachelor's degree are not included when the Office of Admissions calculates the GPA for admission consideration.

### ENGLISH PROFICIENCY FOR ADMISSION

All applicants must submit English proficiency exam scores that meet the University's minimum requirement to be considered for admission to the UW.

All international students are required to submit English proficiency scores that meet the University's minimum requirement for admission consideration (see table below). Previous ESL or English composition courses, even when taken in the United States, will not satisfy this requirement. Students enrolled in a U.S. or Canadian high school or college are still required to submit official exam scores to fulfill the English proficiency requirement.

- *Exception.* Non-U.S. citizens whose primary and secondary education took place in Australia, Canada, Great Britain, Ireland, New Zealand, or the U.S. are exempt from this requirement. Students who were born in any of these countries but educated elsewhere, however, will be required to satisfy the English proficiency requirement.
- *Official scores.* All exam scores must be sent directly from the testing agency. UW-administered MLT scores will be reported directly to the Office of Admissions. Always use your legal name when you take the exam and report any name discrepancies to the UW. Only the exams listed in the table below may be used to satisfy this requirement.
- Plan ahead to take the English proficiency exam. Test dates and locations are limited, so be sure to register for a test date early. Spaces fill quickly so do not wait to take an exam. Late test scores will not be accepted. December is the last month to take an exam before the January 15 application deadline.
- 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.

## TEST SCORE REQUIREMENTS

Test Title	Minimum Requirements for Admission to UW Seattle	Minimum for Admission WITHOUT further AEP Requirement
TOEFL Internet-based	57* Reading, Writing, & Listening sections only	70* Reading, Writing, & Listening sections only
TOEFL computer-based	207	237
TOEFL paper-based	240	580
UW Administered Michigan Language Test (MLT)	82	90
International English Language Testing System (IELTS)	6	7

\*For the internet-based TOEFL only, the minimum scores required are based on the combined total of the Reading, Listening, and Writing sections. We will not include the Speaking portion of the test in our admission review at this time.

## ACADEMIC ENGLISH PROGRAM (AEP) FOR UW ENROLLMENT AND GRADUATION

Students who meet the minimum English proficiency requirement for admission consideration but have scores lower than those listed in Column 3 of the table above will be required to enroll in the Academic English Program (AEP). Such students will be required to complete a sequence of one to five remedial courses beginning with their first quarter at the UW. The AEP requirement will be removed if, before registering for classes at the UW, students submit higher scores that exempt them.

A diagnostic exam is available to determine the appropriate level at which to start AEP course work within the five-course sequence. Students who choose not to take the diagnostic exam will automatically begin with the first course in the sequence. An extra fee is charged for each AEP course in addition to regular tuition. At least one AEP course will be required each quarter until all mandatory AEP classes are satisfactorily completed. Students required to take AEP must register first for AEP to be eligible to register for their other classes.

### SAT I and ACT (optional)

The SAT and the ACT exams are not required for international students. As further evidence of your academic performance, however, we strongly encourage you to submit scores if you have taken either exam, especially if you are from a native English speaking country.

## 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.

### Statement of Purpose

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. Applicants preparing for graduate school must 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 postbaccalaureate 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.

Statements of Purpose are reviewed by the Postbaccalaureate Review Committee. Decisions are made on a rolling basis: the earlier an applicant's file is complete, the earlier the file will be reviewed. Applicants will be notified in writing of the final decision after evaluation of transcripts and the Statement of Purpose.

# 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.

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 general credit for work or life experience. However, two avenues exist for obtaining credit under selected circumstances.

Once enrolled at the UW, students may explore the possibility of obtaining departmental approval for transfer of credit earned through course work taken at institutions that do not have regional accreditation. For information concerning course work taken at non-regionally accredited institutions, contact the Office of Admissions.

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 credit by examination for independent study completed outside a formal educational setting, contact the Graduation and Academic Records Office at 206.543.1803 or [ugradoff@u.washington.edu](mailto:ugradoff@u.washington.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. Once you are enrolled at the UW, if your lower-division credit total exceeds 90, there will be a difference between the "total credits earned" and the "total credits allowed" under the Summary of Transfer Credit following the Detail of Transfer Credit.

Additionally, a maximum of 135 total transfer credits are allowed toward the 180 credit total. The University-wide residence requirement states that 45 of the last 60 credits must be taken "in residence" while enrolled as a matriculated student. 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 of your transferable credit are listed under the Detail of Transfer Credit and may, with your adviser's approval, be used to satisfy individual requirements for graduation. It may be helpful to think of your transfer credits as a "bank account" of credits from which you may draw. All of your 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 your 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 have completed two or more years of a high-school foreign language receive no college credit for an entry-level course (e.g., FRENCH 101) in the same language when that course is completed after matriculation at the University. Transfer students who complete such a course before matriculation at the UW are eligible to receive transfer credit.

## Military Credit

Credits earned in Armed Forces Training Schools (AFTS) and through USAFI and DANTES may not exceed 30 credits and are included in the 45-credit limit for extension credit. Official transcripts, DD-214, or DD-295 forms must be submitted, and credit will not be awarded until after the student has enrolled at the University. Scores received in such course work are not included in the transfer GPA. 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 advanced 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. Other departments in which such overlapping courses occur include Astronomy, Computer Science, Economics, Genetics, Geological Sciences, Linguistics, Psychology, and Statistics. Restrictions of this kind are noted in the course catalog.

## 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.

## ROTC Credit

Prior to autumn quarter 2007, credits earned in first- and second-year military training courses may not be counted in the basic 180 credits that are required for graduation. Some third- and fourth-year courses may count, depending on the institution the student attended previously.

## Senior Residency Requirement

To be recommended for a first or subsequent baccalaureate degree, a student must complete 45 of his or her final 60 credits as a matriculated student in residence at the University of Washington campus where the degree is to be earned.

## 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 Transfer Associate Degree Agreement

Several of the schools and colleges (see below) at the University of Washington have entered into the Transfer Associate Degree Agreement with the Intercollege Relations Commission of the state of Washington to aid in transfer from two-year schools to the University.

Transfer students who enroll in one of these schools or colleges with an academic transfer (not vocational-technical) associate's degree from a Washington community college may receive the following benefit:

Transferable courses used by the community college toward the general education requirement in the associate degree awarded will be accepted toward Areas of Knowledge at UW in the equivalent Area (humanities/VLPA; social sciences/I&S; natural sciences/NW), *even if they do not count that way for other students.*

Please note the following:

- The agreement does not apply to students who entered the UW before Autumn 1985.
- To qualify for the agreement, students must complete all the coursework required for the associate's degree before matriculating at the UW.
- Courses counted toward the UW's Language Skills (English composition and foreign language) requirement cannot also be counted toward Areas of Knowledge. In particular, students in the College of Arts and Sciences and the School of Social Work will have to count first-year foreign language courses toward the foreign language requirement rather than Areas of Knowledge. (Students with associate's degrees who first entered college before Autumn 1985 are exempt from the earlier version of the Language Skills requirement.)
- Students must meet the additional writing requirement (unless they started college before Autumn 1985). Many AA degrees require 10 credits of English composition, 5 of which can be counted toward the additional writing requirement (see <http://www.washington.edu/uaa/gateway/advising/degreeplanning/writreqs.php>) if similar to UW courses. Note that many community colleges count creative writing and verse writing as English composition, but the UW does not allow those courses toward either the English composition or additional writing requirement. (They do count toward VLPA at the UW — even if the community college did not allow them to count toward the humanities requirement of the Associate's degree.)
- Most community colleges do not require a 20-20-20 general education plan; the number of credits required in each area may be a combination such as 15-15-15, or 20-20-15, etc. Students must eventually complete the entire Areas of Knowledge plan required by the UW school or college in question.
- Students who do not meet the Areas of Knowledge requirement entirely with courses taken before transfer must select UW courses with the appropriate Area designations to complete the requirement.

The following UW schools and colleges honor the Transfer Associate Degree Agreement: College of Architecture & Urban Planning, College of Arts & Sciences, School of Business, School of Medicine, School of Nursing, School of Ocean and Fishery Sciences (Oceanography only), and School of Social Work.

# Advanced Placement Program (College Board)

## AP Credit Policies

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

AP Subject	Score	Credit/Placement Awarded and Additional Information
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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.
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Art: Studio Art	-	Placement only. See Art adviser.
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Biology	4,5	BIOL 161-162 (10 cr.) First two quarters of general biology. Counts toward Natural World general education requirement
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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.
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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.
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Calculus AB	2	Placement only into MATH 124. Placement into first quarter of calculus.
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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.
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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.
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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.
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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.
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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. Note: 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.
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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.
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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.
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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.
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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.	German Language	3,4,5	Also satisfies foreign language graduation requirement of the College of Arts and Sciences.  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.
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.	Government and Politics: American	4,5	POL S 202 (5 cr.) American politics. Counts toward Individuals & Societies general education requirement for graduation.
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.	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.
English (either exam)	4,5	ENGL 109 (5 cr.) AP English. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.	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.
English (both exams)	4,5 on both	ENGLISH 109 (10 cr.) AP English. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.	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.
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.	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.
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.	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.
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.	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.

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 (VLPA), 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	Course(s) 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	7	ARAB 108 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation. See department for placement.
Arabic	6	ARAB 108 (10 cr.)
Arabic	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	No credit. Exemption from CHEM 142, 152; placement into CHEM 162.	Geography	7,6,5	GEOG 100 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
Chemistry	6	No credit Exemption from CHEM 142; placement into CHEM 152.	Germanics	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.
Chinese	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.	Germanics	6	GERMAN 201, 202 (10 cr.)
Chinese	6	CHIN 201, 202 (10 cr.)	Germanics	5	GERMAN 201 (5 cr.)
Chinese	5	CHIN 201 (5 cr.)	History		See African History; American History; East/Southeast Asia and Oceania History; European History
Computer Science and Engineering	7,6,5	CSE 100 (5 cr.) Satisfies Quantitative and Symbolic Reasoning graduation requirement.	Italian	7	ITAL 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.
Design Technology	7,6,5	ENGR 100 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.	Italian	6	ITAL 201, 202 (10 cr.)
East/Southeast Asia and Oceania History	7,6,5	HISTAS 108 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.	Italian	5	ITAL 201 (5 cr.)
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.	Japanese	7	JAPAN 421, 422, 423 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.
Economics	5	ECON 200 (5 cr.) Satisfies Quantitative and Symbolic Reasoning graduation requirement or counts toward Individuals & Societies general education requirement for graduation.	Japanese	6	JAPAN 421, 422 (10 cr.)
English	7,6,5	ENGL 108 (5 cr.) Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.	Japanese	5	JAPAN 421 (5 cr.)
European History	7,6,5	HIST 113 (5 cr.) Counts toward Individuals & Societies general education	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.
French	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.	Mathematics	7	MATH 124 (5 cr.) Satisfies Quantitative and Symbolic Reasoning basic skills requirement and/or Natural World general education requirement for graduation
French	6	FRENCH 201, 202 (10 cr.)	Mathematics	6,5	MATH 120 (5 cr.) Satisfies Natural World general education requirement for graduation
French	5	FRENCH 201 (5 cr.)	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	Spanish	7	SPAN 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.
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.	Spanish	6	SPAN 201, 202 (10 cr.)
			Spanish	5	SPAN 201 (5 cr.)
Psychology	7,6,5	PSYCH 101 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.	Swahili	7	AFRAM 306, 307, 308 (15 cr.) Satisfies foreign language requirement.
			Swahili	6	AFRAM 306, 307 (10 cr.) Counts toward foreign language requirement.
Russian	7	RUSS 301, 302, 303 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.	Swahili	5	AFRAM 306 (5 cr.) Counts toward foreign language requirement.
Russian	6	RUSS 301, 302 (10 cr.)			
Russian	6	RUSS 301, 302 (10 cr.)	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.

### 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 email 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

Web Registration is a personal service. The use of robots and other automated tools to submit registration requests is expressly forbidden.

## 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 Registrar to 0.0. Numerical grades may be considered equivalent to letter grades as follows:

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** 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 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 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 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** 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. The S/NS grade option can be elected through the end of the Late Course Drop Period. 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 Points	Credits	Grade	Grade
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

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

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

#### EXAMPLE 2

Course Points	Credits	Grade	Grade
ENGL 121	5	2.3	11.5
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

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

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 Office of Special Services 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 Office of Special Services 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 view and print a grade report through MyUW.

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## Procedures and Fees

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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 nonacademic 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](http://www.washington.edu/students/reg/regelig.html)

Instructions for registration are available on MyUW ([myuw.washington.edu](http://myuw.washington.edu)) in the Student Personal Services menu by selecting Registration. Notification is emailed to each student quarterly with information about registration for the next quarter.

#### Registration Period I

[www.washington.edu/students/reg/addpolicy.html](http://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](http://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](http://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 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 profes-

sional 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](http://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](http://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](http://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 Office of Special Services, 460 Schmitz, when dropping courses.

### **Complete Withdrawal from the University for a Registered Quarter**

[www.washington.edu/students/reg/wdoffleave.html](http://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 Card 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 Office of Special Services 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](http://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. (Select Change of Address under the Student Personal Services menu.). A confirmation message will be sent to the student's email address. *The mailing of notices to the last address on record constitutes official notification.*

## Residence Classification Requirements

[www.washington.edu/students/reg/residency.html](http://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](http://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. A quarterly validation sticker is mailed with the registration confirmation to each registered student. The student ID card with attached validation sticker 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](http://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 \$4, 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 Office of Business Services and Veterans' Affairs, 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.

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# Tuition, Fees, and Special Charges

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## 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 \$8,640 in determining students' financial need. This figure includes food, utilities, and housing. It is higher than the figure of \$7,488 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 \$250 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 \$250 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 give 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 refund 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

[www.washington.edu/students/sfs/sao/ttnrates.html](http://www.washington.edu/students/sfs/sao/ttnrates.html)

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 Extension. See the UW Extension Bulletin for their fee structure.

### 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, \$38.

*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 \$4, paid to the Transcript Office in advance, is required for each transcript.

*Thesis and Dissertation Fees:* Publication binding fee, \$25; dissertation microfilming fee, \$60\*; Microfilming for either the entire dissertation, or the abstract only; \$35 Optional copyright fee (Not available to those microfilming only the abstract.)

\* Part of the obligation of research is publication. In the case of doctoral research, this means microfilm publication of the dissertation and/or abstract. This is a Graduate School requirement in addition to any previous or planned publication of any or all the dissertation. Microfilming allows worldwide distribution of your work. More information about microfilming is provided in the Step 4 section of the Graduate School manual.

## 2008-2009 Student Budget Nine-Month Living Expenses

Budget Items	Lives with Parents Undergrad	Lives with Parents Graduate	Trad'l Undergrad	Non-Trad'l Undergrad	Non-Trad'l Graduate
Books	\$1,035	\$1,206	\$1,035	\$1,035	\$1,206
Room/Board	\$2,877	\$2,877	\$8,640	\$12,474	\$12,474
Personal	\$2,265	\$2,265	\$2,265	\$2,265	\$2,265
Transportation	\$396	\$1,524	\$396	\$1,524	\$1,524
TOTALS	\$6,573	\$7,872	\$12,336	\$17,298	\$17,469



**Replacement Fees:** Duplicate diploma, \$20; student identification card, \$10.

**U-PASS Fee:** A U-PASS validation sticker is mailed quarterly with a student's registration confirmation. 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 \$41 (subject to change) is included on the tuition bill. Students who do not wish to participate in the U-PASS program must return the validation sticker to the University by the tuition payment deadline. The sticker can be returned by mail in the return envelope provided, mailed with the tuition payment, or returned in person to Student Fiscal Services.

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 \$250 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](http://www.washington.edu/students/reg/tuition_exempt.html)

### **Faculty/Staff, Washington State Employee, and Washington National Guard Member Tuition Exemption Programs**

Eligible faculty, staff, state employees, and Washington National Guard members 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 Staff Training and Development Office, or the Registration Office.

### **"Access" Program for Older Adults**

[www.washington.edu/students/reg/access.html](http://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.

<b>Tuition Exemptions</b>			
<u>Category</u>	<u>Contact Office</u>		
Faculty/Staff, Washington State Employee and Washington National Guard Tuition Exemption Program traindev@u.washington.edu	Staff Training and Development Office (206) 543-1957,  or Registration Office (206) 543-4000, regoff@u.washington.edu	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
Senior citizens under the ACCESS Program  resquest@u.washington.edu	Registration Office (206) 543-4000,	Students participating in the WICHE Program	Student Fiscal Services, 129 Schmitz, (206) 543-4694
<b>Tuition Reductions</b>		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
<u>Category</u>	<u>Contact Office</u>		
Active duty military assigned to Washington and their children and spouses  resquest@u.washington.edu	Office of Residency Classification, 264 Schmitz Hall, (206) 543-5932,	TAs/RAs with half-time appointments	Graduate School, 201 Gerberding, (206) 543-7152
Award recipients under the Aid, Washington State Scholars and Washington Award for Vocational Excellence (WAVE) programs	Office of Student Financial	Undergraduate Merit Waivers -- Competitive merit-based scholarships for incoming freshmen	Office of Special Services, 520 Schmitz Hall, (206) 543-9122 specserv@u.washington.edu
	Outreach Services, 172 Schmitz, (206) 685-3504	UW Achievement Award -- Competitive merit-based scholarships for incoming freshmen	Office of Special Services, 520 Schmitz Hall, (206) 543-9122 specserv@u.washington.edu
Children of POWs or MIAs  specserv@u.washington.edu	Office of Special Services, 520 Schmitz Hall, (206) 543-9122	UW faculty members, their children and spouses who are not Washington state residents	Academic Human Resources, 85 Gerberding, (206)-543-5630
Children of Washington law enforcement officers or firefighters who died or became totally disabled in the line of duty specserv@u.washington.edu	Office of Special Services, 520 Schmitz Hall, (206) 543-9122	UW staff members and their children and spouses who are not Washington state residents	Office of Residency Classification, 264 Schmitz Hall, (206) 543-5932, resquest@u.washington.edu
Financial Aid Waivers Aid,	Office of Student Financial	Veterans who served in the Persian Gulf combat zone in 1991	Office of Special Services, 520 Schmitz Hall, (206) 543-9122 specserv@u.washington.edu
	172 Schmitz Hall, 206-685-3504		
Graduate Merit Waivers	The Graduate School, G-1 Communications, 206-543-7152	Veterans who served in Southeast Asia during the period of August 5, 1964-May 7, 1975	Office of Special Services, 520 Schmitz Hall, (206) 543-9122 specserv@u.washington.edu
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, resquest@u.washington.edu		
Intercollegiate Athletics Gender	Department of Intercollegiate Equity Athletics, Student Athlete Student Services (206) 543-0611		

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# Student Life and Student Services

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## 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 Veterans' Affairs, 520 Schmitz, (206) 543-6122; 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.

## Office of Business Services and Veterans' Affairs

The Office of Business Services and Veterans' Affairs, 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

students pay for their education. Assistance is offered in the 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](http://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, 2008, for the academic year beginning in September 2008).

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 of \$15, plus a \$10 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, houses a variety of facilities and services for students, and faculty and staff members. These include lounges, a 478-seat auditorium, a multipurpose ballroom, a barber and hair-styling shop, a branch of the University Book Store, several retail food operations, a study/music lounge with email access, a lost-and-found office, a ticket sales office, a newsstand, a self-service post office, a limited-service bank, three cash machines, a number of student-organization offices, and a games area which includes a twelve-lane bowling center. Meeting rooms accommodating from 10 to 175 persons are available for registered student organizations.

## 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, 207 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, 207 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, 204L HUB, (206) 543-1780, or the Student Activities Office, 207 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 information visit the Recreational Sports Web site at [depts.washington.edu/ima/](http://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, 476 Schmitz.

### **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 email, 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 the Web, or contact UWTechnology Information at (206) 221-5000.

### **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 Ombudsman for Sexual Harassment, (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. OMA'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 variety 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.

### Special Interest Houses

The UW residence halls offer several special interest houses-designated floors in certain halls where residents with common interests live. Residents are encouraged to plan and participate in activities for these houses. If you'd like to live in one of the special interest houses, indicate your preference on your housing application.

#### Special Interest Houses

- **Outdoor House** offers residents the opportunity to plan, participate in and learn outdoor activities such as hiking, biking, skiing, snowshoeing, camping and canoeing. Residents of Outdoor House also share an interest in environmental issues.
- **International House** provides a rewarding environment for those who seek opportunities to share cultural experiences with American and international students, in daily life and through participation in a variety of social and cultural activities.
- **SAFE House** (Substance and Alcohol Free Environment) offers residents the opportunity to live in a residential community where alcohol and tobacco products are not permitted by its members (regardless of a student's age). The community also features programming and activities that are specific to promoting a substance-free lifestyle. Residents work with Resident Advisers and Resident Directors to create a community that exemplifies an awareness of substance and alcohol abuse issues.

In the other residence hall communities, alcohol use is limited to those of legal age (21) and then only within the confines of a resident's room. The use of illegal substances is strictly prohibited in all residence halls. All halls are 100 percent smoke-free.

#### Residential FIG (Freshman Interest Group)

Residential FIG is a specialized program for freshmen which combines academics and life outside class. Students enrolled in a Residential FIG take classes together autumn quarter and live together in the same residence hall for the academic year. New freshmen who have received confirmation for a space in the residence halls are eligible to register. If you are interested in a Residential FIG, visit the FIG website or contact the First Year Programs Office at 206-543-4905.

### First Year Experience

First Year Experience offers an environment specifically designed to provide opportunities to assist first-year students in their adjustment to college, often through educational and social programs and floor activities.

### Honors House

Honors House is an option for University of Washington Honors Program students who wish to expand their intellectual lives beyond the classroom. Students who choose Honors House have the best of both worlds: close contact with other Honors students and the diversity of the residence halls.

### 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.

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# Undergraduate Study

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## Office of Undergraduate Academic Affairs

[www.washington.edu/uaa/](http://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 Education.

### Individualized Studies

[www.washington.edu/students/gencat/academic/indivstudies.html](http://www.washington.edu/students/gencat/academic/indivstudies.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.

### Center for Quantitative Science

[depts.washington.edu/cqs/](http://depts.washington.edu/cqs/)

The Center for Quantitative Science in Forestry, Fisheries, and Wildlife is an intercollege academic unit sponsored by the Office of Undergraduate Education, the College of Ocean and Fishery Sciences, and the College of Forest Resources. The Center offers courses in mathematics and statistical methods as applied to problems in biology, ecology, the environment, and renewable-resource management for undergraduate students. The faculty of the Center includes members of the College of Forest Resources and the School of Aquatic and Fishery Sciences, as well as other units. The quantitative science minor is designed to give undergraduates majoring in biology, ecology, the environment, and renewable-resource management programs a thorough grounding in relevant statistical and mathematical modeling methodology.

### Program on Africa

[depts.washington.edu/poa/](http://depts.washington.edu/poa/)

The Program on Africa (PoA) develops, co-ordinates, and disseminates information about inter-disciplinary, cross-college, Africa-related courses and activities at the UW. It aims to foster an interest in the African continent and its Diaspora, with the ultimate goal of involving knowledgeable, well-trained, and committed students and graduates in Africa's political, cultural, medical, technological, and economic future. PoA offers undergraduate students a minor in African Studies with courses drawn from disciplines as varied as fisheries, anthropology, social work, history, public health, art, and music.

### Program on the Environment

[depts.washington.edu/poeweb/](http://depts.washington.edu/poeweb/)

The Program on the Environment (PoE) fosters and promotes interdisciplinary environmental education at the UW by linking

scholars active in environmental fields from across the University to build a trans-disciplinary network of educators, students, and researchers. PoE offers an undergraduate degree in Environmental Studies, a minor in Environmental Studies, and three graduate certificate programs. The program provides students knowledge in four domains of inquiry: natural sciences; social sciences; law, policy, and management; and ethics, values, and culture. PoE merges these fields through rigorous coursework and hands-on learning to provide a unique opportunity for students and faculty to explore complex environmental issues from multiple perspectives.

### Undergraduate Majors

[www.washington.edu/students/ugrad/advising/majmenu.html](http://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](http://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.

### 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 Aquatic and Fishery Sciences .....	B.S.AFS.
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 Forest Resources .....	B.S.F.
Bachelor of Science in Health Information Administration .....	B.S.H.I.A.
Bachelor of Science in Industrial Engineering .....	B.S.I.E.
Bachelor of Science in Informatics .....	B.S.Info.
Bachelor of Science in Materials Science and Engineering .....	B.S.M.S.E.
Bachelor of Science in Mechanical Engineering .....	B.S.M.E.
Bachelor of Science in Medical Technology .....	B.S.Med.Tech.
Bachelor of Science in Nursing .....	B.S.Nurs.
Bachelor of Science in Technical Communication .....	B.S.T.C.

### Freshmen Interest Groups

One FIG = 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, email, 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.

## Don't Study More, Study Smarter!

These 90-minute small-group sessions address topics such as Test-Taking and Test Anxiety, Time Management and Procrastination, Notetaking, and Stress Management. The workshops are free and offered at the Counseling Center.

## Study Skills on the Web

Offers study tips, information about time management, and links to many Internet resources.

## 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.

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# The Graduate School: Graduate Study

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[www.grad.washington.edu](http://www.grad.washington.edu)

The University of Washington awarded its first graduate degree, a Master of Arts in classical languages, in 1885 and its first Doctor of Philosophy degree, in chemistry, in 1914. Since those beginnings, the University has conferred more than 65,000 master's degrees and 14,000 doctoral degrees, exclusive of medical, dental, and first legal doctorates.

Through its graduate programs, the University fulfills several functions vital to a healthy society: the advancement of human knowledge is facilitated through the development and conduct of scientific research; the education of scholars, teachers and a multitude of professionals in areas that cut across the academic spectrum insure that knowledge and information are communicated to the general public for the use and benefit of all. These functions ensure that some of the problems and needs confronting society are resolved.

To manage its developing graduate programs, the Graduate School was created as a temporary entity in 1899 and was permanently established in 1910. The purpose of the Graduate School is to define and support excellence in graduate education and the research and scholarly activities associated with it. Graduate study is guided by the Dean of the Graduate School and an ever-changing graduate faculty of more than 3,000 members who are selected for their interest in and concern for graduate education at the University of Washington. There are now more than 8,000 graduate students working toward master's or doctoral degrees in 100 separate University programs. A growing number of interdisciplinary graduate degree and graduate certificate programs that have been established through the efforts of interested faculty members.

Graduate School policy is enacted through an elected council of ten graduate-faculty members who are chosen from among the graduate-faculty population and who advise the Dean on matters of policy and procedure. Complementary to that input, each degree-offering unit within the University appoints a graduate program coordinator who serves as an important link between the unit and the Graduate School, advising students on questions concerning Graduate School and departmental degree requirements.

The Graduate School also has a number of responsibilities that relate to its primary ones, such as graduate program review, Graduate Opportunities and Minority Achievement Program, the administration of the Graduate School Fund and certain fellowship programs, as well as such central facilities as the University of Washington Press, and the Walker-Ames and the Jessie and John Danz distinguished visiting professorships.

As part of its commitment to excellence, the University is committed to providing opportunities for students to learn and grow through experiences rich in cultural, ethnic, and racial diversity. Within the Graduate School, the Graduate Opportunities and Minority Achievement Program (GO-MAP) works with the University to provide an innovative and inclusive graduate student community and experience. GO-MAP takes a leadership role in the recruitment and retention of ethnic and racial minority and underrepresented students, building community on and off campus, improving campus climate, and enhancing scholarship and research.

In addition, GO-MAP administers several scholarships and assistantships aimed at increasing diversity in the University's graduate programs.

## Graduate Degree Programs

The Office of Academic Programs in the Graduate School contributes to the University's educational and research mission by conducting quality assessment of proposed and continuing education programs at the graduate and undergraduate level as well as research institutes and centers. Through program review, it ensures academic program quality, including all aspects of an academic unit, and promotes communication among academic units throughout the three-campus system. The principle mechanism by which this is achieved is through a process of peer review. Reviews of degree programs are conducted on a ten-year cycle, or at predetermined shorter intervals. For further information, see Graduate School Memorandum No. 7: Periodic Review of Existing Degree Programs at [www.grad.washington.edu](http://www.grad.washington.edu) and the schedule of program reviews at [www.grad.washington.edu/Acad/Academicprograms.htm](http://www.grad.washington.edu/Acad/Academicprograms.htm), or contact the Office of Academic Programs in the Graduate School at 206-685-3519.



**College of Architecture and Urban Planning**

Architecture & Urban Planning .....	M.S.P.C.I., M.U.P.
Architecture .....	M.Arch., M.S.
Built Environment .....	Ph.D.
Construction Management .....	M.S.C.M.
Landscape Architecture .....	M.L.A.

**College of Arts and Sciences**

Anthropology .....	M.A., Ph.D.
Art .....	M.F.A.
Art History .....	M.A., Ph.D.
Asian Languages & Literature .....	M.A., Ph.D.
Astronomy .....	M.S., Ph.D.
Atmospheric Sciences .....	M.S., Ph.D.
Biology .....	M.S., Ph.D.
Chemistry .....	M.S., Ph.D.
Classics .....	M.A., Ph.D.
Communication .....	M.A., M.C., Ph.D.
Comparative Literature .....	M.A., Ph.D.
Center for Digital Arts and Experimental Media .....	Ph.D.
Dance .....	M.F.A.
Drama .....	M.F.A., Ph.D.
Economics .....	M.A., Ph.D.
English .....	M.A., M.F.A., M.A.T., Ph.D.
Earth and Space Sciences .....	M.S., Ph.D.
French and Italian Studies .....	M.A., Ph.D.
Geography .....	M.A., Ph.D.
Germanics .....	M.A., Ph.D.
History .....	M.A., Ph.D.
Jackson School International Studies ...	M.A.I.S. (includes China Studies; the Comparative Religion; International Studies; Japan Studies; Korea Studies; Middle Eastern Studies; Russia, East European & Central Asian Studies; and South Asian Studies)
Linguistics .....	M.A., Ph.D.
Mathematics .....	M.S., M.A., Ph.D.
Applied Mathematics .....	M.S., Ph.D.
Music .....	M.A., M.M., D.M.A., Ph.D.
Near Eastern Languages & Civilization	M.A.
Philosophy .....	M.A., Ph.D.
Physics .....	M.S., Ph.D.
Political Science .....	M.A., Ph.D.
Psychology .....	M.S., Ph.D.
Scandinavian Studies .....	M.A., Ph.D.
Slavic Languages & Literatures .....	M.A., Ph.D.
Sociology .....	M.A., Ph.D.
Spanish and Portuguese Studies .....	M.A., Ph.D.
Speech Communication .....	M.A., Ph.D.
Speech & Hearing Sciences .....	M.S., Ph.D., Au.D.
Statistics .....	M.S., Ph.D.
Women Studies .....	M.A., Ph.D.

**Graduate School of Business Administration**

Accounting .....	M.P.Acc.
Business Administration .....	M.S.I.S., M.B.A., Ph.D.

**School of Dentistry**

Endodontics .....	M.S.D.
Oral Biology .....	M.S., Ph.D.
Oral Medicine .....	M.S.D.
Orthodontics .....	M.S.D.
Pediatric Dentistry .....	M.S.D.
Periodontics .....	M.S.D.
Prosthodontics .....	M.S.D.

**College of Education** ..... M.Ed., M.I.T., Ed.D.,  
Ph.D.**College of Engineering**

Aeronautics & Astronautics .....	M.S.A.A., M.A.E., Ph.D.
Chemical Engineering .....	M.S.E., M.S.Ch.E., Ph.D.
Civil and Environmental Engineering .....	M.S., M.S.E., M.S.Civ.E., Ph.D.
Computer Science & Engineering .....	M.S., Ph.D.
Electrical Engineering .....	M.S.E., M.S.E.E., Ph.D.
Engineering .....	M.S.E., M.S.
Industrial Engineering .....	M.S.I.E., Ph.D.
Mechanical Engineering .....	M.S.M.E., M.S.E., Ph.D.
Materials Science & Engineering .....	M.S.M.S.E., M.S., Ph.D.
Technical Communication .....	M.S.T.C., M.S., Ph.D.

**College of Engineering and School of Medicine**

Bioengineering .....	M.Med.E., M.S.Bio.E., M.S.E., Ph.D.
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**College of Forest Resources** ..... M.S., M.F.R., M.Env.H.,  
Ph.D.**The Information School** ..... M.S.I.M., M.L.I.S.,  
Ph.D.**Interdisciplinary Degree Programs**

Biology Teaching Group .....	M.S.
Health Administration .....	M.H.A.
Individual PhD Program .....	Ph.D.
Molecular & Cellular Biology .....	M.S., Ph.D.
Museology .....	M.A.
Near & Middle Eastern Studies .....	Ph.D.
Neurobiology & Behavior .....	M.S., Ph.D.
Nutritional Science .....	M.S., Ph.D.
Public Health Genetics Group .....	M.S., Ph.D.
Quantitative Ecology & Resource Management .....	M.S., Ph.D.
Urban Design & Planning .....	Ph.D.

**School of Law** ..... L.L.M., Ph.D.**School of Medicine**

Biochemistry .....	M.S., Ph.D.
Biological Structure .....	M.S., Ph.D.
Comparative Medicine .....	M.S.
Genome Sciences .....	M.S., Ph.D.
Immunology .....	M.S., Ph.D.
Laboratory Medicine .....	M.S.
Medical Education and Biomedical Informatics .....	M.S., Ph.D.
Medical History & Ethics .....	M.A.
Microbiology (Medicine) .....	M.S., Ph.D.
Pathology .....	M.S., Ph.D.
Pharmacology .....	M.S., Ph.D.
Physiology & Biophysics .....	M.S., Ph.D.
Rehabilitation Medicine .....	M.O.T., M.P.T., M.R.M., M.S., D.P.T.

**School of Nursing** ..... M.N., M.S., Ph.D.**College of Ocean and Fishery Sciences**

Aquatic & Fishery Sciences .....	M.S., Ph.D.
Marine Affairs .....	M.M.A.
Oceanography .....	M.S., Ph.D.

## School of Pharmacy

Medicinal Chemistry .....	M.S., Ph.D.
Pharmaceutics .....	M.S., Ph.D.
Pharmacy .....	M.S., Ph.D.

Evans School of Public Affairs ..... M.P.A.

## School of Public Health and Community Medicine

Biostatistics .....	M.S., M.P.H., Ph.D.
Environmental & Occupational Health Science .....	M.S., M.P.H., Ph.D.
Epidemiology .....	M.S., M.P.H., Ph.D.
Health Services .....	M.S., M.P.H., Ph.D.
Pathobiology .....	M.S., Ph.D.

School of Social Work ..... M.S.W., Ph.D.

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.

Dentistry .....	D.D.S.
School of Law .....	J.D.
School of Medicine .....	M.D.
School of Pharmacy .....	Pharm.D.

## Graduate Admissions

Additional program information is available on the World Wide Web at [www.grad.washington.edu](http://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 Office of Graduate Admissions is available for three types of students. It is important to understand the distinctions between the categories.

A **graduate student** is a person working toward a master's or doctoral degree or earning a school administrator's credential. Students must be admitted to this status in order to earn a degree. Information about the Application for Admission to the Graduate School is obtained from the program to which you wish to apply.

A **visiting graduate student** is a person who 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. Admission is based in part on availability of resources. Visiting graduate applicants must have been admitted to another recognized graduate school, be currently pursuing a graduate degree there, and be in good standing. A Certificate of Status signed by the home institution is required. The Application and Certificate are available online at <https://www.grad.washington.edu/application/>. Individual departments may require additional materials, such as transcripts, GRE/GMAT scores, a statement of purpose, or a list of desired course work.

Some graduate programs have chosen to offer admission to **graduate nonmatriculated students**. These students are not presently seeking a graduate degree but may apply a maximum of 12 credits earned in this category to degree requirements should they later be accepted into a graduate program. Applicants should meet minimum Graduate School admission requirements but *admission as a graduate nonmatriculated student does not imply admission to a graduate degree program*. The Application

to Graduate Nonmatriculated Status must be obtained from the program to which you wish to apply. Official sealed transcripts from all collegiate institutions previously attended must be sent to the Graduate Nonmatriculated Office, Box 84808, University of Washington, Seattle, WA 98124-6108. (Refer to Graduate School Memorandum No. 37 for further information.)

Admission to the UW is necessarily a selective process. The prospective student must hold a baccalaureate degree 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 environment, difficult personal and family situation or circumstances, and refugee status or veteran status.

Importance given to these factors will vary among degree programs.

Most Graduate School admissions are for summer or autumn quarters. Admissions for winter and spring quarters may be severely restricted due to considerations of space.

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](http://www.grad.washington.edu).

### Admission Process

Information about the application process for both graduate and graduate nonmatriculated status must be obtained directly from the department. Visiting graduate applicants should go to <https://www.grad.washington.edu/application/> 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 a \$100 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 February 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 coordinator 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 coordinators in the departments.

The Graduate School and the University of Washington Libraries have collaborated to provide the Grants and Funding Information Services (GFIS) for University of Washington graduate students (and faculty) who are seeking any type of general research funding for use at the University of Washington. GFIS promotes awareness of external funding information resources by providing drop-in educational consultations, maintaining a print collection for grant seekers, and offering quarterly seminars highlighting Web-based grant-seeking tools. GFIS works with students and faculty to devise a search strategy, helping to focus efforts and locate available resources. GFIS also will demonstrate searching on several online databases and how to use its print collection of funding resource books so that students can perform future searches based on changing funding needs. GFIS also maintains resources to assist in the proposal-writing process, including grant-writing handbooks and links to online resources.

To set up a consultation, email [gfis@u.washington.edu](mailto:gfis@u.washington.edu), call 206-616-3084, or submit a research profile using GFIS's online form. For funding seminar schedules, check the Web at [www.lib.washington.edu/gfis/events.html](http://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 February 28 deadline 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 chair of the department in which they hope to work or to the Student Employment Office. 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 single graduate students, both men and women. Additional information may be obtained from the Director of Residence Halls Programs, 301 Schmitz.

Spouses of students also may apply for regular full- and part-time University employment. These positions cover a wide range of occupations and offer pay comparable to the prevailing salaries in the community. Some carry such fringe benefits as vacations, sick leave, and opportunities to enroll in University courses. Inquiries may be directed to the Staff Employment Office, 1320 Northeast Campus Parkway.

### Loans

Long-term educational loans are available to graduate students through the Federal Perkins Student Loan, the Federal Direct Stafford Loan, and the Federal Direct Unsubsidized Stafford Loan programs. An application form for these programs (the Free Application for Federal Student Aid, or FAFSA) is available in the office of Student Financial Aid, Box 355880, 105 Schmitz Hall, 206-685-9395, or from the U.S. Department of Education Web site at [www.ed.gov/offices/OPE/express.html](http://www.ed.gov/offices/OPE/express.html). The Office of Student Financial Aid may also be reached by email ([osfa@u.washington.edu](mailto:osfa@u.washington.edu)) or on the Web at [www.washington.edu/students/osfa/](http://www.washington.edu/students/osfa/). The application deadline is February 28 for the following autumn quarter.

Students should meet the application deadline even if they have not yet been admitted to the Graduate School.

The Federal Perkins Student Loan and the subsidized Federal Direct Stafford Loan are awarded to students who demonstrate financial need. Students who do not qualify for need-based

assistance may qualify for Federal Direct Unsubsidized Stafford Loans. For more detailed information on these loan programs, visit the Office of Student Financial Aid Web site at [www.washington.edu/students/osfa/](http://www.washington.edu/students/osfa/).

Short-term emergency loan funds also are available through the Office of Student Financial Aid. Several different types of short-term loans are possible. More information is available from the Office of Student Financial Aid, Short-Term Loans, 172 Schmitz, 206-685-1282. The Graduate School also has a short-term emergency loan available. For more information, call 206-543-5900.

### **Graduate Opportunities and Minority Achievement Program**

The Graduate Opportunities and Minority Achievement Program (GOMAP) works to develop and maintain a diverse and welcoming climate from which all students may benefit. As part of its duties, GOMAP oversees the Graduate School Fund for Excellence and Innovation (see Special Programs and Facilities) and assists University of Washington graduate programs in developing and maintaining efforts designed to increase the enrollment of students from ethnic minority groups that have been historically underrepresented in graduate programs.

Recognizing that financial aid in the form of scholarships, grants, and fellowships is important in achieving and maintaining diversity, the GOMAP administers a variety of need- and merit-based fellowships. Merit-based awards are generally made through the nomination and support of the department in which the student is enrolled. Need-based awards are based upon an evaluation of the student's need as established by the Free Application for Federal Student Aid (FAFSA) and the Office of Student Financial Aid. Students who have varied cultural experiences or educationally or economically disadvantaged backgrounds and who will therefore contribute to the intellectual and social enrichment of the University, are encouraged to apply. Students must be U.S. citizens or permanent residents to be eligible.

Financial assistance from individual departments may also be available. Students should apply directly to the chair of their department. Students are also encouraged to make use of the University's Grants and Funding Information Service located in Suzzallo Library.

Further information on fellowships administered by GOMAP may be obtained by writing to the University of Washington, Graduate School, Graduate Opportunities and Minority Achievement Program, Box 351240, Seattle WA 98195-1240, or emailing [gomap@u.washington.edu](mailto:gomap@u.washington.edu).

All awards are contingent upon the student's admission to the UW Graduate School.

## **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 master's and all doctoral programs 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 nonmatriculated students, and are given numbers from 500 through 800. 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, 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. Courses numbered 498 and entitled Special Topics or Special Projects normally are not applicable to a graduate degree program if addressed primarily to introductory content and undergraduate students. Undergraduate research (499) is not accepted as part of the graduate program. Graduate School Memorandum No. 36 offers additional information on graduate courses. With the exception of summer quarter, 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, units that offer graduate degrees use the system described herein. Grades are entered as numbers, the possible values beginning at 4.0 and decreasing by one-tenth increments until 1.7 is reached. Grades below 1.7 are recorded as 0.0 by the Registrar. A minimum grade of 2.7 is required in each course that is counted toward a graduate degree. A minimum GPA of 3.00 is required for graduation.

Correspondence between number grades and letter grades is as follows:

Numeric grade-point equivalent	Letter grade	Numeric grade-point equivalent	Letter grade
4.0	A	2.8	B–
3.9		2.7	
3.8	A–	2.6	
3.7		2.5	
3.6		2.4	C+
3.5		2.3	
3.4	B+	2.2	
3.3		2.1	
3.2		2.0	C
3.1		1.9	
3.0	B	1.8	
2.9		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 a graduate student does not automatically convert to a grade of 0.0 but will remain a permanent part of the student's record.

**N No grade.** Used only for hyphenated courses and courses numbered 600 (Independent Study or Research), 601 (Internship), 700 (Master's Thesis), 750 (Internship), or 800 (Doctoral 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 chair 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 chair, 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 the student is 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.

**CR/NC Credit/no credit.** With the approval of the faculty in the academic unit, any course may be designated for grading on the credit/no-credit basis by notice in the appropriate *Time Schedule*. For such courses, the instructor submits 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, *CR/NC*, or *N* at the instructor's option.

**W Course Withdrawal.**

**HW Hardship Withdrawal.** Refer to the University of Washington *Time Schedule* for procedures and dates, or visit the Web at [www.washington.edu/students/reg/wdoffleave.html#Q3](http://www.washington.edu/students/reg/wdoffleave.html#Q3).

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

level courses.

The 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.

### 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.

(See Graduate School Memorandum No. 16 for additional information.)

### 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](http://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/Acad/gsmemos/gsmemo08.htm](http://www.grad.washington.edu/Acad/gsmemos/gsmemo08.htm)) for more information.

### Enrollment Requirement

The enrollment requirement for the master's degree is 30 credits 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 an 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 or on-site study.

Only courses at the 400-, 500-, 600-, 700-, and 800-levels can be applied to enrollment or course credit in the major field for advanced degrees (please see Graduate Courses earlier in this section regarding courses numbered 498 and 499). Courses at the 300-level 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.

### **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 the doctoral degree is conferred.

A student who does not complete all degree requirements by the last day of exam week 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 On-Leave basis from the time of first enrollment in the Graduate School until completion of all requirements for the graduate degree. The student must be registered when applying for the master's degree, the passing of the master's final examination, or doctoral General or Final Examinations, the filing of the thesis or dissertation, and the receiving of the degree. Summer quarter On-Leave enrollment is automatic for all graduate students who were either registered or on-leave the prior spring quarter. Failure to maintain continuous enrollment constitutes evidence that the student has resigned from the Graduate School.

A student's petition for On-Leave status must be approved by the departmental graduate program coordinator or alternate and submitted to the Registration Office no later than the fifth day of the quarter. To be eligible for On-Leave status, the student must have registered for, and completed, at least one quarter at the UW and have been registered and completed the previous quarter, or have been officially On-Leave (except summer quarter). An On-Leave student is entitled to use the University Libraries and to sit for foreign-language competence examinations, but is not entitled to any of the other University privileges of a regularly enrolled and registered full- or part-time student. The student pays a nonrefundable fee to obtain On-Leave student status covering four successive academic quarters or any part thereof. An On-Leave student returning to the University on or before the termination of the period of the leave must file a Returning Student Reenrollment Application (available at 225 Schmitz) by the deadline stated on the form and register in the usual way as a full- or part-time student (see Graduate School Memorandum No. 9 for procedures). A student who returns before the termination of the On-Leave period and maintains registration for any part of a quarter cancels On-Leave status. Please note: Periods spent On-Leave are included as part of the maximum time periods allowed for completion of a graduate degree.

## **Readmission**

A student previously registered in the Graduate School who has failed to maintain graduate student status but who wishes to resume studies must file an application in person or by mail for readmission to the Graduate School by the regularly published closing dates. If the student is readmitted, registration will occur during the usual registration period. If the student has attended any other institution during the period when not registered at the UW, official transcripts in duplicate of the student's work must be submitted. An application for readmission carries no preference and is treated in the same manner as an application for initial admission, including the requirement of payment of the application fee.

The Graduate School normally allows six years to complete requirements for a master's degree and ten years for a doctoral degree. Periods spent On-Leave or out of status are included.

## **Concurrent Degree Programs**

### **Formal Concurrent Degree Programs**

Concurrent programs are defined as a pair of programs that may be taken at the UW by a postbaccalaureate student resulting in the satisfaction 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 sometimes be conserved by providing arrangements that permit the student to proceed in a coordinated way toward completion of the degree objectives.

These specific programs have been formally approved and students are coded with the concurrent codes.

To earn two master's degrees, a student must complete two separate sets of minimum Graduate School degree requirements of 36 credits each for a total of 72 credits. If a program requires more than 36 credits for the master's degree, a graduate student, with prior approval of both graduate programs, may apply a maximum of 12 credits beyond 36 earned in one program toward the master's degree in the second program. Thus, the minimum number of additional credits for the second degree, with these 12 approved credits, is 24. Up to 12 credits earned toward a Ph.D. degree may be counted toward a master's degree in another program with the approval of both degree-granting units.

### **Informal Concurrent Degree Programs**

Students in these programs pursue two degrees from different departments simultaneously. These programs have not been approved as formal concurrent programs, but students complete the same requirements as in the formal concurrent programs.

Students choosing this option must complete an Informal Concurrent Degree Application, which may be obtained from the Graduate Student Services Office, 229 Gerberding.

Graduate School Memorandum No. 35: Concurrent Degree Programs contains additional information and is available from the Academic Programs office in the Graduate School or may be found through the Graduate School homepage at [www.grad.washington.edu](http://www.grad.washington.edu).

# Master's Degree

## Summary of Requirements

It is the responsibility of each master's candidate to meet the following Graduate School minimum requirements:

1. Under a thesis program, a minimum of 36 or more quarter credits (27 course credits and a minimum of 9 credits of thesis) must be earned. Under a non-thesis program, a minimum of 36 or more quarter credits of course work must be earned.
2. At least 18 of the minimum 36 quarter credits for the master's degree must be for work numbered 500 and above. (In a thesis program, 9 of the 18 credits must be course credits and 9 may be for 700, Master's Thesis.)
3. Numerical grades must be received in at least 18 quarter credits of course work 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.
4. A minimum of 30 credits must be earned at the University of Washington.
5. In a 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 (700). With the exception of summer, students are limited to a maximum of 10 credits per quarter of thesis (700).
6. A final master's examination, either oral or written, as determined by the student's supervisory committee, must be passed, if it is a departmental requirement.
7. Any additional requirements imposed by the graduate program coordinator in the student's major department or by the student's supervisory committee must be satisfied. A master's degree student usually takes some work outside the major department. The graduate program coordinator in the major department or the student's supervisory committee determines the requirements for the minor or supporting courses.
8. Students may now apply for the master's degree on the Web at [www.grad.washington.edu/stsv/mastapp.htm](http://www.grad.washington.edu/stsv/mastapp.htm). The online application period commences Monday, the third week of each quarter and closes Friday (midnight Pacific Time), the second week of the subsequent quarter (the quarter the student intends to graduate). For example, if competing in winter quarter, the earliest an online request can be submitted is the third week of autumn quarter and the latest is Friday of the second week of winter 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.
9. The graduate student must maintain registration 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).
10. All work for the master's degree must be completed within six years. This includes quarters spent On-Leave or out of status and applicable work transferred from other institutions (see detailed information under Transfer Credit).

11. A student must satisfy the requirements for the degree that are in force at the time the degree is to be awarded.

## 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 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 UW the equivalent of a maximum of 6 quarter credits of *graduate level* course work taken at another recognized graduate school. These credits may not have been used to satisfy requirements for another degree. The petition must include a written 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.

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

UW students who are within 6 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 6 credits in 500-level courses in addition to the last 6 credits they require of 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 6 credits.

The student must also provide a letter from the Office of Graduations and Academic Records stating that these credits have not been applied toward his or her undergraduate degree.

Credit taken as a nonmatriculated student or postbaccalaureate student at the UW may not be transferred into a graduate program. Credit by either independent study through correspondence or 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. Two copies of the thesis, normally written in the English language, along with the appropriate forms signed by the members of the supervisory committee from the student's graduate program, must be submitted to the Graduate School by the last day of the quarter (last day of exam week) in which degree requirements are completed. The faculty in the graduate program may require that the student present an additional copy for its own use. The Graduate School publishes a booklet, *Style and Policy Manual for Theses and Dissertations*, which outlines format requirements. This manual should be obtained from the Graduate School and read thoroughly *before* the student begins writing the thesis. The thesis must meet all format requirements before being accepted by the Graduate School. Thesis advisers are available in the Graduate School for consultation during the thesis preparation process.

A \$25 binding fee is payable at 129 Schmitz before the thesis is submitted to the Graduate School.

## 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 graduate 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 No. 13). The committee chair 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 exam week) in which degree requirements are met. At least two graduate-faculty members of the committee, including the chair, must sign the Master's Application (warrant). If the exam 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 further period of study.

### Application for Master's Degree

Students may now apply for the master's degree on the Web at [www.grad.washington.edu/stsv/mastapp.htm](http://www.grad.washington.edu/stsv/mastapp.htm). The online application period commences Monday, the third week of each quarter and closes Friday (midnight Pacific Time), the second week of the subsequent quarter (the quarter the student intends to graduate). For example, if competing in winter quarter, the earliest an online request can be submitted is the third week of autumn quarter and the latest is Friday of the second week of winter 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. If this is not possible, the applicant is notified of deficiencies by the Graduate School. Once approved, the application is forwarded to the appropriate graduate program. 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.

Upon completion of departmental requirements, the master's degree application is signed by the supervisory committee and returned to the Graduate School. It must be received by the last day of the quarter (last day of exam week) if the degree is to be conferred that quarter. If all requirements are completed after this deadline, registration for the following quarter is required.

The student and the graduate program coordinator should be thoroughly acquainted with the requirements for the particular degree.

### 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, have been established at the University. These programs provide alternatives to the research-oriented Master of Arts and Master of Science degree programs, which emphasize particular fields of knowledge. Programs leading to the M.A.T. degree are offered in Biology Teaching and English.

## 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:

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 of the total program, including dissertation credits, must be in courses numbered 500 and above. At least 18 credits of course work at the 500 level and above must be completed prior to scheduling the General Examination.
2. 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.
3. 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.
4. Creditable passage of the General Examination. Registration as a graduate student is required the quarter the exam is taken and candidacy is conferred.
5. 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 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).
6. 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.
7. 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.
8. 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).



9. 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 an advanced degree and is expected to evaluate the student's performance throughout the program. The supervisory committee should be appointed no later than four months prior to the General Examination. Appointment of the supervisory committee indicates that the graduate faculty in the student's field finds the student's background and achievement sufficient for admission into a program of doctoral study and research. "Preliminary" examinations, if required, should be completed prior to the request for appointment of the supervisory committee (see Graduate School Memorandum No. 13: Supervisory Committees for Graduate Students).

### **Admission to Candidacy for Doctoral Degree**

At the end of *two years of graduate study*, the chair of the supervisory committee may present to the Dean of the Graduate School, for approval, a Request for General Examination (signed by all supervisory committee members including the Graduate School Representative) permitting the student to take the General Examination for admission to candidacy for the doctoral degree. This means that, in the opinion of the committee, the student's background of study and preparation is sufficient to justify the undertaking of the examination. A warrant is issued to the department if the Graduate School requirements have been met. The Request for General Examination must be received at least three weeks prior to the proposed examination date. Written and other examinations prior to the oral are the responsibility of the graduate program and do not need Graduate School approval. At least four members of the committee (including the chair, GSR, and one additional graduate faculty member) must be present at both the General and Final Examinations. Registration as a graduate student is required the quarter the exam is taken and candidacy is conferred.

If the student's performance is judged by the supervisory committee to be satisfactory, the signed warrant certifying successful completion of the General Examination is filed in the Graduate School. If the General Examination is unsatisfactory, the supervisory committee may recommend that the Dean of the Graduate School permit up to a maximum of two additional re-examinations, after a further period of study. Any members of the committee who do not agree with the majority opinion are encouraged to submit a minority report to the Dean of the Graduate School.

Thereafter, the student is identified and designated as a *Candidate* for the appropriate doctoral degree and is awarded the Candidate's certificate. After achieving Candidate status, the student ordinarily devotes his or her time primarily to the completion of research, writing of the dissertation, and preparation for the Final Examination.

The Candidate's certificate and the doctoral degree may not be awarded in the same quarter.

### **Candidate's Certificate**

The Candidate's certificate gives formal recognition of the successful completion of a very significant step toward the doctoral degrees awarded through the Graduate School: Doctor of Philosophy, Doctor of Education, and Doctor of Musical Arts. Students who have passed the Graduate School General Examination and who have completed all requirements for the

degree except the dissertation and the Final Examination are awarded the Candidate certificate.

### **Dissertation and Final Examination**

The Candidate must present a dissertation demonstrating original and independent investigation and achievement. The dissertation should reflect not only mastery of research techniques but also ability to select an important problem for investigation and to deal with it competently. Normally the dissertation is written in the English language. However, if there are circumstances that warrant the dissertation be written in a foreign language, approval must be received from the Dean of the Graduate School. The Graduate School publishes a booklet, *Style and Policy Manual for Theses and Dissertations*, which outlines format requirements. This manual should be obtained from the Graduate School and read thoroughly *before* the student begins writing the dissertation. The dissertation must meet all format requirements before being accepted by the Graduate School. Thesis advisers are available in the Graduate School, and students are encouraged to consult with them throughout the dissertation preparation process.

When the supervisory committee agrees that the doctoral Candidate is prepared to take the Final Examination, the Dean of the Graduate School should be informed of the decision and asked to designate a reading committee consisting of at least three voting members of the supervisory committee.

Once the reading committee is established officially with the Graduate School, a Request for Final Examination (signed by all members of the supervisory committee including the Graduate School Representative) is presented to the Graduate School three weeks prior to the Final Examination date, and if the Candidate has met all other requirements, a warrant authorizing the Final Examination is issued by the Graduate School. At least four members of the committee (including the chair, GSR, and one additional graduate faculty member) must be present at both the General and Final Examinations.

If the Final Examination is satisfactory, the supervisory committee signs the warrant and returns it to the Graduate School by the last day of the quarter in which the degree requirements are completed. Any members of the committee who do not agree with the majority opinion are encouraged to submit a minority report to the Dean of the Graduate School. If the examination is unsatisfactory, the supervisory committee may recommend that the Dean of the Graduate School permit a second examination after a period of additional study.

After the Final Examination, the doctoral Candidate has 60 days in which to submit the dissertation to the Graduate School. Registration as a graduate student is required the quarter the dissertation is submitted and the degree is conferred.

### **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 and/or abstract. This is a Graduate School requirement in addition to any previous or planned publication of any or all of the dissertation and provides worldwide distribution of the work. The Candidate submits the publication agreement when the dissertation is presented to the Graduate School. Publication in microfilm does not preclude other forms of publication.

The following fees for microfilming the doctoral dissertation are paid at the Cashier's Office, 129 Schmitz (all fees are subject to change): microfilming the entire dissertation, \$60; *optional* copyright fee (applicable only when the entire dissertation is microfilmed), \$45; or microfilming of only the abstract, \$60. *These fees are in addition to the \$25 binding fee.*

### **Individual Ph.D. Program**

The Graduate School maintains the Individual Ph.D. (IPh.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. degree. 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. degree. It is not intended as a mechanism for offering the Ph.D. degree within units that do not have their own authorized Ph.D. programs.

A graduate student may apply to the IPh.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 December 15 of each year, and 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/inter/iphd.htm](http://www.grad.washington.edu/inter/iphd.htm).

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# Program Descriptions

## College of Architecture and Urban Planning

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224 Gould  
www.caup.washington.edu

**Dean**  
Daniel Friedman

**Associate Deans**  
Katrina Deines  
Jeffrey Ochsner  
Douglas Zuberbuhler

The College of Architecture and Urban Planning (CAUP) comprises four departments that are directly concerned with the design and development of the physical environment: Architecture, Construction Management, Landscape Architecture, and Urban Design and Planning.

The College offers a variety of programs and degrees focusing on the environmental design 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. The College also offers two Bachelor of Arts programs: A pre-professional undergraduate major in architectural studies which prepares students for professional programs as well as related roles in society, and a major in community, environment, and planning. Further, the College offers a dual major leading to a Bachelor of Arts in Architectural Studies and a Bachelor of Science in Construction Management, a program that requires 225 credits. Master's degrees are also offered in the College: Master of Architecture, Master of Science in Architectural Studies, Master of Science in Construction Management (evening degree), Master of Urban Planning, and Master of Landscape Architecture. Master's students may elect to work toward the Certificate in Urban Design or the Certificate in Historic Preservation. A Ph.D. program in built environment is offered as well as an interdisciplinary Ph.D. in urban design and planning, available through the Graduate School. All 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 part of a major university and metropolis in the Pacific Northwest, the College is able to reinforce its program by using this setting as a laboratory for study. The College works closely with various professional communities to build curricula and a faculty attuned to the understanding and creation of an appropriate physical environment.

Research centers include:

- \* Runstad Center for Real Estate and Community Development
- \* Center for Environment, Education, and Design Studies
- \* Institute for Hazard Mitigation Planning and Research
- \* Urban Ecology Research Laboratory
- \* Institute for Collaborative Building
- \* Northwest Center for Livable Communities

Educational programs include:

- \* Architecture
- \* Community, environment, and planning
- \* Construction management
- \* Landscape architecture
- \* Real estate
- \* Continuing education/extension programs
- \* Historic preservation certificate program
- \* Urban design certificate program

### Institute for Hazard Mitigation Planning and Research

Robert Freitag, Director

The Institute for Hazard Mitigation Planning and Research was established in 1999 as a vehicle for research, teaching, and public service to address the mitigation of natural and man-made hazards through planning and design, and through the integration of mitigation principles into a wide range

of disaster and risk-management opportunities. The institute's approach is interdisciplinary, with close links to other academic research units in the University and to risk management organizations in government and industry.

The research agenda is aimed at developing practical mitigation solutions that can be incorporated into local government land-use planning, development regulation, infrastructure, and emergency management; state and federal response to disasters; planning for business continuity; and planning for post-disaster recovery and reconstruction.

The institute is also pursuing curriculum development to incorporate mitigation principles and methods into existing and new courses in the College's degree programs.

### Urban Design Certificate Program

410 Gould

Jeffrey Ochsner, Director  
Neile Graham, Program Coordinator

The College of Architecture and Urban Planning administers a special graduate-level program that leads to the Certificate of Achievement in Urban Design. Since 1968, this interdisciplinary program has provided a collective framework that allows students to specialize in the study and design of the urban environment as part of their professional education.

The 14-member faculty offers backgrounds in urban design as well as in architecture, landscape architecture, and urban planning. In addition, the communities of the Puget Sound region provide a unique learning laboratory for students to experience the issues and professional activities of urban design. A core curriculum and mandatory coursework in four substantive areas provide the student with a firm grounding in theory, methods, and practical skills. The program is normally seven quarters in length, concurrent with the master's program.

Students accepted for graduate work by the departments of Architecture, Landscape Architecture, or Urban Design and Planning are eligible for the program if they possess the necessary design abilities prior to enrollment in advanced studios.

### International Programs

224 Gould

The departments of the College offer many opportunities for foreign study in which participants earn academic credit while studying abroad. Programs in Rome and Mexico are sponsored on a regular basis. In addition, various study and exchange opportunities exist in such locations as Germany, the Scandinavian countries, Colombia, Mexico, India, and Japan. Faculty exchanges with foreign institutions occur regularly.

### University of Washington Rome Center

95 Piazza del Biscione, Rome, Italy

Katrina Deines, Director

The College maintains a permanent year-round facility in Rome. Studio and classroom spaces, a library, administrative offices, and housing accommodations for faculty are located in the Palazzo Pio on the Campo de Fiori. The Rome Center is used by UW programs in classics, Romance languages, art, art history, English, creative writing, and comparative history of ideas, as well as by the departments of the College of Architecture and Urban Planning. The Rome Center fosters interaction among students from the University and other institutions, together with practicing professionals residing in or visiting Rome. Several major universities regularly share studio critics and lecturers.

## Remote Sensing Applications Laboratory

12 Gould

Frank Westerlund, Director

The Remote Sensing Applications Laboratory (RSAL) is a facility for teaching, research, and public service applications of remote sensing and geographic information technologies in environmental planning and design. Remote sensing includes aerial photography and satellite systems that record earth-surface data in image or digital form for subsequent interpretation by visual or computer techniques and incorporation into geographic information systems. Research applications have included land-use mapping, urban form analyses, growth-management studies, development siting, natural-resource inventories, and environmental analysis. RSAL houses an extensive collection of air photo, satellite data, map, and documentary resources. In addition to optical photo interpretation equipment, the laboratory utilizes UNIX and NT workstation-based software systems such as ERDAS image processing and ArcInfo GIS.

## Facilities

### Computing

Mark Baratta, Director

The CAUP Office of Computing provides a wide variety of specialized computing resources and support services for the College's students, faculty, and staff. These resources include the following:

- \* several networked Windows and Macintosh computing labs with a wealth of software, including CAD, GIS, multimedia, 2D/3D graphics, rendering, animation, scheduling, estimating, bid analysis, project management, modeling, design, spreadsheet, and document preparation packages;
- \* slide and document scanning facilities;
- \* printing and large-format color plotting;
- \* digital still and video cameras and processing software;
- \* Student Computing Loaner Program, which provides checkout of laptop computers, digital still and video cameras, and video/computer projectors to CAUP students;
- \* consulting office for in-person support, along with support via phone and email.

Additionally, students receive UWNNetID computing accounts from the University's central computing organization, Computing and Communications. The UWNNetID allows attachment to the campus network (either locally or via dial-up) and access to email, disk space for file storage and Web pages, and many computing, course scheduling, bibliographic, and library resources.

### Lighting Applications Laboratory

The Lighting Applications Laboratory includes a variety of facilities for use by students and faculty members in conjunction with lighting classes, design-studio courses, and research work. Equipment in the lighting workshop includes lamps and lighting fixtures, sample models and model-building materials, a mirror-box artificial sky, a direct-beam sunlight simulator, assorted light meters and data loggers, cameras, and demonstration displays.

The Department of Architecture is a co-sponsor of the Lighting Design Lab. This lab, a 10,000-square-foot, half-million-dollar facility, was designed to demonstrate the energy conservation potential of state-of-the-art architectural lighting technology. It is operated by Seattle City Light in downtown Seattle. Students can take various positions in the lab as interns. It is also available to assist in their lighting design and testing, as it does with regional architectural offices.

### Photography Laboratory

A large photography laboratory is provided with studio and darkroom facilities for use by photography classes, design-studio classes, special instruction, and independent activity.

### Shop

A fully staffed and equipped wood-, plastic-, and metal-working shop provides students an opportunity to design and build selected projects. The shop is used as an instructional facility in conjunction with studio,

structures, and materials classes. Thesis and other individual activity also can be accommodated.

## Library

The Architecture-Urban Planning Library, 334 Gould, is the primary location for materials on architecture, landscape architecture, construction management, and urban design and planning. The collection contains 42,500 volumes, 7,500 microforms, and 300 currently received serial subscriptions. 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](http://www.lib.washington.edu).

## Visual Resources Collection

Heather Seneff, Director

The slide collection consists of approximately 100,000 images covering architectural, landscape, design and planning, and construction subject matter, supporting the curricular and research needs of the College. New materials for lectures and projects are continually added.

## Student Organizations

Chapters of American Institute of Architects Students, American Society of Landscape Architects, Associated General Contractors, Planning Students Association, and the Historic Preservation Association provide opportunities for undergraduate and graduate students to meet informally and to participate in a variety of projects and events.

## Undergraduate Degree Programs

### 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
- \* In addition, the College offers a minor in Landscape Architecture and a dual degree which combines the Bachelor of Arts in Architectural Studies with the Bachelor of Science in Construction Management

## Historic Preservation Certificate

The College of Architecture and Urban Planning offers education in historic preservation. This reflects a conscious choice to emphasize preservation within the context of individual design professions. The curriculum offers an awareness and familiarity with issues involved in identification, designation, interpretation, and preservation of historic places, as well as restoration, adaptive reuse, and design of sympathetic new construction in historic contexts.

Program Coordinator  
Box 355740  
206-543-5996

### Admission Requirements

Open to students accepted into a graduate program in the College of Architecture and Urban Planning. 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

12-15 credits, as follows:

- \* Track I: Requirements for Students in the M.Arch. Degree Program
  - o Required courses: ARCH 500 (6), ARCH 582 (3), ARCH 590 (3); either ARCH 457 (3) or ARCH 488 (3); URBDP 587 (3); either URBDP 585 (3) or URBDP 586 (4); an advanced studio on preservation design or design in an historic context.

- o Elective courses: Two additional electives in areas related to preservation in architecture, planning, or related design.
  - o 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 Preservation Planning and Design faculty.
- \* Track II: Requirements for Students in the M.L.A., M.U.P., and Ph.D. Degree Programs
- o Core courses: URBPD 585 (3), URBPD 586 (4), one graduate seminar in preservation planning, URBPD 512 (3)
  - o Mandatory course areas: either one graduate course in each of the following areas or a three-quarter sequence in one area: U.S. history; urban history/history of city planning; architectural history
  - o Preservation planning and design: 5 credits of a preservation studio or some combination of design-related courses
  - o Optional internship (5 credits)
  - o Thesis: Thesis 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 Preservation Planning and Design faculty.

## Architecture

208 Gould  
depts.washington.edu/archdept

Architecture includes the study of design, graphics, computing, building structures, construction materials, environmental control systems, history, theory, and professional practice. It also draws from a broad range of fields including ecology, sociology, psychology, cultural studies, and law.

## Undergraduate Program

Adviser  
208 Gould Hall, Box 355720  
206-543-3043  
bainfo@u.washington.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:

- \* The Bachelor of Arts degree with a major in architectural studies
- \* A dual-degree program leading to the Bachelor of arts degree with a major in architectural studies and the Bachelor of Science degree in construction management
- \* A minor in architecture

The B.A. in architectural studies 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, government, development, management, planning, art, graphic design, digital arts, and the like. These benefit from an understanding of and exposure to architectural design and problem solving.

Students may also choose a dual major in both Architecture and Construction Management and can receive both the B.A. with a major in Architectural Studies and the B.S. in Construction Management. Five years of study is usually the minimum necessary to complete the requirements for both degree programs.

## Bachelor of Arts

*Suggested First- and Second-Year College Courses:* See Department Admission Requirements below.

### Department Admission Requirements

1. 90 credits to include the following:
  - a. *Preparatory Architectural Course Work (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 nonmatriculated 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)*

2. 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 course work the student has completed. It is to the student's advantage to take as many of these courses as possible before applying.
3. *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 332, ARCH 380, ARCH 400, ARCH 401, ARCH 402, ARCH 431, ARCH 460. 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 architecture program and must meet architecture admission requirements. Admitted architecture students apply to the construction management program during spring quarter of their junior year (first year in the architecture program). For architecture 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

133 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, 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.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* The architectural studies 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.

- \* *Instructional and Research Facilities:* Departmental and College facilities include the following:
  - o Design Machine Group, a collaborative design and computing research lab and studio aimed at fostering and developing ideas that will shape the future of design and information technology.
  - o UW Rome Center, housed in the Palazzo Pio on the Campo de' Fiori of Rome, provides studio and classroom spaces for students participating in Italian studies programs.
  - o The Lighting Applications Laboratory is operated by the department for use by students and faculty in conjunction with lighting classes, design studio, courses, and research work.
  - o Photography Laboratory: A large and well-equipped laboratory for black-and-white photography operated by the department for the College provides studio and darkroom facilities for use by photography classes, design studio classes, special instruction, and independent activity.
  - o Wood and Metal Shop: Large and well-equipped wood and metal working shops are available for student and class projects.
- \* *Honors Options Available:* None offered
- \* *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 accredited degree. Two types of degrees are accredited by the National Architectural Accrediting Board (NAAB): (1) the Bachelor of Architecture, which requires a minimum of five years of architectural study (this degree is not offered at the University of Washington), and (2) the Master of Architecture, 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. These professional degrees are structured to educate those who aspire to registration and licensure to practice as architects.

The UW's four-year, pre-professional degree 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 years of higher education to attain the first professional degree, the Master of Architecture. The curriculum is divided into three two-year segments of course work with a pre-professional Bachelor of Arts degree (with a major in Architectural Studies) 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 bachelor's degrees in unrelated fields take an additional year of course work.)

## Graduate Program

Graduate Program Coordinator  
208 Gould, Box 355720  
206-543-4180  
archinfo@u.washington.edu

The Department of Architecture offers two graduate level degrees: the Master of Architecture (M.Arch.) degree, a professionally accredited architecture degree; and the Master of Science (M.S.) degree in Design Computing, an advanced research-oriented degree for those who already

hold a professional or pre-professional degree in architecture or an allied design discipline (or can show evidence of equivalent preparation for work in design computing). Those interested in professional careers in architecture should apply to the Master of Architecture program.

## Master of Architecture

The Master of Architecture degree is the only professional degree offered by the Department of Architecture. Completion of the requirements of this nationally accredited degree program satisfies the educational requirement for licensing (registration) as an architect. The accredited M.Arch. program accommodates two groups of undergraduate degree holders: (1) persons holding a pre-professional four-year degree, such as a Bachelor of Arts in Architecture (or equivalent), who normally will require seven or eight quarters of study; (2) persons with an undergraduate degree in an unrelated field, who normally will require ten or eleven quarters, over a period of at least three years, to complete the requirements for the degree. This three-year program may vary somewhat in duration and specific course work required, depending on selection of concentration/study areas and prior academic and professional experience.

Candidates with a pre-professional four-year degree, such as Bachelor of Arts (in architecture) or the equivalent, usually undertake six full-time quarters of study including completion of a thesis for the M.Arch. degree. This program typically requires 91 credits of course work, including 30 credits of design studio, 30 credits of approved core courses, 9 credits of thesis, and 15 credits of electives. Special interests and certificate programs often can be accommodated within the 15 credits of electives and design-studio options.

Persons holding degrees in other fields normally take three quarters of preparatory course work to develop knowledge and skills equivalent to those of students who enter the program from undergraduate architecture programs. Upon completion of preparatory course work, the students merge with students in the two-year program described above.

The department offers an advanced M.Arch. degree program for persons holding an accredited professional five-year Bachelor of Architecture degree (and those already holding an accredited Master of Architecture degree). For these candidates the program represents a specialization or in-depth study of a specific area or interest in the field. Each student's program is developed on an individual basis in consultation with faculty advisers. The approved program of study becomes the student's curriculum, which must be completed for award of the degree. Typically this program involves a minimum of 45 credits of required course work, including a thesis, and can be completed in four or five quarters. Those seeking advanced study of design computing should apply to the Master of Science (M.S.) in Architecture degree program, not the post-professional M.Arch.

## Admission Requirements

- \* Scholastic record and aptitude as evidenced by transcripts from baccalaureate (or higher) degree and GRE test scores, to be taken within the last five years. Primary emphasis is placed on more recent and architecturally-related coursework.
- \* Minimum grade point average of 3.00 (B) or better in the last 90 graded quarter hours or last 60 semester hours.
- \* A portfolio of work in visual arts and/or design. The portfolio is of primary significance for candidates from design backgrounds who desire advanced standing; however, applicants from other fields must show some graphic evidence of interest and aptitude in the design arts as well.
- \* The applicant's Statement of Purpose for clarity, purpose and the extent to which the program can be expected to prepare him/her for those objectives.

The Statement of Purpose is particularly significant for those applying for the post-professional M.Arch. program. Where appropriate the candidate should include a proposed schedule of coursework and identify faculty that will be involved in the study.

- \* The applicant's background and experience in architecture and related fields.
- \* Written recommendations from three persons who can evaluate the applicant's past record and future promise of success in the program.

## Degree Requirements

91-145 credits, as follows:

- \* *For students without an architecture background a preparatory year is required (54 credits):* ARCH 303 (6), ARCH 304 (6), ARCH 305 (6), ARCH 310 (3), ARCH 311 (3), ARCH 312 (3), ARCH 320 (3), ARCH 321 (3), ARCH 322 (3), ARCH 331 (3), ARCH 332 (3), ARCH 350 (3), ARCH 351 (3), ARCH 352 (3), ARCH 360 (3)
- \* *First-year requirements:* ARCH 420 (4), ARCH 432 (3), ARCH 433 (3), ARCH 500 (6), ARCH 501 (6), ARCH 502 (6), ARCH 530 (3), ARCH 570 (3), ARCH 590 (3), ARCH 591 (3), electives (6)
- \* *Second-year requirements:* ARCH 503 (6), ARCH 504 (6), ARCH 595/599 (3), ARCH 700 (9), professional practicum selectives (6), graduate seminar selectives (6), electives (9)

## Master of Science

The Master of Science (M.S.) in Architecture program offers an advanced and specialized graduate degree in architecture. The M.S. in Architecture is currently offered with a single area of specialization, design computing. Applicants should hold a degree in architecture or an allied design discipline. Candidates from a wide range of disciplinary backgrounds who are interested in pursuing education in research and applications of design computing that include design methods, cognition and computation, design collaborations, human/computer interface in design, visual architecture, physical computing, and related areas are encouraged to apply.

### Admission Requirements

- \* Scholastic record and aptitude as evidenced by transcripts from baccalaureate (or higher) degree and GRE test scores (Graduate Record Examination) taken within the last five years
- \* A baccalaureate degree from an accredited United States college or university (or its equivalent in a foreign institution)
- \* Minimum grade point average of 3.00 (B) or better in the last 90 graded quarter hours or last 60 semester hours
- \* A portfolio of work in design in architecture or an allied discipline (or similar work appropriate to the program). The portfolio should include evidence of the applicant's preparation for the study in design computing.
- \* The applicant's Statement of Purpose for clarity, purpose and the extent to which the M.S. in Design Computing program can be expected to prepare him/her for those objectives
- \* The applicant's background and experience in architecture or an allied discipline (or related experience appropriate to the program), as well as preparation for advanced work in design computing, information technology, digital media or the like.
- \* Written recommendations from three persons who can evaluate the applicant's past record and future promise of success in the M.S. in Design Computing program

## Degree Requirements

45 credits, as follows:

- \* *Core Curriculum:* ARCH 587 (3), ARCH 588 (3), ARCH 599 (3)
- \* *Required Coursework:* One of the following: ARCH 402 (6), ARCH 403 (6), ARCH 503 (6), ARCH 504 (6), ARCH 505 (6); ARCH 481 (3); ARCH 484 (3); ARCH 486 (3); either ARCH 482 (3) or ARCH 483 (3)
- \* *Electives:* 9 credits to be chosen from Design Computing courses, or any other relevant courses.
- \* *Thesis:* 9 credits of ARCH 700

## Certificate Programs

Graduate students may elect to participate in the College-wide certificate programs in urban design and preservation planning and design. (See program descriptions in the preceding College section.) The department also offers a certificate program in lighting design.

## International Studies

The department offers the Architecture in Rome program at the University of Washington Rome Center, and the Design/Build Mexico program in Cuernavaca, Mexico. Other programs have included summer study of the Italian Hill Towns and in Portugal and Scandinavia, and numerous

exchanges including Scandinavia, England, Germany, Hong Kong, Colombia, 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 the awarding, although some financial aid is offered to newly entering students. Other financial aid and assistantship possibilities may be found through the Graduate School Fellowship Division and the Office of Student Financial Aid in Schmitz Hall.

## Built Environment

410 Gould  
[www.caup.washington.edu/phdprograms/builtenv/](http://www.caup.washington.edu/phdprograms/builtenv/)

The Ph.D. in Built Environment is a college-wide, interdisciplinary degree program housed within the College of Architecture and Urban Planning. The Ph.D. program provides students with 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

## Doctor of Philosophy

### Admission Requirements

- \* Three letters of recommendation (Please use this downloadable form.)
- \* Curriculum vitae
- \* An exhibit of work which best illustrates the applicant's interests and abilities in areas related to the built environment must be submitted. 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.
- \* Statement of Purpose
- \* 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 score (Test of English as a Foreign Language). 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 the following:

- \* *Core courses (21 credits):*
  - o B E 551 (3), B E 552 (3), B E 553 (3)
  - o B E 550 (6 quarters at 1 credit each)
  - o *Research methods and design:* choice of 6 credits from list, including both qualitative and quantitative coursework
- \* *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 the

qualifying examinations. A broad selection of courses, both within the College of Architecture and Urban Planning and in other UW units, is available.

- \* *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.
- \* *Dissertation (30 credits):* 30 credits, concluding with a final oral defense.

## Construction Management

120 Architecture  
depts.washington.edu/cmweb

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@u.washington.edu

The Department of Construction Management offers the following program of study:

- \* The Bachelor of Science in Construction Management degree
- \* A dual-degree program leading to the Bachelor of Arts with a major in architectural studies and the Bachelor of Science in Construction Management

Students complete the first two years of study as an undeclared major in the College of Arts and Sciences or a community college. During these two years, students complete 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; CHEM 120; ECON 100; ENGL 131, ENGL 281; ESS 101; MATH 112, MATH 124, or MATH 145; ACCTG 215 and ACCTG 225, CM 250, COM 220, MGMT 200, QMETH 201.

#### Department Admission Requirements

1. Minimum 88 credits in the following categories (courses must be completed by the beginning of autumn quarter to be eligible for admission that quarter):
  - a. *Construction Science:* M E 123.
  - b. *Business and Management:* ACCTG 215 and 225; MGMT 200.
  - c. *Individuals & Societies (I&S):* ECON 100, 200, or 201; 10 additional I&S credits from UW Areas of Knowledge list (CM 250 recommended).
  - d. *Natural World (NW):* PHYS 114, PHYS 115, PHYS 117, and PHYS 118; MATH 112, MATH 124, or MATH 145 or Q SCI 291; ESS 101; QMETH 201; 10 additional NW credits from UW Areas of Knowledge list (CHEM 120 or environmental studies recommended).
  - e. *Language Skills:* 5 credits from English composition list; 5 credits from "W" courses or English composition list (ENGL 131 and ENGL 281 recommended).
  - f. *Visual, Literary & Performing Arts (VLPA):* COM 220; 5 additional VLPA credits (from UW Areas of Knowledge list).

2. Admission 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.
3. *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 of the admission committee's decision 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 (73 credits):* ARCH 320, ARCH 321, ARCH 322; B CMU 301, 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 415, CM 420, CM 425 or ARCH 420
3. *Approved Electives (8 credits):* Upper division courses offered by the College of Architecture and Urban Planning or by the School of Business. (CM 413 recommended.)
4. *Capstone Experience (5 credits):* CM 431
5. *Additional Degree Requirement:* Minimum 2.50 cumulative GPA in upper-division college courses.

### Dual Degree Program

For the requirements for the dual-degree program in architectural studies and construction management, see the Architectural Studies page.

### Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* The study of construction management requires an interdisciplinary curriculum that contains a mix of technical, managerial, and business courses to provide graduates with 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 Architecture-Urban Planning 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 Gould Hall. Departmental resources include a student lounge in Room 242, Gould Hall. The lounge contains four computers and space for student collaboration.
- \* *Honors Options Available:* None offered.
- \* *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:*
  - o 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 who are in the top twentieth percentile of their class. Each year the student chapter conducts community service activities.

- o 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, and Mechanical Contractors Association of America. Activities include professional guest lectures, field trips, attendance at professional meetings and seminars, and community service.

### Of Special Note

**Dual-Degree Program:** The Department of Construction Management, in conjunction with the Department of Architecture, offers a five-year dual-degree program to provide students education in both the design and construction disciplines. Students must consult an adviser and apply to the Department of Architecture upon completion of their architecture program prerequisites. To be admitted to the construction management program, students apply at the beginning of the spring quarter of the first year in the Architecture program. The five-year curriculum is a blending of the architecture and construction management programs. Graduates of the dual-degree program receive both a Bachelor of Science in Construction Management and a Bachelor of Arts in Architectural Studies. Students interested in the dual-degree program are encouraged to consult undergraduate advisers in both departments.

## Graduate Program

Graduate Program Coordinator  
120 Architecture Hall, Box 351610  
206-616-1917

## Master of Science in Construction Management

### Admission Requirements

- \* Baccalaureate degree (B.S. or B.A.) 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 (5); CM 411 (3); CM 421 (3).
- \* Minimum GPA of 3.00, based on the last 60 graded semester hours or last 90 graded quarter hours of undergraduate and graduate study.
- \* Graduate Record Examination (GRE) scores
- \* Statement of goals and objectives
- \* Letters of recommendation
- l 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 on the MLT, is required for admission.

### Degree Requirements

45 credits, as follows:

- \* **Core Courses (9 credits):** CM 500 (3), CM 535 (3), CM 575 (3)
- \* **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)
- \* **General Elective Courses (12 credits):** Other graduate-level courses approved by adviser.
- \* **Thesis or Research Paper (3 or 9 credits):** Research Paper -- CM 600 (3); or thesis -- CM 700 (9)

## Landscape Architecture

348 Gould  
[www.caup.washington.edu/html/larch](http://www.caup.washington.edu/html/larch)

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, 206-685-4006

The Department of Landscape Architecture offers the following programs of study:

- \* The Bachelor of Landscape Architecture (B.L.A) degree
- \* A minor in landscape architecture

## Bachelor of Landscape Architecture

### Department Admission Requirements

1. Completion of 90 credits to include the following:

- \* **Departmental Pre-professional Requirements:** L ARCH 300\* (usually offered autumn and summer quarters). One of the following courses (two recommended): L ARCH 352\*, L ARCH 353\*, L ARCH 450/L ARCH 451\*. A drawing or painting course in art is also recommended.

\*Transfer students: These courses are offered through UW Extension.

- \* **General Education Requirements:** Skills Requirements: English Composition (5 credits); Areas of Knowledge: Visual, Literary, & Performing Arts (20 credits); Individuals & Societies (20 credits); Natural World (20 credits to include ESS 101 and BIOL 113); W courses (10 credits, may also count toward any other requirement except the 5-credit English composition requirement).

- \* Electives to bring the total to 90 credits.

2. Undergraduate students currently enrolled at the UW may apply for admission to the department after completion of a minimum of 60 general education credits. Major status is normally granted upon completion of 90 credits and requires formal application and admission to the department.

3. Admission is competitive. Completion of the above requirements does not guarantee admission. Admission is based on academic record, a portfolio of creative work, three letters of recommendation, and other application materials. Contact the department for application materials and detailed information on admission, prerequisites, and required coursework.

4. Application Deadline: February 15 for the following autumn quarter. Students are not admitted to the program at other times. Applications must include the BLA application forms. Students should apply during their second year with the expectation of having completed six quarters of General Education requirements by autumn quarter.

### Major Requirements

Minimum 135 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, L ARCH 406, L ARCH 476
2. **History:** L ARCH 352 and L ARCH 353; and one course of environmental history
3. **Theory:** L ARCH 322, L ARCH 341, L ARCH 361, L ARCH 362, L ARCH 363
4. **Graphics:** L ARCH 411, L ARCH 412
5. **Professional Practice:** L ARCH 473
6. **Construction:** L ARCH 331, L ARCH 332, L ARCH 433

7. Directed Electives in computer, urban design and planning, ecology, environmental legislation, environmental geology, soils, environmental horticulture, forest resources, and plant identification courses to bring the minimum total for the major to 135 credits.

## Minor

*Minor Requirements:* Minimum 25 credits, including 6 studio credits (L ARCH 300); 6 landscape architecture history credits, chosen from L ARCH 352, L ARCH 353, L ARCH 450, L ARCH 451, L ARCH 498; 3 credits in theory and practice, chosen from L ARCH 322, L ARCH 341, L ARCH 361, L ARCH 362, L ARCH 462; 5 credits in any L ARCH or EHUF prefixed courses, including all L ARCH summer offerings and up to 6 credits of L ARCH foreign study courses; 5 credits of courses with the prefix ARCH, CM, or URBDP. Minimum GPA of 2.00 in courses counted toward minor.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* The B.L.A. 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 series 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 that their creative potential and professional growth are realized, and so that they may become leaders in the field. The education includes learning to conceptualize and design through practice on studio projects, fostering creativity, developing graphic 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 regional scales, rural and urban contexts, and diverse cultures. Overall, the program focuses on the application of ecological design strategies to urban and urbanizing areas.

- \* *Instructional and Research Facilities:* The five-year, 225-credit degree is structured around nine studios augmented by lecture courses. The program includes some opportunities for independent studies and work in professional settings. Departmental courses are complemented by elective courses from other departments, including architecture, urban horticulture, soils, geology, urban design and planning, botany, and ecology.

Landscape architecture studios are led by departmental faculty or members of the professional community. Often studios are taught jointly with faculty from other disciplines. Studios 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 housing design, urban landscape design, ecological restoration, and design for ethnic cultures. A capstone studio requires students to integrate their experience of design theory, practice, and construction in a design-build project for a local community. 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.

- \* *Honors Options Available:* None offered.

- \* *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. Students are encouraged to gain real-world experience through professional experience "practica" with professional firms, organizations, or agencies.

Students enter the three-year program in the department following completion of departmental prerequisites and two years of University requirements. In addition to required course work, the program encourages students to pursue personal interests through directed and independent study within and beyond the department.

- \* *Department Scholarships:* Limited availability.

- \* *Student Organizations/Associations:* None.

## Graduate Program

Graduate Program Coordinator  
348 Gould Hall, Box 355734  
206-543-9420, 206-616-3582  
cauplarc@u.washington.edu

## 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. The 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 encouraged 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 preceding College section.

## Program Requirements

Specific program requirements are arranged to fit each student's background. Seminar and field courses are selected to 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.

## Admission Requirements

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.

Admission to the Graduate School requires (1) a baccalaureate degree from an accredited U.S. college or university, or its 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.

Admission is competitive with priority 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. Please contact the department for additional information.

## Urban Design and Planning

410 Gould  
www.caup.washington.edu/html/URBDP

Urban design and planning deals with critical issues of human settlement and urban development. It provides communities with 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 of the College of Architecture and Urban Planning, including the Center for Community Development and Real Estate and the Institute for Hazard Mitigation Planning and Research. Faculty also participate in the Puget Sound Regional Synthesis Model (PRISM) University Initiative Fund program. The department also administers the Remote Sensing Applications Laboratory, concerned with applications in urban planning of remote sensing and geographic information systems (GIS) technology and the Urban Ecology Research Laboratory. In addition, the College has a wide array of facilities for computer-based instruction related to design, including CAD, GIS, and visualization technology, and runs a joint program in advanced computer technology and virtual reality with the Human Interface Technology Laboratory of the Washington Technology Center.

## 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 as one of the University's interdisciplinary undergraduate programs. CEP has gained distinction as a model for a highly personalized, active, and relevant educational experience within a large research institution. CEP students draw liberally upon 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

- \* Minimum 90 credits completed by beginning of autumn quarter of admission.
- \* While cumulative GPA is an important factor, the admissions committee places emphasis on written essays, academic work, and a final interview.
- \* Admission is once a year, for autumn quarter. Application deadline: February 15 for early consideration. Applications submitted later are considered, depending on when admission quotas have been met.

### 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):* One course from the University list (MATH 112 or MATH 124 recommended). 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.
  4. *Diversity Course (5 credits):* One course from an approved list. See program advisers. The diversity course, if applicable, may be counted toward an Area of Knowledge or major requirement.
- \* *Major Requirements*
  1. *Core Seminars (30 credits):* CEP 301, CEP 302, CEP 303, CEP 460, CEP 461, CEP 462.
  2. *Methods Courses (25 credits):* Chosen with guidance of program adviser.
  3. *Internship (5 credits):* CEP 446

\* Electives to complete minimum 180 credits for degree, varies depending on how many general education courses apply to more than one requirement.

## 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.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* A CEP education is founded on the following: start where you are; articulate and embrace a vision of how you 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. Students learn in groups of seventeen. Each 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 Architecture and Urban Planning section, above.
- \* *Honors Options Available:* None offered.
- \* *Research, Internships, and Service Learning:* See College of Architecture and Urban Planning section, above.
- \* *Department Scholarships:* None offered.
- \* *Student Organizations/Associations:* See College of Architecture and Urban Planning section, above.

## Graduate Program

Graduate Program Coordinator  
410 Gould, Box 355740  
206-543-4190

The department offers the Master of Urban Planning (M.U.P.) degree and its faculty participate in the interdisciplinary Doctor of Philosophy (Ph.D.) in Urban Design and Planning. The M.U.P. is the professional degree, while the Ph.D. is primarily for students planning to enter research and teaching positions in urban planning and design.

The graduate 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, including public/private development processes
- \* Historic preservation
- \* Land-use planning, including its environmental, socioeconomic, legal, information systems, and administrative aspects
- \* Environmental planning

Graduate students may elect to participate in the College-wide Certificate Programs in Urban Design and Historic Preservation. See program descriptions in the College section.

The department also offers the Master in Strategic Planning for Critical Infrastructures degree, a fully online graduate program for those in charge of critical infrastructure protection in both the public and the private sectors.

## Master of Urban Planning

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 requiring a minimum of 72 credits.

Requirements for graduate-level study include a satisfactory academic record and undergraduate training 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, American government, environmental systems, and cultural diversity. Students without sufficient background must take these prerequisite courses concurrently with their graduate studies.

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. Core course requirements include 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. Also required are 14 credits of restricted electives, including a

course in advanced methods and a second studio; both may be in an area of specialization. In addition, a course in land-use planning, in urban development economics, and in history/theory of planning is required. A 9-credit thesis or professional project is required upon completion of all other degree course work. Of the 72 minimum credits required for the degree, 16 credits may be 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 planning and infrastructure planning, real estate, urban design, historic preservation, and environmental planning.

Students are admitted to the M.U.P. program primarily in autumn quarter and all application material should be received by the department no later than the preceding February 1 (November 1 for international applicants). Graduate Record Examination general test scores, three letters of recommendation, transcripts of previous degree programs and any additional academic study, and a statement of purpose are required. TOEFL is required for international applicants.

## Doctor of Philosophy

Some of the 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 section.)

## Master in Strategic Planning for Critical Infrastructures

The Master in Strategic Planning for Critical Infrastructures (MSPCI) is a fully accredited master's program for leaders in charge of protecting critical infrastructures and emergency services. Developed in partnership with the Washington State National Guard, the MSPCI program was specifically created for officials in public and private infrastructure systems, emergency management, and homeland security.

This fully online graduate program is designed to train managers in the strategic decision-making required to prevent and counter threats to critical infrastructures and public health.

The MSPCI program is offered each year beginning in autumn. The program is delivered entirely online, and classes begin for each cohort in late September. The MSPCI program is guided by an advisory board of UW faculty and professionals in the field.

A blend of strategic planning and systems theory, the program follows a distinctive analytic approach that enhances the conventional emergency management approach to hazards. Critical systems can be attacked through various means at different points within the system. The program's analytic approach seeks to make the critical infrastructures more resilient to breakdown, whether caused by terrorist acts, natural hazards, or normal accidents.

The MSPCI program offers courses that provide an understanding of vital infrastructure systems and instruction in systems thinking/systems analysis. The curriculum focuses on strategic thinking, leadership skills and the application of content and methods to cases and problems. It includes an emphasis on legal, constitutional and ethical issues, which are examined in relation to homeland security.

To earn the master's degree, students complete 16 courses (52 credits); two additional prerequisite courses (7 credits) are required for individuals needing to build specific background knowledge or skills, but may be waived depending on experience or other courses taken. Aside from the prerequisites, students take two courses per quarter and can expect to complete the program in eight quarters over two years.

Individuals not seeking the degree may enroll in single courses on a space-available basis with instructor permission. To learn more about single-course enrollment, see the single-course enrollment page.

Minimum requirements for admission include a baccalaureate degree (B.A. or B.S.), GRE scores, transcripts, a resume, three recommendations, a statement of purpose, and a departmental application form, as well as completion of the MSPCI prerequisite courses. Applicants must also be admitted to the UW Graduate School. International applicants must also submit their T.O.E.F.L. scores.

For more details, see the MSPCI Web site.

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# College of Arts and Sciences

**Interim Dean**  
Ronald S. Irving

**Divisional Deans**  
Judith Howard -- Social Sciences  
Richard Karpen -- Research and Infrastructure  
Robert Stacey -- Arts and Humanities  
Werner Stuetzle -- Natural Sciences

50 Communications  
[www.artsci.washington.edu/index.asp](http://www.artsci.washington.edu/index.asp)

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

Requirement*	Credits	
Language Skills	5-20	# English composition (5 credits) # Foreign language (0-15 credits, depending on placement)
Reasoning and Writing in Context	15	# Quantitative/symbolic reasoning (5 credits) # Additional writing courses (10 credits)
Areas of Knowledge	75	General-education courses to include at least 20 credits in each of the following three areas: # Visual, Literary and Performing Arts (VLPA) # Individuals and 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

University of Washington (Seattle) Student Planner, a copy of which is given to each entering student.

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

### 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 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 (Q/SR) 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). Q/SR 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, and Performing Arts (Area of Knowledge requirement)
- \* **I&S** -- Individuals and 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 Advising 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. Web sites for these minors may be found in the alphabetical listing of Arts & Sciences degree programs.

### Credits Required Outside Major Department

So that the student will 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 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.

## Evening Degree Program

Students may earn a degree in communication, English, health informatics and health information administration, humanities, or social sciences through the Evening Degree Program. Admission to the program requires the following: 75 college credits, normally to include Arts and Sciences language-skills requirements (English composition and one year of a single foreign language), the reasoning-in-context requirement (quantitative/symbolic reasoning), and a substantial portion of the writing-in-context and general education requirements. Students who have only a few remaining prerequisite courses to complete may, under certain circumstances, be admitted as premajors. Admission and graduation requirements for communication (only the general communications option is offered) and English are identical to requirements for the day programs, shown under departmental listings.

## Major Requirements

The Humanities major and the Social Sciences major require a minimum 2.00 GPA for all courses taken in residence at the UW and a minimum 2.25 GPA for courses taken to satisfy the major requirements.

- \* *Humanities* -- 60 credits, including at least 30 credits from one of the following three options: communication and critical thinking; literature and culture; ideas and beliefs in social history. A 5-credit senior seminar. Remaining credits from courses outside the principal option.
- \* *Social Sciences* -- 60 credits, including 15 credits of social science survey courses (e.g., ANTH 202, SOC 271, POL S 202); 25 credits from one of the following four options: social and ethical theory; law, politics, and the state; culture and ethnicity; economy and ecology. 15 credits of program electives (selected from courses outside the principal option). A 5-credit senior seminar. Major requirements are to include at least 40 credits in 300- and 400-level courses.

For course lists, consult the Evening Degree Program adviser (at Evening Degree Program, 103 Lewis Hall) or the Undergraduate Advising Center, 171 Mary Gates Hall.

## 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 the graduate and professional volume of the 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 that are in force at the time the degree is to be awarded.

## American Ethnic Studies

B510 Padelford  
depts.washington.edu/aes

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  
206-543-5403

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

- \* 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 (35 credits):*
  - a. 15 credits of AES 150, AES 151, AES 212
  - b. 15 credits of AFRAM 101, AAS 101, CHSTU 101
  - c. 5 credits of AES 495 or AES 496
2. *Concentration:* 25 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:

1. One foundation course (5 credits) chosen from the following: AES 151, ANTH 330, HSTAA 105, LSJ/CHID 332, PSYCH 250, WOMEN 200
2. 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 <http://depts.washington.edu/divminor/>.
3. Minimum 15 credits must be completed in residence at the UW. Maximum 10 credits from one department and maximum 10 credits from the student's major department may be applied toward the minor.

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@u.washington.edu](mailto:divminor@u.washington.edu). Program director is Professor Rick Bonus at [rbonus@u.washington.edu](mailto:rbonus@u.washington.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 students 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:* None
- \* *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

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## American Indian Studies

C514 Padelford  
depts.washington.edu/native

American Indian studies surveys Indian cultural developments in art, music, history, medicine, media and film, language, and literature and offers performance and studio experience.

### Undergraduate Program

Adviser  
C514 Padelford, Box 354305  
206-543-9082

The American Indian Studies Center offers the following undergraduate programs:

- \* Bachelor of Arts degree 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 (40 credits):* Chosen from AIS courses or a select list of courses from other departments. (See program adviser or departmental Web site for complete list.)
3. *Senior project (5 credits):* AIS 498 or approved alternative.
4. 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:* None offered
- \* *Research, Internships, and Service Learning:* None offered
- \* *Department Scholarships:* None offered
- \* *Student Organizations/Associations:*
  - o American Indians in Science and Engineering Society (AISES), UW Chapter Office: Ethnic Cultural Center and 207 Loew Hall (MSEP), 206-543-5536 or 206-685-8688
  - o First Nations at the UW, Office: Ethnic Cultural Center, American Indian Room, 206-543-4635, ext. 12
  - o Medicine Wheel Society, Office: Ethnic Cultural Center and School of Medicine

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## Anthropology

M32 Denny  
www.anthro.washington.edu

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  
243 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
- \* A minor in anthropology

### Bachelor of Arts

*Suggested First- and Second-Year College Courses:* Any two of the following: ANTH 202, ANTH 203, ANTH 204, ANTH 206, ANTH 207, ANTH 208, ANTH 209, ANTH 210, or ANTH 228; ARCHY 205; BIO A 201; at least one from SOC 220, STAT 220, STAT 311, or Q SCI 381.

#### Department Admission Requirements

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

#### 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: SOC 220, STAT 220, STAT 311, Q SCI 381
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.
- b. Maximum 12 credits 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 grade of 3.0.
  - c. Transfer students must complete a minimum of 15 upper-division credits in anthropology at the UW.

## 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 grade of 2.0 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 Lab, Luminescence Dating Laboratory, Electron Microscope Laboratory Cooperative, Geoarchaeology Lab, Digital Imaging and Microscopy Lab, Geographical Information System (GIS) Computer Lab. 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. With Distinction (Departmental Honors). 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:*
  - o The Brett E Baldwin Scholarship, for approximately \$1,000, is awarded to an outstanding graduate or undergraduate majoring in anthropology.
  - o The Wienker Prize for Best Undergraduate Essay. Four awards are given each year, one in each subdiscipline 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 Ph.D. programs within the subdisciplines. Additionally, the department has an informal program in environmental anthropology which applicants may pursue within one of the traditional Ph.D. track programs. A concurrent degree program with Health Services offers an M.P.H./Ph.D. A Ph.D. program in sociocultural anthropology with emphasis in ethnomusicology is offered in cooperation with the School of Music. The M.A. degree may be earned within the Ph.D. 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.

## Program 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 M.A. degree usually requires two years of graduate study; the Ph.D. 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 M.A. degree can be earned only within the Ph.D. 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.

## Applied and Computational Mathematical Sciences

C36 Padelford  
[www.math.washington.edu/acms](http://www.math.washington.edu/acms)

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 a 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](mailto: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 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.

1. *Biological and Life Sciences* focuses on basic techniques of mathematical modeling and computing that are employed in the life sciences.
2. *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.
3. *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.

4. *Mathematical Economics*: Students in this option obtain a firm foundation in applied and computational mathematics as well as a basic grounding in economic theory.
5. *Operations Research* provides a firm foundation in the mathematical tools of operations research, particularly optimization and stochastic modeling.
6. *Scientific Computing and Numerical Algorithms* focuses on the design, mathematical analysis, and efficient implementation of numerical algorithms for such problems.
7. *Social and Behavioral Sciences* provides a foundation in commonly used statistical and computational techniques followed by flexibility in pursuing different sets of advanced courses.
8. *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

### Department Admission 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 307, MATH 308, MATH 310, 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/STAT 390; CSE 142, CSE 143; AMATH 352; AMATH/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 102 or BIOL 180 and 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 310, MATH/STAT 394, CSE 373, CSE 410, CSE 417 and one of CSE 413, CSE 415; 9 credits for Computer Science/Computer Science and Engineering double major/double degree - MATH/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, and 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, 122, 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, 122, 123 or ECON 200, 201, 300, MATH 310, 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 454, ECON 472, ECON 482, ECON 483, ECON 485; 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 in Economics.
  - e. *Operations Research Option*. 47 credits to include option core and electives. Option core (30 credits): PHYS 121, 122, 123, MATH 310, MATH/STAT 394, MATH/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/STAT 491, MATH/STAT 492, STAT 421, 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 School of Business Administration 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, 122, 123, MATH 310, MATH 327, MATH 464, MATH 465; 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 (25 credits): PHYS 121, 122, 123, MATH/STAT 394, MATH/STAT 395, STAT 423; and option electives (22 credits): outside area (12 credits or double major/double degree; see adviser for options) and 10 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, 122, 123, MATH/STAT 394, MATH/STAT 395, 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.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes*: The ACMS degree emphasizes the development of advanced skills in discrete and contiguous 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*: With College Honors. With Distinction (Departmental Honors). See adviser for requirements.
- \* *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

414 Guggenheim Hall  
www.amath.washington.edu

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

## Undergraduate Program

Adviser  
414 Guggenheim Hall, Box 352420  
206-543-5493

The Department of Applied Mathematics offers the following undergraduate programs:

- \* The Bachelor of Science degree in Applied and Computational Mathematics, offered in cooperation with departments of Computer Science and Engineering, Mathematics, and Statistics. See Applied and Computational Mathematical Sciences for specific degree information.
- \* A minor in applied mathematics.

## Minor

*Minor Requirements:* 27 or more credits as follows:

1. MATH 124, MATH 125, MATH 126 (5, 5, 5) or equivalent
2. 4 applied math courses at the 300 level or above (excluding AMATH 400, AMATH 498, AMATH 499)
3. Minimum grade of 2.0 required in each course

## Graduate Program

Graduate Program Coordinator  
414 Guggenheim Hall, Box 352420  
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 (1) broad training in those mathematical methods and techniques that have been found useful in applications, (2) in-depth study in at least one field of application, and (3) opportunities to explore various specialized aspects of applied mathematics.

## Master of Science

### Admission Requirements

Prospective students for the Master of Science program should hold an undergraduate degree either in mathematics with a strong background in applications such as the physical, engineering, biological, or social sciences with a strong background in applications-oriented mathematics. The student's record should be a strong one with minimum GPA of B (3.00) or better. Graduate Record Examination scores should be sent to the Graduate School. In addition to the other requirements for all applicants, a minimum score of 500 on the Test of English as a Foreign Language (TOEFL) must be presented by applicants who are not citizens of the United States unless they meet one of the following exceptions: citizens of Australia, Canada, Ireland, New Zealand, or the United Kingdom; or applicants holding bachelor's or advanced degrees from accredited institutions in the U.S. or in one of the countries listed above.

### Degree Requirements

36-45 credits, as follows:

- \* *Core Courses (20 credits):* AMATH 567 (5), AMATH 568 (5), AMATH 569 (5). (Substitution of any of these courses with AMATH 401 (4), AMATH 402 (4) and AMATH 403 (4), respectively, is permitted.) Either AMATH 581 (5) or AMATH 584 (5).
- \* *Applied Mathematics Courses:* Minimum 24 credits from the Applied Mathematics curriculum. Core courses are counted toward this requirement.
- \* *Applied Mathematics Seminar/Clinic/Independent Study (4 credits):* AMATH 501 (1, max. 6), AMATH 502 (1, max. 6) or AMATH 600 spread over at least two quarters.
- \* *Final Examination for Master's Degree:* Oral presentation by the candidate in the presence of his or her Graduate Committee on a current topic of interest from the literature or the results of original research.
- \* *Program Plan:* To be filled out by the student, signed by the adviser, and approved by the Graduate Committee. For full-time students, a Program Plan must be on file no later than the end of the third quarter of registration. Part-time students should file their Program Plan prior to the end of their first three quarters of registration.
- \* *Satisfactory Progress:* The student is expected to maintain a minimum 3.20 GPA. In addition, full-time students (whether self-supporting or under full scholarship or assistantship support) are normally expected to complete the requirements for an M.S. degree in one year and should not exceed two years. Exceptions are granted only by petition to the Graduate Committee.

## Doctor of Philosophy

### Admission Requirements

- \* Completion of course work 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.

- \* Graduate Record Examination
- \* Three letters of recommendation are required in support of each application and should be sent directly to the department.
- \* Minimum score of 500 on the Test of English as a Foreign Language (TOEFL) for applicants who are 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 U.S. or in one of the countries listed above.
- \* A graduate student is considered for admission to the Ph.D. program by the Graduate Committee after completing AMATH 567 (5), AMATH 568 (5), AMATH 584 (5), and AMATH 585 (5) with a grade of 3.4 or better in each course, as well as passing the Preliminary Examination.

### Degree Requirements

Minimum 90 credits, to include:

- \* *Course Requirements:* AMATH 567 (5), AMATH 568 (5), AMATH 569 (5); AMATH 584 (5), AMATH 585 (5), AMATH 586 (5); three of AMATH 570 (5), AMATH 571 (5), AMATH 572 (5), AMATH 573 (5), AMATH 574 (5), AMATH 575 (5); either AMATH 507 (5) or AMATH 515 (5); AMATH 506 (4); two applications courses; 2 credits of departmental seminars; 2 credits of departmental clinics.
- \* *Preliminary Examination:* Three written two-hour exams, covering a core of undergraduate material necessary for successful completion of the Ph.D. program. Core areas are differential equations, linear algebra, and advanced calculus.
- \* *Supervisory Committee:* Formed no later than the end of the spring quarter of the first year.
- \* *Candidacy Requirements:* Form a supervisory committee, select two specialization areas, satisfy course requirements, and design a doctoral research plan.
- \* *General Examination:* Administered after the student has passed the Preliminary Examination and sometime before the end of the student's second year.
- \* *Final Examination:* Oral presentation of the completed research in a seminar open to the public.

## 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

Students in applied mathematics have access to a departmental computing lab equipped with a DEC Alpha server, Alpha/AXP workstations, and X-terminals, with centralized file storage. Software for scientific visualization, numerical analysis, symbolic mathematics, programming, and document preparation is available. The lab is connected to the campus network and the Internet, providing access to supercomputing facilities and other resources.

## Art

104 Art  
art.washington.edu

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@u.washington.edu

The School of Art offers the following undergraduate programs:

- \* The Bachelor of Arts degree with a major in art history, design studies (incorporates elements of the Bachelor of Fine Arts industrial design and visual communications design programs), interdisciplinary visual arts, or painting and drawing.
- \* The Bachelor of Fine Arts degree with a major in ceramics, fibers, industrial design, metals, painting and drawing, photography, printmaking, sculpture, or visual communication design
- \* *Note:* The printmaking and metals programs are not currently admitting new majors

## Bachelor of Arts

*Design Studies, Interdisciplinary Visual Arts (IVA), Painting and Drawing (Students may earn a Bachelor of Arts or a Bachelor of Fine Arts 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 Design Studies Major for Entering Freshmen, Currently Enrolled Students, or Transfer Students:* Students must complete ART 166 (or equivalent), then apply to the major using the appropriate application process. See the program guides on the department Web site for specific information: <http://art.washington.edu/undergrad/programguides/index.html>.

*Admission to the Interdisciplinary Visual Arts Major for Entering 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@u.washington.edu.

*Admission to the Painting and Drawing Major for Entering 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@u.washington.edu.

### Major Requirements

*Design Studies (80 credits)*

1. 5 credits prerequisite: ART 166
2. Successful completion of Design Admission Selection Process
3. 30 credits: ART 207, ART 208, ART 209, ART 210, ART 211, ART 212
4. 20 credits: ART 381, ART 481, ART 482 (repeated to 10 credits)
5. 15 credits electives from the following: ART 366, ART 368, ART 376, ART 377, ART 378, ART 467, ART 383, ART 483, ART 316, ART 317, ART 322, ART 446.
6. 10 credits of art history including ART H 203 and any non-western art history: ART H 204, ART H 205, ART H 206, ART H 230, ART H 311, ART H 315, ART H 318, ART H 330, ART H 337.

*Interdisciplinary Visual Arts (63 credits)*

1. 20 credits of introductory art selected from ART 120, ART 124, ART 126, ART 131, ART 133, ART 140, ART 166, ART 190, ART 201, ART 202, ART 226, ART 227, ART 234, ART 245, ART 246, ART 258, ART 272, ART 273, ART 290, ART 292.
2. 25 upper division credits in art selected from ART 328, ART 329, ART 330, ART 332, ART 333, ART 334, ART 335, ART 338, ART 339, ART 342, ART 345, ART 350, ART 353, ART 354, ART 357, ART 358, ART 390, ART 392, ART 428, ART 436, ART 450, ART 457, ART 458, ART

485, ART 490, ART 492, ART 496, ART 498, ART 499, ART H 498, ART H 499.

3. 18 credits in art history, with a minimum 8 upper division credits, to include one from ART H 203, ART H 380, ART H 381, or ART H 384; one non-western course from ART H 204, ART H 205, ART H 206, ART H 230, ART H 311, ART H 312, ART 313, ART H 315, ART H 318, ART H 321, ART 330, ART H 331, or ART H 337.

*Painting and Drawing (60 credits)*

1. 5 credits: ART 190
2. 15 credits drawing classes: 5 credits ART 290; 5 credits ART 390; 5 credits ART 490
3. 25 credits painting classes: 5 credits ART 292; 5 credits ART 293; 5 credits ART 392; 5 credits ART 393; 5 credits ART 492
4. 15 credits art history (with a minimum 5 upper division) to include one from ART H 203, ART H 380, ART H 381, or ART H 384; one non-western from ART H 204, ART H 205, ART H 206, ART H 230, ART H 311, ART H 312, ART H 313, ART H 315, ART H 318, ART H 321, ART H 330, ART H 331, or ART H 337.

## Bachelor of Fine Arts

*Ceramics, Fibers, Industrial Design, Metals, Painting and Drawing (Students may earn a Bachelor of Fine Arts or a Bachelor of Arts in Painting and Drawing, but not both), Photography, Printmaking, Sculpture, Visual Communication Design*

### Department Admission Requirements

The minimum GPA for admission to School of Art BFA programs is 3.00.

*Note:* The printmaking and metals programs are not currently admitting new majors. Students may check with Academic Advising and Student Services (uaskart@u.washington.edu) for updated information.

For entering freshmen or currently enrolled students

*Admission to Ceramics, Fibers, Painting and Drawing, and Sculpture:* Students complete the prerequisite art course unique to each major (ART 201 for ceramics; ART 226 or ART 227 for fibers; ART 190 for painting and drawing; ART 272 or ART 273 for sculpture), then meet with an Art adviser to declare the major.

*Admission to Industrial Design, Photography, and Visual Communication Design:* Students must complete prerequisite courses unique to each major (see Major Requirements, below). Students then apply to the major using the appropriate application process. Each major has its own unique application process; see Program Guides on department homepage for specific information: <http://art.washington.edu/undergrad/programguides/index.html>.

*For transfer students*

*Admission to Ceramics, Fibers, Painting and Drawing, and Sculpture:* Once admitted to the UW, students meet with an Art adviser to enroll in the appropriate art course (ART 201 for ceramics; ART 226 or ART 227 for fibers; ART 190 for painting and drawing; ART 272 or ART 273 for sculpture). 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@u.washington.edu.

*Admission to Industrial Design, Photography, and Visual Communication Design:* Students must complete prerequisite courses unique to each major (see Major Requirements, below). Students then apply to the major using the appropriate application process and submitting a portfolio. Each major has its own unique application process; see the program guides on the department Web site for specific information: <http://art.washington.edu/undergrad/programguides/index.html>.

*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 <http://art.washington.edu>.

## Major Requirements

### *Ceramics (85 credits)*

1. 10 credits of ART 201, ART 202
2. 15 credits of ART 353.
3. 20 credits of ART 485
4. 25 credits of art or related electives to include ART 120
5. 15 credits art history (with a minimum 5 upper division) to include one from ART H 203, ART H 380, ART H 384, or ART H 381; one non-western from ART H 204, ART H 205, ART H 206, ART H 230, ART H 311, ART H 312, ART H 313, ART H 315, ART H 318, ART H 321, ART H 330, ART H 331, or ART H 337.

### *Fibers (85 credits)*

1. 10 credits of ART 226, ART 227
2. 25 credits of ART 328, ART 329, ART 330
3. 15 credits of ART 428
4. 20 credits of art or related electives to include ART 120
5. 15 credits art history (with a minimum 5 upper division) to include one from ART H 203, ART H 380, ART H 381, or ART H 384; one non-western from ART H 204, ART H 205, ART H 206, ART H 311, ART H 312, ART H 313, ART H 315, ART H 318, ART H 321, ART H 330, ART H 331, or ART H 337.

### *Industrial Design (90 credits)*

1. 5 credits prerequisite: ART 166
2. Successful completion of Design Admission Selection Process
3. 30 credits: ART 207, ART 208, ART 209, ART 210, ART 211, ART 212
4. 30 credits: ART 316, ART 317, ART 318, ART 321, ART 322, ART 422
5. 15 credits: ART 445, ART 446, ART 447.
6. 10 credits of art history including ART H 203 and any non-western art history: ART H 204, ART H 205, ART H 206, ART H 230, ART H 311, ART H 315, ART H 318, ART H 330, ART H 337.

### *Metals (85 credits)*

*Note:* Major is not accepting new students.

### *Painting and Drawing (95 credits)*

1. 5 credits, ART 190.
2. 15 credits of drawing classes: 5 credits ART 290; 5 credits ART 390; 5 credits ART 490.
3. 45 credits of painting classes: 5 credits ART 292; 5 credits ART 293; 5 credits ART 392; 10 credits ART 492 or 5 credits ART 492 and 5 additional credits of ART 490; 15 credits ART 494.
4. 15 credits of studio art or related electives.
5. 15 credits of art history with a minimum 5 upper division to include one from ART H 203, ART H 380, ART H 384, or ART H 381; one non-western art history from ART H 204, ART H 205, ART H 206, ART H 230, ART H 311, ART H 312, ART H 313, ART H 315, ART H 318, ART H 321, ART H 330, ART H 331, ART H 337.

### *Photography (85 credits total)*

1. 15 credits of prerequisites: ART 140; ART 124, ART 126, ART 166, or ART 190; ART H 232.
2. Successful completion of Photography Portfolio Review.
3. 5 credits of ART 241 (autumn quarter only).
4. 25 credits: ART 340; ART 341; ART 342; 10 credits of ART 343.
5. 15 credits of ART 440 (spring, autumn, winter quarters).
6. 15 credits of studio art or related electives.
7. 10 credits of art history including ART H 203 and any non-western art history: ART H 204, ART H 205, ART H 206, ART H 230, ART H 311, ART H 315, ART H 318, ART H 330, ART H 337.

### *Printmaking (85 credits)*

*Note:* Major is not accepting new students.

### *Sculpture (85 credits)*

1. 10 credits of ART 272, ART 273
2. 25 credits of ART 332, ART 333, ART 334, ART 335
3. 10 credits ART 436.
4. 25 credits of art or related electives, to include ART 120.
5. 15 credits of art history (with a minimum 5 upper division) to include one from ART H 203, ART H 380, ART H 384, or ART H 381; one non-

western from ART H 204, ART H 205, ART H 206, ART H 230, ART H 311, ART H 312, ART H 313, ART H 315, ART H 318, ART H 321, ART H 330, ART H 331, or ART H 337

### *Visual Communication Design (100 credits)*

1. 5 credits of prerequisite: ART 166.
2. Successful completion of Design Admission Selection Process.
3. 30 credits: ART 207, ART 208, ART 209, ART 210, ART 211, ART 212
4. 30 credits: ART 366, ART 376, ART 367, ART 377, ART 368, ART 378
5. 25 credits: ART 466, ART 478, ART 467, ART 479, ART 480
6. 10 credits of art history including ART H 203 and any non-western art history: ART H 204, ART H 205, ART H 206, ART H 230, ART H 311, ART H 315, ART H 318, ART H 330, ART H 337.

## 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 details).

- \* *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:* None.

- \* *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 on a competitive basis to any one of the following seven programs: Ceramics, Fibers, Metals, Painting, Photography, Sculpture, and Visual Communication Design.

The master's degree program in Art History at the University of Washington affirms that the M.A. 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 Ph.D. 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 Ph.D., 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 B.F.A. 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

- \* *Ceramics Studio*: 20 credits of ART 553
- \* *Interdisciplinary Seminar*: 25 credits of ART 590
- \* *Art History, Theory, and Criticism*: 10 credits of approved courses
- \* *Studio Electives*: 15 credits of approved electives
- \* *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 M.F.A. exhibition at the Henry Art Gallery along with a one person show at the Ceramics Gallery.

#### Fibers

- \* *Fibers Studio*: 20 credits of ART 540
- \* *Interdisciplinary Seminar*: 25 credits of ART 590
- \* *Art History, Theory, and Criticism*: 10 credits of approved courses
- \* *Studio Electives*: 20 credits of approved electives
- \* *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. Fibers graduates exhibit their thesis work in the annual M.F.A. exhibition at the Henry Art Gallery.

#### Metals

- \* *Metals Studio*: 20 credits of ART 558
- \* *Interdisciplinary Seminar*: 25 credits of ART 590
- \* *Art History, Theory, and Criticism*: 15 credits of approved courses
- \* *Studio Electives*: 20 credits of approved electives
- \* *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. Metals graduates exhibit their thesis work in the annual M.F.A. exhibition at the Henry Art Gallery.

#### Painting and Drawing

- \* *Drawing Studio*: 6 credits of ART 591
- \* *Painting Studio*: 25 credits of ART 592
- \* *Graduate Seminar*: 30 credits of ART 594
- \* *Art History, Theory, and Criticism*: 10 credits of approved courses
- \* *Studio Electives*: 9 credits of approved electives
- \* *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 M.F.A. exhibition at the Henry Art Gallery.

#### Photography

- \* *Photography Studio*: 20 credits of ART 515
- \* *Interdisciplinary Seminar*: 25 credits of ART 590
- \* *Art History, Theory, and Criticism*: 15 credits of approved courses
- \* *Studio Electives*: 15 credits of approved electives
- \* *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 M.F.A. exhibition at the Henry Art Gallery.

#### Sculpture

- \* *Sculpture Studio*: 20 credits of ART 552
- \* *Interdisciplinary Seminar*: 25 credits of ART 590
- \* *Art History, Theory, and Criticism*: 10 credits of approved courses
- \* *Studio Electives*: 15 credits of approved electives

- \* *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 M.F.A. exhibition at the Henry Art Gallery.

#### Visual Communication Design

- \* *Design Studio*: 25 credits of ART 580/ART 582
- \* *Design Seminar*: 20 credits of ART 581
- \* *Art History, Theory, and Criticism*: 15 credits of approved courses
- \* *Studio Electives*: 20 credits of approved electives
- \* *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 M.F.A. exhibition at the Henry Art Gallery.

## Master of Arts

### Admission Requirements

- \* B.A. degree with art history major or equivalent course work with a minimum GPA of 3.00 or B average in art history courses; students in other majors may apply if they have a strong background in art history.
- \* Official GRE General Test scores.

### Degree Requirements

The M.A. program offers both thesis and non-thesis tracks in Art History. The thesis track requires a minimum of 55, and the non-thesis (practicum) track 65, graduate-level credits, to include:

- \* A minimum of 5 numerically graded credits in four of the five major areas: 1) African and Native American; 2) East Asian; 3) Ancient, Classical, and Medieval; 4) Italian and Northern Renaissance, Baroque, and Rococo; 5) Western, late 19th c. to the present.
- \* A minimum of 15 credits in 500-level seminars, including at least one seminar each in a Western and a non-Western area; also, two methodology seminars to be taken in the first year.
- \* For students in the thesis track, at least 10 credits of ART H 700 (Master's Thesis); for the non-thesis track, at least 10 credits of ART H 598 (Master's Practicum)
- \* All degree candidates are required to demonstrate a knowledge of either French, German or Italian, or Chinese or Japanese where appropriate. Degree candidates specializing in Native American art may substitute Spanish for French or German. Students in the thesis track are required additionally to demonstrate knowledge in a second language appropriate to the student's area of study. Petitions for exemption from the second language requirement are considered as warranted by the needs of different fields or projects.
- \* The thesis may be an extension of a seminar paper and must demonstrate the student's ability to conduct rigorous research, indicate familiarity with bibliographical and reference materials, and show a capacity for the synthesis and critical evaluation of the material under consideration.
- \* The practicum must evidence the student's practical or theoretical knowledge of some aspects of art in historical or contemporary situations, and may take any of a variety of forms, either within or outside the academic offerings of the University, e.g., an internship in a public art museum or the publication of critical, educational or other writings. These are minimum M.A. requirements for the Division of Art History. To be eligible for a degree in the Graduate School, a minimum GPA of 3.00 in numerically graded courses numbered 400 and above is required.

## Doctor of Philosophy

### Admission Requirements

- \* M.A. degree in art history or a closely related field with a minimum 3.00 or B average in art history courses.
- \* Official GRE General Test scores.

### Degree Requirements

The Ph.D. program requires a minimum of 90 credits, as follows:

- \* A minimum of 60 credits in art history in numerically graded courses numbered 400 and above, beyond the M.A. Of these 60, at least 30 credits must be in 500-level art history or approved non-art history seminars

- \* A maximum of 20 credits in related fields (in numerically graded courses numbered 300 and above) may be approved for credit in place of art history courses
- \* A minimum of 10 credits must be taken in an area other than areas to be tested by the General Examination.
- \* All doctoral students are required to demonstrate a knowledge of either French, German or Italian, or of Chinese or Japanese where appropriate; to demonstrate a research capability in a second language appropriate to the student's area of study as determined by the faculty; and to demonstrate a knowledge of any further languages judged necessary by the faculty
- \* A minimum of 30 dissertation credits
- \* A General Examination, written and oral, is taken when in the opinion of the student's supervisory committee the student's background is sufficient to justify its undertaking. The fields to be covered are determined in accordance with the student's interests and the faculty's supervisory capabilities.
- \* These requirements are minimum Ph.D. requirements for the Division of Art History. To be eligible for a degree in the Graduate School, a grade point average of 3.0 in numerically graded courses numbered 400 and above is required.

## Scholarships and Teaching Assistantships

School of Art scholarships are awarded annually to new and returning students, based on merit. Applicants admitted to the M.F.A. 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.

## Art History

209 Art  
art.washington.edu

Art history is the study of the creation, style, and meaning of works of art in relation to the artists and societies that created them. The history of art involves the interaction of styles, techniques, concepts, individual personalities, and social values from many places over long periods of time. This discipline is comparative in nature and requires many different skills, derived from the study of history and culture, foreign languages and literature, iconography, stylistic analysis, and connoisseurship.

## Undergraduate Program

Adviser  
104 Art, Box 353440  
206-543-0646  
uaskart@u.washington.edu

The Division of Art History offers the following undergraduate programs:

- \* The Bachelor of Arts degree with a major in art history
- \* A minor in art history

## Bachelor of Arts

*Suggested First- and Second-Year College Courses:* ART H 201, ART H 202, ART H 203, ART H 204, ART H 205, ART H 206. Courses to enhance writing skills, and courses in history, literature, anthropology, classics, and foreign languages.

## Department Admission Requirements

Entering freshmen and transfer students may declare an Art History major by scheduling an appointment with the Art History adviser on or after their orientation/registration date. Currently enrolled University students who wish to declare an Art History major must have a minimum 2.50 GPA and meet with the adviser anytime during the quarter except the first two weeks.

*Admission Policy for Postbaccalaureate Applicants:* Postbaccalaureate study in Art History is limited. Acceptance is competitive, based upon

transcripts of prior college work and a School of Art Supplemental Information Form.

## Major Requirements

55 credits in art history, including one course from each of the following four groups plus three 400-level art history courses:

1. ART H 201, ART H 202, ART H 290, ART H 340, ART H 341, ART H 342, ART H 343, ART H 351, ART H 352, ART H 361, or ART H 373
2. ART H 204, ART H 306, ART H 311, ART H 315, ART H 316, or ART H 321
3. ART H 205, ART H 206, ART H 230, ART H 330, ART H 331, or ART H 337
4. ART H 203, ART H 232, ART H 380, ART H 381, ART H 382, or ART H 384

## Minor

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

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* Students studying in the field of art history can expect to develop strong writing, research, analytical, critical thinking, and problem-solving skills. Coursework is designed to allow students to comprehend the social, historical, ethical, and aesthetic significance of the visual realm that is our present environment and the heritage of many cultures. Art history graduates pursue careers in fields such as gallery and museum management, visual technology, teaching, arts administration, arts education, research, curating and restoration, interior design, and art and antique connoisseurship.
- \* *Instructional and Research Facilities:* None
- \* *Honors Options Available:* With College Honors. With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning:* The Art History Program is based in the School of Art where majors work side by side with students studying in the studio arts. They have direct access to the Art Library, Media Center, Writing Center, a state of the art Computer Center, and three active art galleries. Classes are taught in rooms equipped with the technology needed to address all the issues and complexities of a visual culture. Many art history classes are conducted at local galleries and museums where students receive first-hand knowledge of the visual arts. Enrichments outside the classroom include one quarter study abroad in Rome, opportunities to work one on one with faculty in research projects, and workshops and presentations by visiting artists and scholars.
- \* *Department Scholarships:* Art history majors compete each year for several major scholarships in the School of Art: Austin Award (\$3,000), Marsh Scholarship (\$3,000), and Milnor Roberts Award (\$4,000). They are also eligible for smaller awards of excellence that range from \$500 to \$1,000. Applications are made in early April and scholarship winners are announced at the annual School of Art Open House in late April.

In addition to these awards, students are also encouraged to apply for the Nordstrom Research and Recognition Awards that support special projects, research, and professional development.

The \$2,000 Lockitch Graduating with Excellence Award is presented each year at the School of Art Graduation Celebration to the top undergraduate in Art History.

- \* *Student Organizations/Associations:* Art history majors have opportunities to serve on School of Art committees which include: Open House, Gallery, Graduation Celebration, Curriculum, Space, and Career Discovery Week.

*Of Special Note:* Art history majors anticipating graduate study should acquire a reading knowledge of French, German, Chinese, Italian, or Japanese.

## Graduate Program

Graduate Program Coordinator  
209 Art, Box 353440  
206-543-4876  
uwah@u.washington.edu

### Master of Arts

#### Admission Requirements

1. Bachelor of Arts degree with major in the history of art, or equivalent course work
2. One copy of all academic transcripts (international applicants must submit two copies)
3. Three letters of recommendation
4. Statement of professional objectives in the field
5. Samples of the applicant's written work
6. Graduate Record Examination scores

#### Graduation Requirements

55 to 65 credits, to include:

1. 55 credits in the thesis track or 65 credits in the non-thesis track. Of these credits, a minimum of 45 credits in the thesis track or 55 credits in the non-thesis track must be numerically graded art history courses numbered 400 and above, exclusive of thesis or practicum credits. A maximum of 10 credits in related fields, in numerically graded courses numbered 300 and above, may be approved for credit in place of art history courses. No more than 12 credits of ART H 600 may be counted toward the minimum credit requirement for the Master of Arts degree.
2. A minimum of 5 numerically graded credits each in four of five major areas: African or Native American; East Asian; Ancient, Classical, and Medieval; Italian and Northern Renaissance, Baroque, and Rococo; or late eighteenth- to twentieth-first-century Western.
3. A minimum of 15 credits in 500-level seminars, in addition to ART H 500 and ART H 504, both of which must be taken within the first year of residence. At least one seminar each in a Western and a non-Western area is required.
4. Knowledge of French, German, or Italian, or of Chinese or Japanese if appropriate. Degree candidates specializing in Native American art may substitute Spanish for French, German, or Italian. Candidates in the thesis track are required, in addition, to demonstrate knowledge in a second language appropriate to the student's area of study as determined by the faculty. Petitions to the Faculty Graduate Committee for exemption from the second language requirement are considered as warranted by the needs of different fields or projects. Language requirements may be satisfied by passing graduate proficiency examinations (available in French, German, Italian, and Spanish), or by completing the third quarter of the second year of French, German, Italian, Chinese, Japanese, or other appropriate language as a graduate student at the University of Washington with a minimum grade of 3.0. Students are expected to satisfy at least one of the language requirements no later than the first quarter of residence in the program.
5. Students in the thesis track must take 10 thesis credits in ART H 700 in preparation for the written presentation and oral defense of a thesis that demonstrates the ability to conduct rigorous research, familiarity with relevant sources, and a capacity for synthesis and critical evaluation; students in the non-thesis track must take 10 practicum credits in ART H 598, a practical or theoretical program designed in conjunction with the faculty and defended by means of a final written report and oral examination.

### Doctor of Philosophy

#### Admission Requirements

1. Prior sound preparation in art history at a general level, which usually means having acquired the Master of Arts degree in the history of art
2. One copy of all academic transcripts (international applicants must submit two copies)
3. Three letters of recommendation
4. A statement of professional objectives in the discipline
5. Samples of written research work in art history. Taking the Graduate Record Examination is required.

## Graduation Requirements

Minimum 90 credits, to include:

1. 60 credits in numerically graded art history courses numbered 400 and above, beyond the Master of Arts degree or equivalent, and exclusive of dissertation credits; a maximum of 20 credits in related fields in numerically graded courses numbered 300 and above may be approved for credit in place of art history courses; a minimum of 10 credits must be in areas other than those tested by the General Examination; at least 30 credits must be in 500-level seminars
2. Knowledge of German, French, or Italian, or of Chinese or Japanese if appropriate; a research capability in a second language adjudged appropriate to the student's area of study; a knowledge of any other languages considered necessary by the faculty. Language requirements may be satisfied by passing graduate-proficiency examinations (available in French, German, Italian, and Spanish), or by completing the third quarter of second-year French, German, Italian, Chinese, Japanese, or other appropriate language as a graduate student at the University with a minimum grade of 3.0
3. General Examination, written and oral, taken prior to enrollment for dissertation credits; this examination covers three specific fields of art history chosen from the following general areas: African, Native American, Chinese, Japanese, Ancient, Medieval, Renaissance, Baroque and eighteenth century, Modern, and Contemporary; no more than two fields may be selected from the same area
4. 30 dissertation credits in ART H 800 taken after the General Examination in preparation and defense of the dissertation. These credits must be distributed over a minimum of three quarters
5. A dissertation demonstrating original and independent investigation and achievement

## Financial Aid

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

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## Asian Languages and Literature

225 Gowen  
depts.washington.edu/asianll

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
- \* Minors in Chinese, Hindi, Japanese, and Sanskrit

## 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. Completion of at least 20 credits of college course work (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 a course taken at the UW, and the final grade in the most recent course in that language must be 2.5 or higher.
2. Completion of one writing course (W-prefix) taught in English with a minimum grade of 2.0.
3. The department prefers that prospective majors present a cumulative GPA of 2.50 or higher. Applicants may submit materials in addition to transcripts clarifying any aspect of past course work. 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 will not be 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

75 credits, as follows:

1. *Language Courses:* 30 credits required, including a minimum of 20 beyond the third-year level. Must include CHIN 451, plus other courses drawn from CHIN 411, CHIN 412, CHIN 413, CHIN 421, CHIN 422, CHIN 423, CHIN 452, CHIN 453, CHIN 470, and CHIN 482.
2. *Linguistics Courses:* 5 credits required (CHIN 342); an additional 5 credits optional (CHIN 443).
3. *Literature Courses:* 15 credits required (10 if the optional 5 linguistics credits are taken). Courses may be drawn from ASIAN 201, ASIAN 204, ASIAN 211, ASIAN 263, CHIN 373, CHIN 374, CHIN 380, CHIN 381, CHIN 385, CHIN 461, CHIN 462, CHIN 463, and Chinese literature courses offered in the Department of Comparative Literature.
4. *China-Related Humanities and Social Science Courses:* 25 credits required. Must include HSTAS 211, plus other courses explicitly related to China from such departments as Anthropology, Art, History, International Studies, Linguistics, and Sociology.

### 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, 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

75 credits as follows:

1. 60 credits in languages, of which 45 are in the major language, 15 in the minor language
2. 15 credits in area-related humanities or social science courses to be chosen in consultation with adviser and to include HSTAS 201 and ASIAN 401

## Minor

### Minor Requirements

*Chinese:* 30 credits as follows:

1. *Language Courses:* 15 credits at or above the third-year level. Must include CHIN 451, plus other courses drawn from among CHIN 212, CHIN 213, CHIN 301, CHIN 302, CHIN 303, CHIN 411, CHIN 412, CHIN 413, CHIN 421, CHIN 422, CHIN 423, CHIN 452, CHIN 453, CHIN 470, and CHIN 482.
2. *China-Related Humanities Courses:* 15 credits drawn from among the following: ASIAN 201, ASIAN 204, ASIAN 211, ASIAN 263 (when China is the topic), CHIN 342 (or CHIN 442), CHIN 373, CHIN 374, CHIN 380, CHIN 381, CHIN 385, CHIN 443, and CHIN 461, CHIN 462, CHIN 463.

*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 literature, linguistics, or humanities courses. Acceptable courses include: JAPAN 321, JAPAN 322, JAPAN 323, JAPAN 342, JAPAN 343, JAPAN 405, JAPAN 431, JAPAN 432, JAPAN 433, JAPAN 440, JAPAN 442, JAPAN 443, JAPAN 460, JAPAN 471, JAPAN 472, JAPAN 473. 5 credits from the following may be applied toward the minor: ARCH 441; ARCH 453; ART H 317; ART H 318; ART H 321; HSTAS 423; HSTAS 424; HSTAS 441; MUSIC 495.
3. Minimum 2.0 grade required for each course applied to the minor.

*Sanskrit:* 30 credits as follows:

1. 15 language credits at the second-year level (SNKRT 401, SNKRT 402, SNKRT 403) 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

## Student Outcomes and Opportunities

- \* *Instructional and Research Facilities:* None
- \* *Honors Program:* With College Honors. With Departmental Distinction. See adviser for details.
- \* *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. 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

- \* An undergraduate major in the language and literature of specialization (four years of language training for admission to the Chinese and Japanese programs; 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 will need to acquire the program prerequisites during the earliest stages of their graduate study.
- \* A statement of academic goals
- \* Three letters of recommendation addressed to the Graduate Program Coordinator.

### Degree Requirements

45-54 credits plus language requirements, as follows:

- \* *Coursework Requirement:*
  - o *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.
  - o *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 M.A. thesis according to the rules and policies of the Department of Asian Languages and Literature and pass an oral examination.
- \* *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 reading 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

- \* A minimum undergraduate GPA of 3.00 in the junior and senior years
- \* Three letters of recommendation and a statement of purpose.
- \* 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 GPA of 3.00.
- \* Students lacking such preparation may be admitted to the M.A. program provisionally, and will be required to make up the deficiencies during their first year of residence.

### Degree Requirements

38-40 credits, as follows:

- \* *Degree Requirements:* Two options are available to the student in the M.A. degree program: (1) a thesis program, and (2) a 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.
- \* *Coursework Requirements:*
  - o *Second-Year Classical Chinese, 15 credits:* CHIN 551, CHIN 552, CHIN 553 (5, 5, 5)
  - o *Methods and Materials, 5 credits:* CHIN 559 (5)
  - o *History of Chinese Literature, 5 credits:* Any one course of the following three-quarter sequence: CHIN 461, CHIN 462, CHIN 463 (5, 5, 5)
  - o *The Chinese Language, 5 credits:* CHIN 442 (5)
  - o At least one course from each of the following two groups, 8-10 credits:
    - + *Group I -- Literature:* CHIN 461, CHIN 462, CHIN 463 (5, 5, 5); CHIN 482 (5); CHIN 554, CHIN 555, CHIN 556 (5, 5, 5); CHIN 561, CHIN 562, CHIN 563 (5, 5, 5); CHIN 573 (5, max. 15); CHIN 575 (5, max. 15); CHIN 580 (5, max. 15); CHIN 582 (5, max. 15); CHIN 583 (5); CHIN 590 (5); CHIN 591, CHIN 592, CHIN 593 (5, 5, 5)
    - + *Group II -- Linguistics and Philology:* CHIN 443 (5); CHIN 531, CHIN 532, CHIN 533 (3, 3, 3); CHIN 540 (3, max. 9); CHIN 541 (3, max. 9); CHIN 542 (3); CHIN 544 (3, max. 9); CHIN 557 (5); CHIN 558 (3)
- \* *Foreign Language Requirement:* For the M.A. in Chinese, the additional language requirement must be fulfilled through a graduate reading examination. The additional language may be another Asian language or a European language, but may not be the student's native language, and must be relevant to the student's program of study.
- \* *M.A. Examination:* Examination in Chinese will cover Chinese literature, and the second part will focus on language (linguistics and philology) and texts. The examination should normally be taken no later than autumn quarter of the third year.

## Master of Arts, Japanese Language and Literature

### Admission Requirements

- \* A minimum undergraduate GPA of 3.00 in the junior and senior years
- \* Three letters of recommendation and a statement of purpose
- \* 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.
- \* While a student lacking such preparation may be admitted, the student will be expected to concentrate initially on compensating for deficiencies in background by taking course work 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:

- \* *Coursework:* The M.A. program requires a minimum of 45 credits above the 300 level which are to be earned through a combination of course work and research. At least 18 credits of coursework 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 (5, 5, 5, no graduate credit); JAPAN 411, JAPAN 412, JAPAN 413 (5, 5, 5); JAPAN 431, JAPAN 422, JAPAN 423 (5, 5, 5); JAPAN 471, JAPAN 472, JAPAN 473 (5, 5, 5). 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 that have been written either independently or for courses or seminars, in which case all 45 minimum credits will be in course credits.

- \* *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, which is to say that the knowledge of it will provide him access to a body of critical literature on his field (as in the case of French or German) or will improve his grasp of the structure or etymological sources of Japanese (as in the case of Chinese or Korean). It may not be the student's native language.
- \* *M.A. General Examination:* Near the end of study, the student takes two written examinations, each of two hours' duration, one in pre-modern (pre-Meiji) literature, and 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

- \* A minimum undergraduate GPA of 3.00 in the junior and senior years
- \* Three letters of recommendation and a statement of purpose
- \* 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.
- \* While a student lacking such preparation may be admitted, the student will be expected to concentrate initially on compensating for deficiencies in background by taking course work 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:

- \* *Coursework:* The M.A. program requires a minimum of 45 credits above the 300 level which are to be earned through a combination of course work and research. At least 18 credits of course work 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 (5, 5, 5, if language training is necessary); JAPAN 342 (5, no graduate credit); JAPAN 343 (5, no graduate credit); JAPAN 440 (5); JAPAN 442 (5); JAPAN 443 (5). 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 will be in course credits.

- \* *Foreign Language Requirement:* The student must fulfill one additional language requirement in addition to the language specialization. The language can be either European or an Asian one; however, it should not be English. The language must be relevant to the student's program of study, which is to say that knowledge of it will provide him access to a body of critical literature on the student's field (as in the case of French or German) or will improve the student's grasp of the structure or etymological sources of Japanese (as in the case of Chinese or Korean). It may not be the student's native language.
- \* *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

- \* A minimum undergraduate GPA of 3.00 in the junior and senior years
- \* Three letters of recommendation and a statement of purpose
- \* 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
- \* 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:

- \* *Coursework:* KOREAN 415, KOREAN 416, KOREAN 417 (5, 5, 5); ASIAN 498 (5) or KOREAN 462 (5); KOREAN 531 (5); KOREAN 532 (5); ASIAN 700 (9). The student must also either 1) submit a thesis, or 2) submit two research papers in lieu of a thesis.
- \* *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.
- \* *M.A. 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 M.A. examination no later than autumn quarter of the third year.

## Master of Arts, South Asian Languages and Literature

### Admission Requirements

- \* Minimum undergraduate GPA of 3.00 in the last 90 quarter or 60 semester credit hours
- \* Three letters of recommendation and a statement of purpose
- \* 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 M.A. 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:

- \* *Coursework:*
  - o *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.

- o *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 M.A. thesis according to the rules and policies of the Department of Asian Languages and Literature and pass an oral examination.

- \* *Foreign Language Requirements*: Students must demonstrate competence in their major South Asian language, and must complete the course requirements in their second South Asian language as outlined above. In addition, students must demonstrate through a written examination reading knowledge of one foreign language relevant to their research, which must be other than English and the student's native language. At the M.A. level, this language may be the student's second South Asian language or a European language.

## Doctor of Philosophy, Buddhist Studies

### Admission Requirements

M.A. degree in Asian Languages and Literature at the University of Washington and a satisfactory evaluation by South Asian Language Program faculty. Students with sufficient background, usually the successful completion of a relevant M.A. degree at another institution, may be considered for admission into the Ph.D. program.

### Degree Requirements

90 credits, as follows:

For the Ph.D., 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 M.A. 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 Ph.D. 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 Ph.D. program with specialization in Chinese language and literature submits a formal petition to the Department stating post-M.A. academic plans and goals.

Ideally, the prospective candidate will have completed an M.A. degree in the field of Chinese language and literature prior to entering the Ph.D. program. If the student has an M.A. in another pertinent field, for example, in Linguistics, comparative literature, philosophy, history, or Asian regional studies, it is not necessary to take an additional M.A. in Chinese language and literature. The student, however, is required to satisfy all course and examination requirements for the M.A. 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 B.A. to the Ph.D. 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 M.A., and must petition the department for special permission to bypass the M.A.

## Degree Requirements

90 credits, as follows:

- \* *Course Requirements*: Students in the Ph.D. program must complete the course requirements for the M.A. 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 M.A. must be taken for the Ph.D. The student's post-M.A. course work 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.
- \* *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.
- \* *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 M.A. 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 Ph.D. program must either hold the M.A. degree in Japanese language and literature or must have completed a minimum of 45 course credits and have satisfied the language requirement for the M.A. 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 M.A. 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 only be submitted after consultation with the academic adviser.

### Degree Requirements

95 credits, as follows:

- \* *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 course work on the graduate level. The following courses and dissertation credits are required: JAPAN 501 (5); JAPAN 505, JAPAN 506, JAPAN 507 (5, 5, 5); JAPAN 531, JAPAN 532, JAPAN 533 (5, 5, 5); JAPAN 571, JAPAN 572, JAPAN 573 (5, 5, 5); JAPAN 590 (15); ASIAN 800 (27)

Additional course work 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.

- \* *Language Examinations*: In addition to a second language (usually European) required for the M.A., 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.
- \* *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.

- \* *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.
- \* *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 shall petition for admission to the Ph.D. 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 M.A. degree in Korean literature or the equivalent, or have satisfactorily completed all coursework required for the M.A. in Korean literature. The student should be prepared to take 500-level courses in Korean. The petition should be submitted after consultation with the student's academic advisor.

### Degree Requirements

90 credits, as follows:

- \* *Coursework:*
  - o *Korean Language and Literature:* In addition to the course requirement and examination for the M.A. in Korean literature, students in the Ph.D. program must complete the following courses: KOREAN 531 (5), KOREAN 532 (5), ASIAN 800 (27)
  - o *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.
  - o *Linguistics:* Students are encouraged to take linguistics courses that help the student prepare for the field exam in a language-related area. Courses to choose from include the following: ASIAN 401 (5), JAPAN 440 Linguistics (5).
  - o *Interdepartmental:* Students are encouraged to take Korea-related courses in other disciplines such as history and anthropology. Familiarity with other literatures and cultures, and course work in other departments such as Comparative Literature or other language and literature programs is also recommended.
- \* *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 shall be related to language.
- \* *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 M.A. to this requirement.)
- \* *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 M.A. degree in Asian Languages and Literature at the University of Washington and a satisfactory evaluation by South Asian Language Program faculty. Students with sufficient background, usually the successful completion of a relevant M.A. degree at another institution, may be considered for admission into the Ph.D. program.

### Degree Requirements

90 credits, as follows:

For the Ph.D., 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 M.A. 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, of the candidate's choice--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 Ph.D. 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.

## Astronomy

C319 Physics-Astronomy  
[www.astro.washington.edu/](http://www.astro.washington.edu/)

Modern research in astronomy and astrophysics encompasses a large number of disciplines and specialties. Research areas include planetary systems and astrophysics, 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  
 C311 Physics-Astronomy, Box 351580  
 206-543-1988  
[office@astro.washington.edu](mailto:office@astro.washington.edu)

The Department of Astronomy offers the following undergraduate programs:

- \* 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

Enrolled students in good academic standing may declare the major at any time. Students must complete the necessary paperwork to declare by visiting the department advising office.

### Major Requirements

89 credits as follows:

1. ASTR 321, ASTR 322, ASTR 323
2. 9 credits of astronomy 400-level courses (with at least 3 credits in ASTR 480 or ASTR 499)
3. PHYS 121, PHYS 122, PHYS 123; PHYS 224, PHYS 225, PHYS 227, PHYS 228; PHYS 321, PHYS 322, PHYS 334
4. MATH 124, MATH 125, MATH 126; MATH 308, MATH 324
5. 12 additional credits in courses at the 300 level or above in physics (chosen from PHYS 315, PHYS 323, PHYS 324, PHYS 328, PHYS 331, PHYS 335, PHYS 421, PHYS 422, PHYS 423, PHYS 424, PHYS 425, PHYS 426, PHYS 431, PHYS 432, PHYS 433, PHYS 434) or engineering as approved by adviser. Data analysis (ASTR 480) and senior-year research (ASTR 499) are highly recommended, especially for students planning graduate work.
6. No grade lower than 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.

### Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* With this degree, students obtain a 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.
- \* *Instructional and Research Facilities:* The department operates a 30-inch telescope with modern instrumentation at the Manastash Ridge Observatory near Ellensburg, primarily for students. 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. With Distinction (Departmental Honors): 3.70 GPA in all ASTR courses and 6 credits of ASTR 499.
- \* *Research, Internships, and Service Learning:* Space Grant
- \* *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 autumn quarter of the junior 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  
C306 Physics-Astronomy, Box 351580  
206-685-2392  
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 spacebased- 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 atmospheres 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.

- \* Online application for Graduate Admission (AGA) form of the UW Graduate School
- \* Application fee
- \* A copy of the AGA to the Astronomy Department
- \* Resume
- \* "Statement of Goals and Achievements." This one-page, typed essay must address the reasons why the applicant wishes to pursue a graduate program in astronomy.
- \* Transcripts from all previous colleges and academic programs
- \* Graduate Record Examination (GRE) scores, both general and in the physics subject test, sent from the testing service
- \* Three letters of recommendation submitted online before the application deadline by the recommender.
- \* For international applicants:
  - o A second set of transcripts from all previous colleges and academic programs
  - o A paper copy of the AGA mailed to the Graduate School;
  - o TOEFL score report
  - o UW Statement of Financial Ability
  - o Test of Spoken English (TSE) scores, sent by the testing service
  - o Applicable visa documents (see Graduate School requirements)

#### Degree Requirements

90 credits minimum, to include:

Typically Ph.D. 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 557, ASTR 531, ASTR 561 in one year, and ASTR 508, ASTR 541, ASTR 509, ASTR 511, ASTR 512, ASTR 513 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 Ph.D. 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 Ph.D. research topic. Students embark on their Ph.D. research program after passing the General Examination, typically in their third or fourth year at UW. Most students complete their Ph.D. 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 Ph.D. 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.

# Atmospheric Sciences

416 Atmospheric Sciences-Geophysics  
www.atmos.washington.edu

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

## Bachelor of Science

*Suggested First- and Second-Year Courses:* CHEM 142.

## Department Admission Requirements

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

## Major Requirements

90 credits as follows:

1. *Core requirements (71 credits for the major, plus 5 credits for QSR):*  
MATH 124, MATH 125, MATH 126; MATH 324; PHYS 121, PHYS 122, PHYS 123; AMATH 301, AMATH 351, AMATH 353; CSE 142; ATM S 301, ATM S 321, ATM S 340, ATM S 358, ATM S 370, ATM S 431, ATM S 441
2. *Area of specialization:* 19 credits of additional coursework at the 200 level or above, selected in consultation with the faculty adviser.  
Suggested options include meteorology, atmosphere and environment, atmosphere and ocean, and teacher education.
3. A grade of 2.0 or better in each of the required courses and an overall GPA in these courses of 2.50.

## Pregraduate 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.

## 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; With Distinction (Departmental Honors). 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, which 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.

*Of Special Note:* The first required atmospheric sciences course is ATM S 301, which is offered autumn quarter only. Any lower-division atmospheric sciences courses will count as electives and not as part of the major.

## Graduate Program

Graduate Program Coordinator  
416 Atmospheric Sciences-Geophysics, Box 351640  
206-543-4576  
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 CO<sub>2</sub> 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

- \* Complete Graduate School application (a copy must be sent to the department)
- \* Official copy of transcripts
- \* Statement of interests -- a one-page essay which addresses the reasons why the student wishes to pursue a graduate program in Atmospheric Sciences.
- \* GRE General Examination scores sent from the Educational Testing Service
- \* Three letters of recommendation, either submitted online or, using the appropriate forms, sent directly to the department by the evaluators
- \* For international applicants: TOEFL scores, sent by the testing service
- \* *Deadline:* January 15. Autumn quarter is the only quarter for which the department accepts applications.

### Degree Requirements

45 credits, to include:

*Core classes (25-28 credits):* ATM S 501 (5), ATM S 502 (3), ATM S 535 (3), ATM S 532 (3), ATM S 558 (3). One of the following sequences: ATM S 505 (4), ATM S 509 (4), ATM S 542 (3); or ATM S 503 (3), ATM S 504 (5)

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).

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 should be in the form of ATM S 700, Master's Thesis. However, students intending to pursue a Ph.D should take all of the courses required above.

## Doctor of Philosophy

### Admission Requirements

All students admitted into the Atmospheric Sciences graduate program are admitted initially to the M.S. track of study. Students in the M.S. track who seek entry into the Ph.D. program will be evaluated by the departmental Committee on Graduate Studies.

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 M.S. committee, requesting admission into the Ph.D. program, and choosing one of the three following evaluation options:

- \* A student entering the department, having already earned an M.S. degree in the atmospheric sciences or a closely related discipline, may submit his or her M.S. thesis for evaluation in the first week of the autumn quarter of the student's second academic year in the department.
- \* A student may submit a draft of his or her University of Washington Department of Atmospheric Sciences M.S. thesis approved by the M.S. supervisory committee for evaluation.
- \* A student may submit for evaluation the manuscript of a peer-reviewed journal article on which the student is lead author.

### Degree Requirements

Minimum 90 credits, to include:

- \* *Coursework:*
  - o ATM S 501 (5), ATM S 502 (3)
  - o ATM S 505 (4), ATM S 509 (4) (Students whose anticipated research has minimal connection with atmospheric dynamics, such as those involved in laboratory or field work in atmospheric chemistry or cloud

microphysics, may take ATM S 503 and 504 in place of ATM S 505 and 509. See Graduate Program Coordinator before enrolling in ATM S 503.)

- o Either ATM S 532 (3) or ATM S 558 (3)
- o ATM S 535 (3), ATM S 542 (3)
- o Each of the following must be taken each quarter that coursework is taken: ATM S 520 (1), either ATM S 521 (1) or ATM S 524 (1), and ATM S 600 (up to 10 credits each quarter)
- o Electives: Students should take an appropriate number of elective courses in their areas of interest, as determined in consultation with adviser
- o Applied math: Either AMATH 401 (4), AMATH 567 (5), or AMATH 581 (5); either AMATH 402 (4) or AMATH 568 (5)
- o ATM S 700 (10 credits each quarter, beginning the second year of the program)
- \* General Examination
- \* Dissertation
- \* 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.

## Biochemistry

109 Bagley  
[www.depts.washington.edu/biowww](http://www.depts.washington.edu/biowww)

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  
[advisers@chem.washington.edu](mailto:advisers@chem.washington.edu)

The Biochemistry Program offers the following programs of study:

- \* The Bachelor of Arts degree with a major in biochemistry
- \* The Bachelor of Science degree with a major in biochemistry

## Bachelor of Science

*Suggested First and Second-Year Courses:* BIOL 180, BIOL 200 (or BIOL 201, BIOL 202); CHEM 142, CHEM 152, CHEM 162, 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).

### Department Admission Requirements

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

### Major Requirements

107 credits as follows:

1. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
2. PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116), with the PHYS 121 sequence recommended
3. 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); CHEM 452, CHEM 453 (or CHEM 455, CHEM 456, CHEM 457)
4. BIOL 180, BIOL 200 (or BIOL 201, BIOL 202)
5. GENOME 371
6. BIOC 426, BIOC 440, BIOC 441, BIOC 442
7. 11 credits chosen from a current department list (available in 109 Bagley) of upper-division science classes including math, biology, microbiology, chemistry, genome sciences, zoology. Up to 9 credits of approved advanced-level undergraduate research may also be applied to this requirement.



8. A minimum 2.80 GPA is required for all chemistry, biology, and biochemistry courses counted toward the major; a minimum 2.0 grade is required for all chemistry, biology, and biochemistry courses counted toward the major. A minimum 2.50 GPA is required for the BIOC 440, BIOC 441, and BIOC 442 sequence.

## Bachelor of Arts

90-92 credits as follows:

1. *Mathematics (15 credits)*: either MATH 124, MATH 125, MATH 126, or MATH 134, MATH 135, MATH 136
2. *General Chemistry (15 credits)*: either CHEM 142, CHEM 152, CHEM 162, or CHEM 145, CHEM 155, CHEM 165
3. *Organic Chemistry (17 credits)*: either CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242, or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347
4. *Biology (10 credits)*: BIOL 180, BIOL 200
5. *Physics (12-15 credits)*: either PHYS 121, PHYS 122, PHYS 123, or PHYS 114, PHYS 115, PHYS 116
6. *Biochemistry (6 credits)*: BIOC 405, BIOC 406
7. *Physical Chemistry (6 credits)*: CHEM 452, CHEM 453
8. *Science Electives (9 credits)*: 9 credits to be taken from the following:
  - \* *Biology*: BIOL 220
  - \* *Chemistry*: Any 300- or 400-level course other than CHEM 498 or required coursework
  - \* *Genome Sciences*: GENOME 371
  - \* *Immunology*: IMMUN 441
  - \* *Mathematics/Applied Mathematics*: MATH 307, MATH 308, AMATH 351, AMATH 352. Limit of 3 credits allowed.
  - \* *Medical History and Ethics*: MHE 411
  - \* *Microbiology*: MICROM 402, MICROM 410, MICROM 411
  - \* *Research*: Up to 3 credits of advanced undergraduate research. Research conducted outside the Department of Chemistry or the Biochemistry Program must be approved first.
9. *Grade Requirements*: Minimum cumulative GPA of 2.00 for required coursework. Minimum grade of 1.7 in individual required courses. Overall GPA of 2.00 for work done resident at the UW. Required courses must be taken for a decimal grade unless the course is offered only on a credit/no-credit basis.

## 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. With Distinction (Departmental Honors). 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.
- \* *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 adviser for more information.
- \* *Student Organizations/Associations*:
  - o Alpha Chi Sigma: the UW affiliate of the national chemistry-related science organization for chemistry and biochemistry majors
  - o Phi Lambda Upsilon: the UW affiliate of the national chemistry honorary society
  - o The Free Radicals: a general undergraduate club for chemistry and biochemistry majors.

*Of Special Note*:

- \* This degree requires a minimum of 197 credits.
- \* Students are strongly encouraged to participate in undergraduate research.

## Biology

106 Kincaid  
depts.washington.edu/biology

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@u.washington.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 and evolution; environmental and conservation; general; molecular, cellular, and development; physiology; and plant.

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. An ideal degree for students wishing to double major in arts or humanities and in biology or who wish to design their own degree program.

The Bachelor of Science options are as follows:

1. *Ecology and Evolution*. Emphasizes ecological and evolutionary processes and relationships of those processes to systematics and biogeography of organisms. For students who wish to pursue graduate studies or seek employment in the fields of theoretical and applied ecology, evolution, systematics and biogeography, and mathematical biology.
2. *Environmental and Conservation*. Addresses conservation and restoration aspects of species, populations, and ecosystems, as well as related areas of law and environmental policy. While this is the most interdisciplinary program, it does require the same supporting and foundation courses in science as the other options.
3. *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.

4. *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.
5. *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.
6. *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 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, and mathematics are the same as required by the B.S., 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 six options for the BS degree.
2. Additional Degree Requirements.
  - a. A minimum of 15 credits of 400-level biology electives must be taken at the UW.
  - b. Minimum GPA requirements are the same as for a B.S.

## 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

BIOL 180 or BIOL 201 with a minimum grade of 2.5; or BIOL 180, BIOL 200, BIOL 220 (or BIOL 201, BIOL 202, BIOL 203) with a cumulative GPA of 2.00 for the three courses. CHEM 142, CHEM 152, or equivalent. A minimum cumulative GPA of 2.00 is required for all courses which would apply toward major requirements (this includes all applicable chemistry, physics, mathematics, quantitative science, and introductory biological science courses).

### Major Requirements

90 credits as follows:

1. For all options the following basic coursework is required:
  - a. A one year sequence of introductory biology for majors (BIOL 180, BIOL 200, BIOL 220)
  - b. 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
  - c. Two quarters of mathematics (calculus or statistics): MATH 124 and MATH 125, or MATH 144 and MATH 145, or Q SCI 291 and Q SCI 292, or Q SCI 381 (or STAT 311) and Q SCI 482
  - d. Two quarters of physics: PHYS 114 and PHYS 115, or PHYS 121 and PHYS 122
  - e. GENOME 371

- f. *Natural history/biodiversity:* one course selected from approved list (3 credits)
- g. *Option requirement:* 300- and 400-level courses selected from lists specific to each option. See department web site 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 the sequence does require CHEM 162.

### 2. Additional Degree Requirements:

- a. A minimum GPA of 2.00 for all UW courses applied toward major requirements, including required supporting courses, introductory biology, and upper division coursework. (A grade of 2.0 is not required in individual courses.)
- b. A minimum of 15 credits of 400-level biology electives must be 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.

## 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, nursing, and others.

\* *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; With Distinction (Departmental Honors). See adviser for requirements.

\* *Research, Internships, and Service Learning:* Biology faculty welcome undergraduates into their research programs, often working closely with them. Approximately 40% 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, the faculty in the College of Forest Resources, and the College of Ocean and Fishery Sciences 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:

- o Howard Hughes Undergraduate Research Internship: approximately 20 per year for freshmen and 20 per year for juniors and seniors.

- o Friday Harbor Laboratory (FHL) Apprenticeships: \$3,000 for one quarter, spring or autumn.
  - o Mary Gates Scholarships: very competitive, across all science disciplines.
  - o Herschel and Caryl Roman Scholarship: \$2,500-5,000 annually to one or two students who have an interest in genetics research.
  - o 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 Web site.

\* *Student Organizations/Associations:* Beta Beta Beta Biology Honor Society, tribeta@u.washington.edu; Pre Med Society (Alpha Epsilon Delta), aed@u.washington.edu.

## Chemistry

109 Bagley  
depts.washington.edu/chem

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  
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); courses in linear algebra and differential equations.

### Department Admission Requirements

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

#### Chemistry (ACS-Certified)

95 credits as follows:

1. *Core 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, CHEM 321, 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. 5 credits of numerically graded CHEM or BIOC 400-level courses (not previously listed) which must include CHEM 426 and CHEM 461 and one more course with laboratory (currently CHEM 462, CHEM 463, CHEM 464, and CHEM 465)
  - h. Strongly recommended, research credits in CHEM 399 and CHEM 499.
2. 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. PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 plus one physics lab course). PHYS 121 sequence recommended.
  4. Minimum grade of 2.0 is required in each chemistry course; a minimum GPA of 2.80 is required for courses used to satisfy the major degree requirements; a minimum overall cumulative GPA of 2.80 and minimum 185 credits required for graduation.

### Chemistry

92 credits as follows:

1. *Core Courses:*
  - a. CHEM 142, CHEM 152, CHEM 162, and CHEM 312 (or CHEM 145, CHEM 155, CHEM 165, and CHEM 416)
  - b. CHEM 237, CHEM 238, CHEM 239, and CHEM 241 (or CHEM 335, CHEM 336, CHEM 337, and CHEM 346)
  - c. CHEM 455, CHEM 456, CHEM 457
  - d. Two of the following three: CHEM 317, CHEM 321, or CHEM 461
  - e. 5 additional lab credits chosen from the following: CHEM 242, CHEM 317, CHEM 321, CHEM 347, CHEM 426, CHEM 461, CHEM 462, CHEM 463, CHEM 464, CHEM 465, and BIOC 426
  - f. 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 chemistry GPA of 3.30 or higher may apply up to 6 credits of CHEM 399, CHEM 496, or CHEM 499 of approved research (but CHEM 498 may not be used to satisfy this requirement).
2. 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. PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 plus one physics lab course). PHYS 121 sequence recommended.
4. Minimum grade of 2.0 is required in each chemistry course; minimum GPA of 2.80 is required for all CHEM, MATH, and PHYS courses used to satisfy major requirements.
5. For graduation, a minimum of 182 credits is required with an overall cumulative GPA of 2.80.

## 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

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

### Major Requirements

79-82 credits as follows:

1. *Core Courses:*
  - a. CHEM 142, CHEM 152, CHEM 162, CHEM 312 (or CHEM 145, CHEM 155, CHEM 165)
  - b. CHEM 321
  - c. CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347)
  - d. Either CHEM 317 or CHEM 461

- e. 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
- 2. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
- 3. 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).
- 4. Minimum GPA of 2.0 in chemistry courses counted toward major; and a minimum grade of 1.7 in all required chemistry courses.

## Minor

*Minor Requirements:* 35-44 credits as follows:

1. One of the following two sequences
  - a. CHEM 142, CHEM 152, CHEM 162 and one of CHEM 223, CHEM 237 or CHEM 335
  - b. CHEM 145, CHEM 155, CHEM 165, and one of CHEM 223, CHEM 237, or CHEM 335
2. MATH 124 (or Q SCI 291 and Q SCI 292)
3. PHYS 114 or PHYS 121
4. Three of the following four groups:
  - a. CHEM 312 (or CHEM 165)
  - b. CHEM 321
  - c. One of CHEM 452, CHEM 455, or CHEM 456
  - d. One of CHEM 224, CHEM 238, or CHEM 336
5. Minimum GPA of 2.00 for the minor and a minimum grade of 1.7 in each course presented for the minor.
6. A minimum of 15 credits taken for the minor must be taken 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 B.A. in chemistry is generally useful.

- \* *Instructional and Research Facilities:*
  - o 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.
  - o 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.
  - o 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; With Distinction (Departmental Honors). 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:*
  - o Alpha Chi Sigma: the UW affiliate of the national chemistry-related science organization for chemistry and biochemistry majors
  - o Phi Lambda Upsilon: the UW affiliate of the national chemistry honorary society
  - o The Free Radicals: a general undergraduate club for chemistry and biochemistry majors

*Of Special Note:*

- \* The B.S. degree in chemistry requires a minimum of 182 credits to graduate.
- \* The B.S. degree in Chemistry, ACS-Certified Option, requires a minimum of 185 credits to graduate.
- \* The B.A. 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, bioorganic, 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 Web site for more detailed information regarding admission and graduation requirements.

## Master of Science

The Department of Chemistry offers primarily the Ph.D. 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 minimum grade in each course; 9 credits in thesis research. Without Thesis -- Same as with thesis, except that additional course work may be substituted for the required research. Minimum GPA of 3.00 required.

## Doctor of Philosophy

### Admission Requirements

- \* Baccalaureate degree with major in chemistry or allied sciences
- \* Graduate Record Examination scores

### Degree Requirements

90 credits, to include:

- \* *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
- \* *Seminars:* Participation in departmental seminars
- \* *Dissertation:* Minimum 27 credits of dissertation (CHEM 800) work
- \* Candidacy examinations covering area of specialization

# Classics

218 Denny  
depts.washington.edu/clasdept

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  
206-543-2266  
clasdept@u.washington.edu

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 Ph.D. degree are advised to take the B. A. in classics or, alternatively, the B.A. in Latin or Greek with as many courses in the second language as possible.

A fourth major, the Bachelor of Arts 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.

## Minor

*Minor Requirements:* 25 credits as follows for each of the minors:

- \* *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 following list, 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 B.A. 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 Ph.D. 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. With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning:* None offered.
- \* *Department Scholarships:*
  - o 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.

- o 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.

\* *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  
clasdept@u.washington.edu

The Department of Classics offers programs of graduate study leading to the Master of Arts and Doctor of Philosophy degrees. The M.A. degree may be in Greek, Latin, or Classics (a combination of Greek and Latin). The Ph.D. 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 Ph.D.-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 M.A. may be attained with work in only one of the languages, students who plan to work toward the Ph.D. must be prepared to do graduate work in both Latin and Greek.

### Degree Requirements

36 credits, as follows:

- \* 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.
- \* 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 Ph.D. program is granted after completion of the M.A. degree.

## Degree Requirements

90 credits, as follows:

- \* 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.
- \* 90 credits in courses approved by the department. At least half (which include dissertation credits) must be at the 500 level or above.
- \* Competence in reading German and French, or German and Italian, demonstrated by passing departmental examinations.
- \* Graduate courses (or the equivalent) in Greek and Latin composition.
- \* The Classics proseminar (or equivalent).
- \* Written preliminary examinations:
  - o Translation exams on Greek and Latin literature. Reading lists in each language guide the student's preparation for these exams.
  - o 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.
  - o 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.
- \* An oral general examination on Greek and Roman history, literature, philosophy, and related subjects.
- \* A dissertation approved by the student's Supervisory Committee, and an oral examination on the dissertation.
- \* 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 noncirculating 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

A number of teaching assistantships as well as the Jim Greenfield Graduate Fellowship are available. Assistants teach sections of elementary Latin and Greek, a course in Latin and Greek derivatives, hold 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.

## Communication

102 Communications  
www.com.washington.edu

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. Admission is competitive, based on information in the application packet, cumulative GPA, and grades in COM 201 and/or COM 202. Minimum cumulative 2.50 GPA ensures consideration, but not acceptance.
2. Students are admitted quarterly - autumn, winter, and spring. Applications are due Monday, the third week of autumn, winter, and spring quarters. Applications and additional information are available on the Web and in 118 Communications. 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.
3. Applications are available from the department Web site on the first day of the quarter. Applications should include application form, copies of transcripts and grade reports, and an essay explaining what led applicants to apply to the major.
4. Option requirements:
  - a. *Standard Option:* Minimum 45 quarter credits completed (transfer students must complete at least 10 graded credits at UW). Credits must include completion of COM 201 and COM 202 or completion of one of these and current enrollment in the other.
  - b. *Journalism Option:* Completion of COM 201 or COM 202 required before application.

### 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 Web.
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 Web 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 Web 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 498/499).

*Journalism Option:* A minimum of 61 credits, including the following:

1. *Introductory courses (5 credits):* Either COM 201 or COM 202.
2. *Skills/Competencies core (13 credits):* COM 360, COM 361, COM 362.
3. *Law and Ethics core (10 credits):* COM 440, COM 468.
4. *Emphasis/Specialization (10 credits) in one of the following areas:* communication and culture, communication technology and society, international communication, political communication, rhetoric and critical studies, or social interaction. See advising office or Web for description of each area and lists of qualifying courses.
5. *Advanced Skills/Competencies (8 credits minimum)* selected from the following: COM 301, COM 460, COM 461, COM 463, COM 465, COM 466.
6. *Other requirements (15 credits):* 5 credits each in economics, political science, and history. See advising office for list of acceptable 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 Web site for further information.

- \* *Honors Options Available:* With College Honors. With Distinction. See adviser for details.

- \* *Research, Internships, and Service Learning:* See adviser for details.

- \* *Department Scholarships:* None offered

- \* *Student Organizations/Associations:*
  - o Society of Professional Journalists
  - o Public Relations Student Society of America

## Graduate Program

Graduate Program Coordinator  
221 Communications, Box 353740  
206-543-7269  
cominfo@u.washington.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 (M.C.).

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 M.A. degree program provides training in research and scholarship and can be either preparation for doctoral study or a terminal degree. The M.A. degree requires a minimum of 45 credits of approved coursework and a research thesis. The Ph.D. degree program develops conceptual and methodological capabilities in a substantive area of communication. The Ph.D. 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 M.C. degrees, each of which has specific requirements tailored to that degree. The general M.C. 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 M.C. in digital media is a professional degree focused on digital media content creation, management, and policy. Native Voices is an M.C. 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

- \* Minimum 3.00 or B GPA over the two most recent years guarantees consideration. However, average GPAs for the students admitted have been higher.
- \* M.A. 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 M.A. program.
- \* Full-time status is strongly encouraged, but domestic U.S. residents who do not receive assistantships can enroll half-time.
- \* 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 U.S. does not exempt one from this TSE requirement.

### Degree Requirements

45 credits minimum, as follows:

- \* Three core courses (COM 500, COM 501, COM 502) during the first year of study.
- \* One additional methods course beyond COM 501
- \* 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.
- \* 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 thesis (minimum 10 credits in COM 700) and oral defense.
- \* 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:

- \* At least 12 credits in Communication courses at the 400 and 500 level.
- \* At least 15 credits outside the Department of Communication in a coherent substantive area of specialization.
- \* 10 credits in COM 600 to produce a professional project in an area of specialization for broadcast or publication.
- \* Passage of an oral defense of the project.
- \* The remaining credits necessary to meet the 45 credits for the degree should be selected in consultation with the supervisory committee.
- \* At least 21 credits must be at the 500- or 600-level.
- \* Up to 5 credits of COM 594 may count toward total, although COM 594 credits are not required for M.C. 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 (M.C.) 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 course work or to complete 40 credits of course work (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:
  - o 10 credits of 500-level communication courses. This is typically two 500-level seminars.
  - o COM 600: 10 credits in Documentary Research and Production. To be taken for the completion of the final project.
- \* 25 credits in American Indian Studies/Native Voices: WOMEN 443 (5), AIS 501 (5), AIS 502 (5), AIS 503 (5), AIS 504 (5)

### 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.

## Comparative History of Ideas

B102 Padelford  
depts.washington.edu/chid

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.

### Undergraduate Program

Adviser  
B102D Padelford, Box 354300  
206-543-2097  
chid@u.washington.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:* Coursework in the history of relevant periods, areas, and themes. Introductory courses in philosophy, English, comparative literature, ethnic and gender studies, and other areas of the humanities and social sciences. CHID 110.

#### Department Admission Requirements

Students in good academic standing may declare this major after meeting with an adviser.

#### Major Requirements

55 credits as follows:

1. 10 credits in Group A: Introduction to the History of Ideas
2. 10 credits in Group B: History of Intellectual Cultures (5 credits in each subgroup)
3. 10 credits in Group C: History of Particular Ideas or Themes
4. CHID 390: Colloquium in the History of Ideas (5 credits)
5. A 5-credit senior project (CHID 491)
6. The remaining 15 credits are chosen from among approved electives (300 level and above).
7. At least half the credits presented for the major must be at the upper-division level.
8. Minimum 2.50 GPA in the classes presented for the major.
9. Students may expand the senior project to 10 or 15 credits if they choose (CHID 492/493). The 5 to 10 optional senior project credits are in addition to the 55 credits required of all CHID majors.

See program adviser for current lists of Group A, B, and C courses.

### Minor

*Minor Requirements:* 30 credits as follows:

1. 5 credits in Group A: Introduction to the History of Ideas
2. 10 credits in Group B: History of Intellectual Cultures (5 credits in each subgroup)
3. 5 credits in Group C: History of Particular Ideas or Themes
4. CHID 390: Colloquium in the History of Ideas (5 credits)
5. CHID 498: Special Colloquium (5 credits)

See program adviser for current lists of Group A, B, and C courses.

### 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 Padelford B102 and C101.
- \* *Honors Options Available:* With College Honors. With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning:* CHID undergraduates participate in a variety of educational experiences outside the classroom. For example, many 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:* None offered.
- \* *Student Organizations/Associations:* CHID students spearheaded the formation and development of the DIALOGUE Project, a group open to all UW students interested in international issues. The project serves to facilitate greater international and intercultural dialogue within our own community centered around topics germane to each student's own educational goals. Many students work directly to develop and help coordinate international clubs in high schools across the state.

*Of Special Note:* CHID also sponsors interSections, a student journal published annually by the Comparative History of Ideas program. interSections is organized and edited by undergraduate volunteers from the CHID program.

## Comparative Literature

B531 Padelford  
depts.washington.edu/complit

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

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

Minimum 2.00 overall GPA; completion of one course fulfilling either College of Arts and Science English composition requirement or the W (writing) requirement (5 credits).

*Cinema Studies:* Same as above, plus completion of C LIT 270 or the equivalent.

## Major Requirements

*Literary Studies Option:* (50 credits)

- \* C LIT 300, C LIT 400 (10 credits).
- \* Two differently numbered courses from among C LIT 320, C LIT 321, C LIT 322, C LIT 323 (10 credits).
- \* Two additional courses in comparative literature at the 300 or 400 level (10 credits).
- \* At least one foreign literature course, studied in the original language (3/5 credits). The minimum foreign language prerequisite to meet this requirement is completion of a second year (often higher) of the foreign language, e.g., GERMAN 203 for GERMAN 311; FRENCH 302 for FRENCH 304.
- \* Remaining (17/15 credits) to be earned, with few exceptions, 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.

*Cinema Studies Option:* (50 credits)

- \* 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).
- \* 10 credits from C LIT core requirements (choice of either C LIT 300 or 400, and one course from C LIT 320, C LIT 321, C LIT 322, C LIT 323).
- \* One national cinema course (3/5 credits).
- \* Minimum two years of foreign language study (e.g., through GERMAN 203, or equivalent).
- \* Remaining credits to be earned in recommended 300- and 400-level cinema elective courses offered by Comparative Literature or any UW department.

## Minor

*Minor Requirements:* 30 credits to include C LIT 300, C LIT 400, and two differently numbered courses from among C LIT 320, C LIT 321, C LIT 322, and C LIT 323; at least one course in a literature, studied in the original language, other than English; 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 M.A. and Ph.D. 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:* 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:*
  - o Film Club, film@u.washington.edu
  - o UW Film Colloquium, filmcol@u.washington.edu

*Of Special Note:* A maximum of 5 credits of internship (C LIT 491) may be applied toward the Cinema Studies major.

## Graduate Program

Graduate Program Coordinator  
B531 Padelford, Box 354338  
206-543-7542  
clitgrad@u.washington.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 Women 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 Ph.D. 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:

- \* *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.
- \* *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 M.A. essay. Language competence is attested either by exams or by completion of satisfactory coursework in the language.
- \* *Essay:* Prepared after completion of coursework, under supervision of two faculty members.
- \* *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:

- \* *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.
- \* *Language Requirements:* Advanced reading knowledge in two languages other than English and a basic reading knowledge of a third, demonstrated before Ph.D. examinations are administered. Language competence is attested either by exams or by completion of satisfactory coursework in the language.
- \* *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.

- \* *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.
- \* *Final Examination:* Candidates must pass an oral examination devoted to the dissertation and to fields covered by their written exams.
- \* *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 Ph.D. 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.

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## Computer Science

AC101 Paul G. Allen Center for Computer Science and Engineering  
www.cs.washington.edu

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 degree with a major in computer engineering (see Computer Engineering section)

The core requirements of the two undergraduate majors are identical. 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 three groups -- Direct Admission, Accelerated Admission, and Upper Division Admission. Admission is competitive. Completion of minimum requirements does not guarantee admission.

1. *Direct Admission:* Computer Science and Engineering enrolls up to 20 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. *Accelerated Admission:* Intended as a fast track into the Computer Science and Engineering department for matriculated students who have excelled in the CSE introductory courses.
  - a. *Course Requirements:* CSE 142 or equivalent, CSE 143. At least five additional credits toward the Computer Science Upper Division Admission course requirements.
  - b. *Other Requirements:* Completion of at least 15 credits at the UW. 3.00 cumulative GPA. Competitive applicants for Accelerated Admission typically have received a high grade in CSE 143 at the UW on their first attempt.
  - c. Admission is considered for any quarter.
3. *Upper Division Admission*
  - a. 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 or CHEM 142/CHEM 145 (or any approved science course that requires PHYS 121 or CHEM 142/CHEM 145 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 course 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.

Students may also declare into the Computer Science degree program through the College of Engineering Advanced Admission program (see the College of Engineering section for Advanced Admission entrance and continuation requirements).

### Major Requirements

84-87 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 142/145, and any course in biology, chemistry, physics, earth and space sciences, astronomy, and atmospheric sciences that requires PHYS 121 or CHEM 142/145 as a prerequisite.
2. *Mathematics (19-22 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/STAT 390 or MATH/STAT 391.
3. *Required Courses (35 credits):* CSE 142, CSE 143, CSE 303, CSE 321, CSE 322, CSE 326, CSE 341, CSE 370, CSE 378.
4. *Senior Electives (minimum of 20 credits):* At least 20 credits from the senior electives courses listed in the CS&E Handbook, including at least four of the following courses: CSE 401, CSE 403, CSE 421, CSE 431, CSE 444, CSE 451, CSE 455, CSE 457, CSE 461, CSE 466, CSE 471, CSE 473.
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:* In autumn 2003 the department moved to the new 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 Departmental Honors. See adviser for requirements.

\* *Research, Internships, and Service Learning:* Internships and co-op opportunities are available for computer science undergraduates. See <http://www.engr.washington.edu/coop> and <http://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](http://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

258 Meany  
[depts.washington.edu/uwdance](http://depts.washington.edu/uwdance)

Dance is part of a liberal arts curriculum and provides students with a foundation for future advanced work in performance or movement-related work. Faculty work closely with students to guide them on the educational track that best serves their career goals.

## Undergraduate Program

Adviser  
261 Meany, Box 351150  
206-543-0550  
[uwdance@u.washington.edu](mailto:uwdance@u.washington.edu)

The Dance Program offers the following programs of study:

- \* The Bachelor of Arts degree with a major in dance.
- \* A minor in dance.

## Bachelor of Arts

### Program Admission Requirements

Applications that meet the following requirements are accepted during autumn, winter, and spring quarters.

1. Minimum 2.00 cumulative GPA.
2. Interview with Dance Program adviser to assess applicant's dance background and preparation for the major to ensure proper placement in dance coursework.
3. Current enrollment in a UW dance technique course (ballet or modern) so faculty can determine a demonstration of minimum level of dance skill required to ensure timely completion of requirements, and to evaluate appropriate level for further dance study.

### Major Requirements

Minimum 67 credits in dance as follows:

1. *Core Curriculum Courses:* DANCE 166 (5 credits), DANCE 242 (3), DANCE 250 (5), DANCE 270 (2 credits, 1 crew minimum), DANCE 344

- or DANCE 345 (5), DANCE 390 (5), DANCE 480 (3), DANCE 493 (5). (33 credits)
- 28 credits from the following (12 credit minimum at the 300-level or above; 6 credits minimum in both ballet and modern dance): 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 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.
  - Minimum of two courses from the following dance electives: DANCE 234, DANCE 266, DANCE 366, DANCE 371, DANCE 420, DANCE 490. Up to 4 additional credits of DANCE 270 may be taken as electives and count toward completion of the dance major (minimum 6 credits).

## Minor

*Minor Requirements:* Minimum 25 credits to include 10 credits from DANCE 166, DANCE 234, DANCE 235, DANCE 242, DANCE 250, DANCE 270, DANCE 336, DANCE 344, DANCE 345, DANCE 390, DANCE 420, DANCE 490, DANCE 493; 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 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.

## 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. 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. Use of Meany Hall and the Meany Studio Theatre for Dance Program performances.
- \* *Honors Options Available:* With College Honors; With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning:* See adviser.
- \* *Department Scholarships:* See adviser.
- \* *Student Organizations/Associations:* Dance Student Association, University Ballet Company

## Graduate Program

Graduate Program Coordinator  
258 Meany, Box 351150  
206-543-5594  
uwdance@u.washington.edu

The dance program offers graduate study leading to a Master of Fine Arts degree. This program is designed specifically for professional dance performers who wish to prepare for a transition into college teaching careers. All graduate students will comprise the Chamber Dance Company and will hold teaching assistantships.

## Master of Fine Arts

### Admission Requirements

1. A letter of application and resume.
2. An undergraduate degree.
3. A minimum of eight years of professional performing experience.
4. The ability to demonstrate movement skills at a professional level in at least one idiom, and an in-person audition or performance video tape.
5. Three letters of reference verifying success and responsibility in the professional dance arena. Neither a foreign language nor the Graduate Record Examination is required. Application deadline is January 15.

### Degree Requirements

During the two-year program, a student will be expected to enroll full-time (minimum of 10 credits/quarter) for three quarters each year (summer

quarter excluded). A student must complete at least 72 credits in order to earn the degree, 31 of which are in required courses.

- \* *Required Coursework:* Either PHIL 445 (5) or PHIL 446 (5); DANCE 510 (3), DANCE 515 (3), DANCE 520 (3), DANCE 521 (3), DANCE 530 (2), DANCE 531 (3), DANCE 595 (3)
- \* *Coursework or Competency:* Students must have taken the following courses as an undergraduate, or have mastered the content of the following courses through practical experience, or complete these courses during their two years in the program: DANCE 420 (3), DANCE 493 (3-5), DANCE 544 (3-5), DANCE 545 (3-5), DANCE 590 (3-5)

## Financial Aid

All graduate students will receive tuition waivers and teaching assistant stipends.

## Digital Arts and Experimental Media

207 Raitt  
www.washington.edu/dxarts

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 will 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@u.washington.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 Web page. 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 (6 credits total)
  - c. DXARTS 412 (3 credits)
  - d. Completion of two of the following four DXARTS core sequences (30 credits): DXARTS 441, DXARTS 442, DXARTS 443 (3D Motion and Graphics); DXARTS 451, DXARTS 452, DXARTS 453 (Video); DXARTS 461, DXARTS 462, DXARTS 463 (Sound); 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 BFA 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 BFA program visit the program's Web page.

## 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 BFA degrees, which offer initial professional studio art education, this BFA 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. With Distinction (Departmental Honors). 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, Web site 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@u.washington.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

- \* Master's degree or equivalent in a discipline or field related to the proposed doctoral work.
- \* Portfolio of artistic work.
- \* Statement of purpose
- \* Competence in computing, general technology literacy, and skill and imagination in the applicant's areas of interest.
- \* One copy of the Graduate School's Application Form
- \* One sealed official transcript from each collegiate institution attended.
- \* 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.
- \* A complete curriculum vitae and narrative biography
- \* Three letters of recommendation from instructors or professors familiar with the applicant's academic qualifications
- \* International applicants must submit TOEFL and TSE scores

## Degree Requirements

90 credits, as follows:

- \* 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.
- \* 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.
- \* Minimum 3.00 GPA in DXARTS courses.
- \* General Examination
- \* 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 Exam.
- \* Two-part Final Exam. Registration as a doctoral student is required during the quarter the exam is taken.

## Drama

101 Hutchinson  
depts.washington.edu/uwdrama

Drama as an art form is a far-reaching discipline providing a humanistic approach to today's societal problems and issues. Drama wrestles with the most compelling issues of our time, to derive new understanding for the advancement of the human condition. It also fosters curiosity, invention, bravery, and humor, promoting practical innovation and personal revelation as lifelong practice for the artist.

Through mastery of skills, techniques and theories, people in drama nurture imagination, seek inspiration and fluent, authentic, original storytelling that reflects the complexity of the human spirit.

## Undergraduate Program

Adviser  
129 Hutchinson Hall, Box 353950  
206-543-4204  
uwdrama@u.washington.edu

The School of Drama offers the following program of study:

- \* The Bachelor of Arts degree with a major in drama

### Bachelor of Arts

*Suggested First- and Second-Year College Courses:* See department admission requirements below.

#### Department Admission Requirements

DRAMA 201 and DRAMA 251; two of the following: DRAMA 210, DRAMA 211, DRAMA 212, DRAMA 213; one of the following: DRAMA 290, DRAMA 291, DRAMA 292; and a minimum GPA of 2.50 for the five courses.

No audition is required to enter the program.

#### Major Requirements

66 credits as follows:

1. DRAMA 201 (5 credits)
2. DRAMA 251, DRAMA 252 (10 credits)
3. Three courses from the following: DRAMA 210 (4 credits), DRAMA 211 (4 credits), DRAMA 212 (4 credits), DRAMA 213 (4 credits) (12 credits total)
4. DRAMA 290, DRAMA 291, DRAMA 292 (3 credits total)
5. DRAMA 302 (5 credits)
6. One course from the following: DRAMA 374, DRAMA 377, DRAMA 378, DRAMA 471, DRAMA 472 (5 credits)
7. One course from the following: DRAMA 473, DRAMA 475, DRAMA 476 (5 credits)
8. One course from the following: DRAMA 371, DRAMA 373, DRAMA 416, DRAMA 494 (5 credits)
9. One additional course from the above three groups (5 credits)
10. 300- and 400-level drama electives (10 credits)
11. DRAMA 401 (1 credit)

*Continuation Policy:* Drama majors who fall below a 2.00 GPA in drama courses are placed on academic probation for one quarter. Students who fail to raise their GPA to 2.00 in that time are dropped from the major and returned to premajor status. Students may petition the School of Drama for readmission.

### 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 Penthouse Theatre (the first theatre-in-the-round built in the United States), the thrust-stage Playhouse Theatre, 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:* Ad hoc honors only. See adviser for details.

- \* *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 (new course proposal being submitted). Internship credits count toward drama elective credits to graduate. A resource guide to drama-related internships is available at the drama undergraduate advising homepage.

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 available from the advising office mid-January.

- \* *Student Organizations/Associations:* The Undergraduate Theatrical Society (UTS) is a student organization that produces undergraduate theatre works in the Cabaret performance space. 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 Executive Director of the School of Drama to discuss issues relative to the undergraduate program.

## Graduate Program

Graduate Program Coordinator  
101 Hutchinson, Box 353950  
206-543-5140  
uwdrama@u.washington.edu

The School of Drama offers professional training and scholarly programs leading to the Master of Fine Arts (M.F.A.) and Doctor of Philosophy (Ph.D.) degrees. Areas of study for the M.F.A. 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 M.F.A. degree.

The Ph.D. program provides students with training for scholarly research in theatre history, dramatic literature, theory, and criticism.

### Master of Fine Arts -- Acting

#### Admission Requirements

Admission is based on a private fifteen minute audition and interview with the head of the Professional Actor Training Program (PATP).

Applicants should prepare the following:

- \* A two-minute monologue from a modern prose play.
- \* A two-minute Shakespearean verse monologue.
- \* Approximately 16 bars of a song, a cappella or with auditioner-provided accompaniment.
- \* 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 web site.

Applicants must submit the following to Graduate Programs, School of Drama, University of Washington, Box 353950, Seattle, WA 98195-3950:

- \* The School of Drama PATP application form (available for download from the School's Web site) with the preferred audition date indicated.
- \* 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 \$10.00. Please note, this is a separate fee from the one due to the Office of Graduate Admissions.
- \* A photograph.
- \* A current résumé of training and experience in the applicant's field.
- \* One set of official transcripts.
- \* A statement of purpose including educational and professional goals.
- \* Three letters of recommendation.
- \* A copy of the Application for Admission to the Graduate School.

## Degree Requirements

A group of ten students enrolls each autumn quarter for the three-year program. In addition to performing in studio productions, first-year students join the acting pool in the winter quarter and, together with second and third-year students, perform in the School of Drama mainstage subscription season, directed by faculty, guest professionals supervised M.F.A. students in the directing program.

The studio classes include extensive work on Stanislavski based process, Suzuki training, voice (Linklater based), singing, speech (Skinner-based), stage combat (for certification), dance, trapeze and audition work. The Alexander technique is both taught as a class and is woven throughout most studio classes and productions.

Throughout the year PATP students have opportunities to audition for summer theatre festivals from around the region and country. We also maintain 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.

In their third year, PATP students take an in depth class on "the business of acting" as well as an intensive course in acting for the camera. They rehearse and perform in a third year ensemble show with an outside professional director, create a twenty-minute solo performance of their own design and with the faculty develop a professional showcase that plays in Seattle, Los Angeles and New York.

All PATP students are evaluated by the acting faculty at the end of each quarter. Students are admitted with the expectation that all will graduate, although dismissal is possible given two unsatisfactory critiques.

Required coursework is 90 credits, to include:

- \* 36 credits of DRAMA 557 (12, max. 36)
- \* 36 credits of DRAMA 558 (12, max. 36)
- \* DRAMA 551 (1-3, max. 3)
- \* DRAMA 552 (1-3, max. 3)
- \* DRAMA 553 (1-3, max. 3)
- \* 6 credits of DRAMA 559 (6, max. 18)
- \* 9 credits of DRAMA 700 (1, max. 9)

## Master of Fine Arts -- Directing

### Admission Requirements

This program accepts only two MFA candidates every other year. While there is always room for the exceptional applicant, it is extremely difficult to gain admission directly out of a B.A. program with no other credentials. 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, who have at least the beginning of a professional and artistic record.

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 Web site and fee, made payable to the School of Drama. This fee is separate from that due to the Office of Graduate Admissions (see B below).
- 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. A copy of the Application for Admission to the Graduate School.
- vi. One set of official transcripts.
- vii. A directorial analysis of a play or opera chosen from a preselected list (current list is in packet).

The résumé of theatre activity, statement of purpose and letters of recommendation are all important. The three letters of recommendation should not come from the same source (e.g., the student's B.A. program's faculty). Students may include a video (not required). For return of the video, please include a self-addressed stamped envelope for that purpose.

- 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. International applicants must meet minimum TOEFL and TSE scores and other requirements as listed on the Graduate School's Web site, 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. Candidates are normally given a minimum three weeks' notice and should be prepared to cover travel costs and one to two nights' lodging.

- a. Candidates interview for 30 minutes with the head of the program and another faculty member 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

*Coursework:*

90 credits, to include the following:

- \* 14 credits of DRAMA 563 (2, max. 18)
- \* 18 credits of DRAMA 567 (1-3, max. 12)
- \* Electives chosen from DRAMA 419 (3, max. 9), DRAMA 510 (3, max. 18), DRAMA 560 (2), DRAMA 561 (2-3, max. 12), DRAMA 562 (1-3, max. 12), and DRAMA 569 (3)
- \* 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 of the 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 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. It is always preferable for applicants to bring the portfolio with them when they 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 every year. 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 Wednesday afternoons and applicants are invited to visit classes Wednesday morning. Applicants fill out the M.F.A. design application form completely and indicate how and when they plan to both submit their portfolio and interview with faculty.

**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:** Applicants submit material to both the Office of Graduate Admissions and the School of Drama. For any questions about the application procedure, contact the School of Drama's graduate program assistant at (206)543-0714 or email [uwdrama@u.washington.edu](mailto:uwdrama@u.washington.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 Web site.

1. Submit the following to Graduate Programs, School of Drama, Box 353950, Seattle WA 98195-3950:
  - a. Your portfolio (you can bring this with you if you interview in Seattle).
  - b. The separate design application form (available for download from the School's Web site) and fee. Please note, 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. A copy of the Application for Admission to the Graduate School.
  - g. One set of official 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 M.F.A. program is three years in length, requiring 90 credits of coursework. The first two years are devoted to class and studio work and production projects. In the third year, students complete an internship with a professional theatre before returning to the School of Drama for one quarter for a final thesis project. The program of study is intended to give the student the basic skills needed to work productively in his/her area of interest and to help the student develop his/her own individual artistic vision. The core of the program is a group of classes and seminars that bring designers and directors together to discuss the creation of works for the stage. Other studio and skills courses develop proficiency. Specific courses vary depending on design emphasis. Professionals working in Seattle are regularly invited to attend classes and offer critiques or discuss their work. Students regularly assist faculty on outside projects.

**Scenic Design:** Students in scenic design are expected to acquire acceptable proficiency in drawing and painting, drafting, model building, scene painting and scene and property construction through a rigorous succession of studio assignments and actual production work.

**Costume Design:** This course of study 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 will 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.

**Lighting Design:** The lighting design program emphasizes communication with the director and other designers and a complete understanding of the lighting design process. In advanced studio courses, students work in a light lab, in the school's various theatres, as well as site-specific venues encountering specific lighting challenges. Designing and assisting for UW and off-campus productions is an important part of the program. Lighting students study set and costume design in studio class as well.

## Doctor of Philosophy

### Admission Requirements

Preference is given to applicants with M.A./M.F.A. degrees and theatre experience but those who hold a baccalaureate degree from an accredited college or university are eligible to apply.

- \* An essay or thesis chapter representative of the applicant's best scholarly work.
- \* Graduate Record Examination (GRE) test scores.
- \* A current résumé of training and experience in the field.
- \* A statement of purpose including educational and professional goals.
- \* Three letters of recommendation. Each recommendation must state whether the letter is or is not available for review by the applicant. Forms for this purpose are available for download from the school's Web site. Letters of recommendation should evaluate the applicant's skills and accomplishments as a theatre artist and his or her potential for graduate study in theatre history, dramatic theory, and criticism.
- \* A copy of the Application for Admission to the Graduate School.
- \* One set of official transcripts.
- \* All applicants for graduate study at the UW must also apply to the Office of Graduate Admissions.

International applications must meet minimum TOEFL and TSE scores and other requirements as listed on the Graduate School's Web site.

### Degree Requirements

Three years of study, 99 credits of coursework, including a sequence of 18 seminars (nine in history and nine in theory) 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 course work 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 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.

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## Earth and Space Sciences

070 Johnson Hall  
[www.ess.washington.edu](http://www.ess.washington.edu)

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, 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

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

90 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. *ESS Options (Minimum 55 Credits)*
  - a. *Standard Option*
    - i. *Supporting Science (13-15 credits):* MATH 126 or equivalent; PHYS 115/PHYS 118 or PHYS 122; and one of PHYS 116/PHYS 119 or PHYS 123, CHEM 152, MATH 307, MATH 308, STAT 311.
    - ii. *ESS Required (22 credits):* Two of ESS 311, ESS 312, ESS 313, ESS 314; ESS 400.
    - 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.)
  - b. *Biology Option*
    - i. *Supporting Science (21 credits):* CHEM 152, CHEM 162 or equivalent; BIOL 180, BIOL 200 (or two from BIOL 201, BIOL 202, BIOL 203).
    - ii. *ESS Required (22 credits):* Two of ESS 311, ESS 312, ESS 313, ESS 314; ESS 400.
    - 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.)
  - c. *Environmental Earth Sciences Option*
    - i. *Supporting Science (10 credits):* STAT 311 or Q SCI 381; CHEM 152 or CHEM 220.

- ii. *ESS required (35 to 37 credits):* ESS 201; one of ESS 311, ESS 312, ESS 313, ESS 314, ESS 326; two from ESS 315, ESS 421, ESS 426, ESS 427, ESS 455, ESS 456, ESS 459; ESS 400.
- 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.
- d. *Physics Option*
  - 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 (5 credits):* One of ESS 311, ESS 312, ESS 313, ESS 314.
  - 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.)

All courses counted toward 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.)

All courses counted toward the major must be completed with a minimum grade of 2.0.

### 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.

### Student Outcomes and Opportunities

- \* *Instructional and Research Facilities:* See below.
- \* *Honors Options Available:* With College Honors; With Distinction (Departmental Honors). See adviser or department Web site for requirements.
- \* *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 (Ph.D.) degree in both geological sciences and in geophysics. The programs emphasize a rigorous quantitative approach in conjunction with detailed in-situ and/or laboratory observations to address significant problems that will 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. The department 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 Note: 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 World-Wide-Web Application for Graduate Admission)
5. Departmental application form (submitted via the UW World-Wide-Web Application for Graduate Admission)
6. Personal resume and personal statement (submitted via the UW World-Wide-Web Application for Graduate Admission)

### Degree Requirements

36-45 credits, as follows:

Since the Department of Earth and Space Sciences encourages interdisciplinary courses of study tailored to each student, there are few formal requirements for the M.S. or Ph.D. degrees 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 of the first year
3. ESS 599, every quarter (except summer)
4. Preliminary Examination (see below)

*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:* An ESS requirement for every graduate student in the department's program. Provides one component the department uses to evaluate admission to the Ph.D. 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.

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).

All entering graduate students (both M.S. and Ph.D.) must present and defend a research proposal before a Student Evaluation Committee (SEC) at the end of their first year or at the beginning of their second year in the department.

## 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 World-Wide-Web Application for Graduate Admission)
5. Departmental application form (submitted via the UW World-Wide-Web Application for Graduate Admission)
6. Personal resume and personal statement (submitted via the UW World-Wide-Web 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 M.S. or Ph.D. degrees 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 of the first year
3. ESS 599, every quarter (except summer)
4. Preliminary Examination (see below)

*Preliminary Examination:* An ESS requirement for every graduate student. Provides one component the department uses to evaluate admission to the Ph.D. 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.

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).

All entering graduate students (both M.S. and Ph.D.) must present and defend a research proposal before a Student Evaluation Committee (SEC) at the end of their first year or at the beginning of their second year in the department.

## 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.

## Economics

401 Condon  
[www.econ.washington.edu](http://www.econ.washington.edu)

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  
413 Condon, Box 353330  
206-543-5794  
[econadv@u.washington.edu](mailto:econadv@u.washington.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; MATH 112, MATH 124, MATH 134, or MATH 145;
2. A minimum cumulative GPA for all prior college work of 2.80;
3. GPA for four courses required for entrance must be at least 2.80 with a minimum of 2.0 in each course;
4. Transfer students must be enrolled at the UW before applying to the major;
5. Application deadline is the second Friday of each quarter (including summer). All applicants who meet the minimum admission requirements are admitted in time to register as economics majors for the following quarter.

### Major Requirements

55 credits as follows:

1. Admission to the major.
2. A minimum of 50 credits in economics, including ECON 200, ECON 201, ECON 300, ECON 301, STAT 311, and at least five other upper-division courses in economics at the 400 level, excluding ECON 496, ECON 497, and ECON 499.

3. Grades of 2.0 or better in ECON 300 and 301.
4. One calculus course (MATH 112, MATH 124, MATH 134, MATH 145, or equivalent).
5. 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 since 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, MATH 126 (or MATH 134, MATH 135, MATH 136).
2. A minimum cumulative GPA for all prior college work of 2.80;
3. GPA for four of the five courses required for entrance must be at least 2.80 with a minimum grade of 2.0 for each course (highest math grade used in GPA calculation);
4. Transfer students must be enrolled at the UW before they may apply;
5. Application deadline is the second Friday of each quarter (including summer). All applicants who meet the minimum admission requirements are admitted in time to register as economics majors for the following quarter.

### 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; ECON 400 (or equivalent) or ECON 401; at least 10 additional credits chosen from the following courses: ECON 400 (or equivalent) or ECON 401, ECON 424, ECON 435, ECON 473, ECON 481 (or equivalent), ECON 482, ECON 483, ECON 485, ECON 486; at least 15 additional credits at the 400 level, excluding ECON 496, ECON 497, and ECON 499.
4. Grades of 2.0 or better 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 masters-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.

- \* *Instructional and Research Facilities:* The department currently has a Resources Room (Condon 210), staffed during tutoring hours, which are posted in Condon 413 or at <http://depts.washington.edu/ecnboard/>.
- \* *Honors Options Available:* With College Honors; With Distinction (Departmental Honors). See adviser for requirements or visit [www.econ.washington.edu/instruction/undergrad/honorsrequirements.html](http://www.econ.washington.edu/instruction/undergrad/honorsrequirements.html).
- \* *Internships, Research and Service Learning:* Course credit available for internships and research. For more information, visit [www.econ.washington.edu/instruction/undergrad/beyond.html](http://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.ipe.washington.edu/](http://www.ipe.washington.edu/).
- \* **Student Organizations/Associations:** The Economics Undergraduate Board (EUB) serves as a liaison between Economics students, faculty and alumni, and also provide 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 Economist." For more information on these services, as well as others provided by the EUB, visit <http://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 ECON credits do not count towards the required ECON credits for the BA or BS degree.

## Graduate Program

Graduate Program Coordinator  
403 Condon, Box 353330  
206-685-1384  
[econadv@u.washington.edu](mailto:econadv@u.washington.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.

## Special 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).

The department does not accept admission to a terminal master's (M.A.) degree. A sequential M.A. degree is offered for students already enrolled in the Ph.D. program.

Graduate requirements for the Ph.D. degree include ECON 500, 501, 502, 503, 508, 509, 580, 581, and 582. Ph.D. students are required to pass core examinations in microeconomics and macroeconomics. In addition to this core program, Ph.D. students must take eight other elective field courses in economics at the graduate level. Each Ph.D. 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 Ph.D. degree. Each Ph.D. student chooses a dissertation topic and a doctoral supervisory committee is appointed. After the dissertation topic has been developed, Ph.D. students take the General Examination, an oral defense of the dissertation proposal. When the dissertation is completed, Ph.D. 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.

## English

A101 Padelford  
[depts.washington.edu/engl](http://depts.washington.edu/engl)

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 Education

Adviser  
A2B Padelford, Box 354330  
206-543-2634  
[engladv@u.washington.edu](mailto:engladv@u.washington.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. Completion of 10 credits in any English literature courses. Completion of ENGL 202 and the attached writing link, ENGL 197, may also fulfill this requirement.
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

A minimum of 55 credits as follows:

1. ENGL 202 and writing link ENGL 197 (10 credits). It is recommended these courses be completed by the first quarter of admission to the major and no later than the second quarter after admission.
2. ENGL 302 (5 credits)
3. *English core (25 credits)*: At least 5 credits from each of the following categories: (1) Theories and Methodologies of Language and Literature; (2) Forms and Genres of Language and Literature; (3) Histories of Language and Literature. A list of approved courses is available from the department advising office or department website: <http://depts.washington.edu/engl/>.
4. *English electives (10 credits)*: Must be 200-level or above.
5. At least 15 credits must be in courses focused on pre-1900 literature.
6. Senior capstone course (5 credits) chosen from ENGL 407, ENGL 440, ENGL 442, ENGL 443, ENGL 444, ENGL 473, or ENGL 498.
7. A maximum of 20 credits of 200-level courses and a maximum of 5 credits of creative writing may be applied towards the major.
8. A minimum of 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* - A minimum of 60 credits as follows:

1. ENGL 202 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: <http://depts.washington.edu/engl/>.
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. A maximum of 20 credits of 200-level courses may be applied towards the major.
8. A minimum of 25 credits of English at the 200-level or above must be completed in residence at the UW.

## 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; With Distinction (Departmental Honors). 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 organizations, the media, advertising agencies, social service groups, schools, and businesses. Credit is available to declared English majors (ENGL 491).

- \* *Department Scholarships*:
  - o 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.
  - o 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@u.washington.edu](mailto:brico@u.washington.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 web site for more information.

## Graduate Program

Graduate Program Coordinator  
A105 Padelford, Box 354330  
206-543-6077  
[englgrad@u.washington.edu](mailto:englgrad@u.washington.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 course work, 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 recommendations, the GRE general test, and a critical-writing sample are required [except M.A.T. (E.S.O. L.)]. 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.

*Graduation Requirements*: 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.

**Graduation Requirements:** 55 credits, including 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 MFA 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.

**Graduation Requirements:** 45 credits, of which 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 M.A.T. 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 of these 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.

**Graduation Requirements:** 45-54 credits, including ENGL 571, 572, 574, 576; LING 446 or 450, ENGL 575 or LING 461; three courses from ENGL 471, 478, 479, 560, 561, 562, 563, 564, 567, 569, 575, LING 433/ANTH 464, LING 457/PSYCH 457, LING 451, 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 M.A. 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 M.A. 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 M.F.A., M.A.T., or M.A.T. (E.S.L.) degrees from this University must complete course-work and language requirements for the M.A. degree option and submit an equivalent to the master's essay.

**Graduation Requirements:** 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.

## Geography

408A Smith  
depts.washington.edu/geog

Geography is the science of understanding the relationships among people, spaces, and environments as they take place and shape place around the world. In the 21st century, these spatial relationships have become more globally integrated, more globally consequential, and more globally contested than previously, compelling renewed demands for understanding about the complexity of spatial relations. In this context, geography provides important insights into the spatial transformations associated with globalization, global environmental change, and migration, as well as the geographic reordering of governance, geopolitics, health, population, regional economic development, and rural and urban transformation. The discipline offers sufficient skills training to enable graduates to be competitive in many job markets.

Geography seeks to understand the complex processes that result in the patterns, trends and impacts of urbanization, migration, trade, and development. Geographers use interviews, statistical analysis, databases, scholarly research and observation, and secondary data to construct models, maps, and other tools for understanding.

## Undergraduate Program

Adviser  
415A/B Smith, Box 353550  
206-543-3246  
geog@u.washington.edu

The Department of Geography offers the following programs of study:

- \* Bachelor of Arts degree with a major in geography
- \* A minor in geography

Individual undergraduate programs are built around five program concentrations. Students are encouraged to develop a specific, individualized focus of study within their chosen concentration.

1. **Urban, Social, and Political Processes and Patterns.** Human population distribution, migration, settlement systems, and organization. Geographic facets of ethnicity, race, sexuality, and gender; wealth and poverty; and health and disease. Cultural landscapes; politics, nationalism, and identity formation; geopolitics. Location of urban services, including health-care systems, urban transportation, housing, neighborhood development and land use, as well as issues raised by questions of law and social control. Urban spatial policies. Courses include: GEOG 230, GEOG 245, GEOG 276, GEOG 277, GEOG 280, GEOG 310, GEOG 330, GEOG 342, GEOG 371, GEOG 375, GEOG 377, GEOG 378, GEOG 380, GEOG 401, GEOG 430, GEOG 431, GEOG 432, GEOG 440, GEOG 445, GEOG 461, GEOG 474, GEOG 477, GEOG 478, GEOG 480, GEOG 490.
2. **Economic Geography.** Key questions in this concentration include the following: Why do some cities and regions grow while others decline? What local characteristics attract businesses and employment? What determines the flows of goods, services, ideas, people, and capital that bind together the world economy and the regions within it? What can governments and non-governmental organizations do to affect these characteristics and flows? What are the relevant economic analysis tools to apply to questions of environmental regulation and land use? What effects do global corporations have on the economies of regions and nation-states? To what extent is international development driven by questions of political economy? Courses include: GEOG 207, GEOG 208, GEOG 230, GEOG 236, GEOG 302, GEOG 330, GEOG 336, GEOG 349, GEOG 366, GEOG 367, GEOG 370, GEOG 371, GEOG 430, GEOG 435, GEOG 440, GEOG 447, GEOG 448, GEOG 449, and GEOG 478.
3. **Regional Geography and International Development Studies.** Continental and global patterns of international relations and development. Political economy of development; development theory and practice; globalization. Analysis of geographic concepts in the regional context, especially on such topics as population growth and migration; development history, theory, and practice; hunger, resources, and poverty; and interconnections in the global economy. Special emphasis on East Asia, South Asia, Russia and the former Soviet republics, Latin America, Canada, and the United States. Courses include: GEOG 230, GEOG 236, GEOG 271, GEOG 302, GEOG 330, GEOG 335, GEOG 336, GEOG 349, GEOG 371, GEOG 375, GEOG 430, GEOG 431, GEOG 436, GEOG 436.

4. *Geographic Information Systems (GIS)*. Role, design, and use of geographic information systems for research, planning, management, and decision making. Use of computers in the collection, manipulation, analysis, and presentation of geographical data. Courses include: GEOG 360, GEOG 458, GEOG 460, GEOG 461, GEOG 463, GEOG 465, GEOG 471.
5. *Society and Environment*. Examines the key debates on the causes and outcomes of environmental change and degradation and the paths to sustainable development; the use of data in the formulation of human-environment interaction models; perceptions of nature; nature-culture relationships; and historical and contemporary societal responses to environmental degradation, health problems, and resource consumption. Courses include: GEOG 270, GEOG 280, GEOG 360, GEOG 370, GEOG 371, GEOG 380, GEOG 460, GEOG 461, GEOG 463, GEOG 471, GEOG 472, GEOG 480, GEOG 490.

## 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:

1. *Core Courses, required for all majors (20 credits):* GEOG 205, GEOG 315, GEOG 326, GEOG 360
2. *Foundations (15 credits)*
  - a. *Societies, Cities, and Economies (10 credits):* Any two of the following: GEOG 100, GEOG 123, GEOG 200, GEOG 207, GEOG 208, GEOG 230, GEOG 236, GEOG 245, GEOG 276, GEOG 277, GEOG 280, GEOG 302.
  - b. *Environment and Society (5 credits):* One of the following: GEOG 270, GEOG 271, GEOG 343, GEOG 370, GEOG 371, GEOG 372, or GEOG 380.
3. *Research Methods (5 credits):* One of the following: GEOG 367, GEOG 425, GEOG 426, GEOG 440, GEOG 445, GEOG 458, GEOG 460, GEOG 461, GEOG 465, GEOG 471, GEOG 480
4. *Concentration (15 credits):* Students may choose from among five concentrations (GIS; economic geography; urban/social/political geography; development studies; society and environment), or customize their own hybrid focus along more thematic or issue-driven lines, such as migration studies, globalization, geography and health, sustainability, inequality, race/class/gender studies, etc. See advisers for details. Three upper-division (300- and 400-level) geography courses are required for this concentration, at least two of which must be at the 400 level.
5. *Electives (5 credits):* 5 credits of GEOG electives at the 200 level or above; 300- and 400-level courses preferred.
6. *Additional Degree Conditions and Program Features*
  - a. Transfer students must complete a minimum of 25 upper-division credits (300 and 400 level) in geography in residence at the University of Washington.
  - b. 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;
  - c. 5 credits of internship (GEOG 496) or independent study (GEOG 499) may apply toward the required 60 credits.

## 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 minor 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 grade of 2.0 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:* The study of geography emphasizes both technical and critical thinking skills. Geographers' skill sets include the ability to use Geographic Information Systems (GIS) software to produce maps; advanced technical skills in statistical analysis; the ability to use census and other demographic data; sophistication in locating data and interpreting it to help make an argument; sophistication in visual techniques for displaying data, including maps, charts, and graphs; advanced use of such software as spreadsheets, relational data bases, and Web page design; and the ability to present multiple models of land-use patterns for analysis in environmental and economic decision making. 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, 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; With Distinction (Departmental Honors). 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 planning to study economic, transportation, or urban geography are advised to take ECON 200, 201 as early as possible. For those interested in international or area studies, foreign-language competence (i.e., at a level sufficient to be useful for elective, course-related reading and research) is highly desirable (Russian, Chinese, or Spanish). A working knowledge of a region's or nation's history, landscapes (including physical, urban, and cultural), and current role in world economics and politics will also be of great benefit. 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 adviser.

## Degree Requirements

45 credits, as follows:

- \* GEOG 512 (5)
- \* One of the following 400-level courses in analytical methods: GEOG 425 (5), GEOG 426 (5), GEOG 440 (5), GEOG 460 (5), GEOG 461 (5), or GEOG 471 (5).
- \* At least three quarters of GEOG 598 (1, max. 3), the departmental colloquium, usually taken during the first year in the program
- \* GEOG 597 (2). At the conclusion of GEOG 597, the student must write a revised statement of academic objectives.
- \* The completion of at least two departmental research seminars numbered 500 and above, but not including GEOG 502, GEOG 512, GEOG 513, GEOG 515 or other non-specialized seminars.
- \* Remaining credits to be determined in consultation with adviser.

## Doctor of Philosophy

### 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 adviser.

## Degree Requirements

90 credits, to include:

- \* *Core requirements:*
  - o GEOG 515 (5). Post-master's students who have not previously completed a course on the history of geographic thought (GEOG 512) must complete such a course before taking GEOG 515.
  - o At least three quarters of GEOG 598 (1, max. 3), the departmental colloquium, usually taken during the first year in the program
  - o GEOG 597. At the conclusion of GEOG 597, the student must write a revised statement of academic objectives.
  - o Two of the following 400-level courses in analytical methods: GEOG 425 (5), GEOG 426 (5), GEOG 440 (5), GEOG 460 (5), GEOG 461 (5), or GEOG 471 (5).
  - o Entering post-master's students who have already completed one of these courses or their equivalents need complete only one additional analytical methods courses, subject to the approval of the Graduate Program Coordinator.
  - o The completion of at least two departmental research seminars numbered 500 and above, but not including GEOG 502, GEOG 512, GEOG 513, GEOG 515 or other nonspecialized seminars. This requirement may be satisfied if the two seminars were taken while earning an MA degree in this program.
  - o Submission of a scholarly article to a professionally-reviewed academic journal; or successful application for research support from external agencies such as the National Science Foundation, the Social Science Research Council, the Ford Foundation, the Fulbright Commission, etc. Additional writing credits may be earned by registering for GEOG 599. The publication may be jointly authored with a faculty member or other graduate student.
- \* A minimum grade of 3.0 must be earned in all Geography courses, and a grade of 2.7 or higher must be obtained in all courses in related fields used to satisfy the doctoral degree credit requirement.
- \* Evidence of reading competence in one foreign language, or a sound level of competence in one cognate field of concentration as determined by the student's Supervisory Committee.
- \* A departmental written and oral Preliminary Examination, normally by the end of the third quarter in residence. Post-master's students seeking entry into the Ph.D. program must take the Departmental Preliminary Examination during their first year of enrollment. The Preliminary Examination, or designated parts, may be retaken once.
- \* Successful completion of a Graduate School General Examination, normally held at the end of two years (six quarters) of study. The Supervisory Committee will examine the student's qualifications and

competency to undertake dissertation research, and will evaluate the student's general training in geography and in the field of specialization. Normally, the oral examination will be preceded by a written examination.

- \* Preparation and acceptance by the Dean of the Graduate School of a dissertation. The candidate is expected to register for a minimum of 27 credits of dissertation (GEOG 800) over a period of at least three quarters.

## 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, approximately 85 percent of the department's graduate students have been funded by internal or external sources.

## Germanics

340C Denny  
depts.washington.edu/uwgerman

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  
331 Denny, Box 353130  
206-543-4580  
uwgerman@u.washington.edu

The Department of Germanics offers the following programs of study:

- \* The Bachelor of Arts degree with a major in Germanics with options in German language and literature, and German cultural studies
- \* A minor in Germanics with options in cultural studies, language and literature, and 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, GERMAN 150 and 250 (conversational German through film). Courses on broad cultural topics offered by Germanics.

## Department Admission Requirements

Admission to major status requires the completion of first- and second-year German or equivalent.

## Major Requirements

*German Language and Literature:* 53 credits as follows:

1. 15 credits to include: GERMAN 311, GERMAN 312, and either GERMAN 322 or GERMAN 323
2. 15 credits from the following: GERMAN 411, GERMAN 412, GERMAN 421, GERMAN 422, GERMAN 423, or GERMAN 495
3. One of the following (for 5 credits): GERMAN 333, GERMAN 334, GERMAN 401, or GERMAN 403
4. 18 credits in any upper division Germanics courses not taken for requirements 1, 2, or 3, above. These may include no more than 4 credits from GERMAN 395 and GERMAN 396 combined, and no more than 5 credits each from GERMAN 446 and GERMAN 447. Up to two of the following lower division courses may also be counted toward this requirement: GERMAN 210, GERMAN 220, GERMAN 243, GERMAN 293, GERMAN 295.
5. *Specialization in Linguistics:* Students desiring this specialization must take GERMAN 451 and GERMAN 452 as part of the 18 elective credits shown in item 4, above, and may, with the adviser's permission, count relevant courses in linguistics outside Germanics as well.



*German Cultural Studies*: 50 credits as follows:

1. 15 credits as follows: GERMAN 322, GERMAN 323, and either GERMAN 311 or GERMAN 312
2. 15 credits from the following: GERMAN 411, GERMAN 412, GERMAN 421, GERMAN 422, GERMAN 423, or GERMAN 495
3. 20 credits in any upper division Germanics courses not taken for requirements 1 and 2, above. These may include no more than 4 credits from GERMAN 395 and GERMAN 396 combined, and no more than 5 credits each from GERMAN 446 and GERMAN 447. Up to two of the following lower division courses may also be counted toward this requirement: GERMAN 210, GERMAN 220, GERMAN 243, GERMAN 293, and GERMAN 295. With the permission of the adviser, the student may also count toward this requirement courses relevant to German culture offered by other departments, such as history, political science, art history, music history, comparative literature, international studies, or comparative history of ideas.

For both options above, a grade of at least 2.0 must be earned in every upper-division German course; an overall GPA of 2.50 is required for all courses counted toward the major.

## Minor

*Minor Requirements*: Minimum 30 credits from one of the following three options:

- \* *Language and Literature*:
  - a. 15 credits as follows: GERMAN 311, GERMAN 312; either GERMAN 322 or GERMAN 323
  - b. At least one upper-division language course beyond 302
  - c. 10 credits in upper-division Germanics which may include (a) no more than 4 credits total of GERMAN 395 and GERMAN 396; (b) no more than 5 credits of GERMAN 446; and (c) no more than 5 credits of GERMAN 447. Credits from any two of the following may be included: GERMAN 210, GERMAN 220, GERMAN 243, GERMAN 293, and GERMAN 295.
- \* *Linguistics*:
  - a. 10 credits of GERMAN 451 and GERMAN 452
  - b. One 300- or 400-level language course (5 credits) beyond 302
  - c. One course from GERMAN 311, GERMAN 312, GERMAN 322, or GERMAN 323
  - d. 10 upper division elective credits in Germanics or other departments offering linguistics.
- \* *Cultural Studies*:
  - a. 15 credits of GERMAN 322, GERMAN 323; and either GERMAN 311 or GERMAN 312
  - b. 5 upper-division credits in Germanics offered in English
  - c. 10 credits in upper-division Germanics which may include (a) no more than 4 total credits of GERMAN 395 and GERMAN 396; (b) no more than 5 credits of GERMAN 446; and (c) no more than 5 credits of GERMAN 447. Credits from any two of the following may be included: GERMAN 210, GERMAN 220, GERMAN 243, GERMAN 293, and GERMAN 295.

A minimum grade of 2.0 is required for each course counted toward the minor.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes*: The department's objective is the dissemination of the intellectual and artistic traditions of the German-speaking countries. Toward this goal the department offers courses conducted not only in German but also in English on aspects of German culture and history for general humanistic education.

The major in German language and literature offers training in verbal interpretation and analysis useful for any career that involves formulating and solving problems, especially for those with some special interest in Europe and Germany. It provides excellent preparation for students planning to do graduate work in German literature or linguistics, and also for those who wish to teach German in K-12 settings. Stress is placed on the critical analysis of texts, both in English and in German, and the development of high proficiency in language fluency, grammar, and style.

The major in German cultural studies also offers training in interpretation and analysis useful for any career that involves formulating and solving

problems. It is designed for students who wish to study the German-speaking countries and their culture in the broadest context and encourages students to develop critical skills to analyze various aspects of culture and society, such as literature, film, art, architecture, and political and social institutions.

- \* *Instructional and Research Facilities*: None
- \* *Honors Options Available*: With College Honors. With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning*: Undergraduates may count 5 credits of internship (conducted either here or in a German-speaking country) toward their major or minor in German. Students must sign up in GERMAN 446. A list of internships is available on the departmental Web page. They include local businesses and training sites, as well as internship options abroad. The Office of International Programs and Exchanges offers a number of different study abroad options for Austria and Germany. Students can consult their Web site at [www.ipe.washington.edu](http://www.ipe.washington.edu). The Department of Germanics offers a "Spring in Vienna" program. Students can consult the departmental Web site for more information, or pick up a brochure in the main office.
- \* *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.
- \* *Student Organizations/Associations*: German Club.

*Of Special Note*: Qualified students are invited to take part in the department's 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.

## Graduate Program

Graduate Program Coordinator  
345 Denny, Box 353130  
206-543-6025  
[uwgerman@u.washington.edu](mailto:uwgerman@u.washington.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. The master's curriculum requires a minimum of 40 credits, a critical M.A. paper, a textual analysis, and a final comprehensive examination. 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 M.A. and Ph.D. 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

- \* 40 hours of coursework as determined in consultation with adviser
- \* One critical M.A. paper
- \* Text analysis in one of the M.A. areas of expertise (see below)
- \* Written comprehensive examination in one of the M.A. areas

Areas of expertise for the MA in Germanics are literary history; intellectual history; cultural studies; and linguistics/philology.

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 M.A. reading list); one text analysis (text selected by the M.A. committee from the M.A. reading list); one critical M.A. 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 Ph.D. 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 M.A.); knowledge of a foreign language other than German; two Ph.D. papers and a dissertation prospectus (or three Ph.D. papers); three written doctoral examinations; an oral examination; and a dissertation.

- \* 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.
- \* *Ph.D. papers:* Students have the option of submitting either two doctoral papers and a dissertation prospectus (all to be submitted before the written examinations); or three doctoral papers with the prospectus submitted one quarter after the examinations. Any material submitted before the examinations must be in the candidate's file by the time the written examinations are scheduled. Doctoral papers should be in different areas. The first doctoral paper must be submitted by the beginning of the student's second doctoral year.
- \* *Reading lists:* Guided by the Ph.D. reading list, students prepare their own reading lists for each of the three doctoral examination areas in consultation with the members of the Ph.D. supervisory committee.
- \* 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.
- \* 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.
- \* Students write three four-hour examinations organized in consultation with the supervisory committee according to one of the following patterns: one period exam, one genre exam, one special topic exam; two period exams, one genre exam; two period exams, one special topic exam; one period exam, two special topic exams (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.

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## History

315 Smith  
depts.washington.edu/history

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  
318 Smith, Box 353560  
206-543-5691  
histadv@u.washington.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 and history of science

### Bachelor of Arts

*Suggested First- and Second-Year College Courses:* Courses that develop writing skills.

### Department Admission Requirements

1. Minimum 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 as follows:

1. At least one 5-credit "broad" course (as designated by the department) in each of the following fields: (1) European, (2) United States, and (3) Asia, Middle East, Africa, or Latin America
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 credits completed in residence at the UW
4. 5 credits of HIST 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. Beyond the required subjects, the student may or may not specialize, depending upon personal interests and career plans
7. A minimum GPA of 2.25 for all history courses and minimum grade of 2.0 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 grade of 2.0 in each course applied toward the minor. A minimum of 15 of the 20 upper-division credits must be completed in residence at the UW.

*History of Science:* 25 credits, including HIST 311, HIST 312, HIST 390, and HIST 490; plus one course from HIST 215, HIST 310, HIST 313, HIST 315, HIST 316, HIST 317, HIST 318, HIST 412, HIST 498 (when topic is relevant), MHE 401, MHE 422, MHE 424. A minimum grade of 2.0 is required in each course.

### 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; With Distinction (Departmental Honors). 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:*
  - o 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 Scholarship is awarded to non-resident history majors based on academic merit.
  - o History majors may compete for two paper prizes: The Thomas Power Prize for papers written in a history course of the last year, and the York/Mason Award for history papers written on African Americans in the West.
  - o The Millican Fund and the Willstadter Snow-Smith Award provide funding for travel in the course of historical research.
  - o In addition, the department allows students to nominate their high school history teacher for the Pressly Prize, which honors excellence in education.
  - o 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@u.washington.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 M.A. program is normally completed in five or six full-time academic quarters or their equivalent.

## Master of Arts

### Admission Requirements

- \* Completion of a strong undergraduate program in history, ordinarily as a history major.
- \* Usually a minimum GPA of 3.50 (A-), 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.
- \* Ordinarily a score in the 80th percentile or higher on the verbal portion of the General Aptitude Test of the Graduate Record Examination (GRE).
- \* Evidence of genuine intellectual ability and interest beyond the routine performance of academic tasks.
- \* 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, and 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:

- \* *Submission of the Proposed Course of Study:* Two Field MA form or Proposed Course of Study: Divisional MA form, as appropriate. This requirement must be met no later than the end of the second quarter of graduate study.

- \* Official establishment of the MA Committee and submission of the Request for Establishing a Masters Supervisory Committee form. This requirement must be met no later than the end of the third quarter of graduate study.
- \* 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.
- \* Demonstrate by written examination mastery of a substantial body of historical knowledge. Students will be expected to construct their fields of study in consultation with their supervising faculty.
- \* Satisfactory completion of a graduate seminar which entails the preparation of a research seminar paper; or the satisfactory completion of an M.A. thesis. Most seminars are two- or three-quarter classes.
- \* Official submission of an application for the degree.
- \* All Graduate School requirements.

## Doctor of Philosophy

### Admission Requirements

- \* Completion of a strong masters program in history, or a closely related field.
- \* Usually a minimum GPA of 3.50 (A-), particularly in history and related subjects.
- \* Ordinarily a score in the 80th percentile or higher on the verbal portion of the General Aptitude Test of the Graduate Record Examination (GRE).
- \* Evidence of genuine intellectual ability and interest beyond the routine performance of academic tasks.
- \* 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:

- \* 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.
- \* 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.
- \* Language requirements must be satisfied no later than the quarter immediately preceding the quarter in which the student expects to take the Ph.D. General Examination.
- \* Satisfactory performance in the Ph.D. 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. Ph.D. students concentrating in the U.S. history division are required to offer at least one of the following three chronological fields: Early America, 19th Century, 20th Century. A grade of "honors" or "high pass" in a departmental field examination for the M.A. degree may exempt the student from the Ph.D. examination in that field at the discretion of the faculty member administering the Ph.D. examination.
- \* Satisfactory completion of a seminar paper while enrolled as a Ph.D. student. This paper must be completed before the student takes the Ph.D. General Examination. Students who have not completed a graduate seminar in this department for their M.A. are ordinarily expected to enroll in such a seminar as part of their coursework for the Ph.D., and to write their research paper in the context of this seminar.
- \* Official establishment of the Doctoral Reading Committee.
- \* Preparation of an acceptable doctoral dissertation.
- \* 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 M.A. degree by the time they begin their studies may apply for teaching assistantships and may, with continued satisfactory scholarly progress, hold a T.A. appointment for a total of nine quarters, provided adequate funds are available.

## Honors

211 Mary Gates Hall  
depts.washington.edu/uwhonors

uwhonors@u.washington.edu

The honors program offers its participants a special curriculum featuring small classes, challenging instruction, and close contact with faculty and other honors students. An emphasis on writing is incorporated into the honors core curriculum and honors seminars. Directed and independent study are particularly encouraged for upper-division students, commonly leading to a senior honors thesis or project. For a description of honors program requirements and course descriptions, see the Honors Web site.

## 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  
42 Gowen, Box 353530  
206-543-2396  
lsjadv@u.washington.edu

111 Thomson, Box 353650  
206-543-6001  
jsisadv@u.washington.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:

- 10 credits from an approved list of courses\* concerned with human rights as a core concept.
- 5 credits from an approved list of courses\* concerned with human rights in a broad context.
- 10 additional credits drawn from the above approved lists of courses concerned with human rights.\*
- 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, SIS 399, 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](http://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.

## Humanities (Evening Degree)

103 Lewis Hall  
[www.evedegree.washington.edu/edp/majors/humanities.asp](http://www.evedegree.washington.edu/edp/majors/humanities.asp)

This multidisciplinary major includes upper-division humanities courses selected by faculty of the College of Arts and Sciences. Students explore diverse perspectives in thematically related courses from classics, literature, intellectual history, comparative religion, communications, and art history. Focus is on the ways human beings from different cultures understand their world through communication, literature, and the arts. Students discuss literary and artistic works from a variety of perspectives and approaches, as well as theories of interpretation and practical communication. Analytical, research, and communication skills which can enhance a person's career opportunities are emphasized. Coursework encourages greater understanding of issues, ideas, and themes in history and the contemporary world.

## Undergraduate Program

Adviser  
103 Lewis Hall, Box 353921  
206-543-6160  
advisers@extrn.washington.edu

Humanities offers the following program of study:

- \* The Bachelor of Arts degree with a major in humanities

### Bachelor of Arts

*Suggested First- and Second- Year College Courses:* English composition and additional writing. Introductory courses in Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S). First-year foreign language study.

### Program Admission Requirements

1. Admission to the Evening Degree program (separate from admission to the UW day program).
2. Minimum 75 college quarter credits completed. Most students admitted have completed two years of lower-division college work.
3. See adviser for evaluation of applicable courses and credits.

### Major Requirements

60 credits from the approved list of humanities courses, as follows:

1. Not more than 15 credits in 200-level courses (some or all of which may have been completed prior to admission to the major).
2. At least 45 credits of 300- and 400-level courses, of which a minimum 15 credits must be at the 400 level.
3. Minimum 2.25 GPA for all courses counted toward the major.
4. For list of applicable courses, consult the adviser or go to [http://www.evedegree.washington.edu/edp/majors/humanities\\_courses.asp](http://www.evedegree.washington.edu/edp/majors/humanities_courses.asp).

### Additional Degree Requirements

1. English composition and additional writing (15 credits)
2. Quantitative and Symbolic Reasoning (Q/SR) (4-5 credits)
3. Foreign language – through the third quarter of a single foreign language (0 to 15 credits, depending on placement)
4. *Areas of Knowledge*
  - a. Visual, Literary, & Performing Arts (VLPA) (20 credits)
  - b. Individuals & Societies (I&S) (20 credits)
  - c. Natural World (NW) (20 credits)
  - d. Some credits in VLPA and/or I&S may count also toward the major
5. Additional work to complete a minimum 180 credits overall.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* Students investigate the social, historical, ethical, and aesthetic meanings attached to and manifested in cultural texts and artifacts. These include visual, literary, performance, and philosophical works in different forms and genres, and

in different historical periods and cultural contexts. Students gain a critical understanding of developments in and approaches to the study of literary and cultural forms, as well as the processes by which they are produced, received, and used. They develop an appreciation for the complexities and nuances of language, literature, and cultural expression and communication. In learning to interpret and contextualize texts, to pose questions, to construct arguments, and to conduct effective research, students become better critical thinkers, speakers, and writers, capable of engaging cultural debates and producing new cultural knowledge.

Specific skills developed include writing in various genres; critical, analytic, and integrative thinking; textual and archival research in different media; argumentation; and effective public speaking.

Humanities majors pursue widely varied careers, including education, editing, private enterprise, public administration, creative writing, management, arts administration, museology, development and events planning.

- \* *Instructional and Research Facilities:* Students use all university library resources and facilities corresponding with their individual research needs. In addition, each of the contributing humanities academic departments offers individual resources to majors. Check with advisers for options.
- \* *Honors Options Available:* None offered.
- \* *Research, Internships, and Service Learning:* The program works collaboratively with students interested in pursuing independent study and research opportunities through academic departments that contribute to the major. Opportunities for work with the Carlson Center, Office of International Exchanges, and service learning are possible for all students.
- \* *Department Scholarships:* The Evening Degree program awards need-based financial aid assistance each year to students from a general fund. Two additional scholarship resources are the Rodney I. Straub Endowed Scholarship and the Nicole Snyder Dettmar Endowed Scholarship.
- \* *Student Organizations/Associations:* None at present.

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## Individualized Studies

171 Mary Gates Hall  
depts.washington.edu/genstudy

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  
genstudy@u.washington.edu

The Individualized Studies program offers the following programs of study:

- \* Bachelor of Arts
- \* Bachelor of Science
- \* Degree depends on the theme and curriculum of the approved major.
- \* Ethnomusicology, technical writing, and public health are three faculty-designed major options also available through Individualized Studies. Ethnomusicology (B.A.) focuses on the study of world cultures through their musical expression. Technical writing (B.A. or B.S.) offers the study of writing and other modes of communication in a variety of technical environments. Public health (B.A. or B.S.) involves the study of historical and contemporary issues in public health, including social and behavioral determinants of health, the geography of health and illness, the etiology of chronic and infectious diseases, the relationship between environmental factors and health, and access to health care and modes of delivery of health services.

## Bachelor of Arts, Bachelor of Science

*Suggested First- and Second-Year College Courses:* Varies, depending on student's area of study.

### Program Admission Requirements

Before developing an Individualized Studies major, students should read *Designing an Individualized Studies Major*, or obtain a copy from the Gateway Center, 171 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 of study.
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 of the courses must be 300- and 400-level courses. At least half of 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 chosen courses. 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; With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning:* None
- \* *Department Scholarships:* None offered
- \* *Student Organizations/Associations:* None

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## International Studies

401 Thomson  
jsis.artsci.washington.edu

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@u.washington.edu

The School of International Studies offers the following programs of study:

- \* The Bachelor of Arts degree with a major in international studies with options in Asian studies, Canadian studies, comparative religion, European studies, international studies, Jewish studies, and Latin American studies
- \* Minors in Africa and the African diaspora, Canadian studies, China studies, comparative Islamic studies, comparative religion, European studies, international forestry, international studies, Japan studies, Jewish studies, Korea studies, Latin America studies, South Asian studies, and Southeast Asian studies.

### African Studies

Nancy Farwell, Chair  
Adviser  
501 Thomson, Box 353650  
206-616-0998  
africa1@u.washington.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 Web site, 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 Web site 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 SISA 209 or SISA 210, and two introductory Asian civilization course (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:

30 credits or second-year equivalent language training in a language appropriate to student's concentration, plus 50 credits as follows:

1. Either SISA 209 or SISA 210 (5 credits)
2. SIS 201 (5 credits)
3. An Asian civilization course in student's concentration chosen from SISEA 212/HSTAS 212, SISEA 241/HSTAS 241, SISEA 242, HSTAS 201, HSTAS 202, HSTAS 211, SISA 200, SISSE 221/HSTAS 221 (5 credits)
4. 35 credits of approved coursework from one regional or country concentration, or from the general Asia concentration
5. Approved research paper required in one of the upper division concentration courses
6. 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)
7. 30 of the 35 credits required for the concentration requirement must be taken in residence at the UW.

#### Minor

##### Minor Requirements

The following are approved Asian civilization courses for the minors: SISA 209, SISA 210; SISEA 212/HSTAS 212 (Korea); SISEA 241/HSTAS 241 (Japan); SISEA 242 (Japan); SISSE 221/HSTAS 221 (Southeast Asia); HSTAS 201 (India), HSTAS 202 (India); HSTAS 211 (China).

##### *China Studies*

Madeleine Yue Dong, Chair

*Minor Requirements:* 30 credits, to include the following:

1. HSTAS 211 and either RELIG 202 or one additional introductory Asian civilization course from those listed above. (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 <http://jsis.washington.edu/advise/catalog/minors.html>.

##### *Japan Studies*

Robert Pekkanen, Chair

*Minor Requirements:* 30 credits, to include the following:

1. SISEA/HSTAS 241 or SISEA 242, and one course on a different Asian civilization chosen from those listed above. (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 <http://jsis.washington.edu/advise/catalog/minors.html>.

*Korea Studies*  
Clark W. Sorensen, Chair

*Minor Requirements:* 30 credits, to include the following:

1. SISEA 212/HSTAS 212 and one additional introductory Asian civilization course from the list above. (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 <http://jsis.washington.edu/advise/catalog/minors.html>.

*South Asian Studies*  
Priti Ramamurthy, Chair

*Minor Requirements:* 30 credits, to include the following:

1. HSTAS 202 or SISSA 200. (5 credits)
2. One additional introductory Asian civilization course chosen from those listed above. (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 <http://jsis.washington.edu/advise/catalog/minors.html>.

*Southeast Asian Studies*  
Laurie J. Sears, Chair

*Minor Requirements:* 30 credits, to include the following:

1. SISSE 221/HSTAS 221 (5 credits)
2. One introductory Asian civilization course chosen from those listed above. (5 credits)
3. 15 credits of electives taken at the UW, chosen from any SISSE-prefix course or its joint-listed equivalent, or from the approved list of electives.\*
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 <http://jsis.washington.edu/advise/catalog/minors.html>.

## 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. SIS 200, SIS 201, SIS 202; ECON 200, ECON 201; SISCA 356, SISCA 498
2. Minimum 18 credits from approved Canadian Studies elective course list.

#### Minor

*Minor Requirements:* 25 credits as follows:

1. SISCA 356 and SISCA 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 completed at the UW

\*The list of Canada electives is maintained by the Canadian studies program. For the current list, see [jsis.washington.edu/advise/catalog/minors.html](http://jsis.washington.edu/advise/catalog/minors.html). 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.

## 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/SISME 210 (5)
2. NEAR E 211/RELIG 211 or NEAR E 212/RELIG 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/catalog/minors.html](http://jsis.washington.edu/advise/catalog/minors.html). 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:* RELIG 201, RELIG 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. RELIG 201, RELIG 202; RELIG 380/CHID 380; SIS 201
2. 35 additional credits in RELIG or non-RELIG prefix 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. RELIG 201, RELIG 202
2. 15 additional credits in RELIG-prefix courses or joint-listed equivalents
3. 5 additional credits chosen from RELIG courses or from an approved list of electives\*

\*The list of comparative religion electives is maintained by the Comparative Religion program. For the current list of such courses, see [jsis.washington.edu/advice/catalog/minors.html](http://jsis.washington.edu/advice/catalog/minors.html).

## European Studies

Carol G. Thomas, 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:

1. 10 credits of a foreign language at the third-year level or beyond
2. 15 credits of core courses, including EURO 301 (5 credits), SIS 201 (5), and a survey course on modern Europe (5)
3. One quarter (10 credits minimum) of foreign study in Europe
4. 15 credits from approved list of electives
5. EURO 494-EURO 495, Senior Research Seminar (10 credits)
6. See adviser for specific course options.

## Minor

*Minor Requirements:* 25 credits as follows:

1. Foreign language through the sixth quarter
2. 15 credits of core courses including EURO 301 (5 credits), SIS 201 (5), and a survey course on modern Europe (5)
3. 10 credits from approved list of electives.

## 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 SIS 123/GEOG 123.

## Department Admission Requirements

1. 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 either ECON 200 or ECON 201, and either SIS 200 or SIS 201. Grades in these courses are given special consideration.
2. Application deadline is the third Friday of each 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:

1. ECON 200; either ECON 201 or SIS 123/GEOG 123; SIS 200, SIS 201, SIS 202, SIS 401, SIS 495, SIS 498
2. Three or four upper-division courses in an approved option
3. Three upper-division interdisciplinary courses in international studies from an approved core list
4. 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
5. Majors are required to maintain a GPA of at least 2.50, both overall and in the program, and to earn a minimum grade of 2.0 in all required SIS-prefix courses.

## Minor

## Minor Requirements:

*International Studies:* 30 credits as follows:

1. 10 credits chosen from SIS 200, SIS 201, SIS 202
2. 15 credits in SIS-prefix courses numbered 200 or above (courses with other JSIS prefixes are not eligible). These 15 credits must include at least 5 credits at 400 level (SIS 401 is recommended).
3. 5 additional credits chosen from SIS-prefix courses or from undergraduate courses having any of the following prefixes: SISA, SISAF, SISCA, SISEA, SISJE, SISLA, SISME, SISRE, SISSA, SISSE, EURO, RELIG
4. Minimum grade of 2.0 is required in each course applied toward the minor.

*International Forestry:* 30 credits as follows:

1. *Core courses (18 credits):* I BUS 300 or SIS 330; GEOG/SIS 335, F M 423, and F M 492
2. *Upper-division electives (12 credits)*
  - o For students majoring in forest management, wildland conservation, forest engineering, wildlife sciences, or environmental horticulture and urban forestry: SIS 401, SIS 430, GEOG 375/SIS 375, GEOG 372/SISA 372, and GEOG 308/SISCA 308, or any I BUS, SIS, SISEA, SISLA, SISRE, SISSA, or SISSE course.
  - o For students majoring in other programs: ESC 322, ESC 410, F E 368, F M 320, F M 360, F M 371, F M 470, or any F M, ESC, or F E course. See faculty adviser for other options.
3. Minimum grade of 2.0 required in each course.

## Jewish Studies

Paul Burstein, 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:* RELIG 210, SISJE 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

52 credits as follows:

1. *Introductory courses (15 credits):* RELIG 210, SISJE 250/HIST 250, SIS 201



2. *Jewish Studies Track (20 credits)*: Approved courses in either the Judaic cultural tradition or the Jewish people in the modern world
3. *Jewish Languages and Texts (15 credits)*: A minimum of 15 credits selected from an approved list of courses. Students must be proficient in the Hebrew language through second-year level. Students in the Cultural Tradition track may study ancient or modern Hebrew. Modern Hebrew is required for students in the Modern World track. Under certain circumstances substitution of coursework in an appropriate Jewish lingua franca other than Hebrew may be approved by petition.
4. *SIS 494 (2 credits)*: Senior paper or project

The lists of Jewish Studies courses are maintained by the Jewish Studies Program as part of its Web site. For the current list of such courses, see <http://jsis.artsci.washington.edu/advise/catalog/Jewish-b.html>

## Minor

*Minor Requirements*: 30 credits as follows:

1. RELIG 210 (5 credits) and SISJE 250/HIST 250 (5). (10 credits)
2. 15 credits of Jewish Studies electives, chosen from the list of approved humanities/social science electives.\*
3. 5 additional credits chosen from the list of approved humanities/social science electives or from courses in modern or Biblical Hebrew.\*
4. 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 <http://jsis.washington.edu/advise/catalog/minors.html>.

## Latin American Studies

Jonathan Warren, Chair

The Latin American 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: 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, 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. SIS 201 (5 credits)
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 Web site for a complete list of courses.
5. *Electives (15 credits)*: Courses on Latin America and international studies selected from an approved list.\*
6. *Interdisciplinary Seminar (5 credits)*: SISLA 485, SISLA 486, SISLA 492, or another course chosen from an approved list of research seminars.
7. *SIS 494 (2 credits)*: Senior paper or project

\*Lists of Latin American Studies courses are maintained by the Latin American Studies program as part of its Web site. For the current list of such courses, see <http://jsis.artsci.washington.edu/advise/catalog/Latam-ba.html>.

## 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 studies courses is maintained by the Latin American studies program. For the current list, see [jsis.washington.edu/advise/catalog/minors.html](http://jsis.washington.edu/advise/catalog/minors.html). 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.

## 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.

The University of Washington is also a major center for research on Eastern Europe, Russia, and the independent states of the former Soviet Union, notably the Baltics 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.

Jackson School undergraduates can draw upon an extensive roster of more than 300 UW study-abroad programs and exchanges in 50 countries to enrich their studies.

\* *Honors Options Available*: With College Honors; With Distinction (Departmental Honors). 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 sponsors the Asia Internship Program, through which students with language proficiency have served for three to nine months with organizations such as an international law firm in Seoul, a bank in Nagasaki, and large electronics companies in both Tokyo and Taipei. The 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 State Department. 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.

\* *Department Scholarships:* George M. Beckmann Memorial Scholarship (undergraduate-Japan); Neal and Helen Fosseen Scholarship (undergraduate); Vincent H. Gowen Scholarship (undergraduate-China); Japan-America Student Conference Scholarship; 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); Alice Wanmaker Scholarships (undergraduate). 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@u.washington.edu

The Jackson School offers eight programs that lead to a Master of Arts in International Studies degree: six 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; and South 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.

The Jackson School also offers a general program in International Studies that concentrates on the interaction of international economic, political, and cultural processes with states and societies around the world. This program was developed in conjunction with several professional schools and is designed as a concurrent degree program.

*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 general Graduate Record Examination is required. Applicants must also meet the requirements of the specific Jackson School program to which they are applying. Most of them require or strongly recommend previous study of an appropriate foreign language.

*Graduation 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.

*Financial Aid:* Financial support is available to U.S. citizens and permanent residents in the form of Title VI Foreign Language and Area Studies Fellowships. Some Jackson School programs have additional fellowships available for specific areas of study. Graduate students are also eligible for a limited number of teaching or research assistantships and reader-ships.

*Research Facilities (East Asia):* Research and training facilities include 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. The School has ongoing projects on China, Japan, and Korea in which advanced graduate students and recognized scholars from the United States and foreign institutions regularly participate.

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 Graduate Program. While not required for admission, some previous study of Chinese language is highly recommended.

*Graduation Requirements:* Chinese language training through the third year; two seminars: SISEA 521-SISEA 522 (5 credits each) 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, and religion and culture; further secondary curricular concentrations are available in Greco-Roman religions, East Asian indigenous traditions, and African religious traditions.

*Admission Requirements:* See above under Graduate Program. 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.

*Graduation 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; RELIG 501-RELIG 502; RELIG 510, 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 will 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. More than 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 Graduate Program. Those applying concurrently to a professional program (Business Administration, Public Affairs, Marine Affairs, Forest Resources, Law, or Public Health and Community Medicine) must first 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.

*Graduation Requirements:* Japanese or Chinese language through the third year or any other modern foreign language through the second year; SIS

500, SIS 501, SIS 502, SIS 511, SIS 512, and SIS 522 (3 credits each); courses in two of the following three fields: a regional studies field, a professional field, or a special topics field (minimum three classes -- 9 credits -- for each field); two seminar papers; and an oral examination. Students in concurrent graduate-degree programs also must meet Graduate School requirements for the second degree.

## Japan Studies

Robert Pekkanen, 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. Course work 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 Business School (MAIS/MBA) is offered and other combinations (e.g., with Public Affairs and Law) can be arranged.

*Admission Requirements:* See above under Graduate Program. At least one year of prior training in Japanese language is strongly recommended.

*Graduation Requirements:* Japanese language training through the third year (15 credits minimum training at the UW); SISEA 555 (5 credits); 31 credits in discipline study of Japan to include at least one history course and one social science course; two research papers or an essay of distinction; and an oral examination.

## 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 will be of use for further graduate study, or in a variety of professions such as teaching, business, and government.

*Admission Requirements:* See above under Graduate Program. Previous language training is recommended.

*Graduation Requirements:* Korean language through the third year of instruction; HSTAS 481-HSTAS 482, SISEA 584 (5 credits each), and SISEA 585 (6 credits); 15 credits in discipline study of East Asia or international studies; two seminar papers or an essay of distinction; comprehensive oral examination.

## Middle Eastern Studies

Philip D. Schuyler, 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 Graduate Program. Although knowledge of a Middle Eastern or Central Asian language is not a prerequisite for admission, it is advisable 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.

*Graduation 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 requirements; either a thesis and an oral examination, or two seminar papers and a four-hour written examination.

## Russian, East European, and Central Asian Studies

Stephen E. Hanson, 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 Ph.D. degree in a discipline. 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 Baltics, or Central Asia), although the program provides flexibility to take courses on another region.

*Admission Requirements:* See above under Graduate Program. 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.

*Graduation Requirements:* 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); SISRE 501 (5 credits); SISRE 502 and SISRE 503 (2 credits each); 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 SISRE 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 Baltics 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.

## South Asian Studies

Priti Ramamurthy, 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 Graduate Program.

*Graduation Requirements:* Completion of the third year of a South Asian language to include at least 7 credits at the 400 level or above; SISSA 510 and SISSA 511 (5 credits each); 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; and 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.

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## Labor Studies

Adviser  
101 Smith, Box 353560  
206-543-7946  
pcls@u.washington.edu

## Minor

The Labor Studies minor brings together a series of courses on labor in core social-science departments. It provides students with an interdisciplinary program of study focusing on the importance of labor to the economic, social, political, and cultural evolution of modern societies.

**Minor Requirements:** 30 credits, including HIST 249/POL S 249/SOC 266 (5 credits). Additional 25 credits (no more than 10 from any one department) from the following: HIST 449, HSTAA 450, HSTAA 480, POL S 405, POL S 447, SOC 447, SOC 466, AES 361, CHSTU 354, ECON 443, ECON 444, HRMOB 420. A minimum grade of 2.0 is required for each course applied toward the minor.

## Law, Societies, and Justice

42 Gowen  
depts.washington.edu/class/ljsj

The program in Law, Societies, and Justice provides an interdisciplinary liberal arts education focusing on the unique forms of social control, institutionalized disputing, and justice that we identify with law or legality. Courses inquire into the historically embedded principles and institutional practices associated with diverse legal domains -- constitutional, criminal, administrative, and civil law as well as fundamental human rights -- in the United States and throughout much of the world. The program encourages complex assessments of the workings and implications of law in society according to standards that are both internal and external to the rule of law itself.

## Undergraduate Program

Adviser  
42 Gowen, Box 353530  
206-543-2396  
lsjadv@u.washington.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
- \* A minor in human rights involving courses at the three UW campuses
- \* A minor in disability studies

## 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 (applicants accepted normally present cumulative GPAs considerably 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.
2. Completion of one of the following courses: LSJ 320/POL S 368 or LSJ 321/ANTH 323; LSJ 363/POL S 363 or LSJ 362/SIS 362; LSJ 367/POL S 367; LSJ 375 or SOC 372.
3. Completion of one research methods or statistics class. See the program's Web site or advising office for a list of approved courses.
4. Completion of one English composition course. (Further evidence of writing skills in the social sciences is encouraged.)
5. A minimum cumulative GPA of 2.00 at the University of Washington.
6. Students may apply in autumn, winter, or spring quarters. Applications for admission are due no later than the second Friday of each quarter. Students are notified of admission decisions by the sixth week of the quarter in which they apply.

## Major Requirements

Minimum 58 credits as follows:

1. Completion of the four LSJ core courses: LSJ 320/POL S 368 or LSJ 321/ANTH 323; LSJ/POL S 363 or LSJ 362/SIS 362; LSJ 367/POL S 367; LSJ 375 or SOC 372 (20 credits)
2. One research methods or statistics course from approved list (4-5 credits)
3. Three courses from one of the three designated subfields of study (crime, social control, and justice; comparative legal institutions and politics; rights, resistance, and reconstructions in law) and two courses from one of the other two subfields. See the program's Web site or adviser for list of approved courses. (23 to 25 credits)
4. One LSJ senior seminar; and one field experience/internship, LSJ 401. Senior seminar cannot also count as an LSJ subfield course. (10 credits)
5. Students may use only one 3- or 4-credit course toward completion of the major.

## Minors

**Minor Requirements (Law, Societies, and Justice):** 30 credits as follows:

1. Two courses from LSJ 320/POL S 368 or LSJ 321/ANTH 323; LSJ 363/POL S 363 or LSJ 362; LSJ 367/POL S 367; LSJ 375 or SOC 372 (10 credits).
2. Two courses from a single Law, Societies, and Justice major subfield. The major subfield areas are crime, social control, and justice; comparative legal institutions and politics; and rights, resistance, and reconstruction in law. Classes fulfilling the subfield requirement are outlined on departmental Web pages and handouts (6-10 credits).
3. One course from a second major subfield or from the Law, Societies, and Justice research methods list. The research methods list is outlined in departmental Web pages and handouts (3-5 credits).
4. Elective courses from the list of LSJ core courses or LSJ major subfields. Only one course from the research methods list can be used to reach the total of 30 credits.

**Minor Requirements (Disability Studies):** 30 credits

1. **Core courses:** LSJ 332/CHID 322; LSJ 433/CHID 433; LSJ 434/CHID 434 (15 credits).
2. **Internship or independent study:** (5 credits) LSJ 332/CHID 332 must be completed before this requirement is undertaken.
3. **Disability studies electives:** See LSJ adviser or Disability Studies program Web page 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. The 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 computer lab and writing center for most classes. Research opportunities are available on an individual and group basis with many professors.
- \* **Honors Options Available:** With College Honors; With Distinction (Departmental Honors). See adviser for requirements.
- \* **Research, Internships, and Service Learning:** LSJ was the first program in the social sciences to require an internship as part of its major. The 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. Students work with a variety of governmental and non-governmental agencies and organizations, including private law firms, federal law enforcement agencies, and social service organizations (see the Internship Listings for complete information). 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 of the 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:* None available, although the program does provide several awards with modest cash stipends to graduating seniors.
- \* *Student Organizations/Associations:* Law, Societies, and Justice is a founding member of the National Consortium of Law and Society Programs. The program is presently reassessing the status of student associations and organizations.

*Of Special Note:* The required senior 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.

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## Linguistics

A210 Padelford  
depts.washington.edu/lingweb

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@u.washington.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

### 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.
2. Completion of at least one writing (W) course and two quantitative and symbolic reasoning (Q/SR) courses, with a minimum grade of 2.0 in each course and a cumulative GPA of 2.50 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

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 different language family than the student's native 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 grade of 2.0 in each course and a cumulative GPA of 2.50 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 the reasonable probability of success in the program.

#### Major Requirements

1. LING 400 or another introductory course in linguistics
2. LING 450, LING 451, LING 461, and LING 462
3. ROLING 402
4. 15 credits at the 300 level or higher of one Romance language; ROLING 490; 20 additional credits of departmentally approved courses in linguistics.

#### Minor

*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 upper-division courses.

## 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 individual 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 lab providing instructional software for linguistics and varieties of languages. Departmental facilities include a phonetics lab 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 lab for research in computational linguistics.
- \* *Honors Options Available:* With College Honors. With Distinction. See adviser for details.
- \* *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@u.washington.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. Students may specialize in general or in romance linguistics.

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.

**Admission Requirements:** At least one previous course in linguistics is highly recommended, as is proficiency in one language other than the student's native language. For a specialization in Romance, substantial upper-division coursework in a Romance language or equivalent is required. Two to three letters of recommendation (M.A.) or three letters of recommendation (Ph.D.) and Graduate Record Examination scores are required for all applicants. Doctoral degree applicants should send the department a copy of their master's thesis or a paper of high quality, or both.

## Master of Arts

1. **General Linguistics Option**
  - a. Two courses each in syntax and phonetics/phonology.
  - b. One course in semantics and one course in sociolinguistics.
  - c. Three additional courses at the 500 level. At least two of these must be 500-level courses for which papers or projects are required.
2. **Romance Linguistics Option**
  - a. Three courses in syntax and phonetics/phonology.
  - b. ROLING 402, ROLING 551, LATIN 300
  - c. Six additional linguistics-related courses at the 400 or 500 level. One of these must be a 400-level FRLING or SPLING class and at least two of these must be 500-level classes for which papers or projects are required.
3. No course fulfilling any of the above requirements can be taken for the 2-credit (no paper) option.
4. Demonstrated ability to read the linguistic literature in a language other than English. (For the Romance option, the demonstrated ability must be in a Romance language.) This can be satisfied at any time during the program by arrangement with the Graduate Program Coordinator.
5. An M.A. exam in any areas in which the grade point average for the required course work in that area is below 3.30.
6. Choice of a faculty mentor by the second quarter; formation of a supervisory committee by the fifth quarter.
7. A short M.A. thesis (30 to 50 pages), which will typically be an expansion of a term paper. Students must register for 9 credits of LING 700.
8. All requirements must be completed within the equivalent of six full-time quarters.

## Doctor of Philosophy

Direct admission to the Ph.D. program will be considered on an individual basis for applicants holding a degree from a comparable M.A. thesis program in linguistics or a closely related field. Some such applicants may be granted admission directly into the Ph.D. program, with the stipulation that they make up one or more M.A.-level deficiencies.

Requirements for the Ph.D. degree are the following (which include requirements for an M.A. degree):

1. 30 additional credits of course work. A minimum of five 500-level courses with a paper requirement must be completed before the General Exam, 9 credits of which must follow the M.A. A minimum cumulative GPA of 3.00 is required for graduate course work. A minimum of 90 credits of coursework is required for the Ph.D.
2. During the course of the entire M.A.-Ph.D. program, the student must have completed at least three courses each in syntax and phonetics/phonology and at least two courses in semantics, and have taken a total of five 500-level classes for which papers or projects are required. There is also a major and minor requirement as follows: Major -- six courses in the student's primary area of specialization; Minor -- four courses in a second area (the major and minor together should form a coherent research area). The student's supervisory committee will be the final judge of what courses might qualify to meet these requirements. However, it is worth noting that (a) courses fulfilling these requirements do not necessarily have to be offered from within the Department of Linguistics; (b) non-language instruction courses in a language area can fulfill the major or minor requirement; and (c) no course fulfilling any of the above requirements can be taken for the 2-credit (no paper) option.

3. 27 credits of LING 800.

### 4. Language Requirement

- a. **General Linguistics option:** A breadth language requirement as follows: (a) for native speakers of an Indo-European language, a year of a non-Indo-European language; (b) for native speakers of a non-Indo-European language, a year of a language that is not English or in the same sub-family as their language. The student has the right to petition the supervisory committee to allow a language excluded in (a) or (b) above.
- b. **Romance Linguistics option:** The completion of LATIN 301, as well as the demonstrated ability to read the linguistic literature in a Romance language.
5. Two linguistic papers delivered at a colloquium or conference. Each will be evaluated by a member of the student's Ph.D. committee with expertise in the area of the paper. The evaluation may be either of the oral presentation or of the paper in written form. The student should request evaluation by a faculty member for any paper to be considered for this requirement.
6. By the end of the first quarter after admission to the Ph.D. program, the student will constitute a Ph.D. committee, in accord with Graduate School requirements. As part of this process, the student will work out with the committee members (by email or in person) a strategy for degree completion. The student's Ph.D. committee will administer a General Examination, which involves 2 parts:
  - a. Two general papers in different areas. At least one of the papers must be in grammatical theory.
  - b. 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. The oral examination must be completed within the equivalent of 12 full-time quarters (excluding summer) after entrance into the M.A. program.
7. Within six months of the oral examination, the student will present a formal dissertation proposal to the subset of Ph.D. committee members who constitute the Reading Committee along with a proposed calendar for completion of the dissertation.
8. A Final Exam on the dissertation attended by the candidate's Supervisory Committee and open to others interested.

## Mathematics

C138 Padelford  
www.math.washington.edu

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

*Suggested First- and Second-Year College Courses:* MATH 124, MATH 125, MATH 126, or MATH 134, MATH 135, MATH 136.

### Department Admission Requirements

*Admission Requirements for Standard Option and Philosophy Option:*

1. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136), and at least one 200- or 300-level mathematics course required for the degree, preferably MATH 307.
2. A minimum grade of 2.0 in each course to be offered as part of the major; a minimum overall GPA of 2.00 for all mathematics courses.
3. Application to the program should be made at the end of the sophomore year. Transfer students must be enrolled at the UW before applying to the major.

*Admission Requirements for Teacher Preparation Option:*

1. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136) and at least one 200- or 300-level mathematics course required for the degree, preferably MATH 307.
2. A minimum grade of 2.5 in each course to be offered as part of the major; a minimum overall GPA of 2.50 for all mathematics courses.
3. Application to the program should be made at the end of the sophomore year. Transfer students must be enrolled at the UW before applying to the major.

### Major Requirements

*Standard Option (50 credits):*

1. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); MATH 307; MATH 308; MATH 324; and 26 additional credits at the 300 level and above.
2. A minimum grade of 2.0 must be obtained in all mathematics courses presented to satisfy the mathematics requirement and in required related courses. A GPA of 2.00 or higher must be obtained in all mathematics courses taken at the UW.
3. At least 18 credits of graded mathematics courses numbered 300 or higher must be taken in residence at the UW.

*Philosophy Option (58 credits):*

1. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); MATH 310, MATH 318, MATH 327, MATH 328; five additional mathematics courses at the 300 or 400 level, including at least one two-quarter sequence at the 400 level other than MATH 407, MATH 408, MATH 409, or MATH 421, MATH 422.
2. 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.

*Teacher Preparation Option (58 credits):*

1. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); MATH 307; MATH 308, MATH 318, or MATH 205; MATH 394, MATH 411, MATH 412, MATH 444, MATH 445, MATH 487; either MATH 354 and MATH 355 or PHYS 407, PHYS 408, PHYS 409; either STAT 311, MATH/STAT 390, or Q SCI 381; 6 credits of electives at the 300-level in MATH, AMATH, or STAT.
2. A minimum grade of 2.5 in all courses presented to satisfy the program requirements, with the exception of PHYS 407, PHYS 408, and PHYS 409, which require a grade of 3.0. At least 18 credits of graded mathematics courses numbered 300 or higher taken in residence at the UW.

## Bachelor of Science

*Suggested First- and Second-Year College Courses:* MATH 124, MATH 125, MATH 126, or MATH 134, MATH 135, MATH 136.

### Department Admission Requirements

A minimum grade of 2.0 in the following courses: MATH 124, MATH 125, MATH 126; any 300-level mathematics course. (See departmental adviser for information on Advanced Placement exemption.) A student can substitute the following courses, with a minimum grade of 2.0: MATH 134, MATH 135, MATH 136.

### Major Requirements

*Standard Option (66 credits):*

1. A minimum grade of 2.0 in all courses applied toward the major.
2. A minimum GPA of 2.00 in all mathematics courses taken at the University. At least 18 credits from courses at the 300-level or higher, taken in residence at the University.
3. *Elementary Mathematics Core (21 credits):* MATH 124, MATH 125, MATH 126 (5, 5, 5); MATH 310 (3); MATH 324 (3). (MATH 134, MATH 135, MATH 136 may be substituted for MATH 124, MATH 125, MATH 126, MATH 307, and MATH 318.)
4. *Intermediate Mathematics Core (12 credits):* MATH 308 (3) or MATH 318 (3); MATH 326, MATH 327, MATH 328 (3, 3, 3). (MATH 334, MATH 335, MATH 336 may be substituted for MATH 309, MATH 310, MATH 324, MATH 326, MATH 327, and MATH 328.)
5. *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 (3, 3, 3).
  - \* *Analysis:* MATH 424, MATH 425, MATH 426 (3, 3, 3).
  - \* *Geometry:* MATH 441, MATH 442, MATH 443 (3, 3, 3).
  - \* *Other Analysis:* MATH 307, MATH 309 (3, 3); MATH 427, MATH 428 (3, 3); MATH 435, MATH 436 (3, 3).
  - \* *Probability:* MATH 394, MATH 395, MATH 396 (3, 3, 3); MATH 491, MATH 492 (3, 3).
  - \* *Other Mathematics:* MATH 381 (3); MATH 407, MATH 408, MATH 409 (3, 3, 3); MATH 461, MATH 462 (3, 3); MATH 464, MATH 465, MATH 466 (3, 3, 3).
6. *Electives (12 credits):* Four additional mathematics courses, including a two-quarter sequence at the 300- or 400-level (teacher-preparation courses not allowed). With approval, two of the four 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.

*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. It 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.) MATH 318 is required in the intermediate core and the advanced mathematics core becomes the following:

5. *Advanced Mathematics Core, Comprehensive Option (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 (3, 3, 3).
  - \* *Analysis:* MATH 424, MATH 425, MATH 426 (3, 3, 3).
  - \* *Geometry:* MATH 441, MATH 442, MATH 443 (3, 3, 3).
  - \* *Other Analysis:* MATH 307, MATH 309 (3, 3); MATH 427, MATH 428 (3, 3); MATH 435, MATH 436 (3, 3).

### Minor

*Minor Requirements (33 credits):*

1. *Core (21-25 credits):* MATH 124, MATH 125, MATH 126, MATH 307, and MATH 308 (21 credits), or MATH 134, MATH 135, MATH 136 (25 credits, including 10 advanced-placement credits)
2. *Electives (8-12 credits):* Mathematics courses numbered 300 or higher.
3. At least 9 credits of courses numbered 300 or higher taken in residence at the UW. Minimum grade of 2.0 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; With Distinction (Departmental Honors). 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.

## 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 M.S. non-thesis program has the most demanding course requirements and most closely matches the early stages of the Ph.D. program. Most students who enroll in the department begin their studies with the Ph.D. or M.S. non-thesis program in mind. The M.S. 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 Ph.D. program. Note that the department does not offer a master's degree in mathematics education.

### Master of Arts

*Admission Requirement:* 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).

### Graduation Requirements

*Master of Arts, Non-Thesis:* A minimum of twelve approved one-quarter courses at the 400 or 500 level, including two courses in each of 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 Requirement:* 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.

## Graduation 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 Ph.D. 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 586 and MATH 594-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 Requirement:* Mathematical training equivalent to a bachelor's degree with strong major in mathematics, including rigorous coursework in real analysis and abstract algebra.

*Graduation Requirements:* 90 credits minimum, as follows:

- \* *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 (5,5,5); MATH 524, MATH 525, MATH 526 (5,5,5); MATH 534, MATH 535, MATH 536 (5,5,5); MATH 544, MATH 545, MATH 546 (5,5,5); MATH 554, MATH 555, MATH 556 (5,5,5). 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.
- \* *Preliminary Examinations:* Pass three preliminary examinations by September of the beginning of the third year.
- \* *Foreign Language/Computer Requirement:* Pass either two foreign language examinations or one foreign language examination and a computer programming examination. A Ph.D. 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.
- \* *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 exam 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.
- \* *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.

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## Microbiology

K353A Health Sciences  
depts.washington.edu/micro

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  
K353A Health Sciences, Box 357242  
206-543-2572  
advmicro@u.washington.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 cumulative GPA of 2.25 in prerequisite chemistry and biology courses.
2. Completion of the following prerequisite courses: BIOL 180, BIOL 200, BIOL 220; CHEM 142, CHEM 152, CHEM 162; CHEM 223, CHEM 224, or CHEM 237, CHEM 238, CHEM 239.

## Major Requirements

Minimum 94 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:* CHEM 142, CHEM 152, CHEM 162 (16 credits) (or CHEM 145, CHEM 155); *Organic:* CHEM 223, CHEM 224 (8 credits) (or CHEM 237, CHEM 238, CHEM 239; or CHEM 335, CHEM 336, CHEM 337)
3. MICROM 402, MICROM 410, MICROM 411, MICROM 412, MICROM 431, MICROM 441, MICROM 442, MICROM 443, MICROM 496, and MICROM 445 or MICROM 450 (31 or 32 credits)
4. Approved microbiology electives (5 credits, not to include MICROM 101, MICROM 301, MICROM 302)
5. PHYS 114, PHYS 115 (8 credits) (or PHYS 121, PHYS 122) (PHYS 116 or PHYS 123 recommended)
6. Either MATH 112, MATH 124, MATH 127, MATH 144, Q SCI 381, or STAT 311 (5 credits)
7. BIOC 405, BIOC 406 (6 credits) (or BIOC 440, BIOC 441, BIOC 442)
8. 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.
9. Transfer students must complete at least 20 of the required and elective microbiology credits at the UW.

## 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 B.S. 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; With Distinction (Departmental Honors). 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 Web site.
- \* *Student Organizations/Associations:* The Microphiles Club is open to all students. The club sponsors field trips to local biotech companies, speakers on topic such as research and career opportunities, graduate school, and peer teaching.

## Graduate Program

See the School of Medicine section of the General Catalog.

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## Music

102 Music  
www.music.washington.edu

The foremost goal of the School of Music is the discovery, preservation, and transmission of the practice and knowledge of music, as well as the role of music in culture and history. The school expands the frontiers of artistic enterprise and cultural knowledge through research, scholarship, and creative production, in its publications, performances, and teaching.

Through its instructional offerings, the School of Music provides opportunities for all students of the University of Washington to explore the role of music in the cultural nature of the world, past, present, and future. The school teaches students to think creatively and critically. The

faculty provides professional training to musical performers as well as to academic scholars. The ultimate goal of the school is to instill the standards and ideals of excellence in both the artistic and scholarly endeavor of its students.

The School of Music is committed to furthering and transmitting technological advances through its research and instruction.

Because of its prominence in public performance, the School of Music has a unique external visibility, playing a vital role in the cultural life of the University, region, and beyond through the performance, creation, and study of music and culture. To that end, the school maintains strong links with professional arts organizations regionally as well as nationally.

## Undergraduate Program

Adviser  
116 Music, Box 353450  
206-543-1239  
musicadv@u.washington.edu

The School of Music offers the following programs of study:

- \* The Bachelor of Arts degree with a major in music (music theory-history track; vocal track; instrumental track)
- \* The Bachelor of Music degree with a major in composition, piano, string instruments, voice, organ, orchestral instruments, guitar, jazz studies, music education, and music history
- \* The Bachelor of Arts degree with a major in individualized studies (ethnomusicology) (See individualized studies adviser in 171 Mary Gates Hall for requirements.)
- \* 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. Entrance auditions are held in late September, late January, and as needed throughout the year. (See department Web site for more information.) 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 grade of 2.0 in each course (core and elective) counted toward music major requirements. An overall minimum GPA of 2.50 in music course work is required for graduation.

## Bachelor of Arts

### General Requirements

A minimum of 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. Cumulative GPA of 2.50 for all music courses and a minimum grade of 2.0 for each music course counted toward the major. .

### Major Requirements

*Music Theory-History Track (63 credits):* Music core, plus 12 credits of approved upper-level MUSIC or MUHST electives, 10 credits of MUSAP vocal or instrumental private applied instruction, 5 credits of MUSEN (ensembles).

*Instrumental Track (69 credits):* Music core, plus 6 credits of approved upper-level MUSIC or MUHST electives, 18 credits of MUSAP instrumental private applied instruction, and 9 credits in ensembles.

*Vocal Track (75 credits):* Music core, plus 6 credits of approved upper-level MUSIC or MUHST electives, 18 credits of MUSAP vocal private applied instruction, 6 credits of vocal diction, and 9 credits in ensembles. Proficiency through the third quarter college level in two languages from French, German, and Italian.

## 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 BM 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 grade of 2.0 in each music course counted toward the major, and a GPA of 2.50 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 the 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 MUSAP applied instruction; 6 credits of MUSEN ensembles; and one 400-level course in ethnomusicology. See the Music 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 MUSAP 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 MUSAP applied instruction; 12 credits of MUSEN ensembles. See the Music 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 the adviser for more information on the application process.

**Major Requirements:** Music core (36 credits) plus MUSIC 300, MUSIC 350, MUSIC 351, MUSIC 352 (or MUSIC 380, MUSIC 381, MUSIC 382); MUSED 301; MUSED 304, MUSED 305, MUSED 306; MUSED 340; MUSED 403; MUSED 405 (or MUSEN 303); MUSED 440; MUSED 442 (or MUSED 443); MUSED 452; MUSED 465; 18 credits of MUSAP 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 the Music 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 MUSAP applied instruction; 18 credits of electives; 2 credits of recitals; and 12 credits of MUSEN ensembles. See the Music 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 MUSAP 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 the Music 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 MUSAP applied instruction; MUSIC 434, 435, 436; MUSIC 326, MUSIC 327, MUSIC 328; 7 credits of electives; 2 credits of recitals; and 12 credits of MUSEN ensembles. See the Music undergraduate adviser for more specific information.

#### *Strings (117 credits)*

Music core (36 credits) plus 15 credits of division-approved upper-level MUSIC or MUHST electives; 36 credits of MUSAP applied instruction; 6 credits of MUSIC 429; MUSIC 434, MUSIC 435, MUSIC 436; MUSIC 380; 3 credits of electives; 2 credits of recitals; and 12 credits of MUSEN ensembles. See the Music 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 on these requirements.

### **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:** A minimum of 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:

1. 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).
2. 5 credits from courses for nonmajors 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).
3. 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; With Distinction (Departmental Honors). See adviser for requirements.
- \* **Research, Internships, and Service Learning:** None.
- \* **Department Scholarships:** None.
- \* **Student Organizations/Associations:**
  - o **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@u.washington.edu.
  - o **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.
  - o **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@u.washington.edu) for further details.

#### *Of Special Note:*

#### *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 divisional chair and the written consent of the Director of the School of Music.

### **Graduate Program**

Graduate Program Coordinator  
116 Music, Box 353450  
206-543-2726  
musicadv@u.washington.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
- \* 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**

1. 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.
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), 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 scores are 580 for the paper test and 237 for the computer test.

#### **Degree Requirements**

45 credits minimum, as follows:

1. 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. Proficiency in a foreign language as required by the degree program
3. Thesis, to include passing an oral thesis defense or passing an examination based on approximately 10 topics
4. All work for the master's 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**

1. 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.
2. A minimum GPA of 3.00 or B average in the most recent two years of study.
3. 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 scores are 580 for the paper test and 237 for the computer test.

*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 (MUSAP 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 of 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. Proficiency in a foreign language as required by the degree program
3. Thesis, to include passing an oral thesis defense or passing an examination based on approximately ten topics
4. All work for the master's degree completed within six years, including applicable work transferred from other institutions (max. 6 credits transferable) and time spent on leave.

### **Doctor of Music Arts**

#### **Admission Requirements**

1. 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.
2. A minimum GPA of 3.00 or B average in the most recent two years of study.
3. Scores from the Graduate Record Exam (GRE), unless applying to the Doctor of Musical Arts degree program in any area besides composition, or if 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 scores are 580 for the paper test and 237 for the computer test.

*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 (MUSAP 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. A minimum of 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 required for the specific degree
4. General Examination for admission to candidacy; may consist of written and oral examinations based on approximately twenty topics (depending on degree program)
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 doctoral 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. 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.
2. A minimum GPA of 3.00 or B average in the most recent two years of study.
3. 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 scores are 580 for the paper test and 237 for the computer test.

### Degree Requirements

Minimum 90 credits, to include:

1. A minimum of 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 required for the specific degree
4. General Examination for admission to candidacy, which may consist of written and oral examinations based on approximately twenty topics (depending on degree program).
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 doctoral 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.)

### 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 Web site (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.

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## Near Eastern Languages and Civilization

229 Denny  
depts.washington.edu/nelc

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@u.washington.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 studies
- \* A minor in Near Eastern languages and civilization

## Bachelor of Arts

*Suggested First- and Second-Year College Courses:* Courses in any discipline that deal 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).

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 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 B.A. 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; With Distinction (Departmental Honors). 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 Web site 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@u.washington.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

- \* Statement of purpose
- \* Sample of written academic work
- \* Three letters of recommendation, of which at least two must attest to scholarly ability
- \* Official transcripts from all collegiate institutions attended
- \* 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.
- \* A bachelor's degree from an accredited institution
- \* A minimum GPA of 3.00 or B for last 90 quarter (60 semester) credits
- \* GRE scores
- \* TOEFL scores for International Students

### Degree Requirements

36 credits, as follows:

- \* Reading knowledge of French or German; or, with the prior approval of the student's M.A. 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.
- \* A seminar paper representing the student's best work
- \* Coursework determined in consultation with M.A. committee to prepare for written examinations.
- \* 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 of the 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. For a description of the program, 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 holds 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, some of these beginning as early as 1961. They are handled through the Near East and Slavic sections of the University's Suzzallo Library. 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).

## Neurobiology

318 Hitchcock  
protist.biology.washington.edu/neurobiology

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

### Department Admission Requirements

1. BIOL 180, BIOL 200, BIOL 220, with minimum 2.0 grade in each
2. Completion of most supporting course work 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 course work (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)

- d. *Introductory Biology (minimum 15 credits)*: BIOL 180, BIOL 200, BIOL 220
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*: Labs 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; With Distinction (Departmental Honors). 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.
- \* *Department Scholarships*: None offered.
- \* *Student Organizations/Associations*: Beta Beta Beta, the honor society for biological study; Alpha Epsilon Delta, the national premedical honorary society.

## Philosophy

511 Condon  
www.phil.washington.edu

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  
511 Condon, Box 353350  
206-543-5855  
philadv@u.washington.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 values in society.

## 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 analytical skills.

### Department Admission Requirements

2.00 cumulative GPA and completion of 10 credits of philosophy coursework.

## Major Requirements

50 credits, to include:

1. 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 cumulative GPA of 2.00 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. HIST 311, HIST 312; PHIL 160 or PHIL 460; PHIL 120, each with a minimum grade of 2.0.
2. Completion of 10 credits toward the Natural World (science) requirement (see below), each course with a minimum grade of 2.0.
3. Minimum UW GPA of 2.00.
4. Completion of 10 credits of composition/writing courses with a minimum grade of 2.0 for each course. This requirement may be met by a freshman English composition course, a "W" course, or any course 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:* HIST 311, HIST 312, HIST 390; PHIL 160 or PHIL 460; PHIL 120 (25 credits). A minimum grade of 2.0 in each course and an overall minimum GPA of 2.50.
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 grade of 2.0 in each class.
3. *Capstone:* Completion of HPS 400, with a minimum grade of 2.0 (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 GPA of 2.50 in these courses and a minimum grade of 2.0 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.

## 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. The Philosophy Commons includes a computer lab for students and a small conference room that can be reserved for study groups.
- \* *Honors Options Available:* With College Honors; With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning:* The department offers internship credits for students leading its new majors seminar. Students may also arrange for internship credit with individual faculty. See adviser for details.
- \* *Department Scholarships:* Kenneth R. Parker Award for Excellence in Community Service. The KRP 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 \$250 scholarship. A donation of equal value is made on behalf of the recipient to a community organization of the student's choice. See adviser for details.
- \* *Student Organizations/Associations:* The Society for Undergraduate Philosophy Students (SUPS) 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  
511 Condon, Box 353350  
206-543-5855  
philinfo@u.washington.edu

The Department of Philosophy offers programs of study leading to the Master of Arts and Doctor of Philosophy degrees, the M.A. program serving as the initial stage of the Ph.D. 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 M.A. degree is awarded and also whether admission to the Ph.D. program is granted. The M.A. portion of the program serves as the initial stage of the Ph.D. program.

The Ph.D. program, which normally requires at least two years of study beyond the M.A., 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 (address below). 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/her professional objectives.
5. A complete set of official college transcripts.

### International Applicants

- \* **TOEFL.** A minimum official TOEFL score of 600 (TOEFLC score: 250) is required unless the applicant is a citizen of Australia, Canada, Ireland, New Zealand, or the United Kingdom, or has earned a bachelor's degree or higher in the U.S. or one of the countries listed above.
- \* **TSE.** An official TSE score of 55 is required to receive departmental assistantships involving classroom duties unless the applicant is a citizen of one of the countries listed above. A degree from the U.S. or one of those countries does not exempt the applicant from this requirement.
- \* **Degree Requirements.** The equivalent of a four-year U.S. bachelor's degree. This is based on the following criteria: the country's national system of education, type of institution attended, field of study, and level of studies completed. Policies at other institutions may differ.
- \* **Financial Responsibility.** The University of Washington requires official certification of adequate financial support from each international applicant. The total annual cost (12 months) of study is \$47,076 in U.S. funds. (This cost is subject to change without notice.) Even if a graduate program is able to offer some funding, the applicant may need to provide a portion of these funds personally.
- \* **ESL Requirements.** Policy for students for whom English is a second language: All such students must meet the Graduate School requirements for the admission of international students.
- \* **Additional Requirements.** In addition, the Philosophy Department has the following admission requirements:
  - o An 8-15 page paper in English.
  - o A letter of recommendation addressing the applicant's ability to speak and write English. (This letter may count as one of the three required for all applicants.)
  - o Some students may be required to spend up to three additional quarters improving their English writing and speaking skills. Students who do not have adequate preparation in Western Philosophy may be required to take Ancient Philosophy (PHIL 320), Modern Philosophy (PHIL 322), Contemporary Philosophy (PHIL 326), and Introduction to Symbolic Logic (PHIL 120). Graduate credit is not normally given for these remedial courses.

### Special Requirements

An undergraduate major in philosophy is recommended, although not required, for admission to the M.A. program. An applicant's philosophical potential is assessed primarily on the basis of a sample of his or her written work in philosophy and secondarily on the basis of his or her undergraduate record, Graduate Record Examination scores, and letters of recommendation.

### Degree Requirements

*Please Note:* The Philosophy Department at the University of Washington does not offer a terminal M.A. degree.

This is a non-thesis program. There is no language requirement for the M.A. 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 M.A. at another institution, must complete the M.A. requirements before entering the Ph.D. program.

36 credits minimum, as follows:

- \* **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 departmental logic exam once annually upon request. Part-time students must satisfy this requirement by the time they submit master's papers.
- \* **Distribution Requirement:** Graduate courses are divided into three areas. Students must take at least three courses in each of the following three areas:
  1. Area One:
    - o Greek Philosophy -- PHIL 430 (3), PHIL 431 (3), PHIL 433 (3), PHIL 520 (5)

- o Medieval Philosophy -- PHIL 421 (3), PHIL 434 (3), PHIL 521 (5)
- o Modern Philosophy -- PHIL 422 (3), PHIL 436 (3), PHIL 437 (3), PHIL 438 (5), PHIL 522 (5), PHIL 525 (5)
- o Recent Philosophy -- PHIL 425 (3), PHIL 426 (5), PHIL 439 (3), PHIL 458 (5), PHIL 469 (3), PHIL 526 (5)
- 2. Area Two:
  - o Logic and Philosophy of Mathematics -- PHIL 470 (5), PHIL 471 (5), PHIL 472 (5), PHIL 473 (5), PHIL 474 (5), PHIL 570 (5)
  - o Philosophy of Science -- PHIL 459 (5), PHIL 460 (5), PHIL 466 (5), PHIL 481 (5), PHIL 482 (5), PHIL 560 (5), PHIL 566 (5), PHIL 574 (4)
  - o Philosophy of Mind -- PHIL 463 (5), PHIL 464 (5), PHIL 563 (5)
  - o Philosophy of Language -- PHIL 443 (3), PHIL 444 (3), PHIL 453 (5), PHIL 479 (3), PHIL 553 (5)
  - o Epistemology -- PHIL 450 (5), PHIL 490 (5), PHIL 550 (5)
  - o Metaphysics -- PHIL 456 (5), PHIL 556, PHIL 587 (5)
- 3. Area Three:
  - o Ethics -- PHIL 416 (5), PHIL 417 (5), PHIL 440 (5), PHIL 540 (5)
  - o Philosophy of Art -- PHIL 445 (5), PHIL 446 (5), PHIL 447 (3), PHIL 449 (5), PHIL 545 (5)
  - o Philosophy of History -- PHIL 465 (3), PHIL 565 (5)
  - o Social and Political Philosophy -- PHIL 406 (5), PHIL 407 (5), PHIL 408 (5), PHIL 409 (5), PHIL 410 (5), PHIL 411 (5), PHIL 414 (3), PHIL 461 (5), PHIL 510 (5), PHIL 514 (5)
  - o Philosophy of Religion -- PHIL 467 (5), PHIL 567 (5)

\* Courses numbered below 400 cannot be used to satisfy graduate degree requirements.

\* **12-Course Requirement:** Students must complete twelve graduate courses in philosophy, with a minimum grade of 3.0 in each course. At least four of these twelve courses must be seminars.

\* **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.)

\* **Evaluation:** The graduate faculty of the department evaluates the students' progress on the basis of coursework in philosophy and the papers submitted. The graduate faculty then decides whether the students are (a) awarded an M.A. and admitted to the Ph.D. program; (b) awarded an M.A. and invited to submit papers a second time; (c) awarded a terminal M.A.; or (d) dropped from the program without a degree. Students resubmitting papers must submit completely new ones that satisfy the distribution requirements. A completely new paper is one that has not been previously submitted and is not a revised version of one that has been previously submitted. These papers are due the following year.

\* **Satisfactory Progress:** Students not yet admitted to the Ph.D. program must have 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.

\* **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 Ph.D. program is based on the level of performance with the M.A. requirements. (See above.)

### Degree Requirements

60 credits minimum beyond the master's degree, as follows:

- \* **General Requirements:** There are four general requirements for the completion of the doctoral degree:
  1. General Written Examination
  2. General Oral Examination

3. Dissertation
4. 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.

- \* *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 Ph.D. (seminars taken to fulfill the M.A. requirements may count toward this total). A student's supervisory committee may, however, require additional courses.
- \* *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/her career. The student should consult with the director of graduate studies during the first and second year in the M.A. program to insure that he/she is developing any needed language skills.
- \* *Satisfactory Progress:* A student's supervisory committee determines whether a student in the Ph.D. program is making satisfactory progress. Satisfactory progress for the Ph.D. 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.

## 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 will be 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).

## Financial Aid

The department has some teaching assistantships available to incoming students and the Graduate School offers some non-teaching assistantships.

# Physics

C121 Physics-Astronomy  
www.phys.washington.edu

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 (or MATH 144, MATH 145, MATH 146), MATH 308, MATH 324; PHYS 121, PHYS 122, PHYS 123, PHYS 224, PHYS 225, PHYS 227, PHYS 228. (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 will either need to take more than four years to earn a degree or will be limited to a minimal course of study for graduation in four years.

## Department 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 86 credits, including the following:

1. *Core courses (38 credits):* PHYS 121, PHYS 122, PHYS 123, PHYS 224, PHYS 225, PHYS 227, PHYS 228, PHYS 321, PHYS 322, PHYS 334.
2. *Upper-division lecture courses in modern physics (3-4 credits):* Either PHYS 315 or PHYS 324.
3. *Upper-division physics laboratory courses (6 credits):* Two courses from PHYS 331, PHYS 335, PHYS 431, PHYS 432, PHYS 433, or PHYS 434.
4. *Research and seminars (3 credits):* Choices include PHYS 401, PHYS 402, PHYS 403; or PHYS 485, PHYS 486, PHYS 487; or PHYS 491, PHYS 492, PHYS 493; or PHYS 494, PHYS 495, PHYS 496; or ASTR 480. 1-3 credits of independent research that has significant physics content in a cognate subject (astronomy, chemistry, etc.) may be substituted for 1-3 credits of the above choices with approval of the adviser.
5. *Upper-division lecture courses:* Two courses from an approved list of upper-division lecture courses in physics or cognate subjects.
6. *Mathematics (21 credits):* MATH 124, MATH 125, MATH 126, MATH 324, and one from MATH 308, MATH 318, or AMATH 352.
7. *Related sciences (9 credits):* Selected from physical or biological sciences (other than physics, mathematics, or computer science) or from the history or philosophy of science, in addition to any courses in these fields taken to satisfy requirement 5, above.
8. At least 12 credits of the physics courses presented to satisfy requirements 1 through 5, above, shall be in physics courses numbered 300 or above taken at the UW.
9. A minimum grade of 2.0 is required in all courses presented in fulfillment of requirements 1 through 5, above.
10. Students who plan graduate study in physics are strongly advised to complete PHYS 323, PHYS 324, PHYS 325, PHYS 328, as well as several of the following: PHYS 231, PHYS 232, PHYS 331, PHYS 421, PHYS 422, PHYS 423, PHYS 424, PHYS 425, PHYS 426, PHYS 431, PHYS 432, PHYS 433, and AMATH 401, AMATH 402, AMATH 403.

## Minor

*Minor Requirements:* 30-36 physics credits as follows:

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) 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)
  - b. *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 60 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 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; With Distinction (Departmental Honors). 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 Geissen, Germany.
- \* *Department Scholarships:* None available
- \* *Student Organizations/Associations:* Society of Physics Students, [www.phys.washington.edu/~sps/](http://www.phys.washington.edu/~sps/); Career Development Organization for Physicists and Astronomers, <http://students.washington.edu/cdophys/CAREER/>

*Of Special Note:*

- \* One year of high school physics is strongly recommended before taking PHYS 121.
- \* *Progress Requirement:* In each academic year, every undergraduate physics major who either has completed the required 200-level courses in physics or has begun physics courses beyond the 200 level must (1) complete at least 15 credits of coursework acceptable in fulfillment of the departmental major requirements, exclusive of credits earned by repeating courses in which acceptable credit has been earned previously, or (2) satisfactorily complete an approved part-time program of study. Students who do not satisfy the above requirement will be dropped as physics majors unless exempted explicitly by the Physics Undergraduate Majors Committee. Students dropped for this reason may petition the committee for readmission to the major.

## 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 Ph.D. and thirty M.S. 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 Ph.D. 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 B.S. degree in physical science, engineering, mathematics, or computer science. This program is part-time, with classes offered evenings.

*Graduation 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

*Graduation 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

**Graduation 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-PHYS 503, are required of students holding teaching assistantships.

## Financial Aid

Most graduate students are supported by fellowships and assistantships. Applications for the Ph.D. program are automatically considered for these fellowships and assistantships.

## 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@u.washington.edu

The Department of Political Science offers the following programs of study:

- \* The Bachelor of Arts degree with a major in political science with an option in political economy
- \* 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. Students may pursue faculty-supervised 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. Sophomore standing (completion of 45 college credits).
2. Minimum 2.00 cumulative GPA.
3. Three introductory political science courses (15 credits) with a grade of at least 2.0 in each from the following: POL S 101, POL S 201, POL S 202, POL S 203, POL S 204, POL S 205.
4. Students are admitted all quarters and there are no quarterly deadlines. Applications and additional information available from advisers in 215 Smith.

## 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:** The department also offers the political economy option, a specialized program that combines study of political science and economics. Students who wish to pursue this interdisciplinary option should consult with a political science adviser. A list of recommended coursework is available.

## Minor

**Minor Requirements:** 30 political science credits as follows:

One introductory course (POL S 101, POL S 201, POL S 202, POL S 203, POL S 204, or POL S 205), 25 elective credits numbered POL S 210 and above.

## 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:**
  - o **Political Science Collaboratory:** This facility has 25 computer stations. It functions as a computer classroom and also as a general lab, primarily for political science majors and students enrolled in political science classes.
  - o **Center for Social Science Computation and Research** maintains an extensive data archive and offers many statistical and software consulting services.
  - o **Political Science/Jackson School/Law, Societies, and Justice 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.
  - o 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 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.
    - + *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.
    - + *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; With Distinction (Departmental Honors). See adviser for requirements.

\* *Research, Internships, and Service Learning:* The department offers three internship programs that range from part-time, 5-credit assignments to full-time, 15-credit 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 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:**
  - o *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.
  - o *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.
- \* *Student Organizations/Associations:* Pi Sigma Alpha (Political Science Honor Society), Phi Alpha Delta (pre-law fraternity). See adviser for details

*Of Special Note:*

#### 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 University of Washington.

## Graduate Program

Graduate Program Coordinator  
215 Smith, Box 353530  
206-543-1898  
polsgrad@u.washington.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, international relations, political economy, 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 prepares students for the Doctor of Philosophy degree. The Master of Arts program serves as the initial stage of the Ph.D. program; the department does not offer a terminal Master of Arts degree.

## Doctor of Philosophy

### Admission Requirements

- \* Statement of Purpose detailing academic background, including research experience and methodological skills; plans and goals for study, intellectual interests and areas of specialization; and reasons for interest in studying at the University of Washington.
- \* *Writing Sample:* A relatively short paper (not to exceed 20 pages) or excerpts from a larger work (e.g., Honors thesis) demonstrating ability to write critically and analytically.
- \* Resume
- \* Letters of recommendation
- \* Transcripts
- \* *Test Scores:* GRE General Test scores sent directly by the Educational Testing Service (ETS). TOEFL score of at least 580 (237 for the computer-based TOEFL) for international students, sent directly by the Educational Testing Service (ETS)

### Degree Requirements

Minimum 124 credits, to include the following:

The department recognizes four "general fields" in political science: American politics, comparative politics, international relations, and political theory. The department requires each student to select one general field, in which the student must become familiar with the main body of literature and major intellectual issues, and develop competence in that field's mode of analysis. To meet this requirement, students must take the core course in their chosen general field. All students are required to take at least one additional core course in another general field.

Before a student earns the master's degree, a student must also prepare in a second general field or in one of the specialized fields: area study (Chinese politics, Russian, East European, and Central Asian studies, etc.), 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.

All graduate students are required to achieve a minimum level of competence in political research methods. During their first year, students complete POL S 500, POL S 501, and POL S 502 or POL S 503. Demonstration of competence in a foreign language is not required for the Ph.D. Students who select a field(s) where the Supervisory Committee believes that competence in a language would be beneficial are so advised.

Students entering the program are expected to complete the M.A. degree (46 credits minimum) within two years. The M.A. student completes 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 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 M.A. (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 Collaboratory. 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.

## Psychology

119 Guthrie  
web.psych.washington.edu

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  
psysadvis@u.washington.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, or MATH 120 and MATH 144. (MATH 120 and MATH 144 is the recommended sequence.) 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.

## Department Admission Requirements

Students apply to the Department of Psychology under the same admission requirements, regardless of the degree they will pursue.

1. Minimum cumulative UW GPA of 2.00.
2. Completion of one of the following math courses with a minimum grade of 2.0: MATH 111, MATH 112, MATH 120, MATH 124, or MATH 144. (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 grade of 2.0 in each course and a cumulative GPA of 2.50 in the three courses: PSYCH 101, PSYCH 202, and PSYCH 209.
4. Admission is competitive based on the following criteria:
  - a. Preparation for a major in psychology as indicated by the grades earned in courses required for admission
  - b. GPA, with an emphasis on grades earned in psychology courses
  - c. Other evidence of a commitment to becoming a psychology major
  - d. Personal statement reflecting an interest in and commitment to becoming a psychology major
  - e. 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:

1. PSYCH 101, PSYCH 202, PSYCH 209 (with a grade of 2.5 or higher), PSYCH 317 and PSYCH 318
2. One lab course from PSYCH 330, PSYCH 331, PSYCH 332, PSYCH 361, PSYCH 417, PSYCH 418, or PSYCH 419
3. One course from PSYCH 300, PSYCH 333, or PSYCH 355
4. One course from PSYCH 303, PSYCH 305, PSYCH 306, or PSYCH 345
5. One additional course from PSYCH 300, PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 333, PSYCH 345, or PSYCH 355
6. Three additional graded upper-division classes with at least one at the 400 level (cannot include PSYCH 491 through PSYCH 499)
7. PSYCH 499 (3 credits)
8. PSYCH 496, PSYCH 497, or PSYCH 498 (3 credits) or 3 additional credits of PSYCH 499
9. Up to 6 credits in 200- to 400-level electives to make a minimum total of 66 psychology credits
10. (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.)
11. *Courses in related fields:*
  - a. One of the following MATH sequences: MATH 120 and 124, or MATH 120 and MATH 144 (MATH 120 and MATH 144 preferred). Students may satisfy this requirement by testing out of MATH 124 or MATH 144
  - b. One biological science course from BIOL 118, BIOL 161-BIOL 162, BIOL 180, BIOL 200, or BIOL 220
  - c. One of the following philosophy courses: PHIL 120, PHIL 160
  - d. One social science course (3 to 5 credits) from anthropology or sociology
12. Cumulative minimum GPA of 2.50 in all PSYCH courses applied toward the degree (UW and transfer), with a minimum grade of 2.0 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.
13. Transfer students must meet all of the above requirements and are required to complete at least 15 graded 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, MATH 124, or MATH 144. 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:

1. PSYCH 101, PSYCH 202, PSYCH 209, PSYCH 315 (or PSYCH 317 and PSYCH 318)
2. One lab course from PSYCH 330, PSYCH 331, PSYCH 332, PSYCH 361, PSYCH 417, PSYCH 418, or PSYCH 419
3. One course from PSYCH 300, PSYCH 333, or PSYCH 355
4. One course from PSYCH 303, PSYCH 305, PSYCH 306, or PSYCH 345
5. One additional course from PSYCH 300, PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 333, PSYCH 345, or PSYCH 355
6. Two additional graded upper division classes with at least one at the 400 level (cannot include PSYCH 491 through PSYCH 499)
7. 3 credits from the following list: PSYCH 494, PSYCH 496, PSYCH 497, PSYCH 498, PSYCH 499; or credit from an approved study abroad program
8. Up to 4 credits of PSYCH 200- to 400-level electives to make a minimum total of 53 psychology credits
9. (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.)
10. Courses in related fields:
  - a. 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.
  - b. One biological science course from BIOL 118, BIOL 161-BIOL 162, BIOL 180, BIOL 200, or BIOL 220
  - c. One social science course (3 to 5 credits) from anthropology or sociology
11. Cumulative minimum GPA of 2.50 in all psychology courses applied toward the degree (UW and transfer), with a minimum grade of 2.0 in each course presented for the major
12. 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; With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning:* The Department of Psychology offers academic credit for approved field work 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@u.washington.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 Ph.D.

*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 admissions material is December 15.

### Degree Requirements

Minimum 90 credits, as follows:

- \* *Coursework:*
  - o *Orientation Week:* PSYCH 500 (1)
  - o *Psychology Colloquium:* PSYCH 500 (1)
  - o *Statistics and General Methodology:* During the first year, students must complete each of the following with a minimum grade of 2.7: PSYCH 522 (2), PSYCH 523 (2), PSYCH 524 (4), PSYCH 525 (4).
  - o *Area Course Requirements:* All students are required to take a set of six or more courses as required by the individual areas (see below)
  - o *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).
  - o *Substitutions:* Potential substitutions should be discussed with the student's adviser and Area Head or Area Representative.
- \* *Area Requirements:*
  - o *Animal Behavior:*
    - + *Core courses:* PSYCH 502 (3), PSYCH 503 (4), PSYCH 562 (3)
    - + Three additional courses chosen in consultation with adviser. The following courses may be particularly appropriate for Animal Behavior students: PSYCH 504 (3), PSYCH 505 (4), PSYCH 513 (4)
    - + 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.
  - o *Adult Clinical Area:*
    - + *Core courses:* PSYCH 517 (3), PSYCH 518 (5), PSYCH 519 (5), PSYCH 511 (3) (PSYCH 594 (5) may be substituted), PSYCH 515 (4) (PSYCH 571 (5) or PSYCH 572 (4) may be substituted)
    - + 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.
    - + One course each in social, affective/cognitive, and biological psychology is required. Core concepts courses that can be used to meet the APA breadth requirements are as follows: Affective-Cognitive Breadth: PSYCH 507 (3); Social Breadth: PSYCH 510 (4); Biological Breadth: PSYCH 502 (3), PSYCH 503 (4), PSYCH 504 (3), PSYCH 506 (3)

- + *Note:* PSYCH 594, PSYCH 571 and PSYCH 572 cannot be used as out-of-area courses.
- + One course in community psychology of minority mental health: PSYCH 574 (4), PSYCH 580 (3), or other approved courses.
- + Three courses in clinical issues and methods: PSYCH 591 (1, max. 3), PSYCH 587 (2), PSYCH 588 (2)
- + Two courses in assessment: PSYCH 586 (3); one of the following three courses: PSYCH 576 with PSYCH 590 practicum (5/2), PSYCH 578 with PSYCH 590 (4/2), PSYCH 579 (4)
- + *Clinical practica on a continuing basis:* PSYCH 589 (4), PSYCH 593 (1-6, max. 24), PSYCH 597 (1-5, max. 36)
- + *Seminars and advanced seminars:* PSYCH 550 (1-2, max. 30)
- + All clinical students are strongly encouraged to participate in additional seminars and advanced seminars, both within and outside their Area, throughout their graduate careers.
- + Other requirements for clinical students: A one-year predoctoral internship
- o *Behavioral Neuroscience:*
  - + *Core courses:* PSYCH 421 (5), PSYCH 504 (3), NEUBEH 502 (4); two of the following three courses: NEUBEH 501 (3), NEUBEH 503 (4), CONJ 531/CONJ 532 (1.5/1.5)
  - + Three additional psychology courses: PSYCH 565 (3); not more than one of the following: PSYCH 423 (5), PSYCH 424 (5), PSYCH 426 (4), PSYCH 427 (5), PSYCH 430 (4); one or more of the following: PSYCH 502 (3), PSYCH 503 (4), PSYCH 506 (3), PSYCH 513 (4)
  - + *Seminars and advanced seminars:* All BNS students are required to take at least three quarters of PSYCH 522 (2). 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.
  - + 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.
- o *Child Clinical Area:*
  - + *Research methods:* PSYCH 529 (5), PSYCH 531 (4)
  - + Four courses in child clinical psychology: PSYCH 571 (5), PSYCH 572 (4), PSYCH 576 with PSYCH 590 practicum (5/2), PSYCH 573 (5)
  - + Four core concepts courses: PSYCH 513 (4), PSYCH 514 (4), PSYCH 515 (4), PSYCH 517 (3)
  - + One course in minority mental health: PSYCH 580 (3)
  - + Three courses in clinical issues and methods: PSYCH 591 (1, max. 3), PSYCH 587 (2), PSYCH 588 (2)
  - + *Clinical practica on a continuing basis:* PSYCH 589 (4), PSYCH 593 (1-6, max. 24), PSYCH 597 (1-5, max. 36)
  - + One treatment seminar: PSYCH 543 (3-5, max. 30), PSYCH 553 (1-2, max. 30), PSYCH 550 (1-2, max. 30)
  - + 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.
  - + Other requirements for Child Clinical students: A one-year predoctoral internship
- o *Cognition and Perception:*
  - + *Core courses:* PSYCH 506 (3), PSYCH 507 (3), PSYCH 508 (3)
  - + 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 cognition: PSYCH 504 (3), PSYCH 510 (4), PSYCH 514 (4), PSYCH 515 (4)
  - + *Seminars and advanced seminars:* PSYCH 555 (1-2, max. 30)
  - + 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.
- o *Developmental Psychology:*
  - + *Research Methods:* PSYCH 529 (5)
  - + *Area course requirements:* PSYCH 513 (4), PSYCH 514 (4), PSYCH 515 (4)
  - + 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 (4), PSYCH 504 (3), PSYCH 507 (3), PSYCH 510 (4), PSYCH 511 (3)

- + In lieu of a core concepts course in Child Clinical Psychology, PSYCH 553, Seminar in Child Clinical Psychology, is also recommended for Developmental graduate students.
- + *Seminars and advanced seminars:* PSYCH 556 (1-2, max. 30)
- + All Developmental students are strongly encouraged to participate in additional seminars and advanced seminars, both within and outside their Area, throughout their graduate careers.
- o *Social Psychology and Personality:*
  - + 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.
  - + *Core courses:* PSYCH 510 (4), PSYCH 511 (3)
  - + 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.
  - + *Seminars and advanced seminars:* PSYCH 557 (1-2, max. 30), one additional departmental seminar (PSYCH 550 through PSYCH 558) every quarter throughout the student's graduate career
  - + 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.

## Romance Languages and Literature

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  
<http://depts.washington.edu/frenital/>

## Undergraduate Program

Adviser  
 C252 Padelford, Box 354361  
 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, as follows:

- \* FRENCH 301, FRENCH 302, FRENCH 303, FRENCH 304, FRENCH 305, FRENCH 306, FRENCH 378
- \* Three 400-level courses
- \* Two approved 300- or 400-level literature/culture courses



Transfer credits at the 400 level are accepted only by petition to the Undergraduate Studies Committee.

*Italian:* 60 credits beyond ITAL 203, as follows:

- \* ITAL 301, ITAL 302, ITAL 303
- \* Two from ITAL 341, ITAL 342, 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. A minimum 2.0 grade is required in any course applied toward the major.

## Minor

*Minor Requirements:*

*French* -- 30 credits beyond FRENCH 203, as follows: FRENCH 301, FRENCH 302, FRENCH 303, FRENCH 304 (or FRENCH 305), FRENCH 306 (or a 400-level course, with permission of instructor), FRENCH 378.

Up to 5 credits taken abroad may be counted toward the minor.

*Italian* -- 30 credits beyond ITAL 203, as follows: ITAL 301, ITAL 302, ITAL 303, ITAL 401, ITAL 402 (or ITAL 403), ITAL 404 (or ITAL 405), or equivalent 400-level courses).

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* Employment related to foreign languages is sometimes in specialized fields, but in general could be in many areas. 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 related 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).

Students with substantial foreign language fluency who combine their language skills with a solid foundation in liberal education and adequate job preparation and internships find fulfilling occupations. The department's commitment is to impart to our students a genuine desire to learn throughout their lives, a flexibility that lends itself to changes, and a seriousness of purpose to apply to whatever they undertake in life.

- \* *Instructional and Research Facilities:* UW Rome Center in Rome, Italy.
- \* *Honors Options Available:* With College Honors; With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning:* 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:* None available.
- \* *Student Organizations/Associations:* Italian Club.

*Of Special Note:* The department sponsors study-abroad programs in France and Italy. See adviser for details.

## Graduate Program

Graduate Program Coordinator (French)  
C233 Padelford, Box 354361  
206-616-4444

Graduate Program Coordinator (Italian)  
C259 Padelford, Box 354361  
206-616-3940

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 do so through the Department of Comparative Literature.

## Master of Arts in French Studies

### Admission Requirements

Applicants should present an undergraduate major or its equivalent in French literature and culture. Preparation should be equivalent to the requirements for the Bachelor of Arts degree in French at the University of Washington. All applicants must prove proficiency in the speaking and writing of the French language.

Before their enrollment in French Studies, all incoming M.A. students must complete a list of period and critical readings.

### Degree Requirements

55 credits, as follows:

A total of 45 applicable credits (400-level and above) in coursework; an additional 10 credits in FRENCH 600 for examination preparation. 15 credits of the coursework must be taken at the 500 level. 5 coursework credits are given for the required pedagogy methods seminar for first-time TAs. To remain in good standing the student must maintain a cumulative minimum GPA of 3.60. The minimum acceptable grade for any given course is 2.7.

Students fulfill four of the department's seven period distributions. In addition, they take one class in the history of criticism/critical theory rubric.

Students are encouraged to take up to 15 credits in disciplines outside their major field of study. These credits must be approved by the Graduate Program Coordinator at the time of registration. Credits in supporting or related fields are allowed only for courses numbered 400 or above.

The M.A. examinations (written and oral) are taken in the sixth quarter of study.

## Master of Arts in Italian Studies

### Admission Requirements

Applicants should present an undergraduate major or its equivalent in Italian literature and culture. Preparation should be equivalent to the requirements for the Bachelor of Arts degree in Italian at the University of Washington. All applicants must prove proficiency in the speaking and writing of Italian language.

1. Application for Graduate Admission, along with supporting documents
2. Three letters of recommendation
3. Autobiographical statement
4. CD or audio cassette 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. Foreign students should note that the Graduate School requires proof of proficiency in the English language in 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.

### Degree Requirements

60 credits, as follows:

A total of 50 applicable credits (400-level and above) in coursework, 30 of which are at the 500 level. An additional 10 credits in ITAL 600 is required for examination preparation. To remain in good standing the student must maintain a minimum cumulative GPA of 3.60. The minimum acceptable grade for any given course is 2.7.

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.

M.A. 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 committee of three Italian and Italian adjunct faculty members. The supervisory committee should be formed no later than the first week of the quarter prior to the examination.

The M.A. examinations (written and oral) are taken in the final quarter of study.

## Doctor of Philosophy in French Studies

### Admission Requirements

Applicants for the doctorate in French studies are normally required to present the M.A. degree in French or to demonstrate its equivalent for admission into the Ph.D. program. Students with a background in comparative literature or with a specialization in French within another national literature and language program will be admitted to the Ph.D. program 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. course work in critical theory and/or course work that incorporates a strong component of critical theory).

### Degree Requirements

Minimum 77 credits (beyond the 45 required for the French Studies' M.A.), 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 may be 600-level independent studies. 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. The doctoral coursework should normally be completed in six full-time academic quarters, after which the student advances to Ph.D. candidate status and completes the minimum 27 hours of dissertation credits. Upon completion of the requisite course credits and the other departmental requirements, the student proceeds, with the approval of the Doctoral Supervisory Committee, to the written general examinations and then to the oral general examinations.

### Financial Aid

The department awards annually a number of teaching assistantships. Research assistantships are available on a limited and competitive basis. 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 10 weeks of the quarter.

## Spanish and Portuguese Studies

C104 Padelford  
depts.washington.edu/spanport

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 U.S. The UW offers beginning and intermediate Portuguese and all levels of Spanish.

## Undergraduate Program

Adviser  
C104F Padelford, Box 354360  
206-543-2075  
spanport@u.washington.edu

The Division of Spanish and Portuguese Studies offers the following programs of study:

- \* The Bachelor of Arts degree in with a major in Spanish
- \* A minor in Spanish

### Bachelor of Arts

*Suggested First- and Second-Year College Courses:* First year: SPAN 101, SPAN 102 (or SPAN 110) and SPAN 103; or SPAN 121, SPAN 122, SPAN 123; or SPAN 134; Second year: SPAN 201, SPAN 202 (or SPAN 210) and 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 course- work 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. Applications are available outside C-104F Padelford and online beginning the first day of autumn, winter, spring, and summer quarter. To assure registration priority, applications should be reviewed with the Spanish adviser and filed ideally during the first three weeks of the quarter.

### Major Requirements

58 credits beyond SPAN 203 as follows:

1. SPAN 301, SPAN 302, SPAN 303 (or SPAN 314, SPAN 315, SPAN 316; or SPAN 310; or SPAN 330); SPAN 321, SPAN 322, SPAN 323.
2. One 300-level literature elective course (chosen from SPAN 304 through SPAN 308, SPAN 319, SPAN 340, SPAN 350 through SPAN 352).
3. Five 400-level courses (only one course numbered from SPAN 400 through SPAN 406 may apply to the major).
4. Participation in an approved study abroad program (one quarter minimum, any level) or one or more experiential learning experiences (minimum 3 credits of SPAN 392) which involve significant engagement with the Spanish-speaking community. Students are strongly encouraged to do both.
5. Other than SPAN 400 through SPAN 405, only one course whose instructional materials are primarily in English may apply toward the major.

### Minor

*Minor Requirements:* Seven courses (minimum 31 credits) above the 203 level to include the following:

1. SPAN 301, SPAN 302, SPAN 303 (or SPAN 314, SPAN 315, SPAN 316; or SPAN 310; or SPAN 330).
2. Two of the following three core courses: SPAN 321, SPAN 322, SPAN 323.
3. Two 300-level electives. (400-level courses may be substituted for one or both electives.)
4. Only one course whose instructional materials are primarily in English may apply to the minor. SPAN 327 does 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.

The department directs two study abroad programs, in Mexico (Oaxaca) and Spain (Cadiz). These programs are "living laboratories." Approximately 75 students participate each year.

- \* **Honors Options Available:** With College Honors. With Distinction. See adviser for details.
- \* **Research, Internships, and Service Learning:** Internship opportunities are posted on the department Web site as they become available. Also, students may participate in service learning, in which they combine study with service to the community. Students must volunteer two to five hours per week (a minimum of 20 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. Approximately 18 students participate each year.
- \* **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 Coordinator  
C104 Padelford, Box 354360  
206-543-2075  
spanport@u.washington.edu

The Division of Spanish and Portuguese Studies offers programs 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 of Comparative Literature or other departments of the University.

## Master of Arts

### Admission Requirements

- \* Application for admission to the Graduate School
- \* Three letters of recommendation
- \* A Waiver Form, on which the applicant waives the right to have access to the letters of recommendation.

- \* Academic autobiographical statement composed by the applicant in Spanish
- \* A cassette recording (no micro-cassettes) of the applicant reading the autobiographical statement mentioned in above, together with any other informal comments the applicant wishes to make.
- \* 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.
- \* Graduate Record Examination (GRE) scores
- \* Foreign students should note that the Graduate School requires proof of proficiency in the English language in 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.

### Degree Requirements

- \* A total of 60 applicable credits (400 level and above), 25 of which must be at the 500 level. 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.
- \* SPAN 577 (5). Note: SPAN 510 (3) is required of all teaching assistants and is to be taken during or before a student's first quarter of teaching.
- \* **Distribution requirement:** A minimum of 5 credits (normally one course) must be earned in each of the following areas: medieval and "Golden Age" Spain; Spain of the eighteenth and nineteenth centuries; twentieth-century Spain; colonial and nineteenth-century Latin America; and twentieth-century Latin America.
- \* M.A. candidates must pass an auxiliary language reading ability examination in a language other than English and Spanish. Normally this language will be selected from among the Romance Languages and German. Students stipulate their choice at the time of first enrollment, after consultation with the Graduate Program Coordinator, and is examined no later than the fourth quarter of enrollment. The student consults first with the division's academic adviser and then completes arrangements with the language department administering the examination or with the Educational Assessment Center.
- \* **The M.A. examination:** The M.A. examination is written in the sixth quarter of study, ordinarily in spring quarter.
- \* **Thesis or essay:** Students may elect to include in the required 60 applicable credits 10 credits of M.A. thesis (SPAN 700) or 5 credits of M.A. essay (SPAN 590). Neither the thesis nor the essay is a degree requirement. The M.A. thesis (minimum 40 pages of text) and M.A. Essay (minimum 20 pages) are directed by a graduate faculty member and submitted to the Graduate Studies Committee for its approval.

### 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.

## Scandinavian Studies

318 Raitt  
depts.washington.edu/scand

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  
305Z 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, 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, 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; With Distinction (Departmental Honors). 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@u.washington.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 the 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.

1. 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.
2. 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 Requirement:* 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.

*Graduation Requirements:* Minimum of 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

For the Ph.D. degree, the student concentrates 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 is given to the history of the Scandinavian languages, literary history and theory, and genre study. Opportunities exist for graduate work in such areas as Scandinavian history, politics, mythology, folklore, and Baltic studies.

*Admission Requirement:* Master of Arts degree with major in Scandinavian languages and literature or equivalent background.

*Graduation Requirements:* 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.

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## Slavic Languages and Literatures

M253 Smith  
depts.washington.edu/slavweb

Slavic languages and literatures include the principal East European languages and literatures and Slavic linguistics. Languages include Bulgarian, Czech, Polish, Romanian, Russian, Bosnian/Croatian/Serbian, and Ukrainian.

## Undergraduate Program

Adviser  
M253A Smith, Box 353580  
206-543-6848  
slavicll@u.washington.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, and East European languages 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 Option (60 credits beyond second year):*

1. RUSS 301, RUSS 302, RUSS 303, or the equivalent
2. RUSS 401, RUSS 402, RUSS 403, or the equivalent
3. RUSS 321, RUSS 322, RUSS 323, RUSS 451
4. 10 credits from the following: RUSS 324, RUSS 351, RUSS 352, RUSS 420, RUSS 421, RUSS 422, RUSS 423, RUSS 424, RUSS 425, RUSS 430, RUSS 461, RUSS 490, SLAV 351, SLAV 420, SLAV 423, SLAV 425, SLAV 426, SLAV 490; HSTEU 444, HSTEU 445.
5. Minimum 2.50 cumulative GPA in all RUSS and SLAV courses completed (UW and transfer), with a 2.0 minimum grade in each course presented for the major. Transfer students are required to complete at least 15 graded credits in Slavic department courses at the UW.

*East European Languages and Culture Option (55 credits):*

1. Two years of a principal East European language, or the equivalent
2. SLAV 351
3. 20 credits of literature, culture, linguistics, and history, as appropriate.
4. Minimum 2.50 cumulative GPA in all BCS, BULGR, CZECH, HSTEU, POLSH, SISJE, SISRE, and SLAV courses completed (UW and transfer), with a 2.0 minimum grade in each course presented for the major. Transfer students are required to complete at least 15 graded credits in Slavic department courses at the UW.

## Minor

*Minor Requirements:*

Transfer students are required to complete at least 15 graded credits in Slavic department courses at the UW. Minimum 2.0 grade required in each course presented for the minor.

*Russian Language:* 25 credits to include RUSS 301, RUSS 302, RUSS 303 and 10 credits from RUSS 351, RUSS 352, RUSS 401, RUSS 402, RUSS 403, RUSS 451, SLAV 351, SLAV 425.

*Russian Literature/Slavic Literatures:* 25 credits to include RUSS 321, RUSS 322, RUSS 323 and 10 credits from RUSS 420, RUSS 421, RUSS 422, RUSS 430, RUSS 461, RUSS 490 (Russian-literature option), or 10 credits from BCS 420, CZECH 420, POLSH 420, SLAV 420, SLAV 423, SLAV 490 (Slavic-literatures option).

*Slavic Languages:* 25 credits to include language courses in a Slavic language (other than Russian) numbered 404, 405, 406; SLAV 351; and 5 credits from BCS 420, CZECH 420, POLSH 420, SLAV 423, SLAV 490.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* Graduating majors in Slavic languages and literatures have a solid command of a Slavic language with speaking, listening, reading and 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 in the literature and culture option have a general knowledge of major periods and detailed knowledge of two or three particular authors or genres. Students in the linguistics option 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:* None.
- \* *Honors Options Available:* With College Honors; With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning:* None.
- \* *Department Scholarships:* Vadim Pahn Scholarship for continued study of Russian in an intensive summer language program.
- \* *Student Organizations/Associations:* Rodnoi Ugolok, the Russian 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, will depend on the extent of the student's preparation upon entrance into the program.

## Master of Arts

### Admission Requirements

A student seeking admission to the M.A. 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 will be given to those with three years of language who enroll in fourth-year Summer Intensive Russian the quarter before entry into the program.

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:

- \* *Required Slavic core courses, 11 credits:* RUSS 501 (2), RUSS 502 (3), SLAV 501 (2), SLAV 519 (3)
- \* *Required Slavic linguistics courses, 10 credits from the following:* SLAV 550 (5), SLAV 551 (5), SLAV 570 (3-5, max. 15)
- \* *Required Slavic literature courses, 10 credits:* RUSS 542 (5), RUSS 543 (5)
- \* *Second Slavic language, 5 credits:* one of the following: BCS 403, BULGR 403, CZECH 403, or POLSH 403 (implies completion of 401 and 402)
- \* *Elective courses, 10 credits from above or from the following:* BCS 406 (5), BCS 420 (5), CZECH 406 (5), CZECH 420 (5), POLSH 406 (5), POLSH 420 (5), RUSS 420 (5), RUSS 421 (5), RUSS 422 (5), RUSS 423 (5), RUSS 425 (5), RUSS 426 (5), RUSS 430 (5), RUSS 512 (5), RUSS 520 (5, max. 20), RUSS 521 (5), RUSS 522 (5), RUSS 523 (5), RUSS 526 (5, max. 15), RUSS 570 (5), RUSS 577 (5), SLAV 420 (5, max. 15), SLAV 423 (5), SLAV 425 (5), SLAV 426 (5), SLAV 470 (5), SLAV 490 (3-5, max. 15), SLAV 520 (5), SLAV 561 (5), SLAV 562 (5), SLAV 563 (5), SLAV 565 (4), SLAV 566 (4), URK 420 (5)

### Examinations

- \* *Russian Language:* This examination is based on texts given to the student on the day before the examination. For the examination itself, clean copies of the texts are supplied and the student has three hours to translate specified passages and write an essay. After the examination, the student discusses (in Russian) the content and language of the texts with two examiners. The examination is graded High Pass, Pass, and Fail. Students failing the examination must repeat RUSS 501 and/or RUSS 502 before taking the exam again. A High Pass is normally required for admission to the Doctoral Program.
- \* *Other Slavic Languages:* Students whose programs center around a Slavic language other than Russian must make special arrangements for further study and eventual testing in their target language.
- \* *M.A. Comprehensive Exams:* Normally in three fields and taken within a period of two weeks, the examinations are four hours long taken in situ. With permission of adviser, students may request three-day take-home essays (usually from Friday morning to Monday morning).

## Doctor of Philosophy

### Admission Requirements

Applicants to the doctoral program in Slavic Languages and Literatures are expected to possess an M.A. or equivalent degree. They 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

- \* *Coursework:* At least 90 credits, including graduate course credits taken toward the M.A. Degree, and at least one full year of residence at the UW.
- \* *Readings:* Many post-M.A. credits are satisfied with individually arranged readings courses. Courses are mutually agreed upon by the student and the 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. Ph.D. students with a literature focus should take one year of a second Slavic language (401-403 sequence) or test out of 403. Ph.D. 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.
- \* *Comprehensive Examinations:* Students schedule their Ph.D. exams no later than the end of the sixth quarter of full residency after receiving their M.A. As a prerequisite for scheduling the General Examination, the candidate must demonstrate reading ability in a language appropriate for research purposes. This requirement may be fulfilled either by taking a standardized examination in the appropriate language or by an in-house examination given by a member of the Graduate Faculty of the Slavic Department. The two-hour exam consists of a journal article (5-7 pages), which the student summarizes and a portion of which she or 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. One of the Field Examinations may be in a third Slavic language or in a field from another department at the University. At the discretion of the examiner, the examinations may be either four-hour examinations in situ or three-day take-home essays. A student may be excused from one field examination if the Committee accepts a paper published in a reviewed journal in lieu of that examination.

The student discusses each potential examination with the examiner for that field, presenting, where required, a personal reading list for the field.

Upon completion of the Written Examinations, the examinations and the comments prepared by each examiner are made available to all members of the Committee as well as to the student. The examinations are kept in the student's permanent file in the departmental office.

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.

- \* *Dissertation and Defense:* After the successful completion of the General Examination, the candidate submits a detailed dissertation prospectus to be approved by the Supervisory Committee. 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.

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## Social Science (Evening Degree)

103 Lewis Hall  
www.evedegree.washington.edu/edp/majors/social.asp

This multidisciplinary major includes upper-division social science courses selected by faculty of the College of Arts and Sciences. Students explore diverse political, social, environmental, gender, ethnic, and cultural perspectives in pursuit of their degrees. Coursework encourages greater understanding of issues, ideas, and themes in history and in the contemporary world. Analytical, research, and communication skills which can enhance a person's career opportunities are emphasized.

The coursework in social science is organized into three tracks:

- \* Social and Environmental Issues
- \* Law, Politics, and the Economy
- \* Gender, Ethnicity, and Culture

*Social and Environmental Issues* addresses key ecological, environmental, and social issues of tribal, peasant, industrial, and post-industrial societies from around the world. This track includes assessments of how technological, ecological, environmental, economic, cultural, and sociopolitical factors interact to affect the form and function of social, cultural, and political systems and institutions. It also features courses which explain classical and contemporary theories of anthropology, economics, geography, history, political science, and sociology bearing on these issues.

*Law, Politics, and the Economy* deals with the role and function of government, legal institutions, and economic and political processes, focusing on the complex interaction of political and economic forces which shape social life. Important areas of study include the character of political power and inequality, law and other sources of state legitimacy, international relations and the economic interdependence of nation-states, and the role of the state in maintaining social order and ameliorating conflict within and between societies.

*Gender, Ethnicity, and Culture* studies the cultural, geographic, historical, political, psychological, and social factors which define, shape, and change the various peoples of the United States. Racism, age and sex discrimination, the status and role of women, the treatment of immigrants, the emergence of classes and sociocultural interest groups, and aspects of religious movements and religious conflict are core topics. Courses assessing theories that examine and explain these issues are also essential.

## Undergraduate Program

Adviser  
103 Lewis Hall, Box 353921  
206-543-6160  
advisers@extrn.washington.edu

Social Science offers the following program of study:

- \* The Bachelor of Arts degree with a major in social science

### Bachelor of Arts

*Suggested First- and Second-Year College Courses:* English composition and additional writing. Introductory courses in Individuals & Societies (I&S); Visual, Literary, & Performing Arts (VLPA); and Natural World (NW). First-year foreign language study.

### Program Admission Requirements

1. Admission to the Evening Degree program (separate from admission to the UW day program).
2. 75 college quarter credits. Most students admitted have completed two years of lower-division college work.
3. See adviser for evaluation of applicable courses and credits.

## Major Requirements

60 credits from the approved list of social science survey and track courses, as follows:

1. Survey courses (15 credits maximum). Normally at the 200 level.
2. Primary track (25-35 credits from one track).
3. Track electives (10-20 credits). From courses in other than the primary track.
4. Of the 60 credits, not more than 15 in 200-level courses, at least 45 in 300- and 400-level courses, and at least 15 in 400-level courses.
5. For list of applicable courses, consult the adviser or go to [http://www.evedegree.washington.edu/edp/majors/social\\_courses.asp](http://www.evedegree.washington.edu/edp/majors/social_courses.asp)

### Additional Degree Requirements

1. English composition and additional writing (15 credits)
2. Quantitative and Symbolic Reasoning (Q/SR) (4-5 credits)
3. Foreign language – through the third quarter of a single foreign language (0 to 15 credits, depending on placement)
4. Areas of Knowledge
  - a. Visual, Literary, & Performing Arts (VLPA) (20 credits)
  - b. Individuals & Societies (I&S) (20 credits)
  - c. Natural World (NW) (20 credits)
  - d. Some credits in I&S and/or VLPA may count also toward the major
5. Additional work to complete a minimum 180 credits overall.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* Social science graduates are prepared to think critically and communicate effectively about the interplay among political, demographic, cultural, and social dynamics in considering domestic and international legal, media, environmental, gender, and ethnicity issues. They are able to examine complex issues in a contemporary and historical context. Majors develop the ability to analyze and evaluate issues from varied disciplinary perspectives. A greater respect for diversity and the ability to integrate knowledge when applying learning to the challenges of living in a complex global society results.

Specific skills acquired include writing, critical thinking, research, analytical thinking, integrative cognitive abilities, and effective public speaking.

Social science majors pursue widely varied careers, including labor relations, human resources, law, social work, broadcast journalism, corporate training, private enterprise, education, public administration, mental health, marketing, and non-profit management.

- \* *Instructional and Research Facilities:* Students use all university library resources and facilities corresponding with their individual research needs. In addition, each of the contributing social science academic departments offers individual resources to majors. Check with advisers for options.
- \* *Honors Options Available:* None offered.
- \* *Research, Internships, and Service Learning:* The program works collaboratively with students interested in pursuing independent study and research opportunities through academic departments that contribute to the major. Opportunities for work with the Carlson Center, Office for International Exchanges, and service learning are possible for all students.
- \* *Department Scholarships:* The Evening Degree program awards need-based financial aid assistance each year to students from a general fund. Two additional scholarship resources are the Rodney I. Straub Endowed Scholarship and the Nicole Snyder Dettmar Endowed Scholarship.
- \* *Student Organizations/Associations:* None

# Sociology

223J Condon  
www.soc.washington.edu

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  
223E Condon, Box 353340  
206-543-5396  
asksoc@u.washington.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, SOC 271, or any 200-level sociology courses. General coursework developing critical thinking or analytical skills.

### Department Admission Requirements

1. Any two of the following completed, with grades posted: SOC 110 (or SOC 111), SOC 212, SOC 240, SOC 270, SOC 271.
2. Minimum cumulative GPA of 2.50 for all courses applied to major requirements at time of application. Special circumstances are reviewed on a case-by-case basis.
3. Minimum grade of 2.0 in each course applied to major requirements.
4. Minimum cumulative GPA of 2.00 for all prior college work.
6. A one- to two-page personal statement.
6. Application deadlines are the second Friday of each quarter. See department Web site for information required as part of application packet. 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):* Two courses from SOC 110 (or SOC 111), SOC 212, SOC 240, SOC 270, and SOC 271.
2. *Sociological methods and theory (10 credits):* SOC 220 (5) and SOC 316 (5).
3. *Upper division sociology electives (20 credits):* Chosen from any 300-level or 400-level sociology courses, excluding SOC 316, SOC 395, and independent study courses (SOC 399, SOC 499).
4. *Sociology electives (10 credits):* Chosen from any other sociology courses. A maximum of five credits of independent study (SOC 399, SOC 499) can be counted.
5. Minimum grade of 2.0 in any course applied to major requirements. Minimum cumulative GPA of 2.50 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 department is a member of the Center for Social Science Computing and Research (CSSCR). CSSCR maintains an extensive data archive, and offers consulting support and computer lab access to students in Sociology courses. Sociology is also affiliated with the Center for Studies in Demography and Ecology (CSDE) and the Center for Statistics and the Social Sciences (CSSS), providing interdisciplinary courses, seminars, and research opportunities for Sociology students.

- \* *Honors Options Available:* With College Honors; With Distinction (Departmental Honors). 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  
223J Condon, Box 353340  
206-221-3280  
socadvis@u.washington.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 graduate program specialization in demography and ecology, deviance and social control, race and ethnic relations, family systems, gender studies, institutional analysis, quantitative research methodology, sociological theory, and stratification.

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. The program also offers instruction on effective teaching techniques.

### Master of Arts

#### Admission Requirements

- \* Applicants are evaluated on undergraduate performance, Graduate Record Examination scores, statement of educational plans, recommendations, and samples of written work.
- \* *Application Deadlines:* 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.
- \* *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 Web site for more information.

#### Degree Requirements

The master's program, designed primarily as preparation for Ph.D. work, is not a terminal degree, although it may serve as good training for non-academic research. The M.A. program consists of three elements:

- \* *Substantive training:* Coursework in substantive areas and social theory.
- \* *Methodological training:* Work in social statistics, general social science methodologies, and a data analysis practicum.
- \* *The master's thesis:* Independent empirical research conducted under the supervision of the M.A. Committee.

Students working toward an M.A. degree must complete 45 graduate credits or more with a minimum cumulative GPA of 3.30:

- \* *Sociological Theory* -- SOC 510 (3)
- \* *Statistics* -- SOC 504, SOC 505, SOC 506 (3, 3, 3)
- \* *Logic of Social Inquiry* -- SOC 508 (3)
- \* *Proseminar* -- SOC 501 (1, 1, 1)



- \* *M.A. Thesis* -- SOC 700 (9)
- \* *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 M.A. degree in sociology in the UW Sociology Department or elsewhere. Occasionally, M.A. 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

45 credits beyond the Master of Arts requirements (above) as follows:

- \* 3 graded credits in theory
- \* 6 graded credits in approved methods courses
- \* 9 elective credits
- \* 27 dissertation credits

Additionally, students must maintain a GPA of 3.30, pass a minor area examination, pass a major area examination, pass the General Examination (prospectus defense), pass the Final Examination, and submit 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.

## Speech and Hearing Sciences

210 Eagleson  
depts.washington.edu/sphsc

Speech and hearing sciences concern the processes and disorders of human communication. This includes the study of normal hearing, speech, and language development, speech acoustics, speech physiology and perception, hearing, the nature of language, speech 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  
sphscadv@u.washington.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

### Bachelor of Science

*Suggested First- and Second-Year College Courses:* PSYCH 101, BIOL 118, LING 200, introductory math and statistics courses.

### 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 will be notified of the department's decision within four weeks. Applications and additional information are available outside 210 Eagleson and on the department's Web site.

Students who meet admission requirements are eligible for one of two options: Option 1, General Academic, is intended to provide broad perspectives of the discipline, but not to prepare students specifically for careers in clinical speech pathology and audiology. It is appropriate for students with interests in education, health care, and communication. 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 professions of 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 cumulative GPA of 3.00 is required in core courses for students following Option 2.

*Option 1, General Academic:* 72-74 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. BIOL 118 (5 credits)
4. A 3-5 credit college-level mathematics course (excluding MATH 098, MATH 100, MATH 102, MATH 103, MATH 104, MATH 170, MATH 198, or other remedial, historical, or methodology math course) or statistics course (excluding STAT 111). MATH 120 or MATH 144 recommended.
5. Minimum 9 credits at the 200 level or above in psychology, educational psychology, or special education, or 300 level or above in linguistics.

*Option 2, Speech and Hearing Sciences and Disorders:* 82-84 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. BIOL 118 (5 credits)
4. A 3-5 credit college-level mathematics course (excluding MATH 098, MATH 100, MATH 102, MATH 103, MATH 104, MATH 170, MATH 198, or other remedial, historical, or methodology math course) or statistics course (excluding STAT 111). MATH 120 or MATH 144 recommended.
5. Minimum 9 credits at the 200 level or above in psychology, educational psychology, or special education, or 300 level or above in linguistics.

### Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* The graduate will (1) have 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) understand 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) have 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:* Research labs, computer lab, and clinic located in the department.
- \* *Honors Options Available:* With College Honors; With Distinction (Departmental Honors). See adviser for requirements.
- \* *Research, Internships, and Service Learning:* None offered
- \* *Department Scholarships:* None offered

- \* *Student Organizations/Associations:* The National Student Speech Language Hearing Association (NSSLHA) UW chapter, 153 Eagleson.

## Graduate Program

Graduate Program Coordinator  
205 Eagleson, Box 354875  
206-685-7402  
sphscadv@u.washington.edu

The Department of Speech and Hearing Sciences offers the Master of Science in Speech Language Pathology, Doctor of Audiology, and Doctor of Philosophy degrees. 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. At the Doctor of Audiology (Aud) and speech-language pathology master's (SLP MS) level, the specific focus is on the clinical procedures involved in the identification, prevention, and remediation of communication disorders. To complement departmental curricula in various specialization areas, close interdisciplinary relationships are maintained with other University departments and off-campus centers. Advanced degrees in the speech and hearing sciences equip the student to do research, to teach at the college and university level, and to provide clinical services to the communicatively impaired.

## Master of Science in Speech-Language Pathology

### Admission Requirements

Admission to the program is during summer and autumn quarters only.

- \* GRE scores
- \* A minimum GPA of 3.00 during the last 90 quarter credit hours of study (60 semester)
- \* Bachelor's degree with a major in Speech-Language Pathology (Speech and Hearing Science, Communication Disorders, or a similarly named major) or other major with postbaccalaureate certification in Speech-language Pathology.
- \* Personal statement
- \* Completed application. Deadline February 1.

### Degree Requirements

Minimum 114 credits, to include:

- \* Principles of biological sciences, physical sciences, mathematics, and the social/behavioral sciences
- \* Basic human communication and swallowing processes
- \* Nature of speech, language, hearing, and communication disorders and differences, and swallowing disorders
- \* Principles and methods of prevention, assessment, and intervention for people with communication and swallowing disorders
- \* Standards of ethical conduct
- \* Processes of research and the integration of research principles into evidence-based clinical practices
- \* Contemporary professional issues
- \* Knowledge about certification, specialty recognition, licensure, and other relevant professional credentials
- \* Specialized oral, written and other forms of communication for use in professional practice.
- \* 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.
- \* 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.

## Doctor of Audiology

### Admission Requirements

- \* Graduate School application
- \* Departmental application
- \* Transcripts for all colleges and universities attended
- \* Personal statement
- \* Three recommendation forms

### Degree Requirements

203 credits as follows:

- \* *Year 1 (62 credits):* SPHSC 509 (3), SPHSC 521 (4), SPHSC 523 (4), SPHSC 570 (4), SPHSC 571 (4), 572 (3), 574 (4), SPHSC 575 (3) or SPHSC 503 (3), SPHSC 577 (3), SPHSC 582 (4), SPHSC 583 (4), SPHSC 588 (3), SPHSC 591 (4) each quarter, 592 (3)
- \* *Year 2 (56 credits):* SPHSC 462 (3) or SPHSC 580 (3), SPHSC 490 (3), SPHSC 504 (3), SPHSC 542 (3), SPHSC 575 (3) or SPHSC 503 (3), SPHSC 576 (2), SPHSC 578 (2), SPHSC 581 (2), SPHSC 585 (2), SPHSC 588 (1, 1, 1) for three quarters, SPHSC 591 (4, 4, 4, 4) for four quarters, SPHSC 593 (3), SPHSC 594 (2), SPHSC 595 (2), SPHSC 600 (3), electives (4).
- \* *Year 3 (55 credits):* SPHSC 462 (3) or SPHSC 580 (3), 522 (2), SPHSC 579 (2), SPHSC 584 (3), SPHSC 587 (2), SPHSC 588 (1, 1, 1) for three quarters, 590 (1), SPHSC 591 (4, 4, 4, 4) for three quarters, plus 10 credits for summer quarter), SPHSC 600 (3, 3, 3) for three quarters, electives (8).
- \* *Year 4 (30 credits):* Full-time clinic (SPHSC 591) for three quarters.

## Doctor of Philosophy

### Admission Requirement

Students who wish to work toward the Ph.D. degree must have completed a bachelor's or master's degree depending upon area of interest. Since the doctoral program does not lead to clinical or professional certification, students who wish to satisfy minimum standards of clinical competence in speech-language pathology or audiology typically complete the majority of this preparation before entering the doctoral program.

### Degree Requirements

The academic programs for students in the Ph.D program are planned on an individual basis in consultation with the student's faculty committee. Concentration can occur 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. Opportunities for additional clinical work in the area of communication disorders are provided to those having such interests.

### Financial Aid

A number of teaching and research assistantships are available for qualified graduate students. In addition, the department has traineeships/fellowships supported by the National Institutes of Health.

### Research Facilities

The department's research laboratories, as well as those of the Virginia Merrill Bloedel Hearing Research Center, 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.

# Statistics

B313 Padelford  
www.stat.washington.edu

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 School of Business Administration; 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.
- \* A minor in statistics

## Bachelor of Science

*Suggested First-and Second-Year College Courses:* CSE 142; CSE 143; MATH 307, MATH 308, MATH 309, MATH 327, MATH 328. Additional courses in the sciences and quantitative methods. It is recommended that the student declare the major only after completion of STAT 341.

## Department Admission Requirements

1. Completion of 45 credits, including MATH 124, MATH 125, MATH 126; a minimum 8 credits from one of the following groups of courses: ASTR 101, ASTR 102, ASTR 190, ASTR 201, ASTR 301; CHEM 120, CHEM 142, CHEM 145, CHEM 152, CHEM 155; GENOME 351, GENOME 372, GENOME 453; PHYS 114, PHYS 115, PHYS 116, PHYS 117, PHYS 118, PHYS 119, PHYS 121, PHYS 122, PHYS 123, PHYS 210, PHYS 211, PHYS 212; and one course from STAT 220, STAT 311, STAT 390, or an approved substitute. The 8 credits must be from within the same group (e.g., CHEM 142, CHEM 152).
2. Minimum grade of 2.0 in each of the above listed prerequisites and a cumulative GPA of 2.80 for these courses.
3. Students wishing to declare a statistics major must apply by contacting the adviser after prerequisites are completed and graded.

## Major Requirements

Minimum 74-75 credits, as follows:

1. MATH 124, MATH 125, MATH 126; MATH 307, MATH 308, MATH 309; MATH 327, MATH 328 (the honors sequences in calculus may replace the corresponding regular sequences)
2. CSE 142, CSE 143
3. One course from STAT 220, STAT 311, STAT 390, or approved substitute (STAT 311 is recommended)
4. STAT 394, STAT 395, followed by STAT 341, STAT 342, STAT 421, STAT 423.
5. Electives (at least 9 credits): one upper-division course in statistics, mathematics, or computer science, plus two upper-division courses in any discipline (including but not limited to statistics, mathematics, and

computer science), all subject to prior approval by the Statistics adviser. The first elective defines the flavor of the major within these interrelated mathematical fields, and the other two give a chance to broaden the basis of the major into a special-interest area, chosen from the full range of upper-division courses offered at the University. However, three Department of Statistics courses is the most common choice. Any other choice must fit into an approved coherent plan.

6. A minimum grade of 2.0 in all courses used to satisfy major requirements.
7. A minimum cumulative GPA of 2.50 for all courses used to satisfy major requirements.

## Minor

*Minor Requirements:* minimum 38 credits, as follows:

1. MATH 124, MATH 125, MATH 126
2. STAT 311 or approved substitute
3. STAT 394, followed by STAT 341, STAT 342, STAT 421 (or STAT 423)
4. One elective from the following choices: STAT 395 (strongly recommended), STAT 396, STAT 403, STAT 423, STAT 427, STAT 428, CSE 142, MATH 307, MATH 308, AMATH 351, AMATH 353.
5. Minimum 2.0 grade in each course used to satisfy minor requirements. Minimum cumulative 2.50 GPA in all statistics courses (including whatever elective is taken) counted toward the minor.

## 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 and Sciences Instructional Computing Lab. Tutoring in a set of introductory statistics courses is currently available at the Statistics Tutor and Study Center.
- \* *Honors Options Available:* None offered.
- \* *Research, Internships, and Service Learning:* Some students receive limited support and the opportunity to participate in the VIGRE program which, funded by the National Science Foundation, encourages undergraduates to participate in research; sometimes students function in teams with faculty and graduate students. 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, <http://students.washington.edu/actuary>

## Graduate Programs

Graduate Program Coordinator  
B312 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 Department 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

**Graduation Requirements:** 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, 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.

## Doctor of Philosophy

### Graduation Requirements

Minimum 90 credits, to include:

In addition to Graduate School requirements, appropriate training in statistics and related sciences. Appropriate General Examinations of basic graduate-level knowledge in statistics and probability (including two preliminary examinations). Satisfactory performance in MATH 574, MATH 575, MATH 576. 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.) Approved performance in statistical consulting (typically STAT 598 and STAT 599). Demonstration of proficiency in computing. 1 credit of STAT 590 per quarter. Final Examination.

The graduation requirements for the Ph.D. 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.

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## Women Studies

B110 Padelford  
depts.washington.edu/webwomen

Women studies is an interdisciplinary discipline 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, women 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  
B110C Padelford, Box 354345  
206-543-6902  
wsadvise@u.washington.edu

The Department of Women Studies offers the following programs of study:

- \* The Bachelor of Arts degree with a major in women studies
- \* A minor

## Bachelor of Arts

**Suggested First- and Second-Year College Courses:** WOMEN 200, and any of the following: WOMEN 206, WOMEN 257, WOMEN 283, WOMEN 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 62 credits, as follows:

1. WOMEN 200 or equivalent, 2 credits of WOMEN 299, and one additional WOMEN 200-level course
2. WOMEN 322 or WOMEN 456; WOMEN 357
3. One course in feminist theory (WOMEN 455 is recommended for those planning to pursue graduate study. See department adviser for a complete list of acceptable courses.)
4. Minimum 3 credits of WOMEN 497 fieldwork
5. 25 additional Women Studies upper-division credits
6. Senior capstone, WOMEN 494

## Minor

**Minor Requirements:** 30 credits as follows:

1. WOMEN 200 or equivalent; one additional WOMEN 200-level course (10 credits)
2. WOMEN 322 or WOMEN 456 (5 credits)
3. Additional upper-division credits in women studies (excludes independent-study courses, only 5 credits of WOMEN 490 allowed) (15 credits)

## Student Outcomes and Opportunities

- \* **Learning Objectives and Expected Outcomes:** A Bachelor of Arts in Women Studies helps students prepare for careers in human, health, legal, or civil service, as well as in the private sector. Some women 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 women studies have found employment in public agencies, community services, health services, private businesses, and legal firms.
- \* **Instructional and Research Facilities:** The Women Studies Technology Center (WSTC)
- \* **Honors Options Available:** With College Honors; With Distinction (Departmental Honors). 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), as well as a local student group, Feminism on Campus (FOC).

## Graduate Program

Graduate Program Coordinator  
B110 Padelford, Box 354345  
206-543-6900  
womenst@u.washington.edu

The Department of Women Studies offers graduate training leading to the Master of Arts and Doctor of Philosophy degrees in interdisciplinary women studies as well as in a chosen discipline. The core faculty represent the following disciplines: anthropology, American Indian studies, economics and development, history, international studies, English, sociology, and psychology. Although students are required to work primarily with a core faculty member in Women Studies, they have the opportunity to study with more than 60 faculty members from a wide range of disciplines who are adjunct faculty to Women Studies. M.A. students must complete a thesis or practicum. Ph.D. students must complete a dissertation.

## 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).

## **Program Requirements**

All students are required to complete 15 credits of the core seminars: History of Feminism (WOMEN 501), Problems in Feminist Theory (WOMEN 502), and Feminist Research and Methods of Inquiry (WOMEN 503). Under the guidance of a core faculty mentor and advisory committee, the student shapes an individual program of study. The master's program usually requires two years of graduate study; the doctoral program usually requires three years of study beyond the master's level, including independent field research and preparation of a dissertation. Ph.D. 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 Ph.D. students.

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# Michael G. Foster School of Business

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## Dean

Jim Jiambalvo  
114 Mackenzie

## Associate Dean for Academic Affairs

Thomas Lee

116 Mackenzie  
depts.washington.edu/bschool

busadmin@u.washington.edu

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 Business School prepares students for professional careers in management and related disciplines in both the private and public sectors.

The Business 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 Business 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. It also has had EQUIS accreditation by the European Foundation for Management Development (EFMD) since 2002, being one of only a few North American university business schools to have such designation.

## Facilities and Services

Most Business 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. Four computer labs in Balmer Hall are available to Business 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 Business 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 Executive Programs, 206-543-8560, fax 206-685-9236, uwexp@u.washington.edu.

## International Business Programs

International business programs are coordinated and developed by the 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 School maintains faculty with special international teaching and research expertise. Internationally oriented courses are offered by each department.

At the undergraduate level, the 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 Business School offers the Global Business Program (GBP) that provides 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 GBP includes overseas travel through study tours, quarter-long exchange programs, and international internships. GBP students 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 the Program Assistant, CIBER, 303 Lewis, 206-685-3432, fax 206-685-4079, uwciber@u.washington.edu.

## Entrepreneurship Programs

The focus of the Business 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, a high-tech entrepreneurship speaker series, 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 Business School as well as other schools and colleges of the University. Undergraduates who wish to complete the option must be admitted to the Business School. Graduate students who wish to complete this specialization must participate in the CIE consulting club, attend the High-Tech Entrepreneurship Speaker Series, complete several CIE core classes, and participate in the Business Plan Competition. Contact CTE for more information at 206-685-9868, cte@u.washington.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.

The University of Washington Retail Management Program (RMP) prepares interested students for first-line management careers in the retail industry. This interactive program includes visiting speakers, executives-in-residence, and store visits. Participating students complete a series of courses and a summer internship. The various facets of the program are designed to provide students with a comprehensive background in retail management. Questions about the Retail Management Program can be directed to the program office at 206-685-2755.

## 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@u.washington.edu](mailto:bwrite@u.washington.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**  
Vikki Haag Day

**Associate Director**  
Elaine G. Solomon

Adviser  
137 Mackenzie, Box 353200  
206-685-3400  
[bizinfo@u.washington.edu](mailto:bizinfo@u.washington.edu)

The Business 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 analytical skills. ACCTG 215, ACCTG 225, MGMT 200, and Q METH 201 are suggested second-year college work.

## Department Admission Requirements

The Business 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 three admission groups, the Freshman Admission Program (FRAP), the Early Admission Group (EAG), and the Upper-Division Admission Group (UAG), described below. The following requirements apply to the Early Admission Group, and 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 five factors:
  - a. for Early Admission Group, pre-college test scores from SAT or ACT
  - b. overall scholastic record
  - c. grades in pre-application courses, described below
  - d. written communication skills
  - e. 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 FRAP and EAG is offered once a year, for autumn quarter only. A Business 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, regardless of admission group.

### Freshman Admission Program (FRAP)

The Business 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.

### Early Admission Group (EAG)

This admission path is open to students who began their studies at the UW as freshmen, have been enrolled no more than three quarters, and have completed 30 numerically graded credits at the UW. Courses completed prior to applying must include ECON 200; MATH 112, MATH 124, MATH 134, or MATH 145; 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; and pre-college test scores (ACT or SAT). General education or elective courses can be taken to complete the minimum 30 graded credits.

### Upper-Division Admission Group (UAG)

Students must present a minimum 60 academic credits at the time of application including the following graded credits: ACCTG 215; ECON 200 or ECON 201; MATH 112, MATH 124, MATH 134, or MATH 145; 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. 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 Business 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, to include the following:

**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, MATH 134, or MATH 145); 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 Business 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.

**Business 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 302, B CMU 410, ENGL 281, ENGL 381; one from English composition, or from the remaining 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 economics and up to 9 credits of statistics but not GEN ST 350; a cumulative GPA of at least 2.50 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 are 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 Business 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.

**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 cumulative GPA of 2.50: I S 310, I S 320, I S 410, I S 445, 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 cumulative GPA of 2.50: MKTG 450, MKTG 460, and three additional MKTG electives, excluding MKTG 490, MKTG 495, and MKTG 499. It is recom-

mended that students take MKTG 450 and MKTG 460 before they take the other electives.

**Center for Technology Entrepreneurship (CTE):** 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 one of two pathways with a minimum cumulative GPA of 2.50.

All students are required to complete ENTRE 370 and two of the following three courses: MKTG 455, FIN 457, or MKTG 335. Entrepreneurship students must take MGMT 430 to complete one of the core requirements for the Business School.

Students in the Business Creation pathway must complete ENTRE 472 and ENTRE 473. Students in the Business Growth pathway must complete ENTRE 475 and ENTRE 476.

**Admission to the options:** Students can apply to one option at the same time they apply to the Business School. Continuing Business 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 Business School and on their GPA in all previous option-specific courses.

## 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 Business 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 will help 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 Distinction."
- \* **Research, Internships, and Service Learning:** The Business 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 [depts.washington.edu/bschool/internships/](https://depts.washington.edu/bschool/internships/).
- \* **Department Scholarships:** The Business 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 Business 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 Business 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.

*Of Special Note:*

#### **Double Baccalaureate and Second Baccalaureate**

Students who wish to earn more than one baccalaureate degree simultaneously should consult an academic adviser in the Business School Undergraduate Program Office, either during or before their junior year. Persons seeking a second baccalaureate after finishing a first 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 that for which space is available, acceptance is competitive, based on the criteria listed above for selection of first baccalaureate degree applicants. The Business 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 the Business Educational Opportunity 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, Graduate School of Business Administration, 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 Graduate School of Business Administration 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@u.washington.edu

The full-time Master of Business Administration degree program has been designed for students who are 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 (16), B A 501 (16), B A 502 (10); three of the following bridge elective options: EBIZ 509 (2) (required for EBIZ certificate), ENTRE 509 (2) (required for CIE certificate), FIN 509 (2) (prerequisite for most finance electives), I BUS 509 (2), MGMT 579 (2-4, max. 12), or MKTG 509 (2). 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 (4), ACCTG 501 (4), B ECON 500 (4), B ECON 501 (4), FIN 502 (4), I S 504 (4), MGMT 500 (4), MGMT 502 (4), MGMT 505 (2), MKTG 501 (4), OPMGT 502 (4), QMETH 500 (2), QMETH 501 (2), 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 and Community Medicine.

## **Executive Master of Business Administration**

#### **Director**

Louise Kapustka  
206-685-1333  
emba@u.washington.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**

- \* *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.
- \* Three letters of recommendation
- \* Graduate Management Admission Test (GMAT) scores
- \* 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

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 (2), EMBA 503 (2), EMBA 504 (4), EMBA 505 (5), EMBA 506 (3), EMBA 510 (3), EMBA 511 (1), EMBA 512 (4), EMBA 520 (5), EMBA 521 (4), EMBA 529 (2, 2), EMBA 530 (3), EMBA 531 (5), EMBA 532 (5), EMBA 533 (4), EMBA 534 (2), EMBA 540 (2), EMBA 551 (4), EMBA 552 (2), EMBA 558 (4).

## Technology Management Master of Business Administration

### Director

206-221-6995  
tmmba@u.washington.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 will 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

- \* 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.
- \* Applicants must hold a baccalaureate degree from an accredited college or university.
- \* Personal statement
- \* Three letters of recommendation and evaluations
- \* Resume
- \* Interview
- \* GMAT scores
- \* Two sealed copies of official transcripts
- \* Additional requirement for permanent residents: Proof of English language proficiency (if applicable)
- \* 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. Please contact the TMMBA office to find out the applications deadlines for the upcoming class.

## Degree Requirements

TMMBA 500 (1, 1), TMMBA 501 (5), TMMBA 502 (4), TMMBA 503 (2, 2), TMMBA 505 (4), TMMBA 507 (4), TMMBA 510 (4), TMMBA 512 (4), TMMBA 515 (4), TMMBA 516 (4), TMMBA 517 (4), TMMBA 520 (4), TMMBA 521 (2), TMMBA 522 (4), TMMBA 528 (2, 2), TMMBA 530 (1), TMMBA 551 (4), 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

- \* Satisfactory completion of prerequisite courses (see Web site for list of prerequisite courses)
- \* Scores from the GMAT exam
- \* International TOEFL scores
- \* Well written essays
- \* Work experience
- \* Volunteer and student activities

## Degree Requirements, Auditing and Assurance Pathway

48 credits, as follows:

- \* ACCTG 521 (4), ACCTG 523 (4), ACCTG 527 (4), ACCTG 576 (2), ACCTG 566 (4), ACCTG 577 (4), ACCTG 579 (4, 4, 4)
- \* *Internship*: ACCTG 575 (14). If no internship, complete four approved elective classes: ACCTG 420 (3), ACCTG 524 (3), ACCTG 525 (4), ACCTG 562 (4) ACCTG 564 (4)

## Degree Requirements, Taxation Pathway

48 credits, as follows: ACCTG 530 (4), ACCTG 531 (3), ACCTG 533 (3), ACCTG 534 (3), ACCTG 535 (3), ACCTG 536 (3), ACCTG 537 (3), ACCTG 538 (3), ACCTG 539 (4), ACCTG 541 (4), ACCTG 541 (4), ACCTG 543 (3), ACCTG 547 (3)

## Doctor of Philosophy

### Program Coordinator

Jaime Banaag  
102 Mackenzie  
206-543-4111  
baphd@u.washington.edu

The Ph.D. program in business administration is a research-based program 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, Ph.D. students complete a program of formal coursework (a 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 Business 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.

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## Accounting

[foster.washington.edu/departments/acctg](http://foster.washington.edu/departments/acctg)

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 Web site. See also the Course Catalog for course descriptions.

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## Finance and Business Economics

[foster.washington.edu/departments/finance](http://foster.washington.edu/departments/finance)

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 Web site. See also the Course Catalog for course descriptions.

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## Management and Organization

[foster.washington.edu/departments/mo](http://foster.washington.edu/departments/mo)

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 Web site. See also the Course Catalog for course descriptions.

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## Information Systems and Operations Management

[foster.washington.edu/departments/isom](http://foster.washington.edu/departments/isom)

The Department of Information Systems and Operations Management consists of three subareas: 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 IS curriculum is designed to give students a basic understanding of IS technology and its impact on all phases of an organization. Specific areas of study include data communications and networks, systems analysis and design, database management, expert systems, and applications programming. The Operations Management (OPMGT) 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 (QMETH) 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, using spreadsheets to construct decision support models).

For more information, see the Department of Information Systems and Operations Management Web site. See also the Course Catalog for course descriptions.

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## Marketing and International Business

[foster.washington.edu/departments/mib](http://foster.washington.edu/departments/mib)

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 Web site. See also the Course Catalog for course descriptions.

# School of Dentistry

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## Dean

Martha Somerman  
D322 Health Sciences

[www.dental.washington.edu](http://www.dental.washington.edu)

Established in 1945, the University of Washington School of Dentistry offers courses leading to a Doctor of Dental Surgery (D.D.S.) 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 (M.S.), an M.S. non-thesis degree for dental hygiene educators, and a doctoral degree (Ph.D.). Postdoctoral study is available in various disciplines. The School also offers a baccalaureate degree completion program in dental hygiene.

Opportunities to earn other degrees concurrently (M.S. or Ph.D. 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, a Comprehensive Center for Oral Health Research, a Dentist-Scientist program, and a fellowship research training programs for predoctoral and postdoctoral students. The mission of the Regional Clinical Dental Research Center is to foster clinically relevant research that will advance dentistry's knowledge base, improve patient care, and promote oral health. The Comprehensive Center for Oral Health Research is focused on children's dental health and is one of only six such programs to be funded nationally by the National Institute of Dental and Craniofacial Research. 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 Health Sciences Center and is an oral health-care center of excellence serving the people of the state of Washington and the Pacific Northwest. Our 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 health-care delivery as well as the epidemiology 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.
- \* *Prosthodontics* provides instruction in the fabrication and maintenance of removable, complete, and partial dentures, and dental implants.
- \* *Restorative Dentistry* offers training in the restoration or replacement of tooth structure and study of the form and function of the masticatory structures.

## Undergraduate Program

Dental hygiene seeks to understand why some people get preventable oral diseases and why others do not. Risk factors, such as poverty, ethnicity, and education, as well as environment, contribute to perpetuation of these diseases. The dental hygienist observes and defines dental diseases, assesses potential outcomes of interventions, and manages conditions that compromise oral health. As an applied discipline, dental hygiene links its theoretical foundation to behavioral and natural sciences. Using evidence-based science, the discipline seeks to facilitate holistic assessments of individuals and communities and to find solutions to oral health problems. Students in the discipline learn to transfer learning from clinical to community contexts as a means of improving the oral health status among people.

Adviser  
D583 Health Sciences, Box 357475  
(206) 543-5820  
[dhyg@u.washington.edu](mailto:dhyg@u.washington.edu)

The Dental Hygiene Degree Completion Program offers the following program of study:

- \* Bachelor of Science degree with a major in dental hygiene.

The UW has no prelicensure program in dental hygiene.

*Please note:* The dental hygiene program is currently undergoing a major revision. Please contact the program for further details.

## Bachelor of Science

*Suggested First- and Second-Year Courses:* Students desiring entry into the dental hygiene profession may take their first year general studies courses in chemistry, psychology, sociology, public speaking, English language composition, mathematics, nutrition, microbiology, and liberal studies at the UW, or another community, technical, or four-year institution. Having successfully completed a pre-licensure dental hygiene program and obtained a license to practice dental hygiene, students are eligible to return to the UW to complete the Bachelor of Science degree with a major in dental hygiene.

## Department Admission Requirements

The dental hygiene program is currently undergoing a major revision and is not accepting new applicants. Please contact the program for further information.

## Major Requirements

Students must complete University requirements as well as dental hygiene major requirements. University requirements include a 45-credit senior residency; English, writing, and quantitative reasoning proficiencies; and Areas of Knowledge. The dental hygiene major requirements include a sequence of three dental-hygiene core courses and a minimum of one path.

Completion of the required major and University requirements takes one to two years. Students planning to graduate in one year must have a faculty-approved plan of study within the first quarter of enrollment. Students planning a two-year program must have a faculty-approved plan of study within the first two quarters of enrollment. All students must meet with a program adviser yearly and are encouraged to meet with a program adviser quarterly.

## Core Requirement

Students complete a year-long core requirement founded on significant oral health problems and probable solutions within the context of specific communities. Behavioral change, community development, health education models, and scientific literature provide a theoretical foundation for study in the core courses. The core curriculum focuses on real problems in real places. Using a people-places-problems approach, students use Internet and library resources to research, analyze, discuss, and make evidence-based decisions relevant to oral health promotion and dental disease prevention. Further, they explore core values, ethics, laws, and issues related to care access, health promotion/disease prevention approaches, and healthcare delivery models. Included are field activities linked to education, government, business, and health resources. Additionally, dental hygiene majors complete requirements in at least one path and may take electives of their choice to complete the senior residency requirement. All students must complete the three core courses, D HYG 465, D HYG 492, and D HYG 493 (3 credits each, total 9) in the prescribed order.

## Path Requirement

Students must select at least one of two pathways to fulfill the path requirement. The options are:

**Dental Hygiene Care.** This path is for dental hygienists who desire to work as clinicians in hospitals, clinics, long-term care facilities or other healthcare services that require advanced clinical and management skills. Students take courses in interdisciplinary health sciences, along with courses that focus on dental hygiene care and management of persons with physical, mental, developmental, and complex medical disabilities. Required courses in oral medicine augment this path. Major requirements include a minimum of 11 or 12 credits beyond the core: 10 credits in ORALM 460, or approved alternatives that focus on care of special clients; 3 credits of approved interdisciplinary health science courses; and 2 credits of approved research.

**Oral Health Promotion.** This path is for dental hygienists who desire to work in multicultural and multidisciplinary settings at the local, state, national, or international levels and who require skills beyond clinical expertise. Students learn about the framework within which societies organize and manage their healthcare services and learn to link health with the environment, people's beliefs, ways of life, and kinship. They learn about differences between Western, Eastern and Shamanistic philosophies of health as prerequisites to developing educational strategies for oral health promotion and dental disease prevention. As students build skills essential for working with health agencies, they participate in community health projects as educators, advocates, or researchers. Activities focus on the health of children and families in rural and remote areas of Washington state. Major requirements for this path include a minimum of 15 credits beyond the core, to include 3 credits in approved interdisciplinary health sciences courses, 3 credits in healthcare delivery systems, D HYG 402 or substitute; 3 credits in health promotion strategies (D HYG 403) or approved substitute; and a minimum of 4 credits in at least 2 sections of D HYG 404 or approved substitutes.

## Academic Standards

The School of Dentistry requires that a minimum numerical grade of 2.5 be earned in dental hygiene courses counted toward satisfaction of graduation requirements with a dental hygiene major. Graduation with a dental hygiene major also requires a minimum cumulative GPA of 2.00 for all work done in residence at the University. A student whose cumulative GPA falls below 2.00 in any quarter will be placed on academic probation. While on probation, the student must attain at least a 2.50 GPA for each succeeding quarter's work until the cumulative GPA is raised to 2.00.

## Student Outcomes and Opportunities

\* **Learning Objectives and Expected Outcomes:** The UW Dental Hygiene Completion Program emphasizes the health of populations rather than of individuals. Dental hygienists conduct community assessments; develop networks that engage community partners; set priorities; obtain baseline measures; set targets; and measure progress toward solutions to community oral health problems. Dental hygiene core skills include the ability to search and retrieve information from the Internet; use census, geographic, and demographic data; critically assess scientific literature; analyze and interpret data; and apply new scientific knowledge to solutions of health problems. In addition to the core knowledge set, dental hygienists select from two paths of study: care of special

populations and oral health promotion. Depending upon area of interest, graduates pursue careers as business managers, marketing specialists, clinic administrators, hospital and nursing home dental hygienists, public health planners, program managers, research assistants, and teachers of dental hygiene.

\* **Honors Options Available:** None.

\* **Research, Internships, and Service Learning:** Students in the undergraduate program take off-campus service-learning courses related to their path of study. Generally, sites are located in rural and underserved health provider shortage areas of Washington state, but may include regional, national, or international locations.

Students are eligible for international programs and exchanges following completion of their core course requirements. An applicant who is a dental hygienist from an affiliated international institution may be eligible for a tuition waiver during one or more quarters of the regular academic year (autumn, winter, spring). Students interested in these opportunities need to contact the program's academic adviser at least six months in advance.

Majors may be eligible, following the completion of prerequisite courses, to participate in study-abroad programs that focus on health care delivery, oral health promotion, or dental disease prevention. The University and its affiliated sites provide the settings for fieldwork, service, and research activities, and interdisciplinary learning experiences.

\* **Department Scholarships:** Students may apply for scholarships offered by the Dental Hygiene Education fund.

\* **Student Organizations/Associations:** The Washington Rural Health Organization, Washington State Public Health Association, Washington State Dental Hygienists' Association, American Dental Education Association, and International Association of Dental Research are among many from which to select.

**Of Special Note:** The 90-credit community college transfer limit does not apply to students admitted to this program. The last 45 credits for the degree must be earned in residence at the UW.

## 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 M.S.D. 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 M.S.D. The 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 M.S.D. 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 \$50
- \* 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 of Oral Biology
- \* GRE General Test scores
- \* TOEFL required for international students. The minimum TOEFL score required for acceptance is 237 computer, 580 paper, iBT 70 (based only on listening, reading and writing sections)

## Degree Requirements

50 credits, to include the following:

- \* *Required courses:* ORALB 564 (1-3, max. 10), ORALB 565 (1-3, max. 10), ORALB 566 (2-4, max. 16), ORALB 569 (2), PERIO 575 (1-3, max. 10), ORALB 570 (1-3, max. 9), ORALB 575 (1-3, max. 10), ORALB 579 (2); either ORALB 591 (1-2, max. 2), ORALB 592 (1-2, max. 2), or DPHS 568 (3); for foreign-trained dentists and non-dentists: ORALB 572 (3), PATH 544 (2/3, max. 5)
- \* *Recommended electives:* DPHS 569 (2), MEBI 520 (2), ORALB 562 (1-5, max. 10), ORALB 574 (3), PATH 501 (1, max. 9), PATH 535 (\*, max. 20), PATH 552 (2-5, max. 30)
- \* *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 M. S. 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 \$50
- \* 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 122 credits, to include the following:

- \* 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.
- \* *Required Core Courses:* ENDO 561 (2), ENDO 580 through ENDO 587 (2 credits each), ENDO 590 (2, max. 16), ENDO 593 (1, max. 3), ENDO 594 (1), ENDO 600 (var.), ENDO 658 (1), ENDO 660 (4, max. 32), DENT 565 (2), DENT 568 (1-3, max. 6), DPHS 568 (3), DPHS 569 (2), ORALB 569 (2), ORALB 574 (3), ORALB 579 (2), ORALB 591 (1-2), ORALB 592 (1-2), ORALM 580 (2), ORTHO 580 (3), PERIO 567 (1, max. 3), PERIO 582 (1, max. 12), PERIO 585 (1, max. 12), PERIO 586 (1, max. 9).
- \* *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.
- \* *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

- \* Either a baccalaureate or a professional degree from a dental or medical school
- \* Completed application and application fee of \$50
- \* 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 the student's personal background and aspirations
- \* Brief biographical sketch in a resume/CV format
- \* Official transcripts, sent directly to the Department of Oral Biology
- \* GRE General Test
- \* TOEFL required for international students. The minimum TOEFL score required for acceptance is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections)

### Degree Requirements

- \* 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.
- \* *Required core courses:* ORALB 569 (2), ORALB 575 (1-3, max. 10), ORALB 578 (2-4, max. 15), ORALB 579 (2), ORALB 581 (1-3, max. 3), ORALB 591 (1-2, max. 2), ORALB 592 (1-2, max. 2), ORALB 600, ORALB 700, DPHS 568 (3)
- \* *Electives:* 7 credits from science courses outside oral biology
- \* *Recommended:* One class on educational methods
- \* *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.
- \* *Teaching:* Students are encouraged to take elective courses offered through the Department of Medical Education and Graduate School.

## Master of Science, Dental Hygiene

### Admission Requirements

- \* Either a baccalaureate or a professional degree from a dental or medical school
- \* Completed application and application fee of \$50
- \* 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 the student's personal background and aspirations
- \* Brief biographical sketch in a resume/CV format
- \* Official transcripts, sent directly to the Department of Oral Biology
- \* GRE General Test
- \* TOEFL required for international students. The minimum TOEFL score required for acceptance is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections)

### Degree Requirements

70 credits, as follows:

- \* *Coursework:* 48 credits, as follows: CONJ 401 (4), CONJ 402 (4), CONJ 403 (4), PATH 544 (2-3, max. 5), PERIO 575 (2), ORALB 520 (3), ORALB 561 (3, max. 6), ORALB 572 (3, max. 6), ORALB 575 (1-3, max. 10); at least one of the following: PERIO 517 (2), DPHS 568 (3), DPHS 569 (2), or O S 532 (2); at least two of the following: MEBI 520 (2), MEBI 521 (3), GRDSCH 630 (2, max. 6), ORALB 562 (2, max. 10)
- \* *Electives:* 22 credits of electives. Recommended electives: ORALB 569 (2), ORALB 574 (3), ORALB 578 (2-4, max. 15), ORALB 579 (2), ORALB 600 (\*), DENT 534 (1, max. 2), DPHS 550 (\*, max. 6), DPHS 569 (2), ORTHO 580 (2), O S 520 (2), PHCOL 434 (2), PHCOL 435 (2), ORALM 520 (2)
- \* 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

- \* Either a baccalaureate or a professional degree from a dental or medical school
- \* Completed application and application fee of \$50
- \* 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 the student's personal background and aspirations
- \* Brief biographical sketch in a resume/CV format
- \* Official transcripts, sent directly to the Department of Oral Biology
- \* GRE General Test
- \* TOEFL required for international students. The minimum TOEFL score required for acceptance is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections)

### Degree Requirements

Minimum 90 credits (including at least 27 credits of thesis). 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).

- \* *Required core courses:* ORALB 569 (2), ORALB 575 (2-4, max. 15), ORALB 578 (2-4, max. 15), ORALB 579 (2), ORALB 581 (1-3, max. 3), ORALB 591 (1-2, max. 2), ORALB 592 (1-2, max. 2), ORALB 600, ORALB 800, DPHS 568 (3)
- \* At least 6 credits from the School of Medicine: CONJ 524, CONJ 551 (1.5, 1.5) or PABIO 536 (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 that emphasizes the general dentist's role in a hospital and the management of medically, physically, and mentally compromised patients. Application, selection, and administration of the General Practice Residency is provided through the Department of Restorative Dentistry. Further information can be obtained by contacting Dr. Barton S. Johnson, Division of Hospital Dentistry, Department of Restorative Dentistry, Box 357456, School of Dentistry, University of Washington, Seattle, WA 98195-7456; (206) 543-7496; or visit the General Practice Residency Web site.

### 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 (M.P.H.) programs in the Departments of Epidemiology and Health Services of the School of Public Health and Community Medicine 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 Ph.D. 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 health care 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 new 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, [www.dental.washington.edu/conted/index.php](http://www.dental.washington.edu/conted/index.php).

## Professional Programs

### Doctor of Dental Surgery

The Doctor of Dental Surgery (D.D.S.) curriculum provides students with 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 school's clinics. 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 D.D. S. 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 course work beyond 42 months.

### Admission

To be considered for admission to the predoctoral program, a student must have completed the required courses listed below, have taken the Dental Admission Test, and have attended a personal interview. The School does not select or give preference to a particular undergraduate major field. The Admissions Committee encourages diversity in majors. Courses in the social sciences and the humanities are also important and are reviewed by the committee, as are non-cognitive factors, including community service.

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.

**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), the national application service used by most U.S. dental schools. The School has established November 1 as its AADSAS priority filing deadline. This means that only those applications received in the AADSAS Washington, D.C. office by the priority filing date will be forwarded to the University of Washington for consideration by the Admissions Committee. There are no exceptions. AADSAS applications are available online at [www.adea.org](http://www.adea.org). Information regarding the Dental Admission Test may be found at <http://www.ada.org/prac/careers/dat-01.html>.

For information on admission to the University of Washington School of Dentistry contact either Kathleen Craig, Office of Student Admissions, School of Dentistry, University of Washington, Box 356365, Seattle, WA 98195-6365, 206-543-5840, fax 206-616-2612, [askuwsod@u.washington.edu](mailto:askuwsod@u.washington.edu), or [www.dental.washington.edu](http://www.dental.washington.edu). University of Washington undergraduates may contact the Predental Advising Office, University of Washington, 171 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. Letters of recommendation must include 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 the third (character reference) from someone who can indicate the applicant's contribution to fellow man, community, etc. 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.
4. Dental Admission Test scores. Test must be taken by October 31 of the year prior to entry.
5. Transcripts from all higher education institutions attended.
6. A list of current and future courses.
7. 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).

8. 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 Services 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 (1-8) are returned. Upon receipt of the completed application, invitations for an interview are sent to applicants based on a preliminary screening of grades, DAT scores, and noncognitive factors. The interview is an opportunity for an open and friendly discussion of the applicant's interests, background, and reasons for selecting dentistry as a profession. The interview allows the applicant to ask questions about the School, faculty, and student life, and is conducted by members of the Admissions Committee. In addition to the interview, the applicant will have an opportunity to hear information about financial aid, meet and have lunch with enrolled students, take a tour of the School, and meet one of the School's deans, and hear presentations about research and outreach opportunities.

Following the interview, the Admissions Committee, which is composed of faculty and community dentists, will make a decision concerning admission status. The following seven areas are considered in their deliberations:

1. **Grades.** Overall grade-point average (GPA) and GPA of predental required science courses are reviewed. College grades are an important indicator of dental school performance and success. The Committee members review these grades 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: 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 University of Washington the 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 will have a baccalaureate degree by the time of entry. Admission may be offered to applicants without a baccalaureate degree, but only to those applicants who have completed all predental requirements and have an extremely competitive academic record. A minimum of three years' full-time coursework is required.
4. **Dental Knowledge.** 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 are considered as admission factors. A qualified applicant will have 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.** Diversity in the student body contributes to the development of oral health care professionals prepared to address the needs of society.
6. **Unique Life Experiences.** Research and teaching efforts, travel, and work experience are some of the life experiences that are considered important. Such experiences demonstrate the breadth and level of maturity of a candidate.
7. **Personal Attributes.** In addition to motivation, the applicant's poise and communication skills are examined by the Admissions Committee. Personal attributes such as integrity, responsibility, leadership, initiative, community service, perseverance, and diversity of interests are important.
8. **Demonstrated Community Service.**

Although interviews begin in October, the earliest the Admissions Committee notifies applicants of its decision is December 1. The School uses a "rolling admission" format, so interviews and committee decisions will continue to be made between December and March.

The Admissions Committee makes one of three decisions regarding all applications:

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 requirements: required registration deposit, transcripts showing completion of all required predental 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 which is 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 letters and information. Letters detailing registration procedures and providing financial aid information will be sent in early summer. In late summer, new students receive a packet of materials welcoming them to the School and describing the orientation program, also called Prep Weeks. Attendance is mandatory and provides an opportunity for the newly enrolled student to learn about the upcoming curriculum, student rights and responsibilities, financial aid information, student organizations, and to begin course work. Orientation begins in late August. New students attend an off-campus student retreat to meet classmates and relax in an informal setting.

Western Interstate Commission for Higher Education (WICHE): The School participates in the program administered by WICHE for students who reside in Western states not served by a dental school (Alaska, Arizona, Hawaii, Montana, Nevada, 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 for 2007-2008	First Year	Second Year	Third Year	Fourth Year	Total
Tuition (resident)	17,425	17,425	22,675	22,675	80,200
Tuition (nonresident)	41,429	41,429	53,953	53,953	190,764
Books and Supplies	8,330	8,283	3,272	1,299	21,184
Immunization Fee	475	0	0	0	475
Total Education Costs (resident)	26,230	25,708	25,947	23,974	101,859
Total Education Costs (nonresident)	50,234	49,712	57,225	55,252	212,423
Room/Board	11,742	11,742	15,656	15,656	54,796
Personal	2,265	2,265	3,020	3,020	10,570
Transportation	1,443	1,443	1,924	1,924	6,734
Total Budget (resident)	41,680	41,158	46,547	44,574	173,959
Total Budget (nonresident)	65,684	65,162	77,825	75,852	284,523

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 Services, D323 Health Sciences, Box 356365.

## Degree Requirements

285-333 credits minimum, as follows:

- \* **Year 1 (71 credits, plus electives):** B STR 431 (2), B STR 530 (13), B STR 541 (4); DENT 610 (2); DPHS 510 (2); ORALB 510 (3, 3), ORALB 520 (3), ORALB 521 (2); ORALM 513, ORALM 514, ORALM 515 (1, 1, 1); ORALM 516, ORALM 517 (1, 2); P BIO 505 (4), P BIO 506 (4, 4); PATH 544 (3, 2); PERIO 517 (2); RES D 510 (1, 2), RES D 511 (3), RES D 515 (3), RES D 516 (3), RES D 517 (3), RES D 519 (1)
- \* **Year 2 (86 credits, plus electives):** DENT 520 (1); DENT 521, DENT 522 (3, 3); DENT 523 (1); ENDO 521 (4); O S 520 (2); ORALM 520 (2, 2, 2), ORALM 525 (1), ORALM 526 (2), ORALM 527 (1), ORALM 528 (1), ORALM 529 (4); ORTHO 520 (2), ORTHO 521 (3), ORTHO 522 (2); PEDO 520 (4), PEDO 525 (1); PERIO 525, PERIO 526 (2, 2); PERIO 620 (1); PHCOL 434 (2), PHCOL 435 (2); PROS 520 (3), PROS 523 (2),

PROS 525 (4), PROS 620 (3, 1); 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 (2), DENT 534 (1, 1), DENT 537 (1), DENT 543 (1); DENT 551, DENT 552, DENT 553, DENT 554 (1, 1, 1, 1); DPHS 535 (1), ENDO 534 (1), ENDO 535 (1), ENDO 630 (1, 1, 1, 1); O S 530 (1, 1, 1), O S 532 (2), O S 630 (2, 2); ORALM 531, ORALM 532, ORALM 533 (1, 1, 2); ORALM 630 (1, 1, 1, 2); ORTHO 630 (1); ORTHO 631 (1); PEDO 630 (1, 1, 1, 1); PERIO 530, PERIO 531 (2, 2); PERIO 630, PERIO 631, PERIO 632 (1, 1, 1); PERIO 639 (1); PROS 630 (1, 1, 1, 2); RES D 530, RES D 531, RES D 532 (2, 2, 2); RES D 535 (3), RES D 630 (2, 3, 3), RES D 635 (3)
- \* **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 (2), DENT 645 (2); DPHS 541 (1), DPHS 640 (1); ENDO 630 (1, 1, 1); O S 630 (2); ORALB 540 (2); ORALM 540 (2, 2), ORALM 545 (1, 1), ORALM 640 (1, 1, 1); PEDO 630 (1, 1, 1); PERIO 540 (1); PERIO 640, PERIO 641, PERIO 642 (1, 1, 1); PROS 640 (1, 1, 1); RES D 540 (2), RES D 541 (2), RES D 542 (1), RES D 640 (3, 3, 3)
- \* **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 Web site at [depts.washington.edu/hhpcweb/index.php?ClinicID=1](http://depts.washington.edu/hhpcweb/index.php?ClinicID=1)

# College of Education

## Dean

Patricia Wasley  
222 Miller

## Associate Deans

Deborah E. McCutchen  
Tom Stritikus

education.washington.edu

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. The College has four broad curricular areas: Curriculum and Instruction, Educational Leadership and Policy Studies, Educational Psychology, and Special Education. Degrees conferred are M.Ed., Ph.D., Ed.D., and M.I.T. Certificates 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 B.A. in Early Childhood and Family Studies. In collaboration with the College of Arts and Sciences, the College offers a 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, and the Office of Minority Recruitment and Retention. 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 or in graduate degree programs may visit the College's Web site at [education.washington.edu](http://education.washington.edu) or email [edinfo@u.washington.edu](mailto:edinfo@u.washington.edu).

## Undergraduate Program

Adviser  
206 Miller, Box 353600  
206-543-7834  
[edinfo@u.washington.edu](mailto:edinfo@u.washington.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
- \* An interdisciplinary minor in education, learning, and society

## Bachelor of Arts

*Suggested First- and Second-Year Coursework:* A course in human development (NURS 201, PSYCH 206, PSYCH 306, or similar); 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 course in mathematics or statistics (MATH 170, STAT 22, or other college-level mathematics or statistics course; ECFS 200.

## Admission Requirements

1. Students are admitted for the junior year, in autumn quarter only. Application deadline is April 15. Admission is competitive, based on student's academic performance and personal statement. Minimum 2.50 overall GPA guarantees consideration but not acceptance. Courses taken should include those mentioned in suggested coursework, above.

Personal statement should reflect student's interest in and commitment to the field of early childhood and family studies.

2. Prior to admission, students should complete most of the Arts and Sciences General Education Requirements, to include English composition and additional writing, Quantitative and Symbolic Reasoning, foreign language, and Areas of Knowledge (Visual, Literary, & Performing Arts (VLPA), Individuals & Societies (I&S), and Natural World (NW). See adviser or UW Student Planner for details of these requirements.

## Major Requirements

81 credits, to include:

1. *Year 1: Didactic Core:* ECFS 300, ECFS 301, ECFS 302, SPHSC 308, NUTR 300, EDSPE 419. *Service Learning and Research:* ECFS 303 (prior to this course, students must provide evidence of a state and national fingerprint background check); ECFS 304, ECFS 305.
2. *Year 2*
  - a. *Didactic Courses:* ECFS 401, ECFS 402, EDPSY 304, EDUC 305, EDSPE 404.
  - b. *Service Learning and Research:* ECFS 454, ECFS 455, ECFS 456.
  - c. *Electives:* 20 or more credits to complete minimum UW requirement of 180 credits. Courses are in theoretical foundations of early childhood development, methodology, and social policy and organization. Minimum one course in each area. See adviser for current lists of electives.

## 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. Requirements for the minor are listed in the Undergraduate Interdisciplinary Programs section of the General Catalog.

## Other Undergraduate Study

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 the 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.

## 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 Web sites contain specific information about admissions, curriculum, faculty, and general advising:

For principals and program administrators, the Danforth Educational Leadership Program, [depts.washington.edu/k12admin/danforth/](http://depts.washington.edu/k12admin/danforth/).

For superintendents, the Leadership for Learning Program, [depts.washington.edu/k12admin/l4l](http://depts.washington.edu/k12admin/l4l).  
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 Area for Educational Psychology, 312 Miller, Box 353600, University of Washington, Seattle, Washington 98195-3600.

The College of Education is authorized by the State Board of Education to prepare and recommend individuals for Residency and Professional 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 University of Washington report may be requested via email from [edinfo@u.washington.edu](mailto:edinfo@u.washington.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 severe disabilities or emotional and behavioral disorders, and with infants, toddlers, and preschool children with disabilities. Candidates may also select a teacher education/special education option which provides initial certification in elementary education with coursework in special education. All programs are offered at the master's level. For additional information, email [edinfo@u.washington.edu](mailto:edinfo@u.washington.edu), or visit the College's Web site at [education.washington.edu](http://education.washington.edu).

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 OSPI guidelines and where programs exist, contact any Educational Service District or the Office of Professional Licensing and Certification, OSPI, Box 47200, Old Capitol Building, Olympia, Washington 98504, or visit [www.k12.wa.us/certification/](http://www.k12.wa.us/certification/). For information about Professional Teacher Certificate programs at the University, contact Center Connect at 206-543-7834.

### 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.washington.edu/areas/tep/pathways/endorsements.html](http://education.washington.edu/areas/tep/pathways/endorsements.html), or contact the Office of Admissions and Academic Support, 211 Miller, Seattle, WA 98195-3600, or email [edinfo@u.washington.edu](mailto:edinfo@u.washington.edu).

### Graduate Degree Programs

Graduate Program Coordinator  
206 Miller, Box 353600  
206-543-7833  
[edinfo@u.washington.edu](mailto:edinfo@u.washington.edu)

The College of Education currently offers four advanced degrees: Master in Teaching, Master of Education, Doctor of Education, and Doctor of Philosophy. The M.I.T. degree will be awarded to elementary and secondary 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 (including cognitive studies), educational leadership and policy studies, or special education. A focus on higher education leadership and policy leading to Master of Education or Doctor of Education degrees is offered through Educational Leadership and Policy Studies. Questions regarding graduate study in education should be directed via email to [edinfo@u.washington.edu](mailto:edinfo@u.washington.edu), or visit the College's Web site at [education.washington.edu](http://education.washington.edu).

### Master in Teaching

The Master in Teaching (M.I.T.) 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 course work and field experiences spanning five 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 baccalaureate degree from an accredited institution with at least a 3.0 GPA for the last 90 quarter (60 semester) credits.

2. Goal statement
3. 60 or more hours in a classroom that most closely matches the subject and age level the applicant wishes to teach. A supervisor completes the Evaluation of Educational Experience form.
4. Two letters of recommendation from faculty or professional references.
5. Passing scores from all three sections of the West-B exam scores, sent to UW.
6. Passing score of the Praxis II exam in applicant's specific content area. Refer to Web or brochure for specific information.
7. Official transcripts from all community colleges and universities attended.
8. Secondary applicants must contact the appropriate department adviser to have coursework evaluated using the Endorsement Evaluation form. Refer to the endorsement sheet in the M.I.T. packet for department information and locations. Social Studies applicants may drop off unofficial transcripts and course descriptions to 206 Miller for evaluation.
9. Elementary applicants must have coursework evaluated by a Program Design Specialist in 206 Miller. This is done by submitting transcripts (and course descriptions from schools other than UW) along with the Prerequisite Evaluation form to 206 Miller. The evaluation is completed within two weeks and mailed to the applicant.

### Degree Requirements

60-101 credits, to include:

1. *Elementary Education Focus*
  - a. *Courses:* EDC&I 324 (2); EDC&I 494 (1); EDC&I 586 (1, 1, 1); EDLPS 496 (3); EDSPE 526 (3); EDTEP 501, EDTEP 502, EDTEP 503 (2, 3, 4); EDTEP 505 (2); EDTEP 511 (3); EDTEP 521, EDTEP 522 (3, 3); EDTEP 523 (3); EDTEP 531, EDTEP 532, EDTEP 533 (3, 3, 3); EDTEP 541 (4); EDTEP 542 (3); EDTEP 543 (3); EDTEP 551 (3); EDTEP 552 (3); EDTEP 601 (10); UCONJ 510 (4).
  - 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 (2); EDC&I 494 (1); EDC&I 586 (1, 1, 1); EDLPS 496 (3); EDSPE 404 (3); EDSPE 414 (3); EDSPE 496 (3); EDSPE 496 (3); EDSPE 500 (3); EDSPE 513 (3); EDSPE 514 (3); EDSPE 526 (3); EDSPE 545 (3); EDSPE 601 (3); EDTEP 501, EDTEP 502, EDTEP 503 (2, 3, 4); EDTEP 505 (2); EDTEP 511 (3); EDTEP 521, EDTEP 522 (3, 3); EDTEP 523 (3); EDTEP 531, EDTEP 532, EDTEP 533 (3, 3, 3); EDTEP 541 (4); EDTEP 542 (3); EDTEP 543 (3); EDTEP 551 (3); EDTEP 552 (3); EDTEP 601 (10); UCONJ 510 (4).
3. *Secondary Education Focus:* EDC&I 494 (1); EDC&I 586 (1); EDTEP 551 (3); EDTEP 561 (5); EDTEP 562, EDTEP 563 (3, 3); EDTEP 564 (3); EDTEP 565 (3); EDTEP 571 (3); EDTEP 573 (3); either EDTEP 580, EDTEP 582, EDTEP 584, EDTEP 586, or EDTEP 588 (5); either EDTEP 581, EDTEP 583, EDTEP 585, EDTEP 587, EDTEP 589 (3); EDTEP 591 (3); EDTEP 592 (3); EDTEP 593 (3); EDTEP 595 (3); EDTEP 601 (10); elective outside Education (2)

### Master of Education

The Master of Education (M.Ed.) 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 of, the 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 with at least a 3.0 GPA for the last 90-quarter (60 semester) credits.
2. GRE Scores
3. Goal statement
4. Prerequisites stipulated by the area of specialization within the College

#### Degree Requirements, Curriculum and Instruction Pathway

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. *Educational Communication and Technology Study Option*
    - a. *Required courses (9 credits minimum)*: EDC&I 510 (3), EDC&I 511 (3); either EDC&I 551 (3), EDC&I 552 (3), or EDC&I 553 (3)
    - b. *Related courses (6 credits minimum)*: Courses on the design, development, and use of instructional systems, materials, and approaches in a variety of educational settings, chosen in consultation with adviser.
    - c. *Courses outside Curriculum and Instruction (3-12 credits)*: Selected with the student's adviser, these courses may include courses from any other Area in the College and from departments across the University. At least 3 credits must be taken outside the College.
    - d. *Additional foundations courses (3-6 credits)*: Students may take additional foundations courses, chosen from the following categories with the approval of the adviser: psychological foundations, educational policy studies, research foundations, or curriculum foundations.
  3. *Language, Literacy, and Culture Study Option*
    - a. *Core studies (9 credits)*: Selected from the following: EDC&I 453 (3), EDC&I 455 (3), EDC&I 457 (3), EDC&I 460 (3), EDC&I 462 (3)
    - b. *Assessment and inquiry (3 credits)*: In consultation with their adviser, students 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.
  4. *Mathematics Education Study Option*
    - a. At least 27 credits in mathematics and mathematics education. Courses, selected in consultation with the student's adviser, should be appropriate for future career goals. Of the 27 credits, 9 credits should be chosen from mathematics education courses (below).
    - b. *Mathematics Education Courses*: EDC&I 475 (3), EDC&I 476 (5), EDC&I 477 (5), EDC&I 478 (2-9), EDC&I 479 (1-6), EDC&I 575 (3), EDC&I 576 (3), EDC&I 577 (1-6).
  5. *Multicultural Education Study Option*
    - a. *Ethnic Diversity Outside the College of Education (15 credits)*: Selected from 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 (3), EDC&I 569 (4); remainder to be chosen from the following: EDC&I 456 (1-6); EDC&I 464 (3); EDC&I 469 (3); EDC&I 474 (3); EDPSY 536 (3); EDLPS 566 (3); EDC&I 573 (3); EDC&I 574 (3).
  6. *Science Education Study Option*: At least 21 credits, approved by faculty adviser, in fields such as, biology, chemistry, physics, earth science, oceanography, or other science-related courses.
  7. *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.
  8. *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.

## Degree Requirements, Educational Psychology

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 requires preparation of a scholarly paper of publishable quality (9 credits minimum).
2. *Foundations of Education courses (12 credits)*: Either EDLPS 521 (3), EDLPS (3), EDLPS 540 (3), or EDPSY 580 (3); either EDPSY 501 (3) or EDPSY 510 (3); EDPSY 490 (3); EDPSY 591 (3)
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 of Education) approved by the faculty adviser.
    - i. *Measurement and Evaluation*: EDPSY 495 (3), EDPSY 512 (3), EDPSY 584 (3), EDPSY 592 (3), EDPSY 595 (3), EDPSY 596 (3), EDPSY 597 (3)
    - ii. *Human Development*: EDPSY 502 (3), EDPSY 531 (3), EDPSY 532 (3), EDPSY 582 (3)
    - iii. *Cognition and Learning*: EDPSY 510 (3), EDPSY 524 (3), EDPSY 525 (3), EDPSY 583 (3), PSYCH 414 (5)
    - iv. *Language Processes*: EDPSY 520 (3), EDPSY 521 (3)
  - b. *Research (9 credits)*: Thesis option: Report of a research investigation that requires the student to design and execute an empirical study. Non-thesis option: Preparation of a scholarly review of the research literature; should be of publishable quality.
4. *Human Development and Cognition Design Study Option (45 minimum total credits)*
  - a. *Required courses*: One or more from each of the following content fields with options to consist of courses below or alternative courses (including courses outside of the College) approved by the faculty adviser:
    - i. *Human Development*: EDPSY 502 (3), EDPSY 509 (5), EDPSY 531 (3), EDPSY 532 (3), EDPSY 533 (3), EDPSY 534 (3), EDPSY 582 (3)
    - ii. *Cognition and Learning*: EDPSY 510 (3), EDPSY 524 (3), EDPSY 525 (3), EDPSY 583 (3), PSYCH 414 (5)
    - iii. *Reading and Language Processes*: EDPSY 425 (3), EDPSY 507 (5), EDPSY 520 (3), EDPSY 521 (3), EDC&I 532 (3), PSYCH 447/LING 447 (4), PSYCH 457/LING 457 (5), ENGL 472 (5)
    - iv. *Measurement and Evaluation*: EDPSY 495 (3), EDPSY 512 (3), EDPSY 513 (3), EDPSY 584 (3), EDPSY 592 (3), EDPSY 595 (3), EDPSY 596 (3), EDPSY 597 (3)
  - b. *Research (9 credits)*: Thesis option: Report of a research investigation that requires student to design and execute an empirical study. Non-thesis option: Preparation of a scholarly paper of publishable quality.
5. *School Psychology Specialization (73 credits)*
  - a. *Statistics and Research (6 credits)*: EDPSY 490 (3), EDPSY 591 (3)
  - b. *Cognition and Learning (3 credits minimum)*: EDPSY 501 (3); EDPSY 502 (3)
  - c. *Social and Developmental Bases of Behavior (6 credits minimum)*: EDPSY 502 (3), EDPSY 531 (3)
  - d. *Exceptionality (6 credits minimum)*: EDSPE 525 (3); and EDSPE 505 (3) or EDSPE 526 (3)
  - e. *Biologic Bases of Behavior (5 credits)*: EDPSY 577 (5)
  - f. *Specialization Seminars (2 credits minimum)*: EDPSY 570 (2)
  - g. *Individual Differences and Personality (8 credits minimum)*: EDPSY 548 (5), EDPSY 552 (3)
  - h. *Assessment (21 credits minimum)*: EDPSY 507 (5), EDPSY 564 (5), EDPSY 540 (5), EDPSY 572 (3), EDPSY 573 (3)
  - i. *Intervention (16 credits minimum)*: EDPSY 544 (5), EDPSY 546 (5), EDPSY 550 (3), EDPSY 551 (3)
  - j. *Ethics and School (3 credits minimum)*: EDPSY 568 (3)
  - k. *Courses with Practicum Requirements (3 credits minimum)*: EDPSY 500 (3)
  - l. *Consultation (3 credits minimum)*: EDPSY 549 (3)

The school psychology M.Ed. degree is awarded upon successful completion of the above course requirements, and successful completion of a portfolio examination of applied and clinical work. At least one course relevant to the student's field of study must be taken from a unit other than the College. Certification: The Washington State approved internship program at the University of Washington is open only to graduate students

who have successfully completed the master's program in school psychology at the University of Washington and are currently matriculated as full time students at the post-master's or doctoral levels. Washington State Certification is awarded by successfully passing the Praxis Exam and by successfully completing a 9-month internship of 1200 hours or more (half of which must be in a school setting) and 6 credit hours of university case study supervision and 30 hours of internship credit. Students who successfully complete the internship may also apply for National Certification as a school psychologist.

### Degree Requirements, Education Leadership and Policy Studies

48 credits, as follows:

1. *Common area and distribution requirements (18 credits minimum)*: A minimum of 18 credits of coursework in EDLPS. Of these 18 credits, 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)*: A minimum of 6 credits in courses in or out of the College of Education, or the equivalent as determined in consultation with the adviser.
2. *Special Education Major Field (21 credits)*: The specific sequence of courses is determined by the adviser, depending on the student's background, educational goals, and type of disabled individual that 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)*: A minimum of 12 credits 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 Ed.D or Ph.D. program should select a thesis option.

### Doctor of Education

The Doctor of Education (Ed.D.) degree is designed to prepare professionals whose primary interest is to deal directly with problems of educational practice. The program of study leading to the Ed.D., 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 at least two years of resident study, 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 Web site 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 (3), EDLPS 550 (3), EDLPS 560 (3)
5. *Supervised Internships and Field Experiences (9 credits)*: The 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)*

### Doctor of Philosophy

The Doctor of Philosophy (Ph.D.) in education is a research degree. It offers preparation for a career of research on issues fundamental to education -- issues that range from fairly narrow questions about human learning to macroquestions regarding the form of societies' educational institutions. The scope of the Ph.D. degree in education is broad. It is possible to pursue a degree 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 of the study options in the Ph.D. program 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 in 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

The course of study consists of six academic areas and the dissertation. The Ph.D. 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 studying in a broad area, a specialization within that area, two cognates and a specialization outside of the department.

Degree requirements include a minimum of two years of resident study, 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 of 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 Ph.D. program is accredited by the American Psychological Association (APA) and approved by the National Association of School Psychologists (NASP). The school psychology M.Ed. 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 email at [edinfo@u.washington.edu](mailto:edinfo@u.washington.edu) or via the College's Web site at [education.washington.edu](http://education.washington.edu). The annual application deadline is March 1.

## Special Research and Service Facilities

Within the College of Education opportunities exist for students to gain research and service experience.

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 Web site at [depts.washington.edu/centerme/home.htm](http://depts.washington.edu/centerme/home.htm).

The Clinical Training Laboratory, operating under the aegis of Educational Psychology, offers observation rooms equipped with video recorders where school psychology trainees and their clients can be observed and taped through one-way mirrors (under faculty supervision).

The world-renowned Experimental Education Unit 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 [www.eeuweb.org](http://www.eeuweb.org).

The Multidisciplinary Learning Disabilities Center conducts research on preventing and treating reading and writing disabilities and on the biological basis of learning disabilities. The center disseminates its findings to teachers through workshops and presentations at regional, national, and international meetings, and at a unique teacher mentoring program during the summer program for students with dyslexia and dysgraphia.

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 Web site at [depts.washington.edu/ctpmail/](http://depts.washington.edu/ctpmail/), or email [ctpmail@u.washington.edu](mailto:ctpmail@u.washington.edu).

The Institute for the Study of Educational Policy promotes interdisciplinary studies that bring together research and practice for the benefit of children and youth, educators, policy makers, and the larger community. The institute includes (a) The Center for Educational Renewal, which responds to a growing nationwide interest in the renewal of schools and teacher education by creating partnerships, promoting innovative programs and policies for the education of educators, and reforming leadership and governance structures; (b) The Center for Effective Schools, which is committed to engaging in research and service activities designed to promote instructionally effective schools through collaboration and self-evaluation; (c) The Center for the Study and Teaching of At-Risk Students, which was established to foster interprofessional projects to encourage students to stay in school; and (d) The School Law Division, which deals with the improvement of professional practices of school administrators, including superintendents, principals, and program directors. Additionally, the institute conducts policy research pursuant to grants and contracts with school districts, state and federal agencies, and other educational organizations.

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# College of Engineering

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## Dean

Matthew O'Donnell  
371 Loew

## Associate Deans

Greg Miller, Infrastructure  
Eve Riskin, Academic Affairs  
Dan Schwartz, New Initiatives

[www.engr.washington.edu](http://www.engr.washington.edu)

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 the 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 engineering, civil and environmental engineering, computer engineering, electrical engineering, industrial engineering, materials science, mechanical engineering, and technical communication.

The College offers active educational and research programs, both departmental and interdisciplinary, at the graduate levels. (See Interdisciplinary Engineering Studies 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 1991. In 2003, 1,669 upper-division undergraduate majors and 1,306 graduate students were enrolled in engineering programs taught by a faculty of 191 members.

## College Facilities

Teaching and research activities of the College are conducted in thirteen 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 reports, 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 of the 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 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@engr.washington.edu](mailto:engradv@engr.washington.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.

## Engineering Advising and Diversity Center

301 Loew

Students are encouraged to contact the Engineering Advising and Diversity Center for program, course, or career information and discussion. The center assists any student interested in planning the initial portion of an engineering degree program, and distributes information about prerequisites for application to all the departments in the College. A student interested in engineering should identify engineering as the intended major while still in the College of Arts and Sciences and seek advice in the center.

For more information, visit the Engineering Advising and Diversity Center Web site.

## Financial Aid

The College offers financial assistance to undergraduates through industrial scholarships and loan funds. Scholarship information is available at the College of Engineering Advising and Diversity Center (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

301 Loew

The College of Engineering Honors Program offers students of outstanding performance and achievement a course of study designed to provide intellectual challenge in a stimulating learning atmosphere which draws on the resources of a large, diversified university. Students entering the Honors Program become candidates for the degree "With College Honors" or "With Distinction (Departmental Honors)."

## The College Honors Degree

Students who complete this program receive a degree "With College Honors."

The College honors degree requires that students participate in the University Honors Program while taking engineering prerequisites in the College of Arts and Sciences. When these students are admitted to engineering departments, they may be nominated to enroll in the Engineering Honors Program. Completion of the College Honors degree involves both an honors general-education component and advanced honors work completed after students have been admitted to the College of Engineering.

**Admission Requirements:** Minimum cumulative GPA of 3.30, minimum departmental GPA, and participation in the University Honors Program as a pre-engineer.

**Graduation Requirements:** The College honors curriculum consists of two parts: a general-education component and a component in the student's major department. The general-education component is completed during the student's freshman and sophomore years. Students select three

sequences, each three quarters long, from honors, mathematics, natural science, and civilization offerings.

The second component occurs during the junior and senior years. Students then select a total of 9 credits of College honors courses with a minimum of 3 credits of departmental 499H Special Projects (or ENGR 499H). The additional honors credits can be fulfilled with either special projects or ad hoc courses.

## The Departmental Honors Degree

Students who complete this program receive a degree "With Distinction."

*Admission Requirements:* Minimum cumulative GPA of 3.30, minimum departmental GPA (varies from department to department).

*Graduation Requirements:* Students are nominated for the Departmental Honors Program when they have been in their department for a minimum of one quarter. Students select a total of 9 credits of college honors courses with a minimum of 3 credits of departmental 499H Special Projects (or ENGR 499H). The additional honors credits can be fulfilled with either special projects or ad hoc courses.

Departmental honors degrees are offered in the following degree programs: Aeronautics and Astronautics, Bioengineering, Chemical Engineering, Civil and Environmental Engineering, Computer Engineering, Electrical Engineering, Industrial Engineering, Materials Science and Engineering, Mechanical Engineering, Technical Communication, and Paper Science and Engineering. The paper science and engineering major is offered in the College of Forest Resources and is a joint program with the College of Forest Resources and the College of Engineering.

## International Study

Given the increased likelihood that engineering students will have overseas work experiences or will do business with international clients and competitors, the College encourages students to study foreign languages in addition to their engineering course work and to take advantage of opportunities for study at foreign universities either at the undergraduate or graduate level. The College has active exchange agreements with approximately forty-three universities in twenty-four countries. Foreign-language courses at the third-quarter level or above (e.g., GERMAN 103) may be applied toward the VLPA general education requirement. Students may contact the Engineering Advising and Diversity Center, 301 Loew, for information about opportunities for international study. Engineering students can also participate in the Global Engineering Education Program (through the Center for Workplace Development) for opportunities to study abroad, located in 101 Wilson Annex.

## Recommended High School Preparation

Substantial high school preparation in mathematics, physical science, and communication is essential for entrance to engineering studies. Required and recommended courses may be determined from the Engineering Advising and Diversity Center (301 Loew).

## Admission

There are a variety of pathways students follow in gaining admission on programs in the College of Engineering. Details on the processes and information on prerequisite course work are available on the individual department Web sites or from the Engineering Advising and Diversity Center in 301 Loew Hall. The information below provides an overview of the admission processes.

### Department Direct Admission

Incoming freshmen who indicate bioengineering, chemical engineering, computer engineering, electrical engineering, industrial engineering, or materials science and engineering as their intended area of study on their University application are considered for direct admission to these programs. The number of students directly admitted to the programs varies from approximately 10 to 20 percent of the incoming class. Direct admission is for autumn quarter only.

### College Advanced Admission

Students who indicate an interest in engineering on their University admission application are considered for the College of Engineering Advanced Admission program, a special program for high-achieving

incoming freshmen. Students accepted to the Advanced Admission program may declare the engineering major of their choice (limited to participating departments) at the conclusion of the first academic year provided eligibility requirements are met.

To maintain eligibility for Advanced Admission, students must maintain a cumulative GPA of 3.00 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. Advanced Admission students are also required to enroll in at least one College of Engineering (or related) introductory seminar in their first year. The purpose of this requirement is to promote the exploration of the engineering disciplines, preparing the students to make an informed choice of major. The full list of eligible seminars is maintained by the advising staff in the Engineering Advising and Diversity center in 301 Loew Hall.

## Regular Admission

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 Engineering Advising and Diversity Center (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 Engineering Advising and Diversity Center, 301 Loew Hall.

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.

All engineering programs offer an upper-division admission process. In general, upper-division admission occurs at the end 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. The Engineering and Advising Diversity Center or the individual department or program has a list of specific entrance requirements. All departments offer upper-division admission for autumn quarter and some 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 admissions is July 1. For those 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, chemical engineering, civil and environmental engineering, computer engineering, electrical engineering, industrial



engineering, mechanical engineering, materials science, and paper science and engineering. (The paper science and engineering major is offered in the College of Forest Resources and is a joint program with the College of Forest Resources and the College of Engineering.)

The following programs are accredited by the Engineering Accreditation Commission of ABET:

- \* Aeronautical and Astronautical Engineering
- \* Chemical Engineering
- \* Civil Engineering
- \* Computer Engineering
- \* Electrical Engineering
- \* Industrial Engineering
- \* Materials Science and Engineering
- \* Mechanical Engineering

Curricula leading to baccalaureate degrees are offered in bioengineering and technical communication. The bioengineering program was reviewed for accreditation in autumn 2007. Bioengineering will be notified by ABET of the final accreditation action in summer 2008.

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 may be 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).

*Non-professional 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, the College, and their particular program or department. College requirements are listed in this section, and 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.

### Continuation Policy

While the University has general regulations governing scholastic eligibility for continuance, departments and programs in the College of Engineering have adopted additional requirements in order to make the best use of the limited facilities and resources available and to provide reasonable assurance of academic success. The following criteria and procedures are applied to all undergraduate students for determining continuance in the major program.

1. Full-time students are expected to complete 12 or more credit hours per academic quarter applicable toward the degree program. (An average of 15-16 hours per quarter is required to complete the graduation requirements in 12 quarters.)
2. Part-time attendance may be allowed. Refer to written departmental guidelines for criteria. Written permission must be obtained from a

departmental undergraduate adviser for a student to attend on a part-time basis. Students who have received permission to attend part time must complete at least one course each quarter applicable toward their degree. Application for part-time students should be made prior to the first day of the quarter in which the student wishes to attend part time.

3. A student who withdraws from the University without prior written approval or is dropped for non-payment of fees must obtain approval of the departmental admissions committee before registering or maintaining pre-registration for the following academic quarter. In such cases the department registration may be disallowed or canceled if the student's academic record is not competitive with the admission requirements prevailing at the time.
4. All undergraduate students who have exceeded the graduation requirements of the degree program for which they have been accepted by more than 10 credits are transferred by their department to the College of Arts and Sciences.
5. Students are required to maintain a minimum GPA of 2.00 in all departmental and professional program courses. The GPA is computed by considering all engineering college departmental courses of 300 level or higher, including repeated courses, but excluding Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S) distribution requirements. If the GPA in these courses does fall below 2.00, a student is placed on departmental probation and must achieve a quarterly GPA higher than 2.00 the following quarter or be dropped from the department and transferred to the College of Arts and Sciences.
6. The minimum acceptable grade for any course required for each major is set by the individual department. If a grade received is less than the minimum, a student may repeat the course without loss of course entry priority. Otherwise, the decision to admit a student to a course depends upon space available.
7. The progress of each student is reviewed each quarter. If a student's performance fails to meet the standards outlined above, the student is placed on probation the following quarter. The student is notified in writing of the reason for probation and is told what must be done for removal from probation. If the student does not show progress toward removing the deficiencies in the following quarter, the student is notified in writing, dropped from the department, and transferred to the College of Arts and Sciences.

The College recognizes that inequities can result from any continuation policy. If students are placed on probation or dismissed and believe that their record has been misunderstood, they may request reconsideration of the probation or dismissal by writing a letter to the department chairman. The letter should include any additional supporting or relevant material. The letter and supporting material are transmitted to the department faculty committee. The faculty committee reviews carefully all available information and then decides whether or not academic probation shall be continued for another quarter or whether the dismissal was appropriate and valid. Any student appeal must be made within 30 days of the notification of placement on probation or dismissal. The committee responds to the student appeal within 30 days.

## College of Engineering Graduation Requirements

### General Education Requirements

The College requires a minimum number of credits within certain areas of study and some specific courses within certain areas. All programs require the following:

- \* *Visual, Literary, & Performing Arts and Individuals & Societies:* The University requires a minimum of 10 credits of coursework designated Visual, Literary, & Performing Arts (VLPA) and 10 credits of coursework designated Individuals & Societies (I&S). Most engineering departments require additional VLPA or I&S coursework beyond the University minimum. See individual department information for details. 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. 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. Courses that count toward these requirements are identified as VLPA or I&S in the Course Descriptions and in the quarterly Time Schedule.
- \* *Natural Science:* 20-25 credits. Most departments within the College require chemistry (10 credits): CHEM 142, CHEM 152 (some departments do not require CHEM 152); and physics (15 credits): PHYS 121, PHYS 122, PHYS 123. See departmental list for specific natural science requirements.

- \* *Mathematics:* Specifically required are MATH 124, MATH 125, MATH 126, and MATH 308. Additional credits are specified or recommended by the department or program.
- \* *Written and Oral Communication:* One 5-credit English composition course from the approved University list. T C 231, Introduction to Technical Writing (3 credits), and T C 333, Advanced Technical Writing and Oral Presentations (4 credits, or department-approved alternative).

### Engineering Departmental Course of Study

Each engineering department specifies a number of sophomore level engineering fundamental courses followed by a yearlong series of junior level core courses. During the senior year students complete technical elective and design courses that culminate in a major, meaningful design experience. See departmental list for specific degree requirements.

## Special Programs

Engineering Co-op Program (three to six month internships)  
Program Coordinator, Dawn Wiggins  
301 Loew, Box 352180  
coop@enr.washington.edu

The Co-op Program provides an opportunity for pre-engineering and engineering students to combine practical, full-time, on-the-job engineering experience with full-time academic study. Students typically take a break from their studies for six months to work full-time and return to full-time academic status upon completion of the co-op assignment. In addition, students receive academic credit for the co-op experience. Advantages of participation include assistance in deciding which field of engineering to follow, 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 Co-op Program Office, College of Engineering, Box 352180 (301 Loew), or by visiting the Co-op Program Web site.

## Educational Outreach

Fulfilling a commitment to lifelong learning, the College of Engineering offers 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 UW Educational Outreach's Engineering Professional Programs (EPP) and Education at a Distance for Growth and Excellence (EDGE). For more information, contact Engineering Professional Programs at 206-543-5539, or Education at a Distance for Growth and Excellence at 206-685-2242.

For more information, see the Engineering Professional Programs and Education at a Distance for Growth and Excellence Web sites.

## Special Facilities

Office of New Initiatives  
Director, Mary J. Heusner  
372 Loew, Box 352180

The Office of New Initiatives promotes, stimulates, and coordinates research in all fields of engineering. Its primary role is to encourage and develop interdisciplinary research programs and national research initiatives. The Office of New Initiatives 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:

- \* Center for Design of Analog-Digital Integrated Circuits (CDADIC)
- \* Center for Engineering Learning and Teaching (CELT)
- \* Center for Intelligent Materials and Systems (CIMS)
- \* Center for Nanotechnology (CNT)
- \* Center for Surfaces, Polymers, and Colloids
- \* FAA Center of Excellence for Advanced Composite Materials (AMTAS)
- \* Intelligent Transportation Systems (ITS)
- \* Institute of Advanced Materials & Technology (i-AMT)
- \* NSF Center for Institutional Change (UW ADVANCE)
- \* NSF Center for the Advancement of Engineering Education (CAEE)

- \* NSF Engineered Biomaterials Research Center (UWEB)
- \* NSF Genetically Engineered Materials Science & Engineering Center (MRSEC)
- \* NSF Integrative Graduate Education and Research Traineeship Program (IGERT - Bioresource-based Energy for Sustainable Societies)
- \* NIH Microscale Life Sciences Center (MLSC)
- \* Pacific Earthquake Engineering Research Center (UW-PEER)
- \* Washington State Transportation Center (TRAC)
- \* Transportation Northwest (TransNow)
- \* Turing Center

Collaborating centers outside Engineering:

- \* Center for Process Analytical Chemistry (CPAC)
- \* The Water Center

For more information, see the Office of New Initiatives Web page.

## Interdisciplinary Engineering Studies Program

301 Loew

The College of Engineering directly administers nondepartmental undergraduate and graduate degree programs. Some engineering fundamentals and writing courses required for admission to the departments are managed by specific engineering departments.

## Undergraduate Programs

301 Loew

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.

The IES Program offers a nonprofessional degree program leading to the Bachelor of Science (B.S.) and a professional degree program for the Bachelor of Science in Engineering (B.S.E.).

Due to the uniqueness of each interdisciplinary student's program of studies, the B.S. and B.S.E. degrees are not accredited by the Accreditation Board for Engineering and Technology (ABET). The experience requirement to obtain a professional engineering license is two years longer for a B.S.E. graduate, except in surveying, than for a graduate of an accredited program. A B.S. graduate is not eligible for a professional engineering license.

Interdisciplinary students develop personal programs of study approved by a faculty adviser with similar interests. Programs are reviewed and approved by the Interdisciplinary Committee, which oversees all undergraduate interdisciplinary-study programs. Contact the Engineering Advising and Diversity Center, 206-543-1770, for information on established procedures and applications for entry into the B.S.E. and B.S. 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 B.S.E. degree is awarded. Detailed information regarding the B.S.E. degree can be obtained from an adviser in the Engineering Advising and Diversity Center (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 the Engineering Advising and Diversity Center (301 Loew).

## Graduate Programs

### Master of Science in Engineering/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.

Approved programs lead to the M.S.E. degree in civil, mechanical, chemical, and inter-engineering, and to the M.S. degree in civil engineering, inter-engineering, and materials science and engineering.

The Inter-engineering Master of Science in Engineering (M.S.E.) and Master of Science (M.S.) program is intended for students whose desired course of study does not fall within one of the traditional engineering graduate programs. An inter-engineering 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 M.S./M.S.E. option are handled by the designated 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 M.S./M.S.E. program rather than one of the traditional engineering graduate programs. Applicants to the M.S./M.S.E. program must have well-defined educational objectives which cannot be satisfied by established engineering programs.

### Admission Requirements

M.S.E./M.S. applicants are required to have a bachelor's degree in engineering, mathematics, or science with a minimum GPA of 3.00 in courses taken in the junior and senior years. Students entering without an accredited engineering undergraduate degree and seeking an M.S.E. 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 M.S.E./M.S. program, the applicant must submit a plan of study that sets out the intended 400- and 500-level course work and proposed thesis topic. Before applying to the M.S.E. 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 M.S.E./M.S. Program.

**Development of the Statement of Objectives:** Students must submit a one-page statement of study, degree, and career objectives for seeking the Interengineering M.S.E./M.S. degree. This statement should explain why the student wants to enter the M.S.E./M.S. 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 information may include work experience, outside interests, and unusual circumstances that may contribute to a better understanding of the student's record. Applicants to the M.S.E./M.S. 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 M.S. or M.S.E. 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.

## Aeronautics and Astronautics

211 Guggenheim Hall  
www.aa.washington.edu

Aeronautics and astronautics deals with the design and analysis 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 programs 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 two groups -- 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.

*Early Admission (Limited number of students admitted through this process)*

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.
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.
4. Early admission students may start the autumn-quarter, junior-year program after meeting the requirements and standards for upper-division admission.

Completion of the minimum requirements does not guarantee admission.

*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, AMATH 301\*, CEE 220, M E 230, CHEM E 260, T C 231, 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 GPA of 2.50 in courses required for admission and a minimum grade of 2.0 in each course required for admission consideration.

Completion of the minimum requirements does not guarantee admission.

Students may also declare into the Aeronautical and Astronautical degree program through the College of Engineering Advanced Admission program (see the College of Engineering section for Advanced Admission entrance and continuation requirements).

## Graduation Requirements

180 credits as follows:

1. *General Education Requirements (85 credits)*
  - a. *Areas of Knowledge:* 49 credits as follows: Visual, Literary, and Performing Arts (VLPA), and Individuals & Societies (I&S): 24 credits to include minimum 10 credits in VLPA and minimum 10 credits of I&S, plus four additional credits in either area. Natural World: 25 credits, to include CHEM 142 (5) and PHYS 121, PHYS 122, PHYS 123 (15 credits). An additional 5 credits of natural-world courses. (See department for list of approved courses.)
  - b. *Mathematics:* 24 credits to include MATH 124, MATH 125, MATH 126, MATH 307, MATH 308, and MATH 324.
  - c. *Written and Oral Communication:* 12 credits, to include one 5-credit English composition course from the University list; T C 231; and T C 333 (or department-approved alternative).
2. *Major Requirements (95 credits)*
  - a. *Engineering Fundamentals:* 16 credits, to include A A 210, CEE 220, M E 230, and CHEM E 260.
  - b. *Professional Courses:* 75 credits. Junior-year professional program courses are all required. The senior year consists of A A 409, A A 410-A A 411 or A A 420-A A 421, A A 447, and 15 credits of senior technical electives. With approval, 3 credits of the latter may be chosen from another area of engineering.
  - c. *Electives:* 4 credits of free electives, which may be used to meet the 180 credits required for graduation.

## 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 strong 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.

The B.S.A.A.E. program is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7000. The above student outcomes follow closely the ABET suggested outcomes:

1. An ability to apply knowledge of mathematics, science and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data
3. 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
4. An ability to function on multi-disciplinary teams
5. An ability to identify, formulate and solve engineering problems
6. An understanding of professional and ethical responsibilities
7. An ability to communicate effectively
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
9. A recognition of the need for, and an ability to engage in life-long learning
10. Knowledge of contemporary issues
11. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice

The outcomes are attained by ensuring that the students have the following attributes, skills, and abilities upon graduating from the program that map to the above ABET program outcomes.

1. Graduates will demonstrate a solid mastery of fundamentals in the following aerospace engineering disciplines: fluids, structures, controls, propulsion, flight mechanics, orbital mechanics and energetics.
2. Graduates will have a combination of analytical, computational, and experimental skills.
3. Graduates will learn to work and communicate effectively both as individuals and in teams.
4. Graduates will demonstrate an ability to perform and communicate the results of a multi-disciplinary systems design.
5. Graduates will show that they can make decisions based on societal need and implications, contemporary issues and ethical considerations.
6. Graduates will be aware of the need for and will have the skills necessary for life-long 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. With Distinction (Departmental Honors). See adviser for details.

- \* *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 (M.S.A.A.)

### Admission Requirements

- \* *Grade Point Average:* The Graduate School requires that applicants hold a GPA of at least 3.00 for the last 90 quarter hours or 60 semester hours of graded undergraduate course work to be considered for admission. Applicants admitted by the department normally have a minimum GPA of 3.30. 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.
- \* *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.
- \* *GRE General Test:* The department requires applicants to take the general portion of the Graduate Record Examination. Although the department does not have minimum GRE scores, the typical successful applicant to the program has scores in excess of 450 Verbal, 700 Quantitative, 650 Analytical, or 5.0 Analytical Writing. If the applicant wishes to be considered for a graduate assistantship or fellowship, the scores should be received before February 15th.
- \* *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 referer should send the recommendation in letter format; no special form is used.

- \* *Statement of Objectives:* A statement of objectives should be written, providing the department with 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.
- \* *English Requirements for Foreign Students:* Minimum TOEFL scores of 580 on the paper-based exam or 237 on the computerized exam are required for foreign students whose native language is not English.
- \* *Prior Degrees:* Prospective students should hold an undergraduate degree in aerospace or mechanical engineering. Applicants with strong grades (3.5 and above) in related disciplines (physics, other engineering disciplines) are considered.

## Degree Requirements

39-45 credits, as follows:

- \* All M.S.A.A. degree candidates must have a program of study plan approved by the Graduate Committee of the Department of Aeronautics and Astronautics.
- \* Before completing 12 credits of graduate course work, file a program of study plan which has been prepared with the assistance of the adviser or with the Graduate Program Adviser. This program is submitted to the Graduate Committee for approval.
- \* The minimum M.S.A.A. program may consist of either ten courses plus 9 thesis credits, or 13 courses. No more than three of the courses may be at the 400 level (though not 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 each quarter of full-time studies.

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 be used to make up part of the individualized graduate program. However, only three undergraduate courses are counted toward the minimum requirements (and none in the student's depth area).

- \* 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, two signed, unbound copies of the thesis and receipt for binding fee must be submitted to the Graduate School by the last day of the quarter.

It usually takes one and a half to two years of full-time study to complete the requirements for an M.S.A.A. degree. The Graduate School imposes a time limit of six years for any master's degree.

## Master of Aerospace Engineering (M.A.E.)

The M.A.E. 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

- \* *Grade Point Average:* The Graduate School requires that applicants hold a GPA of at least 3.00 for the last 90 quarter hours or 60 semester hours of graded undergraduate course work to be considered for admission. Applicants admitted by the department normally have a minimum GPA of 3.30. 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.
- \* *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.
- \* *GRE General Test:* The department requires applicants to take the general portion of the Graduate Record Examination. Although the department does not have minimum GRE scores, the typical successful applicant to the program 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.

- \* *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 referer should send the recommendation in letter format; no special forms are used.
- \* *Statement of Objectives:* A statement of objectives should be written providing the department with 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.
- \* *English Requirements for Foreign Students:* Minimum TOEFL scores of 580 on the paper-based exam or 237 on the computerized exam are required for foreign students whose native language is not English.
- \* *Prior Degrees:* Prospective students should hold an undergraduate degree in aerospace or mechanical engineering. Applicants with strong grades (3.5 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 M.A.E. program includes twelve courses plus 8 credits for the project, or ten courses and one of three business certificate programs.

## Doctor of Philosophy (Ph.D.)

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

- \* *Grade Point Average:* The Graduate School requires that applicants hold a GPA of at least 3.00 for the last 90 quarter hours or 60 semester hours of graded undergraduate course work to be considered for admission. Applicants admitted by the department normally have a minimum GPA of 3.40. 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.
- \* *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.
- \* *GRE General Test:* The department requires applicants to take the general portion of the Graduate Record Examination. Although the department does not have minimum GRE scores, the typical successful applicant to the program 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.
- \* *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 referer should send the recommendation in letter format; no special forms are used.
- \* *Statement of Objectives:* A statement of objectives should be written providing the department with 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.
- \* *English Requirements for Foreign Students:* Minimum TOEFL scores of 580 on the paper-based exam or 237 on the computerized exam are required for foreign students whose native language is not English.
- \* *Prior Degrees:* Prospective students should hold undergraduate and graduate degrees in aerospace or mechanical engineering with a minimum GPA of 3.40. Applicants with strong grades (3.4 and above) in related disciplines (physics, other engineering disciplines) are considered.

## Degree Requirements

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 Ph.D.

- \* *The Departmental Qualifying Examination:* To take the department qualifying examination, students must have a 3.40 GPA in technical course work at the graduate level. In addition, they must have an M.S.A.A. degree or its equivalent, must have a faculty member accept them into their research program and agree to serve as their thesis advisor, supervise their Ph.D. research, and chair their Qualifying Exam Committee.
- \* *The General Examination:* Upon successful completion of the qualifying examination, a Ph.D. 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 examination, 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.
- \* *The Completion of Coursework:* The department requires at least 18 credits of course work in addition to that for the M.S.A.A. degree. A form listing the courses to be taken must be approved by the student's adviser and placed in the student's file.
- \* *The Preparation of the Dissertation:* The dissertation requires a substantial effort, generally equivalent to at least one year of full-time study, and must demonstrate original and independent research and achievement.
- \* *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.

## Additional Information

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 Web site.

## Bioengineering

N107 William H. Foege Building  
depts.washington.edu/bioe

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 health care 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 programs in the world. Major areas of research and education include distributed diagnosis and home healthcare (d2h2), molecular bioengineering and nanotechnology, engineered biomaterials and tissue engineering, medical imaging and image-guided therapy, and computational bioengineering.

## Undergraduate Program

Adviser  
N107 William H. Foege Building, Box 355061  
206-685-2000  
bioeng@u.washington.edu

The Bioengineering Program offers the following programs of study:

- \* The Bachelor of Science in Bioengineering degree

## Bachelor of Science in Bioengineering

*Suggested First- and Second-Year College Courses:* CHEM 142, CHEM 152, 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 Web site for more information.

1. *Direct Admission.* The department enrolls up to 25 percent of its incoming class directly from high school. Students accepted to the University 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 University are eligible to apply at the end of the freshman year if they have completed the following courses: MATH 124, MATH 125, MATH 126, CHEM 142, CHEM 152, CHEM 162, and 5 credits of English composition. The application deadline is July 1 for autumn quarter admission.
3. *Upper Admission.* Upper admission requires 59 credits of coursework with at least a 2.50 GPA: MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152, CHEM 162; PHYS 121, PHYS 122; BIOL 180, BIOL 200; CSE 142; and 5 credits of English composition. A 2.50 GPA guarantees consideration but does not guarantee admission. Application deadlines are February 1 for spring quarter and July 1 for autumn quarter. Consult the department's Web site or adviser for more details.

## Graduation Requirements

Students follow the requirements that are 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, and Performing Arts (VLPA) and Individuals and Societies (I&S), with at least 10 credits in each area.
2. *Written and Oral Communication (8 credits)*: 5 credits of English composition, from the approved University list; T C 231. Additional writing credits are built into the major core courses.
3. *Mathematics (25 credits)*: MATH 124, MATH 125, MATH 126, MATH 307, MATH 308; STAT 390.
4. *Natural Science (47 credits)*: CHEM 142, CHEM 152, CHEM 162, and CHEM 223 or CHEM 237; PHYS 121, PHYS 122, PHYS 123; BIOL 180, BIOL 200; BIOC 405.
5. *General Elective (1 credit)*

*Major Requirements (75 credits):*

1. *Engineering Fundamentals (17 credits)*: CHEM E 260; CSE 142, CSE 143; E E 215.
2. *Bioengineering Core (38 credits)*: BIOEN 201, BIOEN 301, BIOEN 302, BIOEN 303, BIOEN 304, BIOEN 305, BIOEN 357; BIOEN 481; 8 credits of BIOEN 482.
3. *Bioengineering Senior Electives (15 credits)*: 15 credits chosen from BIOEN 420, BIOEN 440, BIOEN 455, BIOEN 457, BIOEN 467, BIOEN 485, BIOEN 490, BIOEN 491, BIOEN 492. One of these courses must be "design-designated" (see department for current list).
4. *Approved Electives (5 credits)*: 5 additional credits chosen from an approved list of mathematics, science, and engineering courses (see the department's Web site for further information), or from the Bioengineering senior elective list.

## 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 health care. 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*: With College Honors. With Distinction (Departmental Honors). See adviser for requirements.

- \* *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 Web site 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@u.washington.edu

The Department of Bioengineering offers programs of study which lead to the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) 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 January 15. Late and/or incomplete applications are not reviewed. Required application items include the following:

- \* Graduate School application
- \* Department of Bioengineering Admissions Form
- \* Statement of purpose
- \* Resume/curriculum vitae
- \* Three letters of recommendation
- \* One set of official transcripts
- \* Official GRE scores
- \* Official TOEFL scores (international applicants only)

More information about the application is online at [depts.washington.edu/bioe/programs/phd/phd-apply.html](https://depts.washington.edu/bioe/programs/phd/phd-apply.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 M.S. program.

## Degree Requirements

Course requirements for the M.S. 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:

- \* *Molecular Bioengineering*: BIOEN 501 (4)
- \* *Cellular Bioengineering*: BIOEN 502 (4)
- \* *Systems Bioengineering*: BIOEN 503 (4)
- \* *Biostatistics (4 credits)*
- \* *Bioengineering seminar*: BIOEN 510 (1)
- \* *Bioengineering elective courses, chosen in consultation with faculty adviser*: 10 credits
- \* *Master's thesis*: BIOEN 700 (9 credits)

## Doctor of Philosophy

The objective of the Ph.D. 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 Ph.D. program does not require prior completion of the M.S. degree and may be made directly after the B.S. An optional dual Ph.D. degree in bioengineering and nanotechnology is available. See [www.nano.washington.edu](http://www.nano.washington.edu) for more information.

### Admission Requirements

See the application process detailed in the M.S. section.

While it is not required to complete an MS degree before beginning the Ph.D., every graduate student is expected to have the following courses as part of his or her 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 Ph.D. program.

### Degree Requirements

Minimum 90 credits, to include the following:

The Ph.D. program consists of a rigorous set of core courses, elective courses, and a focused research project. Three major milestones punctuate that work: the Qualifying Examination, the General Examination, and the Final Examination (dissertation defense). Additionally, 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 the following:

- \* *Molecular Bioengineering*: BIOEN 501 (4)
- \* *Cellular Bioengineering*: BIOEN 502 (4)
- \* *Systems Bioengineering*: BIOEN 503 (4)
- \* *Biostatistics* (4)
- \* *Bioengineering seminar*: BIOEN 510 (1)
- \* 16 credits of bioengineering elective courses, chosen in consultation with faculty adviser
- \* 27 credits of dissertation writing (BIOEN 800)

Ordinarily, a student progressing well and on schedule follows this schedule:

- \* *First Year*: Complete one to three lab rotations and select a thesis adviser no later than the end of spring quarter.
- \* *Second Year*: Pass the Qualifying Examination and form a Supervisory Committee by the end of the second year.
- \* *Third Year*: Pass the General Examination.
- \* *Fourth Year (and subsequent years)*: Make an annual progress report to, and receive feedback from, the Supervisory Committee.
- \* *Fifth Year*: Defend the dissertation.

## Medical Scientist Program

A Medical Scientist Training Program exists for the support of individuals interested in coordinated graduate school/medical school study leading to both the M.D. and Ph.D. 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 Aid

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.

## Chemical Engineering

105 Benson  
[www.cheme.washington.edu](http://www.cheme.washington.edu)

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 control 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](mailto:advising@cheme.washington.edu)

The Department of Chemical Engineering offers the following program of study:

- \* The Bachelor of Science in Chemical Engineering degree.

## Bachelor of Science in Chemical Engineering

*Suggested First- and Second-Year College Courses*: 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), CSE 142, CHEM E 260.

### Department Admission Requirements

Applicants are considered in three groups -- Direct Freshman Admission, Early Admission, and Upper-Division Admission. Admission is competitive. Thus, 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; the deadline for Early Admission and Upper-Division Admission is July 1. The application is available at [www.engr.washington.edu/advising/engrapplapplications.html](http://www.engr.washington.edu/advising/engrapplapplications.html).

1. *Direct Freshman Admission*
  - a. Open to freshman students formally admitted to the UW.
  - b. Minimum high school GPA of 3.80; minimum SAT (or equivalent) scores of 1400.
  - c. Indication on the UW freshman application of chemical engineering as the student's first choice of major.
2. *Early Admission*
  - a. *Course requirements*: MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152, CHEM 162; PHYS 121; and 5 credits of English composition. All courses must be completed prior to the July 1 application deadline.
  2. *Credit requirements*: Applicants must be completing their freshman year at the UW and must have completed a minimum of 15 credits taken in residence at the UW.
  - c. *Grade requirements*: A minimum grade of 2.0 in each prerequisite course and a minimum GPA of 2.50.



### 3. Upper-Division Admission

- Course requirements:** MATH 124, MATH 125, MATH 126, MATH 307 (18 credits); CHEM 142, CHEM 152, CHEM 162, CHEM 223 or CHEM 237 (19); PHYS 121, PHYS 122, PHYS 123 (15), CSE 142 (4), CHEM E 260 (4); and one 5-credit English composition course. In addition, it is strongly recommended that students complete CHEM 224 or CHEM 238.
- Credit and grade requirements:** 75 credits completed by July 1 application deadline, with a minimum overall 2.50 GPA and minimum 2.0 in all courses required for admission.
- Students with a GPA lower than 2.50 for these specified courses or an overall GPA lower than 2.50 for all courses applicable to the B.S.Ch.E. degree seldom succeed in the department. Historically, a GPA of 2.80 or higher in these categories is required for admission to and success in the department.
- 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.

Students may also declare into the Chemical Engineering degree program through the College of Engineering Advanced Admission program (see the College of Engineering section for Advanced Admission entrance and continuation requirements).

### Graduation Requirements

180 credits, as follows:

#### General Education Requirements (108 credits)

- Written and Oral Communications (12 credits):** One 5-credit English composition course from the University list; T C 231; T C 333 (or department-approved alternative).
- Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S) (24 credits):** A minimum of 10 credits required in each area.
- Natural World (72 credits)**
  - Physics (15 credits):** PHYS 121, PHYS 122, PHYS 123
  - Mathematics (24 credits):** MATH 124, MATH 125, MATH 126, MATH 307, MATH 308, and MATH 309 (or MATH 390 or IND E 315)
  - Chemistry (33 credits):** CHEM 142, CHEM 152, CHEM 162, CHEM 237, CHEM 238, CHEM 455, CHEM 457, CHEM 461

#### Major Requirements (68 credits)

- Engineering Fundamentals (8 credits):** CHEM E 260; CSE 142
- Chemical Engineering Core Courses (44 credits):** CHEM E 310, CHEM E 326, CHEM E 330, CHEM E 340, CHEM E 435, CHEM E 436, CHEM E 437, CHEM E 465, CHEM E 480, CHEM E 485, CHEM E 486
- Engineering Elective Courses (16 credits)**

#### Unspecified Electives (4 credits)

A minimum GPA of 2.00 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.

### Student Outcomes and Opportunities

- Learning Objectives and Expected Outcomes:** The B.S.Ch.E. program is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700.

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; With Distinction (Departmental Honors). 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. Application deadline is April 1.

- 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 paper science. 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

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 be:

- \* Highly ranked (top 10%) in a respected chemical engineering program.
- \* Score at least 750 on the quantitative portion of the GRE.
- \* 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 as follows:

- \* 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.)
  - o *Math/Computer/Statistics*: CHEM E 481 (3), CHEM E 482 (3), CHEM E 510 (4), CHEM E 512 (3), CHEM E 575 (3), CHEM E 526 (3, max. 9), STAT 421 (4)
  - o *Thermodynamics*: CHEM E 455 (1/3, max. 3), CHEM E 525 (4), CHEM E 526 (3), CHEM E 552 (3)
  - o *Transport Phenomena*: CHEM E 530 (4), CHEM E 531 (3), M E 533 (3), M E 534 (3)
  - o *Reaction Phenomena*: CHEM E 461 (3), CHEM E 560 (3), CHEM E 564 (3), CHEM E 565 (3)
  - o *Materials and Biotech*: CHEM E 467 (3), CHEM E 554 (3), CHEM E 558 (3), CHEM E 570 (3, max. 6), CHEM E 590 (3)
- Approved 400-level courses presented for the 18 graded credits include 400-level CHEM E courses not required for the B.S. degree and 400-level non-CHEM E courses approved by the Graduate Program Coordinator.
- \* A minimum cumulative GPA of 3.00 in the graduate program.
- \* At least 30 credits must be taken at the UW.
- \* Submit a thesis describing original research. At least 9 credits of thesis credits are required (CHEM E 700).
- \* Pass a Final Exam consisting of an oral presentation of the thesis.
- \* 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 to include, as follows:

- \* 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.)
  - o *Math/Computer/Statistics*: CHEM E 481 (3), CHEM E 482 (3), CHEM E 510 (4), CHEM E 512 (3), CHEM E 575 (3), CHEM E 526 (3, max. 9), STAT 421 (4)
  - o *Thermodynamics*: CHEM E 455 (1/3, max. 3), CHEM E 525 (4), CHEM E 526 (3), CHEM E 552 (3)
  - o *Transport Phenomena*: CHEM E 530 (4), CHEM E 531 (3), M E 533 (3), M E 534 (3)

- o *Reaction Phenomena*: CHEM E 461 (3), CHEM E 560 (3), CHEM E 564 (3), CHEM E 565 (3)
- o *Materials and Biotech*: CHEM E 467 (3), CHEM E 554 (3), CHEM E 558 (3), CHEM E 570 (3, max. 6), CHEM E 590 (3)

Approved 400-level courses presented for the 18 graded credits include 400-level CHEM E courses not required for the B.S. degree and 400-level non-CHEM E courses approved by the Graduate Program Coordinator.

- \* A project consisting of at least 6 credits of CHEM E 600 (i.e., 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.
- \* Thesis research (i.e., CHEM E 700 or 800) cannot count toward the 39 credits.
- \* A minimum cumulative GPA of 3.00 in the graduate program.
- \* At least 30 credits must be taken at the UW.
- \* A Final Exam 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 be:

- \* Highly ranked (top 10%) in a respected chemical engineering program.
- \* Score at least 750 on the quantitative portion of the GRE.
- \* 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

The requirements are the same as for the M.S.Ch.E. 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 M.S.Ch.E. options, usually less emphasis is on chemical engineering, more on engineering science and related subjects.

## Doctor of Philosophy

### 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 be:

- \* Highly ranked (top 10%) in a respected chemical engineering program.
- \* Score at least 750 on the quantitative portion of the GRE.
- \* 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:

- \* *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).
  - o Complete at least 18 credits of courses numbered 500-600 at the University of Washington.

- o 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.
- o Complete a minimum of 90 credits, at least 60 of which are UW credits.
- o 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.
- o Maintain a minimum cumulative GPA of 3.00.
- o Pass the General Examination.
- o Pass the Final Examination (includes approval of the dissertation by the student's supervisory committee).
- o 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.
- o Complete all work for the doctoral degree within ten years.
- \* Students with a chemical engineering undergraduate degree: In addition to the requirements listed above, doctoral students must:
  - o Complete the non-thesis M.S.Ch.E. degree prior to the General Examination. (Students with an M.S. in chemical engineering from another university may petition the Graduate Program Coordinator for an exemption.)
  - o Serve as a TA for at least three quarters. Students should plan on one quarter per year in years 2-4.
  - o Complete at least six graded courses numbered 500-599 or approved 400-level courses to satisfy the following:
    - + Five courses from at least four of the following five categories. (Courses listed in each category are typical. Others may qualify subject to approval by the Graduate Program Coordinator.)
      - \* *Math/Computer/Statistics*: CHEM E 481 (3), CHEM E 482 (3), CHEM E 510 (4), CHEM E 512 (3), CHEM E 575 (3), CHEM E 526 (3, max. 9), STAT 421 (4)
      - \* *Thermodynamics*: CHEM E 455 (1/3, max. 3), CHEM E 525 (4), CHEM E 526 (3), CHEM 552 (3)
      - \* *Transport Phenomena*: CHEM E 530 (4), CHEM E 531 (3), M E 533 (3), M E 534 (3)
      - \* *Reaction Phenomena*: CHEM E 461 (3), CHEM E 560 (3), CHEM E 564 (3), CHEM E 565 (3)
      - \* *Materials and Biotech*: CHEM E 467 (3), CHEM E 554 (3), CHEM E 558 (3), CHEM E 570 (3, max. 6), CHEM E 590 (3)
    - + One CHEM E course in a topic outside the student's main research area.
- \* *Non-Chemical Engineering Undergraduates*: Students whose undergraduate degree is in engineering or science (e.g., B.S. 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 (4), CHEM E 435 (4), CHEM E 465 (4), CHEM E 485 (4)

Students lacking a strong background in thermodynamics are advised (but not required) to take CHEM E 326 (4) prior to attempting CHEM E 525 (4). It is possible to take some graduate courses while completing the required undergraduate courses.

## Research Facilities

The department is fortunate to have outstanding 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 Web site at [www.cheme.washington.edu](http://www.cheme.washington.edu), which provides details on application procedures. Offers of admission with financial support are usually made in January through March.

# Civil and Environmental Engineering

201 More  
[www.ce.washington.edu](http://www.ce.washington.edu)

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; water resources, hydrology, and environmental fluid mechanics; 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 water resources, hydrology, and environmental fluid mechanics.

## Undergraduate Program

Adviser  
 201 More, Box 352700  
 206-543-5092  
[ceadvice@u.washington.edu](mailto:ceadvice@u.washington.edu)

The Department of Civil and Environmental Engineering offers the following program of study:

- \* The Bachelor of Science in Civil Engineering degree

The B.S.C.E. degree is appropriate for students interested in civil and environmental engineering. The B.S.C.E. program is accredited by the Engineering Accreditation Commission of ABET (Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, Tel: 410-347-7700).

## 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

Students typically apply during the sophomore year for admission in the junior year. 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; application deadline is July 1. Applications are accepted through the College of Engineering online application form. For more information, see information for prospective students on the department Web site.

1. *Course Requirements*: MATH 124, MATH 125, MATH 126, MATH 308; CHEM 142; PHYS 121, PHYS 122; AMATH 301 or CSE 142 (AMATH 301 strongly recommended); AA 210; CEE 220; M E 230; and 5 credits of English composition.
2. *Grade Requirements*: Minimum grade of 2.0 in each course and a minimum cumulative GPA of 2.50.

Students may also declare into the Civil and Environmental Engineering degree program through the College of Engineering Advanced Admission program (see the College of Engineering section for Advanced Admission entrance and continuation requirements). The department also admits a

small number of qualified freshmen directly into the major through its Freshman Direct Admission program (see the department Web site for additional information).

## Graduation Requirements

180 credits as follows:

### General Education Requirements (85-87 credits)

1. *Written and Oral Communication (8 credits)*: English composition (5); TC 231 (3)
2. *Visual, Literary, and Performing Arts (VLPA) and Individuals & Societies (I&S) (24 credits)*: A minimum of 10 credits in VLPA and a minimum of 10 credits of I&S plus 4 additional credits in either area.
3. *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.
4. *Natural World (49-50 credits)*
  - a. *Mathematics (21 credits)*: MATH 124, MATH 125, MATH 126, MATH 307 (or AMATH 351), MATH 308 (or AMATH 352)
  2. *Statistics (3-4 credits)*: IND E 315 (preferred) or STAT 390
  3. *Science (25 credits)*: CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123

### Major Requirements (94 credits)

1. *Engineering Fundamentals (19 credits)*: AMATH 301 or CSE 142, AA 210, CEE 220, and ME 230. Students who complete STAT 390 must complete an additional Engineering Fundamentals course from CHEM E 260, IND E 250, IND E 280, M E 123, 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.
2. *Civil Engineering Core (45 credits)*: CEE 306, CEE 316, CEE 320, CEE 342, CEE 345, CEE 350, CEE 363, CEE 366, CEE 379, CEE 380, CEE 390, CEE 391, CEE 392
3. *Professional Practice and Capstone Design (6 credits)*: CEE 440 and one course from CEE 441, CEE 442, CEE 444, or CEE 445. Minimum grade of 2.0 required for both courses in this two-course sequence.
4. *Civil Engineering Technical Electives (15 credits)*: A minimum of 12 credits of CEE 400-level coursework selected from an approved list, with at least one core course from four separate areas of concentration within the department. Plus any additional CEE 400-level course (except CEE 423 and courses taken to fulfill requirement c, above). Minimum grade of 2.0 required for each of the four courses used to fulfill the core courses requirement.
5. *Upper-Division Engineering and Science (9 credits)*: Choice of additional CEE 400-level courses or courses from an approved list from outside the department.
6. *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*: The B.S.C.E. program is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700.

To fulfill its instructional mission, the undergraduate program is based on specific educational objectives. In particular, upon completion of the undergraduate program our students will have:

1. demonstrated proficiency in applying fundamental mathematical, scientific, and engineering principles in formulating and solving civil engineering problems;
2. demonstrated sufficient mastery of core civil engineering topics suitable for entry into the profession and/or for graduate study;
3. gained significant experience in designing systems and components in civil and environmental applications in both individual and team contexts;
4. acquired up-to-date skills for analysis, data collection, modeling, project management, professional development, communication, and presentation;
5. developed an understanding of professional and social issues suitable for participation and leadership in their communities.
6. developed the capacity to think critically and communicate effectively to a broad audience through a foundation in the humanities and sciences offered through the University.

Achieving the above program objectives requires a series of measurable outcomes consistent with the program objectives as well as the mission of the department, college, and University. The department has adopted the ABET Criterion 3 Program Outcomes as its own program outcomes, and has augmented them to include outcomes based on the required ASCE Curriculum Program Criteria. The resulting program outcomes are that students have:

1. an ability to apply knowledge of mathematics, science, and engineering
2. an ability to design and conduct experiments, as well as to analyze and interpret data
3. 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
4. an ability to function on multi-disciplinary teams
5. an ability to identify, formulate, and solve engineering problems
6. an understanding of professional and ethical responsibility
7. an ability to communicate effectively
8. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
9. a recognition of the need for, and an ability to engage in life-long learning
10. a knowledge of contemporary issues
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
12. proficiency in mathematics through differential equations, probability and statistics, calculus-based physics, and general chemistry
13. proficiency in a minimum of four recognized major civil engineering areas
14. an understanding of professional practice issues such as procurement of work, bidding versus quality-based selection processes, how the design professionals and the construction professions interact to construct a project
15. an understanding of the importance of professional licensure and continuing education

- \* *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 autoanalyzer, 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. With Distinction (Departmental Honors). 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 Web site. 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  
206-543-2574

The Department of Civil and Environmental Engineering offers programs of study leading to the degrees of Master of Science in Civil Engineering (M.S.C.E.) and Doctor of Philosophy. The department also provides authorized options leading to the College-wide Master of Science (M.S.) and Master of Science in Engineering (M.S.E.) degrees.

The three master's programs are intended to accommodate the needs of three categories of students: the M.S.C.E. degree is for those who have completed an undergraduate degree in civil engineering and plan to continue with their professional training; the College-wide M.S.E. degree is for other engineering graduates who wish to do graduate work in civil and environmental engineering; and the College-wide M.S. degree is for those whose bachelor's degree is not in engineering, but who desire to apply their training in science to the solution of problems in some specific sector related to civil and environmental engineering. The non-engineer may be required to take additional course work to obtain an M.S.E. degree.

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 water resources, hydrology, and environmental fluid mechanics.

### 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.

*Graduate Online Programs:* The Department of Civil and Environmental Engineering, in collaboration with the Department of Construction Management in the College of Urban Planning and Architecture, offers an online master's degree program 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. Each of these areas may also be completed separately as part of a graduate-level certificate program. For more information on the master's degree in construction engineering or construction engineering certificates, see [www.outreach.washington.edu/cenrg/about.asp](http://www.outreach.washington.edu/cenrg/about.asp)

#### Degree Requirements

42 credits, as follows:

Three options are available -- thesis, non-thesis, and internship. All three options allow for strong flexibility in coursework so that the student may individualize the coursework to an area of research, determined in conjunction with the faculty adviser.

- \* *Thesis option:*
  - o 30 credits of coursework with at least 15 credits at the 500 level
  - o 3 credits (maximum) of CEE 500
  - o 9 credits of master's thesis, CEE 700
- \* *Non-thesis option:*
  - o 36 credits of coursework with at least 18 credits at the 500 level
  - o 3 credits (maximum) of CEE 500
  - o 3 credits (maximum) of CEE 600 with a minimum grade of 3.0
- \* *Internship option:*
  - o 30 credits of coursework with at least 15 credits at the 500 level
  - o 3 credits (maximum) of CEE 500
  - o 3 credits (maximum) of CEE 600 with a minimum grade of 3.0
  - o 6 credits of internship, CEE 601

### 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:

- \* Students with a master's degree from outside the U.W. or from outside the CEE department or Ph.D. topic area:
  - o Master's degree credit waiver (30 credits)
  - o Numerically graded credits (30 credits)
  - o Dissertation (27 credits)
  - o CEE seminar (3 credits)
- \* Students with UW CEE master's degree in Ph.D. topic area:
  - o Numerically graded credits from master's degree plus Ph.D. graded credits (63 credits)
  - o Dissertation (27 credits)

With the approval of the department, an appropriate master's degree from an accredited institution may be applied towards 30 of the 90 quarter credits.

Because the degree is a research-based degree, course requirements are individualized depending on student's background and Ph.D. 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 hydraulics and environmental fluid mechanics are located in the Harris Hydraulics Laboratory.

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## Computer Science and Engineering

AC101 Paul G. Allen Center for Computer Science and Engineering  
[www.cs.washington.edu](http://www.cs.washington.edu)

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](mailto: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 section)

The core requirements of the two undergraduate majors are identical. 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 three groups -- Direct Admission, Accelerated Admission, and Upper Division Admission. Admission is competitive. Completion of minimum requirements does not guarantee admission.

1. **Direct Admission:** Computer Science and Engineering enrolls up to 20 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 will have taken calculus and at least one year of laboratory science (preferably physics) upon entering the University. Admission is for autumn quarter only.
2. **Accelerated Admission:** Intended as a fast track into the Computer Science and Engineering department for matriculated students who have excelled in the CSE introductory courses.
  - a. **Course Requirements:** CSE 142 or equivalent, CSE 143. At least 5 additional credits toward the Computer Science Upper Division Admission course requirements.
  - b. **Other Requirements:** Completion of at least 15 credits at the UW. 3.00 cumulative GPA. Competitive applicants for Accelerated Admission typically have received a high grade in CSE 143 at the UW on their first attempt.
  - c. Admission is considered for any quarter.
3. **Upper Division Admission**
  - a. 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 or CHEM 142/CHEM145 (or any approved science course that requires PHYS 121 or CHEM 142/CHEM 145 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.

Students may also declare into the Computer Engineering degree program through the College of Engineering Advanced Admission program (see the College of Engineering section for Advanced Admission entrance and continuation requirements).

## Graduation Requirements

180 credits as follows:

### General Education Requirements (81-84 credits)

1. **Written and Oral Communication (12 credits):** 5-credit course in English composition from the University-approved list; T C 231; T C 333, or department-approved alternative.
2. **Visual, Literary, and Performing Arts (VLPA) and Individuals and Societies (I&S) (30 credits):** A minimum of 10 credits in each required area.
3. **Natural World (39-42 credits):**
  - a. **Mathematics (19-22 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/STAT 390 or STAT 391 (or STAT 394, STAT 395).
  - b. **Science (20 credits):** PHYS 121, PHYS 122, and 10 additional credits from the list of approved natural science courses in the CS&E Handbook. Courses that meet the department's science requirement include any course in biology, chemistry, physics, earth and space sciences, astronomy, or atmospheric sciences that requires PHYS 121 or CHEM 142/CHEM 145 as a prerequisite.

### Major Requirements (74-75 credits)

1. **Required Courses (47 credits):** CSE 142, CSE 143, CSE 303, CSE 321, CSE 322, CSE 326, CSE 341, CSE 370, CSE 378, CSE 451, CSE 461; E E 215
2. Either a hardware or a software specialization
  - a. **Hardware Specialization (28 credits):** E E 233; CSE 466, CSE 467; CSE 471; 5-credit course chosen from the list of CSE hardware capstone courses in the CS&E Handbook; and 6 credits from courses on the approved computer engineering senior elective course list in the CS&E Handbook.
  - b. **Software Specialization (27 credits):** CSE 403; 18 credits from the approved computer engineering senior elective course list in the CS&E Handbook, including at least three courses from CSE 401, CSE 421, CSE 444, CSE 466, CSE 471, CSE 484; 5 credit course chosen from the list of CSE software capstone courses in the CS&E Handbook.
3. 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.

### Free Electives (21-25 credits)

## Student Outcomes and Opportunities

- \* **Learning Objectives and Expected Outcomes:**
  - a. **Engineering Quality:** Graduates will engage in the productive practice of computer engineering to identify and solve significant problems across a broad range of application areas.
  - b. **Leadership:** Graduates will engage in successful careers in industry, academia, and public service, providing technical leadership for their business, profession and community.
  - c. **Economic Impact:** Graduates will enhance the economic well-being of Washington State through a combination of technical expertise, leadership and entrepreneurship.
  - d. **Lifelong Learning:** Graduates will 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 will have:

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data
3. 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
4. An ability to function on multi-disciplinary teams
5. An ability to identify, formulate, and solve computer engineering problems

6. An understanding of professional and ethical responsibility
7. An ability to communicate effectively
8. The broad education necessary to understand the impact of computer engineering solutions in a global, economic, environmental, and societal context
9. A recognition of the need for, and an ability to engage in life-long learning
10. Knowledge of contemporary issues
11. An ability to use the techniques, skills, and modern computer engineering tools necessary for engineering practice.
12. Knowledge of probability and statistics
13. Knowledge of discrete mathematics

\* *Instructional and Research Facilities:* In autumn 2003 the department moved to the new 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. With Distinction (Department Honors). 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](http://www.engr.washington.edu/coop) and [careers.washington.edu](http://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](http://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](mailto: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 Ph.D. with an integrated M.S. Students can also pursue part-time graduate study in the evening, leading to an M.S. 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:*
  - o 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.
  - o Satisfactorily pass an M.S. 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.
  - o 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):
    - + Either CSE 521 (3), CSE 525 (3), or CSE 531 (3)
    - + Either CSE 548 (3), CSE 551 (3), CSE 561 (3), or CSE 567 (3)
    - + Either CSE 501 (3), CSE 503 (3), CSE 505 (3), or CSE 544 (3)
    - + Either CSE 510 (3), CSE 546 (3), CSE 557 (3), CSE 573 (3), or CSE 576 (3)
    - + Two additional courses from two of the groups above
  - o 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:*
  - o 9 credits CSE 700, Master's Thesis
  - o Of the 31 remaining credits,
    - + At least 16 credits must be in courses numbered 500 or above
    - + 24 credits must be CSE courses
    - + 7 credits may be in one or more supporting fields such as: engineering, mathematics, natural sciences, business administration, linguistics, philosophy, psychology, or medicine.
  - o *Thesis:* Preparation of a written thesis acceptable to a CSE Supervisory Committee and satisfactorily passing an oral examination on the thesis work.

## 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 UWTV 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

90 credits, to include:

- \* Satisfactorily passing a Ph.D. 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.
- o 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 are required to take 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):
  - + Either CSE 521 (3), CSE 525 (3), or CSE 531 (3)
  - + Either CSE 548 (3), CSE 551 (3), CSE 561 (3), or CSE 567 (3)
  - + Either CSE 501 (3), CSE 503 (3), CSE 505 (3), or CSE 544 (3)
  - + Either CSE 510 (3), CSE 544 (3), CSE 546 (3), CSE 557 (3), CSE 573 (3), or CSE 576 (3)
  - + Two additional courses from two of the groups above

- + Four additional courses taken for credit from CSE or related areas with approval.
- o An independent project completed under the supervision of two faculty advisers. A written summary and an oral presentation are required.
- \* Satisfactorily passing the General Examination. In this examination, the applicant must demonstrate depth of knowledge in a principal area acceptable to the Ph.D. Supervisory Committee.
- \* Completion of at least 90 credits of course work, at least 40 of which are to be 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) 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.
- \* Completion of two quarters of teaching assistantship within the department.
- \* Preparation of a dissertation that must be acceptable to the Supervisory Committee. Students must register for at least 27 credits of CSE 800 (Dissertation).
- \* Satisfactorily passing an oral examination on the dissertation work.

## Application Requirements

Most entering graduate 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 378, CSE 326, CSE 321, CSE 322, 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 homepage for perspective 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.

## 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.

# Electrical Engineering

AE100R Paul Allen Center  
www.ee.washington.edu

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 program of study

- \* The Bachelor of Science in Electrical Engineering degree

## 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/score/EEPlan.pdf](http://www.engr.washington.edu/score/EEPlan.pdf).

## Department Admission Requirements

Because resources are limited, students must apply for admission to the electrical engineering program. Application forms and a comprehensive booklet, *The Electrical Engineering Handbook for Undergraduates*, can be obtained from the undergraduate adviser for electrical engineering. The department classifies applicants by admission group; the specific requirements for each are described below. Admission to the department is competitive and completion of the requirements does not guarantee admission. All applicants have the right to petition and appeal the admissions decision of the department. Please see the undergraduate adviser for more information.

Applicants are considered in three groups -- Early Decision, 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.

### Early Decision

The Department of Electrical Engineering enrolls up to 10 percent of its incoming class directly out of high school, prior to the completion of University-level prerequisites. Freshman applicants to the University of Washington who list Electrical Engineering as their intended major are automatically considered. Competitive applicants will have taken or be 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 plus accompanying laboratory at the level of PHYS 121, PHYS 122, PHYS 123, or CHEM 142, CHEM 152, or equivalent; 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. Early Admission is available autumn quarter only. Application deadline is July 1.
3. Grade requirements: Minimum 2.50 GPA in courses required for admission, and minimum 2.50 overall GPA.

### Upper-Division Admission

1. *Course requirements:* MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122; CHEM 142; 5 credits of English composition.
2. 64 credits completed by application deadline (July 1 for autumn admission; February 1 for spring admission).
3. Grade requirements: Minimum overall 2.50 GPA and minimum 2.50 GPA in courses required for admission.

Students may also declare into the Electrical Engineering degree program through the College of Engineering Advanced Admission program (see the College of Engineering section for Advanced Admission entrance and continuation requirements).

## 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; T C 231; T C 333 (or department-approved alternative).
2. Visual, Literary, and Performing Arts (VLPA), and Individuals & Societies (I&S) (25 credits): A minimum of 10 credits is 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 (13 credits)*: E E 215, E E 233, E E 235
3. *Electrical Engineering Pathways (21 credits minimum)*
4. *Electrical Engineering Electives (up to 24 credits)*: See adviser for list of acceptable courses. Total number of credits of the pathway and electives should total 45.
5. *Engineering Electives (10 credits)*: See adviser for list of acceptable courses.
6. *Statistics (3-4 credits)*: STAT/MATH 390 or IND E 315
7. *Grade Requirements*: Minimum 2.00 GPA in all E E courses with no grade below 1.0 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*: The objective of the Department of Electrical Engineering at the University of Washington is to produce alumni who contribute to society and to the economic base of the region and beyond to the best of their abilities. The department recognize that its students have diverse interests and talents, and although the majority may find employment in one of the many specialties or interdisciplinary activities in industry or academe to which electrical engineers traditionally gravitate, the department also expects some of its alumni to build careers in business, law, health care, government or other professions. Regardless of the intended career, the educational objective is to see students succeed, to use the analytical discipline and problem-solving skills of their undergraduate education in creative endeavors as professionals and to avail themselves of opportunities to learn new skills and advance their careers through continuing education.

The B.S.E.E. 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:

1. An ability to apply knowledge of mathematics, science and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data
3. 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
4. An ability to function on multi-disciplinary teams
5. An ability to identify, formulate and solve engineering problems
6. An understanding of professional and ethical responsibilities
7. An ability to communicate effectively
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
9. A recognition of the need for, and an ability to engage in life-long learning
10. Knowledge of contemporary issues
11. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice
12. Knowledge of probability and statistics, including applications appropriate to electrical engineering
13. Knowledge of differential equations, linear algebra, complex variables and discrete mathematics
14. Knowledge of mathematics through differential and integral calculus, basic sciences, computer science, and engineering sciences necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components, as appropriate to program objectives.

- \* *Instructional and Research Facilities*: The department maintains a number of instructional and research labs to support courses and independent study activities. There are three general-purpose computing labs. Instructional labs include a large instrumentation lab supporting

numerous electronics courses; individual labs for digital design courses; a power lab to support the power/energy systems classes; and labs that support capstone design classes. Students participating in undergraduate research and independent study generally have access to the research labs of their supervising faculty member.

- \* *Honors Options Available*: With College Honors. With Distinction. See adviser for details.
- \* *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.

*Of Special Note*: The departmental policy on continuation is consistent with the continuation policy of the College but also includes supplementary requirements specific to the department. Details may be obtained from the department advising office.

### 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 (M.S.E.E.) and Doctor of Philosophy (Ph.D.). 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 M.S.E.E. 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 their studies; or a student may simply accumulate a suitable distribution of 45 credits of course work. Course work for each of the options is developed with the advice of faculty advisers as well as through the department advising staff.

For the Ph.D. 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 course work beyond the M.S.E.E. degree is usually desirable.

### Master of Science in Electrical Engineering

#### Admissions Requirements

In addition to meeting Graduate School admission requirements, the Graduate Record Examination (GRE) general test is required of all students. 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 admissions qualifications, visit the department's Web site at [www.ee.washington.edu/graduate/admitcriteria.html](http://www.ee.washington.edu/graduate/admitcriteria.html).

## Degree Requirements

Masters students have the option of choosing between three different pathways for pursuing their degree:

- \* *Thesis option:* The thesis option is best intended for students who wish to pursue an in-depth research experience with intended preparation for pursuing a Ph.D.
- \* *Project option:* Students who wish to combine the written work of a thesis with a more hands-on approach to individual problems may choose the project option.
- \* *Coursework option:* A student whose main goal is to work in industry immediately upon graduation may find the coursework option more suitable to their needs.

These three options have several related requirements:

- \* Students must complete a plan of study by their second quarter of study.
- \* Students must complete a minimum of 45 credits.
- \* Students must be registered full time (10 credits) per quarter (less in summer)
- \* Students may apply no more than 3 credits of E E 500. 1 credit is required.
- \* Students may apply no more than 5 credits of E E 599 to the degree.
- \* Students are required to take 1 credit of E E 592, offered autumn quarter.

### Thesis Option

45 credits, as follows:

- \* 9-12 credits of E E 700
- \* At least 20 credits in E E courses numbered 500 and above
- \* No more than 12 credits in E E 400-level courses
- \* 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.

### Project Option

45 credits, as follows:

- \* A minimum of 4 credits E E 600
- \* At least 25 credits in E E courses numbered 500 and above
- \* No more than 12 credits in E E 400-level courses
- \* No more than 9 credits from non-E E courses

The required 4 credits of E E 600 must be completed in one quarter and receive a minimum grade of 3.0. Students must complete a written report and an oral presentation to faculty. A student's supervisory committee may permit the student to conduct a second project, allowing a total of 8 credits of E E 600 credits. However, students may not continue project work from one quarter to another.

### Coursework Option

45 credits, as follows:

- \* At least 25 credits in E E courses numbered 500 and above
- \* No more than 12 credits in E E 400-level courses
- \* No more than 9 credits from non-E E courses

The coursework option allows students to pursue the M.S.E.E. 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

### Admissions Requirements

In addition to meeting Graduate School admission requirements, the Graduate Record Examination (GRE) general test is required of all students. 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 admissions qualifications, visit the department's Web site at [www.ee.washington.edu/graduate/admitcriteria.html](http://www.ee.washington.edu/graduate/admitcriteria.html).

### Degree Requirements

The Ph.D. 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 Ph.D. 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 Ph.D., students must:

- \* Pass the department Qualifying Examination
- \* Complete an individualized course of study approved by the student's Ph.D. Supervisory Committee
- \* Pass the University General Examination
- \* Prepare and defend a satisfactory dissertation based on original research
- \* Complete at least 90 credits of course work, independent study, and dissertation (60 of which must be completed at the UW), 18 of which must be graded credits
- \* Maintain a cumulative minimum GPA of 3.00.
- \* 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.

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## Industrial Engineering

G-7 Mechanical Engineering Building  
[depts.washington.edu/ie](http://depts.washington.edu/ie)

Industrial engineering (IE) 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 engineering one of the most people-oriented and customer-focused of the engineering disciplines.

Industrial 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  
leadvice@u.washington.edu

The Industrial Engineering program offers the following program of study:

\* The Bachelor of Science in Industrial Engineering degree

## 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 VLPA 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 guarantee admission. All applicants have the right to petition and appeal the department's admission decision.

#### Freshman Admission

The UW Industrial Engineering program enrolls up to 10 percent of its incoming class directly out of high school, prior to the completion of university-level prerequisites. Freshman applicants to the University of Washington who have listed Industrial 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 grade of 2.0 in each prerequisite course and a minimum overall GPA of 2.50.

#### 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, which is July 1 for autumn admission and February 1 for spring admission.

Students may also declare into the Industrial Engineering degree program through the College of Engineering Advanced Admission program (see the College of Engineering section for Advanced Admission entrance and continuation requirements).

### Graduation Requirements

180 credits as follows:

#### General Education Requirements (91 credits)

1. *Written and Oral Communications (12 credits):* 5-credits in English composition from the University-approved list; T C 231; T C 333 (or department-approved alternative).
2. *Visual, Literary, and Performing Arts (VLPA) and Individuals and Societies (I&S) (30 credits):* A minimum of 10 credits is required 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 GPA in all engineering courses with no grade below 1.0 in these courses.

## Student Outcomes and Opportunities

\* *Learning Objectives and Expected Outcomes:* Industrial 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.

The B.S.I.E. degree is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4021, telephone: (410) 347-7700. The goal of the undergraduate program is to provide a comprehensive education to prepare students for the profession, resulting in the following outcomes:

1. An ability to apply knowledge of mathematics, science and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. 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.
4. An ability to function on multi-disciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
12. An understanding of the integrated, interdisciplinary nature of the discipline.

\* *Instructional and Research Facilities:* Industrial 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. With Distinction (Departmental Honors). 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/](http://www.engr.washington.edu/coop/)).

- \* *Department Scholarships:* IE 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 IE 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  
[ieadvise@u.washington.edu](mailto:ieadvise@u.washington.edu)

Industrial 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 Engineering

### Admission Requirements

To be eligible for consideration to the M.S.I.E. degree, applicants are expected to have a bachelor's degree in engineering, mathematics, or science, with a minimum GPA of 3.00.

### Degree Requirements

41 credits, as follows:

- \* *Coursework Only Program:*
  - o 21 graded credits in industrial engineering (500 level or above) courses
  - o 17 graded credits in technical electives (a maximum of 9 technical elective credits may be taken at the 400 level)
  - o 3 credits of Industrial Engineering seminar: IND E 591, IND E 592, IND E 593 (1, 1, 1)
- \* *Thesis Program:*
  - o 18 graded credits in industrial engineering (500 level or above) courses
  - o 11 graded credits in technical electives (a maximum of 9 technical elective credits may be taken at the 400 level)
  - o 9 credits of master's thesis (IND E 700)
  - o 3 credits of Industrial Engineering seminar: IND E 591, IND E 592, IND E 593 (1, 1, 1)

## Doctor of Philosophy

### Admission Requirements

To be eligible 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 GPA of 3.00.

### Degree Requirements

90 credits, as follows:

- \* 3 credits of Industrial Engineering graduate seminar: IND E 591, IND E 592, IND E 593 (1, 1, 1)
- \* 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.
- \* General examination
- \* *Dissertation:* 27 credits of dissertation (IND E 800) over a period of at least three quarters.
- \* Final examination

## Materials Science and Engineering

302 Roberts  
[depts.washington.edu/mse](http://depts.washington.edu/mse)

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@u.washington.edu](mailto:mse@u.washington.edu)

The Department of Materials Science and Engineering offers the following programs of study:

- \* The Bachelor of Science in Materials Science and Engineering degree
- \* 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; MSE 170; A A 210; CEE 220; T C 231.

### 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. All applicants have the right to appeal the department's admission decision. Application information is available from the department adviser.

#### 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. (T C 231 and M E 123 must be taken no later than the academic year of admission.)

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 (July 1 deadline) and spring quarter (February 1 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.

Students may also declare into the Materials Science and Engineering degree program through the College of Engineering Advanced Admission program (see the College of Engineering section for Advanced Admission entrance and continuation requirements).

### Graduation Requirements

180 credits as follows:

#### General Education Requirements (85 credits)

1. *Written and Oral Communications:* 12 credits, to include one 5-credit English composition course from the University list; T C 231; T C 333 (or department-approved alternative).
2. *Visual, Literary, and Performing Arts (VLPA), and Individuals & Societies (I&S) (24 credits):* A minimum of 10 credits is 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 of the following: PHYS 224, PHYS 225, CHEM 162, CHEM 223, CHEM 224, CHEM 237, CHEM 238, CHEM 455, CHEM 457

#### Major Requirements (89-90 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, CHEM E 260, IND E 250.
2. *Materials Science and Engineering Core (49-50 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 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.

### 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. A minimum grade of 2.0 is 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 team-work, 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:

1. An ability to apply knowledge of mathematics, science and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data
3. 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
4. An ability to function on multi-disciplinary teams
5. An ability to identify, formulate and solve engineering problems
6. An understanding of professional and ethical responsibilities
7. An ability to communicate effectively
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
9. A recognition of the need for, and an ability to engage in life-long learning
10. Knowledge of contemporary issues
11. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice
12. An ability to apply advanced science (such as chemistry and physics) and engineering principles to ceramics, metals, polymers and composite materials systems
13. 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
14. An ability to apply and integrate knowledge from each of the four major elements of the field to solve materials selection and design problems
15. An ability to utilize experimental, statistical and computational methods consistent with the goals of the program
16. Experience in laboratory work and in research and/or design problem solving
17. 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. With Distinction. See adviser for details.

- \* *Research, Internships, and Service Learning:* Materials Science and Engineering students interested in paid internship experiences should contact the Engineering Co-op Program, 301 Loew Hall, Box 352180, 206-543-8711, coop@enr.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 B.S./M.S. Degree Program

The goal of the combined B.S./M.S. 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 Ph.D. program. It creates a more efficient and continuous academic program that leads directly to the Master of Science degree. Students earn both the B.S. and M.S. 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@u.washington.edu

The Department of Materials Science and Engineering offers programs of study leading to the Master of Science in Materials Science and Engineering (M.S.M.S.E.) and the Doctor of Philosophy in either Materials Science and Engineering and 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:

- \* 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 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 advisor(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:

- \* Overall minimum GPA of 3.20 in the last 90 credits before application.
- \* At least 15 credits of MSE courses completed with a minimum GPA of 3.40.
- \* Statement of interest and goals for the M.S. degree.
- \* Interview with admissions committee

Students accepted into the combined BS/MS program by the department will then apply to the Graduate School in December of their senior year. These students will normally enroll in the Materials Science option for the M.S. 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 would be transferred to the graduate program when the student enters as a graduate student, subject to the approval of the MSE Graduate Program Committee. The graduate school will waive the restrictions on transfer credits for this purpose.

Students admitted into the BS/MS program will combine their BS senior project requirement (MSE 499) with the MS thesis requirement (MSE 700) and will begin the research starting summer or autumn quarter of their senior year. The student will receive 4 credits of MSE 499 for the undergraduate portion of the research program, and then register for 9 or more credits of MSE 700 for the thesis. Written and oral reports are required to complete the 499 credits, to be submitted before the end of the senior year. The thesis is required for the completion of the MS degree.

## Master of Science in Materials Science and Engineering

### Admission Requirements

The applicant must have a minimum undergraduate grade point average of 3.00 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 M.S.M.S.E. program. After admission, students with a minimum of 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:

- \* Knowledge of fundamentals of Materials Science and Engineering equivalent to MSE 170
- \* Knowledge of crystallography equivalent to MSE 331
- \* Background in materials properties equivalent to MSE 362 and MSE 351
- \* Knowledge of kinetics equivalent to MSE 322
- \* Understanding of thermodynamics equivalent to the level of MSE 421

### Degree Requirements

36 credits, as follows:

At least 27 credits must be for course work, 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 course work taken at the University of Washington. A minimum cumulative GPA of 3.00 is required for a graduate degree at the University. Required courses may not be taken on a S/NS option. The S/NS option in other courses must have the approval of the student's faculty advisor.

#### \* Thesis Option

- o Three required core courses (9 credits): MSE 510 (3), MSE 525 (3), MSE 541 (3)
- o Three optional core courses
- o 3 credits of seminar (MSE 520)
- o 9 credits of thesis work (MSE 700)
- o 6 credits of electives (400- or 500-level physical science or engineering courses) to meet the 36 credit requirement.

#### \* Non-Thesis Option

- o Three required core courses (9 credits): MSE 510 (3), MSE 525 (3), MSE 541 (3)
- o Four practice-oriented materials or related engineering courses, 12 credits minimum, chosen to complement the student's program.
- o Materials Engineering Project, MSE 598, 4 credits. This is taken during the last quarter of the master's program.
- o Electives to meet the 36 credit requirement.
- o 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 grade point average of 3.00 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 B.S. degree will be required to enroll as M.S. students.

*Prerequisite:*

- \* Knowledge of fundamentals of Materials Science and Engineering equivalent to MSE 170
- \* Knowledge of crystallography equivalent to MSE 331
- \* Background in materials properties equivalent to MSE 362 and MSE 351
- \* 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 Ph.D. degree.

Students interested in the 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:

- \* 30 credits from M.S.M.S.E. degree or equivalent
- \* Three required core courses (9 credits): MSE 510 (3), MSE 525 (3), MSE 541 (3)
- \* 6 credits of seminar (MSE 520)
- \* 9 credits of elective MSE courses
- \* 36 credits of MSE 800
- \* Qualifying Exam
- \* General Exams
- \* Portfolio Review
- \* Dissertation
- \* Final Exam

### 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. This is accomplished by requiring all the students to 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 Study Program book, given to each graduate student upon entry. Graduate students work closely with their committee chairs. Through this interaction, students develop a professional identity including 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, 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 Study Program book.

### Engineering Materials Option for the Master of Science

The Engineering Materials option for an M.S. 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.

## Mechanical Engineering

143 Mechanical Engineering Building  
www.me.washington.edu

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@u.washington.edu

The Department of Mechanical Engineering offers the following program of study:

- \* The Bachelor of Science in Mechanical Engineering (B.S.M.E.) degree

### 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; application deadline is July 1.

#### 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.

Students may also declare into the Mechanical Engineering degree program through the College of Engineering Advanced Admission program (see the College of Engineering section for Advanced Admission entrance and continuation requirements). 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; T C 231; 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 Communications*: 12 credits, to include one 5-credit English composition course from the University list; T C 231; T C 333 (or department-approved alternative).
2. *Visual, Literary, and Performing Arts (VLPA), and Individuals & Societies (I&S)* (24 credits): Minimum of 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 credits)

1. *Engineering Fundamentals* (31 credits): A A 210; ; CEE 220; E E 215; IND E 315 (or MATH 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 credits)

## Student Outcomes and Opportunities

### \* Learning Objectives and Expected Outcomes:

1. *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:
  - a. using fundamental science and analysis to solve engineering problems,
  - b. successfully executing engineering designs, and
  - c. performing effectively in design teams, in the use of management tools, and through effective oral, written, and graphical communication.
2. *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:
  - a. think critically, in the sense of broadly educated individuals (i.e., be informed evaluators/consumers of information),
  - b. perform independent, informed analysis on issues inside and outside of technology, and
  - c. continue lifelong learning.

The B.S.M.E. 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:

1. Background in mathematics, science, and engineering principles. Ability to apply this knowledge to the formulation and solution of mechanical engineering problems.

2. 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.
3. An understanding of the necessary professional abilities of a practicing engineer including ethical conduct, teamwork in the pursuit of a goal, and effective communication.
4. Ability to conduct computer-based design and analysis in engineering applications.
5. Exposure to a general education program that aids in the understanding of and increases the appreciation for the "non-technical" world.
6. Realization of the business environment in which engineering is practiced.
7. Awareness and necessity of continuing education, graduate study, and other lifelong learning experiences.

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; health care; 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 Web site to view faculty research areas.

\* *Honors Options Available*: With College Honors, With Distinction (Departmental Honors). See department advisers 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 Web site. The deadline for scholarship applications is April 1. Sophomores may apply for scholarship consideration before being admitted to the department.

### \* Student Organizations/Associations:

- o American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
- o American Society of Mechanical Engineers (ASME)
- o Pi Tau Sigma - Mechanical Engineering Honor Society (PTS)
- o Society of Automotive Engineers (SAE)
- o Society of Manufacturing Engineers (SME)
- o Society of Naval Architects and Marine Engineers (SNAME)
- o Society of Women Engineers (SWE)

## Graduate Program

Graduate Program Coordinator  
143 Mechanical Engineering Bldg, Box 352600  
206-543-5090  
megrad@u.washington.edu

The Department of Mechanical Engineering offers graduate programs leading to the degrees of Master of Science in Mechanical Engineering (M.S.M.E.) and Doctor of Philosophy (Ph.D.). The department also provides authorized options leading to the College-wide Master of Science in Engineering (M.S.E.) 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 M.S.M.E., 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

- \* *Grade Point Average:* The Graduate School requires a GPA of at least 3.00 for the last 90 quarter hours or 60 semester hours of graded undergraduate coursework to receive consideration. The department prefers an overall undergraduate GPA of at least 3.20. In addition, the department prefers that Ph.D. applicants have an M.S. GPA of 3.50 or better.
- \* Quality and difficulty of courses taken and universities and colleges attended.
- \* *GRE General Test:* Minimum GRE scores of 450 Verbal (350 if English is not a native language), 650 Quantitative, and 4.0 Analytical Writing.
- \* Three letters of recommendation
- \* Statement of purpose
- \* Official transcripts from all colleges/universities attended
- \* Professional experience, if applicable
- \* 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:

- \* 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.
- \* Course grades must be 2.7 or above
- \* 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.
- \* 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
- \* 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).
- \* 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.

*Please note:* For thesis-option students, special projects course 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

- \* *Grade Point Average:* The Graduate School requires a minimum GPA of 3.00 for the last 90 quarter hours or 60 semester hours of graded undergraduate coursework for admission. The department prefers an overall minimum undergraduate GPA of 3.20. In addition, the department prefers that Ph.D. applicants have a minimum M.S. GPA of 3.50.

- \* Quality and difficulty of courses taken and universities and colleges attended
- \* *GRE General Test:* Minimum GRE scores: 450 Verbal (350 if English is not a native language), 650 Quantitative, and 4.0 Analytical Writing.
- \* Three letters of recommendation
- \* Statement of purpose
- \* Official transcripts from all colleges/universities attended
- \* Professional experience, if applicable
- \* 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:

- \* *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.
- \* *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.
- \* *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 Ph.D. program.
- \* *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.
- \* *Qualifying Exam:* Every full-time student in the department's Ph.D. program is required to take the examination within one calendar after entry into the program.
- \* *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 Ph.D. study and no less than four months prior to scheduling the General Examination, replaces the first-year Advisory Committee.
- \* *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 scheduling the General Examination.
- \* *Dissertation Research:* Registration for a minimum of 27 credits of dissertation research is required over a period of at least three quarters - and at least two quarters after the General Exam.
- \* *Reading Committee:* The Reading Committee, consisting of three members drawn from the Supervisory Committee, must include at least two core Mechanical Engineering faculty.
- \* *Final Examination*
- \* *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 Web site 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.

# Technical Communication

14 Loew  
www.uwtc.washington.edu

Technical communicators use their language, visual, and analytical skills, as well as training and research in electronic and other media, to create and enhance communication in scientific and technical environments. Technical communication prepares students to design, create, edit, and evaluate technical and scientific discourse. The department provides coursework in the development of online help systems and in the design of general-audience content for delivery by means of advanced communication technologies such as the Web.

The complexities of modern life have greatly increased the number of people who need to communicate about technical and other specialized topics. Scientific journal articles, manuals, proposals, and other genres are important for a vast array of readers. With the Information Age, gaining and sharing technological understanding and capability has become a crucial human activity. We communicate in more genres, address broader (often global) audiences, and face more complex rhetorical problems than ever before.

To achieve success in their communication activities, progressive organizations are employing sophisticated planning and development methods, including user-centered design and evaluation, content management, and systems-based analyses. In addition, they undertake research projects and apply existing research to their own needs. Contemporary research in technical communication ranges from controlled empirical research on the processing of text, graphics, and multimedia content to observational research on how meaning is created and negotiated in business environments and virtual communities.

Other major interests include the human-computer interface, hypermedia, communications technology, the rhetoric of technical discourse, international communication, visual communication, publications and communications management, policy analysis of technological systems, and research and testing.

## Undergraduate Program

Adviser  
211 Engineering Annex, Box 352195  
206-543-1798 or 206-616-0797  
tcadvise@u.washington.edu

The Department of Technical Communication offers the following programs of study:

- \* The Bachelor of Science in Technical Communication degree
- \* A minor in technical Japanese

## Bachelor of Science in Technical Communication

*Suggested First-Year College Courses:* T C 231, approved math or statistics (see list on T C Web site), approved science (see list on T C Web site)

### Department Admission Requirements

Applicants are considered in two groups -- 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.

### Early Admission

1. *Course requirements:* 38 credits to include 10 credits of approved mathematics or statistics; 15 credits of approved natural science; and 13 credits of approved written and oral communication (including T C 231). 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. Application deadline is July 1 for autumn quarter only.
3. *Grade requirements:* Minimum 3.00 GPA in written and oral communications courses and minimum 2.00 cumulative GPA.

### Upper-Division Admission

1. *Course requirements:* 10 credits of approved mathematics or statistics; 15 credits of approved natural science; and 13 credits of approved written and oral communication (including T C 231). All courses must be completed prior to the July 1 application deadline.
2. 60 credits completed by application deadline, which is July 1 for autumn quarter and February 1 for spring quarter.
3. Students applying in the senior year must spend a minimum of four quarters in the program.
4. *Grade requirements:* Minimum 3.00 GPA in written and oral communications courses and minimum 2.00 cumulative GPA.

Students may also declare into the Technical Communication degree program through the College of Engineering Advanced Admission program (see the College of Engineering section for Advanced Admission entrance and continuation requirements).

## Graduation Requirements

180 credits as follows:

### General Education Requirements (93 credits)

1. *Written and Oral Communications (13 credits):* 5 credits of English composition from the University list; T C 231; 5 credits of oral/written communication from T C list (see adviser).
2. *Visual, Literary, & Performing Arts (VLP), and Individuals & Societies (I&S) (30 credits):* A minimum of 10 credits is required in each area.
3. *Math and Natural Science (50 credits):*
  - a. Mathematics (minimum 15 credits; see list of qualifying courses on T C Web site)
  - b. Science (minimum 15 credits; see list of qualifying courses on T C Web site)

### Major Requirements (82 credits)

1. *Technical Communication Core (51 credits):* T C 310, T C 400, T C 401, T C 402, T C 403, T C 407, T C 411, T C 412, T C 437, T C 493, T C 495
2. *Technical/Analytical (12 credits):* Must include either CSE 142 or PHIL 120.
3. *Approved Electives (19 credits):* Must demonstrate a coherent and relevant area of specialization.

### Free Electives (5 credits)

## Minor

*Minor Requirements:* Technical Japanese: Minimum of 25 credits to include T C 461 (5), T C 462 (5), T C 463 (5), plus 10 credits from the approved list of elective courses. For more information, contact the Technical Japanese Office, 13 Engineering Library.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* The department has identified several areas of competency for students. By achieving mastery in all these areas, upon graduation TC students are well prepared to advance to careers in technical communication, apply to top graduate programs, and conduct research in the field.

- Graduates are able to:
- o Understand the TC field
  - o Write and edit at a professional level

- o Analyze communication situations and problems in scientific and technical settings
- o Identify and work with the major genres of technical communication
- o Use appropriate tools and technologies to develop communication solutions
- o Understand and use principles for effective display of information
- o Understand and practice effective content development
- o Manage TC projects effectively
- o Work effectively on teams
- o Be sensitive to relevant larger contexts and environments

The Department of Technical Communication prepares students to assume positions of intellectual leadership in industry, government, and non-profit organizations. Students also specialize in science writing or Web site design. The Technical Japanese program provides a unique opportunity to develop cross-cultural experience and expertise.

Whatever their professional direction, technical communication students learn the newest communication technologies and practices, the most effective information-design strategies, and the research skills appropriate to their interests. They also learn the enduring theory and principles that enable them to understand the constant changes they will encounter throughout their careers. Finally, their coursework takes place in the context of social and political issues and human needs.

- \* *Instructional and Research Facilities:* Department facilities include the T C Computer Lab, Technical Japanese Computer Lab, Laboratory for Usability Testing and Evaluation (LUTE), and the Engineering/School Writing Center (EiWC).
- \* *Honors Options Available:* With College Honors. With Distinction. See adviser for details.
- \* *Research, Internships, and Service Learning:* All Technical Communication undergraduates are required to complete at least one 3-credit internship. The supervised internship in a publications organization must be approved by the faculty 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 are invited to work in research groups with TC grad students and faculty.
- \* *Department Scholarships:* Annually, T C selects one recipient of a College of Engineering Scholarship. The criteria for this scholarship are the applicant's prior academic history and likelihood for success in the technical communication field. Additionally, the Society for Technical Communication (STC) offers annual scholarships open to all students enrolled in a T C-related program.
- \* *Student Organizations/Associations:* Students in the Technical Communication degree program often participate in the Student Chapter of the Society for Technical Communication (STC), the Minority Science and Engineering Program (MSEP), and Women in Science and Engineering (WISE).

*Of Special Note:* The T C department is a small, academic community. Students generally call their professors by their first name and have the opportunity to work individually on projects and research supervised by T C faculty. Undergraduate students are encouraged to work in research groups and to attend conferences and professional meetings.

## Graduate Program

Graduate Program Coordinator  
14 Loew, Box 352195  
206-543-2567  
tcadvise@u.washington.edu

## Master of Science in Technical Communication

Technical Communication offers a Master of Science in Technical Communication (M.S.T.C.). (An evening program is offered through UW Educational Outreach.) A total of 41 credits is required for the M.S.T.C. degree, which includes 29 credits of required T C graduate courses and 11 credits of approved electives. M.S.T.C. students may elect to pursue a master's thesis or project report with the approval of their supervisory committee.

### Admission Requirements

In making recommendations for admission, the faculty consider the following from an applicant's record: (1) undergraduate GPA; (2) under-

graduate degree program and work experience; (3) the Graduate Record Examination (GRE) Verbal score; (4) the Test of English as a Foreign Language (TOEFL) score (if applicable); (5) letters of recommendation; and (6) Statement of Goals and Career Objectives. A limited number of prerequisite undergraduate courses may be required.

### Degree Requirements

41 credits, as follows:

The course of study must include:

- \* Two courses in Theory (min. 8 cr)
- \* Two courses in Research Methods (min. 8 cr)
- \* Coursework in Society and Systems (min. 4 cr)
- \* Coursework in New Media Design and Applications (min. 8 cr)
- \* Electives (no minimum)
- \* One seminar (min. 1 cr)

Students must complete the M.S.T.C. program within three years of admission; most finish within one to two years. Students who wish to propose a master's thesis (T C 700) or internship with report (T C 601) should consult with the adviser.

The required T C graduate courses include the following: T C 501 (4); T C 502 (4); T C 510 (4); either T C 516 (4) or T C 517 (4); either T C 505 (4), T C 512 (4), or T C 520 (4); T C 521 (1-2, max. 3).

Other courses that fulfill requirements in the four categories (Theory, Research Methods, Society and Systems, and New Media Design and Applications) must be approved by the student's supervisory committee chair. Courses may include coursework not only in engineering, but also in fields such as computer science, cognitive science, psychology, linguistics, behavioral science, as well as other disciplines at the UW.

## Inter-Engineering Master's in Technical Japanese

The Inter-Engineering Master's in Technical Japanese is a two year inter-engineering master's degree program that combines the study of engineering and technical Japanese in a high-tech learning environment. It is the only program of its kind in the country.

Students take classes in an engineering specialty and in advanced Japanese. They spend summer quarter after their first year in Japan doing a required internship in a Japanese company or research lab. Some internships are longer. Students graduate with an Inter-Engineering M.S.E. or M.S. degree.

Applicants who do not have an engineering or other high-tech background can follow the technical communication track and graduate with the inter-engineering M.S. degree.

### Admission Requirements

To be admitted, students should have at least three years of college-level Japanese language study or the equivalent. The Japanese Proficiency Test is required for all applicants and should be taken no later than two weeks before the application deadline. If applicants are unable to make arrangements to take the test before the application deadline, they need to contact the program coordinator.

### Degree Requirements

54 credits, as follows:

- \* *Engineering Fields:* Students must select an engineering field (usually the same as your undergraduate area of concentration) from among the following: Aeronautics and Astronautics, Bioengineering, Chemical Engineering, Civil and Environmental Engineering, Computer Science and Engineering, Electrical Engineering, Materials Science, Mechanical Engineering, Technical Communication
- \* *Credit Requirements:*
  - o *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.
  - o *Technical Japanese coursework:*
    - + *Oral Communication in Technical and Business Settings:* T C 471 (3), T C 472 (3), T C 473 (3)
    - + *Reading Techniques in Technical Japanese:* T C 461 (3), T C 462 (3), T C 463 (3)

- + *Advanced Japanese for Technical and Business Professionals*: T C 561 (3), TC 562 (3), T C 563 (3)

## Doctor of Philosophy

The goals and objectives of the T C Ph.D. program are as follows:

- \* To prepare individuals for a career as researchers, teachers, and intellectual leaders in the discipline of technical communication
- \* To foster the development and dissemination of new knowledge in technical communication
- \* To foster the development of an international, multi-cultural perspective and a diverse, inclusive student body and workforce in technical communication
- \* To invent new technical and strategic solutions to technical communication problems

By completion of the course of study, technical communication doctoral students are able to:

- \* Analyze a communication situation in its full complexity
- \* Select or develop an appropriate theoretical framework to motivate an understanding of the situation
- \* Select an investigative method from a broad range of methods and effectively use it for conducting an inquiry.
- \* Confront specific communication problems and create solutions for them that can be defended theoretically
- \* Translate theory and research findings into technical or strategic inventions for solving communication design problems

## Admission Requirements

Students may be admitted to the T C Ph.D. program after completing either an undergraduate degree or a master's degree in T C or a relevant field (up to 30 credits of master's work may be applied toward the 105-credit requirement). Because T C is a relatively new discipline, applicants can be expected to represent a wide range of backgrounds.

Applicants must submit the following:

- \* UWTC Ph.D. admission forms
- \* Official transcripts of all academic study
- \* Evidence of a minimum GPA of 3.00
- \* Three letters of recommendation
- \* A curriculum vitae
- \* A personal statement of objectives and research area of interest.

International students will also be required to submit a TOEFL test score of at least 600, obtained within the last two years.

## Degree Requirements

105 credits, as follows:

To be awarded a Ph.D. in Technical Communication from the Department of Technical Communication at the University of Washington, the following requirements must be met:

- \* After having completed 30 credits of coursework, pass a Preliminary Exam. (Those who do not pass the preliminary exam for Ph.D. study may proceed to finish a terminal master's degree.)
- \* Select Committee Chair within two quarters of passing Preliminary Exam.
- \* Successfully complete all course distribution and credit-hour requirements.
- \* Successfully complete the requirements for directed research.
- \* After having completed 60 credits, pass a General Examination to attain formal candidacy for the Ph.D. program (Candidate's Certificate).
- \* Successfully defend a dissertation proposal before a Supervisory Committee.

- \* Successfully defend the dissertation itself before a Reading Committee (Final Exam).

Students are encouraged but not required to teach; if they do teach, they are required to take the teaching seminar, T C597.

## Course Distribution

The coursework exposes students to the literature and multidisciplinary perspectives of the field; the coursework requirements are distributed across four main thematic areas: theory, research methods, media design and applications, and society and systems. In their coursework, students encounter the main themes and intellectual diversity of the field and learn to reason about the claims of the main perspectives. Students use elective credits to broaden their perspectives or gain more depth in disciplines closely related to TC. The specific required core courses and other coursework requirements in the four thematic areas that all TC Ph.D. students are expected to take include the following:

- \* *Theory*: Four courses that are 3 or more credits, as follows: T C 501 (4), T C 502 (4), additional approved theory courses
- \* *Research Methods*: Three courses that are 3 or more credits, as follows: T C 516 (4) or T C 517 (4); additional approved research methods courses
- \* *Media Design and Applications*: Three courses that are 3 or more credits, as follows: T C 510 (4), T C 511 (5), additional approved media design courses
- \* *Society and Systems*: Three courses that are 3 or more credits, from the following: T C 505 (4), T C 512 (4), T C 520 (4), other approved society and systems courses

The following tables present a summary of the credit-hour requirements for the TC Ph.D., a list of courses that meet the coursework category requirements, and a sample full-time and part-time pathway.

## Credit-Hour Requirements

- \* 46 credits minimum of core distribution requirements
- \* 12 credits of directed research (T C 596)
- \* 20 credits minimum approved electives (30 credits max.)
- \* 27 credits minimum dissertation

A student entering with a master's degree in Technical Communication may use up to 30 credits from that degree towards the Ph.D. requirements. These 30 credits may be applied toward the core distribution requirements or toward the elective credits, as appropriate and as approved by the graduate adviser.

## Research Facilities

The Department of Technical Communication has a well-equipped computer laboratory that effectively supports its courses and research projects. In addition, there are two specialized departmental research laboratories: the Technical Japanese Lab and the Laboratory for Usability Testing and Evaluation (LUTE). An award-winning magazine, Northwest Science and Technology, is produced in the department and serves as a laboratory for science-writing students. Finally, technical communication 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 technical communication. More information and application forms can be obtained by contacting the department.

# College of Forest Resources

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## Dean

B. Bruce Bare  
107 Anderson

## Associate Dean for Academic Affairs

Stephen West  
123 Anderson

[www.cfr.washington.edu](http://www.cfr.washington.edu)

The College of Forest Resources 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 College holds a position of national and international leadership in both instruction and research. Its location in one of the world's largest forest regions provides students access to a unique urban-to-wildland world-class laboratory in which to study. Approximately 250 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 College'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 Center for Urban Horticulture (CUH), the UW Botanic Gardens (UWBG), the Olympic National Resources Center (ONRC), the Rural Technology Initiative (RTI), Stand Management Cooperative (SMC), and the Precision Forestry Cooperative. For current information on all these centers and cooperatives, please visit [www.cfr.washington.edu/research/index.html](http://www.cfr.washington.edu/research/index.html).

## Facilities

The College 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 University of Washington Botanic Gardens, is located near the Union Bay natural area on the east side of the Seattle campus.

The Center for Urban Horticulture maintains a library that serves students, faculty, landscape professionals, and the public. The Center's herbarium supports fieldwork in urban 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 Department of Biology, is available for use by the College's students.

The College'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 College computing facilities include computer systems dedicated to specific research areas, a student computer laboratory, a geographical information systems (GIS) laboratory, and a local-area network with several servers offering access to the Internet and local printers.

## Office of Student and Academic Services

Director, Student and Academic Services  
Michelle M. Trudeau  
130 Anderson  
[cfradv@u.washington.edu](mailto:cfradv@u.washington.edu)

The Office of Student and Academic Services in the College of Forest Resources assists prospective students with admission to the College and advises current students, including interpretation of College and University requirements and assistance in course planning. At the graduate level, faculty advisers assist students in creating a course plan to help build an appropriate academic background for their research area.

The office keeps job listings and employer resources to help students obtain summer employment and internships while in school and permanent employment upon graduation. The office also sponsors a career fair every January. Although work experience is not required for graduation, students are strongly urged to seek summer employment relevant to their career goals.

## Research Programs

Areas of research are closely tied to the College's graduate program research areas. These include forest ecology, forest soils, forest systems and bioenergy, paper science and engineering, restoration ecology and environmental horticulture, social sciences, sustainable resource management, and wildlife science.

## Outreach Programs

The College, through its interdisciplinary centers and through collaboration with Cooperative Extension of Washington State University, undertakes and promotes continuing public and professional education for citizens of the state.

## Field Facilities

College 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 College 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. Broad forest and soil diversity in this area has led to extensive biological, management, and engineering research. A full-time resident staff manages this 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 College is establishing a new Center for Sustainable Forestry at Pack Forest to be charged with discovering, teaching, and demonstrating the concepts of sustainable forestry, with special emphasis on the College'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 mission of the center is to conduct research and education on natural-resources management practices which integrate ecological and economic values. Innovative management methods that integrate environmental and economic interests into pragmatic management of forest and ocean resources are demonstrated. A forest management program as well as a marine program are in place to study the relationship between the terrestrial and marine environment.

The Wind River Canopy Crane is a 250-foot research crane set in old-growth forest canopy in southwestern Washington state. It is the largest canopy crane in the world and the first in a temperate forest. A research partnership between the College of Forest Resources and the U.S. Forest Service, it provides graduate students and faculty opportunities for on-site research and field trip opportunities for undergraduates.

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 utilized by the College in cooperation with Seattle Public Utilities for studies in forest physiology and mineral cycling in the forest ecosystem.

The Center for Urban Horticulture, a part of the UW Botanic Gardens, has offices, laboratories, public-education resources, and field sites for teaching and experimentation 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 dumpsite 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 an herbarium dedicated to plants of urban 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 Horticultural 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 also conducts courses, lectures, and special events for the public and professionals as part of the College'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 University of Washington 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 various research projects, including many independent student projects. The arboretum, established in 1934, also serves as an important public-service area to the University, offering numerous formal and informal classes for the general public and, in addition, serving the community as a public park and open space.

## Undergraduate Program

Adviser  
116 Anderson  
206-543-3077  
cfradv@u.washington.edu

The College of Forest Resources offers the following programs of study:

- \* The Bachelor of Science in Forest Resources degree with a major in environmental science and 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 in Forest Resources degree with a major in paper science and engineering.
- \* Minors in environmental science and resource management; and streamside studies.

## Bachelor of Science in Forest Resources

*Suggested First- and Second-Year College Courses:*

- \* *Environmental Science and Resource Management:* T C 231, ENGL 131 (or other 5-credit English composition course); COM 220; BIOL 161-BIOL 162; CHEM 120, CHEM 220; any 5-credit VLP course; MATH 120 or Q SCI 291; ESRM 210.
- \* *Paper Science and Engineering:* CHEM 142, CHEM 152, CHEM 162, CHEM 237, CHEM 238; ECON 200; ENGL 131 (or other 5-credit English

composition course); T C 231; CHEM E 260; MATH 124, MATH 125, MATH 126, MATH 307; PHYS 121, PHYS 122, PHYS 123; Q SCI 381; PSE 201, PSE 202, PSE 248, and PSE 450.

## Department Admission Requirements

- \* *Environmental Science and Resource Management:* Students in good academic standing may declare this major at any time.
- \* *Paper 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 College Web site. Departmental deadlines are July 1 for autumn quarter, October 15 for winter quarter, and January 15 for spring quarter. Admission is competitive; completion of requirements does not guarantee admission.

## Graduation Requirements

*Environmental Science and Resource Management*

180 credits as follows:

1. *General Education Requirements (67-68 credits)*
  - a. *Written Communication (12 credits):* 5 credits English composition (ENGL 131 preferred); T C 231; and four additional credits, which are satisfied by core courses shown below.
  - b. *Quantitative and Symbolic Reasoning (20 credits):* Q SCI 291, Q SCI 292, Q SCI 381; ESRM 250.
  - c. *Natural World (24-25 credits):* BIOL 161 and BIOL 162, or BIOL 180 and BIOL 200; CHEM 120 and CHEM 220, or CHEM 142 and CHEM 152; ESRM 210 or ESS 210 or ESS/OCEAN 230 or ESS 201 or ATM S 211.
  - d. *Visual, Literary, & Performing Arts (VLP) (10 credits):* COM 202 or COM 220; five additional credits from the University VLP list.
  - e. *Individuals & Societies (I&S) (10 credits):* ENVIR/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 College of Forest Resources for the major; 29 to 36 such credits may come from one of the specified option course lists described below):* 15 of the credits must be at the 400 level.
  - c. *Capstone (10 credits):* ESRM 462 and ESRM 463 and ESRM 464; or ESRM 494 and ESRM 496; or ESRM 494 and ESRM 495.
3. *Free electives:* As needed to bring minimum total to 180 credits.

*Environmental Science and Resource Management with one of the following voluntary program options:*

All requirements for any of the four voluntary options are the same as for the major shown directly above.

1. *Landscape Ecology and Conservation Option (35 credits, including 29 credits from the following list):* ESRM 350, ESRM 425, ESRM 427, ESRM 430, ESRM 441, ESRM 465, ESRM 470. Minimum 6 additional credits of 300- or 400-level courses from within the College of Forest Resources to reach 35 total.
2. *Restoration Ecology and Environmental Horticulture Option (36 credits from the following list):* ESRM 331, ESRM 362, ESRM 411 or ESRM 412, ESRM 415, ESRM 444 or ESRM 451, ESRM 473 or ESRM 302, ESRM 478, ESRM 480.
3. *Sustainable Forest Management Option (35 credits from the following list):* ESRM 368; ESRM 461; ESRM 323; ESRM 470; ESRM 430; ESRM 311 or ESRM 328 or ESRM 350 or ESRM 409 or ESRM 410 or ESRM 425 or ESRM 426 or ESRM 428; ESRM 315 or ESRM 381 or ESRM 420 or ESRM 435 or ESRM 444 or ESRM 455 or ESRM 468; ESRM 320 or ESRM 321 or ESRM 400 or ESRM 403 or ESRM 427 or ESRM 465.
4. *Wildlife Conservation Option (35 credits from the following list):* ESRM 350, ESRM 351, ESRM 450, ESRM 455 (to be taken at least twice), Q SCI 477, Q SCI 482, Q SCI 483.

*Paper Science and Engineering*

1. *General Education Requirements (91 credits)*
  - a. *Written Communication (8 credits):* 5 credits English composition (ENGL 131 preferred); T C 231 (3 credits). (Additional 5 credits satisfied by PSE courses shown below.)

- b. *Mathematics and Statistics (23 credits)*: MATH 124, MATH 125, MATH 126, MATH 307; Q SCI 381 or STAT 311.
- c. *Supporting Sciences (43 credits)*: CHEM 142, CHEM 152, CHEM 162; CHEM 237, CHEM 238; CHEM E 260; PHYS 121, PHYS 122, PHYS 123.
- d. *Visual, Literary, & Performing Arts (VLPA) (10 credits)*: Chosen from the University VLPA list.
- e. *Individuals & Societies (7 credits)*: ECON 200; 2 credits from the University I&S list; (3 additional credits satisfied by required PSE courses.)
- 2. *Major Requirements (64-65 credits)*
  - a. *Chemistry and Chemical Engineering (18 credits)*: CHEM 455; CHEM E 310, CHEM E 330, CHEM E 340, CHEM E 436.
  - b. *Paper Science Courses (46-47 credits)*: PSE 201, PSE 202, PSE 248, PSE 402, PSE 404, PSE 406, PSE 450, PSE 476, PSE 477, PSE 478, PSE 479, PSE 480, PSE 481, PSE 482, PSE 487, PSE 497. All required PSE courses must be completed with at least a 2.0 grade.
- 3. *Electives*
  - a. Technical Electives or Business Option (12 credits minimum).
  - b. Free electives to bring minimum total to 180 credits.

## Minors

### *Environmental Science and Resource Management*

*Minor Requirements*: Minimum 25 ESRM credits, 20 of which must be upper division. A maximum of 5 credits from PSE courses allowed.

### *Streamside Studies*

*Minor Requirements*: Minimum 28 credits with a grade of at least 2.0 in each course:

- 1. *Core courses (minimum 15 credits)*: ESS 210, ESS 230, ESS 326 or ESS 401; CEE 476 or ESRM 426; ESRM 303, BIOL 356, or FISH 447; and FISH 450, ESRM 328/FISH 328, or FISH 311.
- 2. 3 credits of ESRM 429
- 3. 10 credits from the following (extra courses not applied to the core may also count): CEE 462, CEE 476; ESRM 210 or ESRM 311; ESRM 371/ENVIR 379/SOC 379, or ANTH 457; ESRM 465, ESRM 470, ESRM 472; FISH 312, FISH 428, FISH 438/BIOL 438; GEOG 370.

## 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 paper science and engineering curriculum is to provide students with the training, tools, and experiences needed to be successful professionals in the pulp, 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 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 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.

The Bachelor of Science in Forest Resources degree with a major in paper science and engineering. The paper science and engineering major is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700, 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. The program has adopted the following objectives and outcomes:

- 1. Graduates of the PSE program will have strong technical capability. They will have the essential knowledge and basic skills required for technical careers in the Pulp, Paper, and Allied Industries.
  - a. Students will have the ability to apply knowledge of mathematics, science, and engineering.
  - b. Students will have the ability to apply knowledge of fiber and paper physics, chemistry, and chemical engineering as it pertains to the pulp and paper industry.
  - c. Students will have the ability to design and conduct experiments, as well as to statistically analyze and interpret data.
  - d. Students will have the ability to design a system, component, or process to meet desired needs with realistic constraints.
  - e. Students will have the ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
  - f. Students will have the ability to communicate effectively, both orally and written.
- 2. Graduates of the PSE program will be excellent problem solvers. They will be able to creatively resolve problems and exercise sound professional judgment in open-ended projects such as designing processes or solving product and production problems.
  - a. Students will be able to pose well-defined, solvable problems from complicated and loosely defined scenarios similar to those found in the pulp and paper industry.
  - b. Students will be able to apply scientific and engineering principles in open-ended projects, such as designing processes or solving product and production problems.
  - c. Students will be able to generate alternative solutions and designs, and then use sound professional judgment to choose between alternatives in open-ended projects.
  - d. Students will be able to evaluate and communicate the results of completed tasks in open-ended projects.
- 3. Graduates of the PSE program will have the intellectual maturity to work well within their professional organization and to contribute to society at large.
  - a. Students will be able to contribute to and lead multidisciplinary teams.
  - b. Students understand professional and ethical responsibilities.
  - c. Students will have the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
  - d. Students will know contemporary issues relevant to the pulp and paper industry.
  - e. Students will understand that life-long learning is a necessity for maintenance of professional competency.

- \* *Instructional and Research Facilities*: See the main College section (above) for details.

- \* *Honors Options Available*: With College Honors; With Distinction (Departmental Honors). See adviser for requirements, or link to [www.cfr.washington.edu/acad/undergrad/honors.htm](http://www.cfr.washington.edu/acad/undergrad/honors.htm)

- \* *Research, Internships, and Service Learning*: The Office of Student and Academic Services regularly receives internship announcements, which are forwarded to all CFR 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*: The College of Forest Resources has a strong scholarship program for majors which provides in-state tuition to students, based on merit or need. Application information can be found at [www.cfr.washington.edu/Acad/Scholarship.htm](http://www.cfr.washington.edu/Acad/Scholarship.htm).

The Washington Pulp and Paper Foundation provides scholarships for students enrolled in the Paper Science and Engineering curriculum. For information about these scholarships, contact Professor Rick Gustafson in Bloedel 364, or visit the foundation Web site.

- \* *Student Organizations/Associations*: The College has student organizations which organize student symposia, field trips, parties, slide shows

and talks, public service projects, and other social activities. Current CFR student organizations can be found at [www.cfr.washington.edu/People/organizations.htm](http://www.cfr.washington.edu/People/organizations.htm).

*Of Special Note:* Some college classes include field trips or require laboratory supplies or material duplication at student expense.

## Graduate Programs

Graduate Program Coordinator  
116 Anderson, Box 352100  
206-543-7081  
[cfradv@u.washington.edu](mailto:cfradv@u.washington.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 of study within the College divisions.

## Master of Environmental Horticulture

### Admission Requirements

- \* Evidence of academic readiness for the program.
  - o Minimum 3.00 GPA in last 60 semester or last 90 quarter hours.
  - o 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).
  - o Scores on the GRE (550-Verbal, 600-Quantitative, 5.0 Writing recommended).
  - o *International applicants only:* Minimum TOEFL score of 580 (237 for computer based test).
- \* Evidence of knowledge of the intended area of study.
  - o Clearly written statement of objectives in pursuing further education.
  - o Ideally, work or field experience in the planned area of study.
- \* Supporting evidence from reference persons.
  - o Recommendations from references familiar with applicant's academic ability and potential.
  - o Letters of recommendation from employers in field related to applicant's educational goals.

### Degree Requirements

45 credits, as follows:

- \* CFR 500 (1), CFR 503 (6), CFR 549 (2), CFR 561 (2), ESRM 411 (3), ESRM 451 (5), ESRM 480 (5), ESRM 481 (2); one course in policy, planning or administration (3 credits)
- \* *Internship/independent research:* A formal public presentation and written professional paper are required. A member of the EHUF faculty will advise the student on his/her project, which will be completed as CFR 601 (9 credits minimum)
- \* Electives (7 credits)

## Master of Forest Resources in Sustainable Forest Management

### Admission Requirements

- \* Evidence of academic readiness for the program.
  - o Minimum 3.00 GPA in last 60 semester or last 90 quarter hours.
  - o 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).
  - o Scores on the GRE (550-Verbal, 600-Quantitative, 5.0 Writing recommended).
  - o *International applicants only:* Minimum TOEFL score of 580 (237 for computer based test).
- \* Evidence of knowledge of the intended area of study.
  - o Clearly written statement of objectives in pursuing further education.
  - o Ideally, work or field experience in the planned area of study.

- \* Supporting evidence from reference persons.
  - o Recommendations from references familiar with applicant's academic ability and potential.
  - o Letters of recommendation from employers in field related to applicant's educational goals.

### Degree Requirements

45 credits, as follows:

- \* CFR 500 (1), CFR 509 (3), CFR 526 (3)
- \* *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.
- \* *Unrestricted electives:* 9 credits
- \* *Capstone project:* CFR 600 (5) or CFR 601 (5)

## Master of Science

### Admission Requirements

- \* Evidence of academic readiness for the program.
  - o Minimum 3.00 GPA in last 60 semester or last 90 quarter hours.
  - o 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).
  - o Scores on the GRE (550-Verbal, 600-Quantitative, 5.0 Writing recommended).
  - o *International applicants only:* Minimum TOEFL score of 580 (237 for computer based test).
- \* Evidence of knowledge of the intended area of study.
  - o Clearly written statement of objectives in pursuing further education.
  - o Ideally, work or field experience in the planned area of study.
- \* Supporting evidence from reference persons.
  - o Recommendations from references familiar with applicant's academic ability and potential.
  - o Letters of recommendation from employers in field related to applicant's educational goals.

### Degree Requirements

Minimum 45 credits, to include as follows:

- \* *Orientation:* CFR 500 (1)
- \* *Social and Natural Sciences Applied to Natural Resource and Environmental Issues:* CFR 509 (3)
- \* *Disciplinary Knowledge:* Minimum 10 credits from list of approved courses according to interest area
- \* *Research Design and Quantitative Analysis:* Minimum 8 credits from list of approved courses according to interest area
- \* *Current Topics:* 2 credits (500 level), topics vary from year to year
- \* *Thesis Research:* CFR 700 (9 credits minimum)

Current interest groups are:

- \* Forest Ecology
- \* Forest Soils
- \* Forest Systems and Bioenergy
- \* Paper Science and Engineering
- \* Restoration Ecology and Environmental Horticulture
- \* Social Sciences
- \* Sustainable Resource Management
- \* Wildlife Science

## Doctor of Philosophy

### Admission Requirements

- \* Evidence of academic readiness for the program.
  - o Minimum 3.00 GPA in last 60 semester or last 90 quarter hours.
  - o 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).
  - o Scores on the GRE (550-Verbal, 600-Quantitative, 5.0 Writing recommended).
  - o *International applicants only:* Minimum TOEFL score of 580 (237 for computer based test).



- \* Evidence of knowledge of the intended area of study.
  - o Clearly written statement of objectives in pursuing further education. Ph.D. applicants should have earned a master's degree, most apply for the master's and then continue on to the Ph.D.
  - o Ideally, work or field experience in the planned area of study.
- \* Supporting evidence from reference persons.
  - o Recommendations from references familiar with applicant's academic ability and potential.
  - o Letters of recommendation from employers in field related to applicant's educational goals.

### **Degree Requirements**

90 credits, to include as follows:

- \* Same as for Master of Science degree (above) with one additional course in each of the categories:
  - o Disciplinary Knowledge
  - o Research Design and Quantitative Analysis
  - o Current Topics

- \* Qualifying examination
- \* General examination
- \* Dissertation research: CFR 800 (27 credits minimum)
- \* Final examination

### **Financial Assistance**

The College 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 January 15 for the following academic year. Applications are in the College's admissions packet available on the College's Web site at [www.cfr.washington.edu/Acad/grad.html](http://www.cfr.washington.edu/Acad/grad.html).

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# The Information School

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370 Mary Gates Hall  
Box 352840

**Dean**  
Harry Bruce

**Associate Deans**  
Robert Mason, Research  
Matthew Saxton, Academics

[www.ischool.washington.edu](http://www.ischool.washington.edu)

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 Ph.D. 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.

Our community is interdisciplinary, bringing together a variety of social science traditions, including: library and information science, computer science, sociology, communication, philosophy, and engineering. Most of our 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, an esteemed 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.

## Undergraduate Program

Informatics refers to the study of information systems and technology from a human perspective. It features the Information School's emphasis on a human-centered approach to systems design.

Informatics students study a range of information constructs, from simple systems that support personal information management to complex systems that involve vast databases of distributed information manipulated in real-time by high-speed computer technologies. They analyze national and global information policy, the management of formal information systems in organizations, and the subtleties of everyday information behavior. Also, they invent methods for representing, classifying, and retrieving information and design new information systems responsive to people's needs and values.

**Adviser**  
470 Mary Gates Hall  
Box 352840  
206-543-1794  
[informatics@ischool.washington.edu](mailto:informatics@ischool.washington.edu)

## Bachelor of Science

Suggested First- and Second-Year College Courses: INFO 100, an English composition course (selected from the University list), CSE 142, CSE 143, and STAT 311, courses that develop strong analytical, qualitative and quantitative reasoning, and written and oral communication skills as well as courses that provide exposure to a variety of social science fields.

## Program Admission Requirements

### Regular Admission

1. INFO 100 (5 credits); CSE 142 (4); STAT 311 (5) or QMETH 201 (4); one English composition course selected from the University list (5), with a minimum grade of 2.0 in each course. Departmentally approved transfer equivalents may be used to substitute for prerequisite courses. (Students may not receive credit for INFO 100 taken after CSE 142. Therefore, INFO 100 will be waived for students who have already completed CSE 142 or equivalent. If INFO 100 is waived, students make up the 5 credits by taking additional elective credits in the major.)
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 April 15. Students apply online at [www.ischool.washington.edu](http://www.ischool.washington.edu). Admission is for autumn quarter only.
5. Transfer students should contact the Information School as soon as they become interested in the informatics major. The School will consider courses equivalent to CSE 143 and may allow a student to be admitted provisionally on the condition that the student completes CSE 143 or equivalent with a minimum grade of 2.0 during the summer before matriculating in the program.

## Freshman Direct Admission Program (FDAP)

1. 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.
2. The number of early admission (FDAP) students will not exceed 10% of the number of majors admitted each year.

## Major Requirements

92 credits as follows:

1. Courses required for admission to the program (24 credits, as shown above)
2. *Human Centered Strand (20 credits)*: INFO 310, INFO 311, INFO 320, and INFO 380
3. *Technical Strand (13 credits)*: CSE 143, CSE 373, INFO 340, and INFO 341
4. *Integrated Strand (23 credits)*: INFO 300, INFO 370, INFO 440, and INFO 490 or INFO 491
5. *Major Electives (12 credits minimum)* selected from upper-division electives from the Information School and approved courses from outside departments.

*General Education*: Beyond the 92 credits required for the major, students must also satisfy the following:

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)

With courses required for the major, students automatically satisfy requirements for English composition (pre-admission English composition requirement), Quantitative/Symbolic Reasoning (STAT 311), Writing (INFO 310, INFO 311, and INFO 320), and Natural World (CSE 142, CSE 143, and INFO 340, INFO 341, and INFO 440). In addition, students satisfy a good portion of the requirements for Individuals & Societies (INFO 310, INFO 311, and possible electives). They satisfy requirements for Visual, Literary, and Performing Arts by taking courses outside the major. (INFO 424, an elective in the major, also counts towards the VLPA requirement.) Students must earn a minimum 180 credits to graduate.

## Continuation Policy

Students are expected to make satisfactory progress towards attainment of the Bachelor of Science in Informatics degree. Under normal circumstances, an informatics major attending full-time would make satisfactory progress by completing the major requirements in approximately two years after admission to the major, or within three years for students admitted to the major as sophomores. Lack of academic progress may be evidenced by low scholarship as well as excessive course repeats, course drops, or University withdrawals and cancellations. For more details, see adviser.

## 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 various professions. Possible job titles include security and performance analyst, Web developer, information management specialist, network administrator, product developer, business analyst, usability engineers, and many others.

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 information technologies on people; ability to communicate effectively in writing and speaking; 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, 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 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. Over half of all informatics students participate 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).

- \* *Departmental 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 Technology (ASIST).

### Of Special Note:

*Capstone Projects*: Students often use their capstone projects (INFO 490) to identify interest areas, develop skills, and prepare for future pursuits. The capstone projects, with titles such as "Making Environmental Policy: Human Centered Analysis of Knowledge Sharing Between Cross-Functional Groups" and "Project Management in an Open Source Developing Community," encompass a wide range of topics. Through capstone projects, students demonstrate the skills, understandings, and competencies they can successfully use to prepare for employment and graduate studies.

*Information Sessions*: Prospective students are encouraged to attend an Informatics information session. For a schedule of information sessions, visit the School's Web site.

## Graduate Programs

Graduate Program Coordinator  
370 Mary Gates Hall, Box 352840  
206-543-1794  
mlis@ischool.washington.edu

The School offers graduate programs leading to the Master of Library and Information Science (M.L.I.S.), the Master of Science in Information Management (M.S.I.M.), and the Doctor of Philosophy in Information Science.

### Master of Library and Information Science

#### Admission Requirements

The MLIS program is offered in two delivery modes: residential (on-campus, 2 year program) and distance (online with quarterly residencies, 3 year program). When applying applicants must indicate for which program they are applying. Applications should include the following:

- \* A current resume highlighting any relevant work experience, volunteer activities, and honors, awards, and presentations
- \* Three letters of recommendation
- \* Three letters of recommendation
- \* Personal statement of educational and professional goals and responses to two supplemental questions
- \* Official transcript from each relevant institution attended
- \* GRE Scores. Applicants with an earned doctorate (Ph.D., M.D., J.D.) are not required to submit GRE scores.
- \* TOEFL score (for international students)

#### Degree Requirements

63 credits, as follows:

- \* *Core curriculum (34 credits)*: LIS 500 The Life Cycle of Information (2), LIS 510 (4), LIS 520 (4), LIS 530 (4), LIS 540 (5), LIS 550 (4), LIS 560 (3), LIS 570 (4), LIS 580 (4)
- \* *Electives (29 credits)*
- \* *Portfolio or Thesis Option*: MLIS students must complete either a portfolio or thesis in order to graduate.
- \* *Directed Fieldwork*: LIS 590 (2-4, max. 8) is an elective course designed to provide students with 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 M.L.I.S. 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

- \* A current resume highlighting any relevant work experience, volunteer activities, and honors, awards, and presentations
- \* Three letters of recommendation
- \* Personal statement of educational and professional goals and responses to two supplemental questions
- \* Official transcript from each relevant institution attended
- \* Earned J.D. prior to enrollment in the M.L.I.S. program
- \* TOEFL score (for international students)

#### Degree Requirements

44 credits, as follows:

- \* *Core curriculum (23 credits)*: LIS 500 (2), LIS 510 (4), LIS 520 (4), LIS 530 (4), LIS 540 (5), LIS 550 (4)
- \* *Law librarianship courses (17 credits)*: LIS 591 (3), LIS 592 (3), LIS 593 (3), LIS 594 (4), LIS 595 (4)
- \* *Directed fieldwork*: LIS 590 (4)

## Master of Science in Information Management

#### Admission Requirements

- \* A current resume highlighting any relevant work experience, volunteer activities, and honors, awards, and presentations
- \* Three letters of recommendation
- \* Personal statement of educational and professional goals
- \* Official transcript from each relevant institution attended
- \* GRE or GMAT Scores. Applicants with an earned doctorate (Ph.D., M.D., J.D.) are not required to submit GRE or GMAT scores.
- \* TOEFL score (for international students)

#### Degree Requirements, Day Option

65-71 credits, to include:

- \* *Core curriculum*:
  - o *Foundational core courses*: IMT 480 (4), IMT 440 (1-5, max. 5), IMT 500 (1)
  - o *Technology core courses*: IMT 540 (4), IMT 541 (5), IMT 542 (3)
  - o *Management core courses*: IMT 580 (4), IMT 581 (3), IMT 582 (4)
  - o *Integrating core courses*: IMT 598 (3), IMT 595 (3-5)
- \* *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. M.S.I.M. course electives include, among others, principles of information retrieval systems, strategic planning and evaluation, and marketing foundations for information professionals.
- \* *Internship*: M.S.I.M. internships are structured around a course (IMT 590) and are designed to provide students with 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:

- \* *Core curriculum*:
  - o *Foundational core courses*: IMT 480 (4), IMT 440 (1-5, max. 5), IMT 500 (1)
  - o *Technology core courses*: IMT 540 (4), IMT 541 (5), IMT 542 (3)
  - o *Management core courses*: IMT 580 (4), IMT 581 (3), IMT 582 (4)
  - o *Integrating core courses*: IMT 598 (3), IMT 595 (3-5)
- \* *Electives*: Students complete a minimum of 11 credits of electives, which includes advanced M.S.I.M. courses, relevant upper level coursework in other academic disciplines, or an Independent Study (IMT 600).

## Doctor of Philosophy

Ph.D. Adviser  
370 Mary Gates Hall  
206-543-1794  
phd@ischool.washington.edu

#### Admission Requirements

- \* Current curriculum vitae highlighting any academic and/or work experience, honors, publications, presentations, and research experience
- \* Three letters of recommendation
- \* Personal statement of educational and professional goals
- \* Official transcript from each relevant institution attended
- \* GRE Scores. Applicants with an earned doctorate (Ph.D., M.D., J.D.) are not required to submit GRE scores.
- \* TOEFL score (for international students)

#### Degree Requirements

90 credits minimum, to include:

- \* *Required courses*: INSC 501 (3), INSC 570 (4), INSC 572 (5), INSC 500 (2); two research practica; two teaching practica; at least one of the following quantitative methods courses: BIOST 502 (4), BIOST 517 (4), COM 520 (5), CS&SS 507 (3), PSYCH 524 (4)
- \* Additional elective coursework selected in consultation with the faculty advisers

- \* 18 graded credits in courses at the 500 level and above (taken prior to General Exam)
- \* 60 credits taken prior to General Exam
- \* 27 dissertation credits (INSC 800)
- \* Preliminary Review determined by a School-based Advisory Committee at the end of the required first-year of full-time study
- \* General Examination upon completion of coursework and practica components to attain formal candidacy for the Ph.D. program (Candidate's Certificate)
- \* 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 M.L.I.S. and M.S.I.M. students are encouraged to apply during the admissions process and throughout the year as other positions become available. Please visit the Student Employment Opportunities page to apply for open positions. Ph.D. students are automatically considered for graduate student service appointments.

M.L.I.S. 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 10,000 square feet of offices, workstations, research labs, and meeting spaces.

For more information, please visit the School's Web site at [www.ischool.washington.edu/technology/](http://www.ischool.washington.edu/technology/).

## 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 Solutions, Information Assurance and Cybersecurity, and School Library Professional. Those interested in continuing education or certificate programs should contact UW Educational Outreach, 4311 11th Avenue NE, Box 354978, University of Washington, Seattle, WA 98105. Phone: 206-543-2320 or see [www.extension.washington.edu/ext/](http://www.extension.washington.edu/ext/).

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# Interdisciplinary Graduate Programs

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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  
depts.washington.edu/astrobio

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.

This investigation demands an intense interdisciplinarity, and the Astrobiology Program at the University of Washington is creating a new community of scholars, investigators, and educators. This community is skilled in multidisciplinary methods and thinking and pushes the boundaries beyond the commonplace with intellectual vigor, creativity, and rigorous method.

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 Ph.D. programs of the participating departments. The program's unique features that 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. So, too, does the astrobiology community of scholars and researchers at the University of Washington benefit 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

The University of Washington academic departments participating in the Graduate Certificate Program in Astrobiology provide expertise in all the primary disciplines collaborating in the study of Astrobiology:

- \* 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 in the usual way by the Ph.D. program of one of these departments.

Please contact the participating departments of your choice for Ph.D. program application requirements and deadlines.

## Certificate Requirements

15 credits minimum, as follows:

- \* ASTBIO 501 (4), ASTBIO 502 (4)
- \* Three astrobiology-only seminar series (1 cr)
- \* One cognate course approved by the student's advisory committee to ensure sufficient breadth (see program Web site for current list of cognate courses)
- \* One quarter of a research rotation in an area outside the student's home discipline (3 to 10 credits)
- \* Participation in a minimum of three workshops comprising the capstone experience (non-credit)
- \* Astrobiology ethics seminar (variable credits)

A minimum of 15 credits are required. Additional credits may be earned through:

- \* Other approved cognate courses
- \* Astrobiology public lecture series (1 credit)

Successful completion of the program requires a minimum cumulative GPA of 3.00 for all courses required for the certificate and a grade of 2.7 or higher for each elective course counted toward the certificate.

## Biomedical Structure and Design

J405 Health Sciences  
depts.washington.edu/bmsdwp

## Graduate Program

Graduate Program Coordinator  
G514 Health Sciences, Box 357420  
206-543-5474

The department's graduate program is directed toward the education of doctoral students who anticipate careers that will 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 subdisciplines: human anatomy, neuroanatomy/neurobiology, histology, embryology/developmental biology, cell biology, and macromolecular structure.

## Master of Science

### Admission Requirements

- \* A minimum GPA of 3.00
- \* A bachelor's degree in one of the following or a related area: chemistry, biology, physics, biochemistry, or biophysics.
- \* GRE and advanced GRE in either Chemistry, Biochemistry, Biology or Physics.
- \* The minimal course requirements for successful applicants are:
  - o *Chemistry*: General, organic, and physical
  - o *Physics*: One year
  - o *Mathematics*: One year of calculus; multivariable calculus and/or linear algebra are strongly recommended
  - o *Biology and/or Biochemistry*: One year general biology plus one advanced course in biology or biochemistry
- \* Undergraduate research experience is strongly recommended.
- \* International students must have a minimum TOEFL score of 600.
- \* International students hoping to study with BMSD faculty in the Chemistry Department must have a minimum TSE score of 55.

## Degree Requirements

36 credits, as follows:

- \* *Required courses:* BIOC 530 (3); BMSD 540, BMSD 541, BMSD 542 (2, 2); BMSD 520 (0.5) to be taken every quarter
- \* 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
- \* 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.
- \* *Teaching:* In order to gain practical teaching experience, students in the program will serve as teaching assistants for two quarters.
- \* *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.

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## Biology Teaching

protist.biology.washington.edu/teachers

## Graduate Program

Graduate Program Coordinator  
222 Hitchcock, Box 355320  
206-543-1689

The Graduate School Biology Teaching Group offers an interdisciplinary program that leads to the degree of Master of Science in biology 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 course work 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.

## Master of Science

### Admission Requirements

- \* Secondary teaching certificate. (Uncertified teachers employed in private schools, community colleges, or other educational facilities must provide evidence of professional involvement in teaching.)
- \* Bachelor's degree in biology or closely related field. Students in related fields must have adequate preparation in science.
- \* Minimum GPA of 3.00 in the most recent 90 graded quarter credits (60 semester credits)
- \* Graduate Record Examination Test scores
- \* Two or three letters of recommendation.
- \* Statement of professional experience and objectives.

### Degree Requirements

- \* 36 credits, 18 of which must be graduate level and 18 must be graded. These categories are not mutually exclusive.
- \* All coursework must be at or above the 400 level.
- \* 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.

## Environmental Management

274 Mary Gates Hall  
depts.washington.edu/poeweb/gradprograms/envmgt

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 capstone consulting project, students acquire the tools to solve real-world environmental problems via the three avenues of science, policy, and business. The program provides an excellent education and training opportunity for a diverse array of graduate students preparing for careers in the broad field of environmental affairs.

Key benefits of the program are:

- \* Students participate in a community of faculty and students from a multitude of departments who share the common goal of environmental stewardship and sustainability.
- \* Students explore environmental problems, and develop solutions, in a multidisciplinary environment, incorporating a wide range of perspectives and priorities.
- \* Students receive a printed certificate and record in their 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 such interdisciplinary educational experience available to graduate students at the University of Washington at this time.

### Eligibility

All students enrolled in graduate and professional degree programs in any school of the University of Washington are eligible to apply.

Prior to admission, students must have completed 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); and social or natural science.

Facility with written argument and communication is a prerequisite. This requirement is demonstrated in the letter of application.

### Steering Committee

The program is governed by the Steering Committee for Environmental Management.

## Graduate Program

Graduate Program Coordinator  
274 Mary Gates Hall  
Box 352802  
206-221-6129  
envirmgt@u.washington.edu

The certificate's courses and projects have been chosen to 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, perhaps most importantly, to appreciate, communicate with, and collaborate with experts from other fields, who have different perspectives and priorities.

### Certificate Requirements

21 credits, as follows:

- \* Three core courses (10 total credits, actual courses vary by year)
- \* Completion of a team-based keystone project (ENVIR 491, 8 credits)
- \* Participation in the Henry Luce Environmental Management speaker series (included with keystone credits)

\* 3 credits of electives selected in consultation with the Graduate Program Coordinator and approved by the EM Admissions Committee

## Global Trade, Transportation, and Logistics Studies

313 Loew  
depts.washington.edu/gttl

The aim of the graduate certificate program in Global Trade, Transportation, and Logistics (GTTL) is to enable graduate students to augment their degree programs in preparation for careers that demand the combined knowledge of trade, transportation, and logistics. Particular attention is directed to the study of activities involved in the flow of goods from point of origin to point of consumption on a global scale. The wide range of issues addressed include the management of the intermodal connections among maritime, aviation, and overland modes of transport; environmental and energy concerns; advancements in telecommunications; and the legal, regulatory, and technological infrastructures that facilitate global commerce and transportation.

The GTTL graduate certificate program is responsive to the needs of government and industry for trained university graduates. The program is overseen by the Interdisciplinary Committee on Global Trade, Transportation, and Logistics. Members come from the University and the private and public sectors. GTTL works with leaders in business and government organizations to develop internships and jobs, in addition to offering a number of scholarship opportunities for graduate students. The GTTL certificate is based on a set of course requirements to be fulfilled in conjunction with the student's existing graduate degree program.

### Interdisciplinary Committee

The Interdisciplinary Committee periodically reviews the content of the core courses, recommends instructors, maintains the list of eligible electives, and coordinates with course instructors regarding scheduling and prerequisites. The committee is assisted in these tasks by the lead core-course instructor, the program director, the program assistant director, and the Graduate School staff, as appropriate. The committee also oversees the policy on admission to the graduate certificate program.

## Graduate Program

Graduate Program Coordinator  
313 Loew, Box 352193  
206-616-5778  
gttl@u.washington.edu

Students associated with GTTL receive the Graduate Certificate upon completing the program's requirements and obtain their degrees through cooperating academic units. Students admitted into graduate degree programs in the following units are eligible for the GTTL graduate certificate: Aeronautics and Astronautics, Business Administration, Civil and Environmental Engineering, Communications, Economics, Education, Forest Resources, Geography, International Studies, Law, Marine Affairs, Political Science, Public Affairs, Technical Communication, and Urban Design and Planning. Graduate students from other departments may be admitted on an ad hoc basis. GTTL prepares students for careers in international trade, transportation, and logistics by offering a comprehensive program encompassing selected courses from the aforementioned separate disciplines. Those students completing the graduate certificate receive an appropriate notation on their transcript and a Letter of Achievement, signed by the head of the student's academic unit and the Dean of the Graduate School.

### Certificate Requirements

A minimum of 20 credits: two core courses (8 credits) and four elective courses (at least 12 credits).

The core courses -- GTTL 501 and GTTL 502 -- provide a basic overview of the academic theories, political-economic structures, industrial dynamics, public policies, and strategic issues concerning the study, business, and regulation of global trade, transportation, and logistics.

Students select electives from a continually updated list. Most electives (and core courses) may also satisfy a student's home department

requirements. At least one elective must come from outside the home department to reinforce the interdisciplinary objective of the certificate program. A substitution policy developed by the committee assures that an appropriate mix of electives can be found for each student. GTTL 600 (Independent Study) and GTTL 601 (Internship) provide an alternative means to gain elective credits.

## Health Services Administration

depts.washington.edu/mhap

### Graduate Program

Graduate Program Coordinator -- In-Residence and Executive Programs  
H660 Health Sciences, Box 357660  
206-543-8778  
mhap@u.washington.edu

The Graduate Program in Health Services Administration Group offers two programs of study leading to the Master of Health Administration (M.H.A.) degree: an in-residence program and an executive program. The M.H.A. degree is accredited by the Accrediting Commission for Education in Health Services Administration. It 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 field. The curriculum is designed to be interdisciplinary with a faculty drawn from the Graduate Schools of Public Health and Community Medicine, Business Administration, Public Affairs, Nursing, Medicine, and Law. Concentrations of study may vary according to the student's academic interests and career objectives. In addition to academic work, in-residence M.H.A. students are strongly encouraged to participate in an internship experience in a health facility or agency typically under the preceptorship of the administrator or director of that organization.

Concurrent degree programs combining health administration with business administration, medicine, law, or public administration are also offered. These curricula (with the exception of the M.H.A./M.D. and M.H.A./J.D.) typically require three years of intensive academic study and culminate in joint degrees (M.H.A./M.B.A., M.H.A./M.D., M.H.A./M.N., M.H.A./M.P.A., M.H.A./J.D.).

The Executive Master of Health Administration program, launched in January 1998, 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. It offers advanced curriculum in planning, organizing, and implementing programs that improve the cost-effectiveness and quality of patient care. Courses meet once each month for three-day sessions (typically Thursday through Saturday) for 24 months (October to September). This program structure allows practicing professionals to continue their careers while gaining a graduate degree.

Course listings may be found under the School of Public Health and Community Medicine, Department of Health Services section of this catalog.

### Application Requirements

Applicants to the in-residence program must submit, in addition to Graduate School admission requirements, a supplemental program application, four narrative statements, a resume, a self-assessment, three recommendations, and scores from either the GRE or the GMAT. MCAT or LSAT scores are accepted for relevant concurrent degree applicants. Informational interviews with members of the program faculty may be requested but are not required for the formal admission review process. Relevant health services experience is preferred. Applicants are accepted for autumn quarter only of each year.

Application deadline is January 15. Applications received after this date (U.S. and Canadian only) are considered on a space-available basis.

Applicants to the executive program must submit the same application materials as listed above for the in-residence program. Priority for admission is given to applicants with medical/clinical training and professional experience. Applicants are accepted for autumn quarter only of each year. Applications are reviewed following the preferred deadline of



April 30. Applications received after this date (U.S. and Canadian only) are reviewed on a space-available basis.

Applicants can expect to hear about the status of their application within approximately four weeks of the application deadline. Those interested in applying should contact the program office as soon as possible to inquire about availability and the application process.

Earlier application deadlines and additional documentation are required for international applicants.

## Financial Aid

Financial support for current M.H.A. students may be available from several sources: loans, work study positions, internships, possible outside fellowships, and possible teaching or research assistantships outside the program. For more information on financial aid, contact the UW Office of Student Financial Aid (105 Schmitz Hall, Box 355880, 206-543-6101, [osfa@u.washington.edu](mailto:osfa@u.washington.edu)) or the M.H.A. program office.

## Research Facilities

In addition to its University facilities, the program makes extensive use of community health facilities and agencies for research and training.

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# Molecular and Cellular Biology

[depts.washington.edu/mcb](http://depts.washington.edu/mcb)

## Graduate Program

Graduate Program Coordinator  
T466 Health Sciences, Box 357275  
206-543-0253  
[mcb@u.washington.edu](mailto:mcb@u.washington.edu)

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 a relationship with the Institute for Systems Biology. This collaboration allows access for students to labs conducting research using a systems approach to biology.

Faculty Interests

Over 250 faculty members from the UW and FHCRC are researching molecular and cellular biology and are skilled in the training of graduate students. Faculty research interests encompass both prokaryotic and eukaryotic cells in the following general areas: genetics, cell biology, neurobiology, immunology, virology, molecular structure, developmental biology, cancer biology, plant biology, genomics/proteomics, and microbiology.

## Doctor of Philosophy

### Admission Requirements

- \* 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.
- \* GRE scores. General Test. A Subject Test (e.g., Biology, Biochemistry, Chemistry) is not required but highly recommended.
- \* Letters of recommendation
- \* Statement of purpose

### Degree Requirements

90 credits, to include:

- \* *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.
- \* *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 will 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.
- \* *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 a science education experience, and hold their committee meeting. Students form their doctoral Supervisory Committees by the end of December, define their doctoral projects, take additional elective courses, participate as teaching assistants for two quarters, and hold their committee meetings.
- \* *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 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 department of the committee chair. Students maintaining satisfactory academic progress receive funding for the duration of their graduate training.

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# Museology

[www.museum.washington.edu/museum](http://www.museum.washington.edu/museum)

## 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 the 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.

## Program Requirements

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.

Requirements for successful completion of the Master of Arts degree include:

1. Completion of a minimum of 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. A minimum of three quarters of full-time residence credit or part-time equivalent.
3. Demonstration of reading competence in one foreign language, if required by the student's supervisory committee due to the student's area of specialization.
4. Completion of an 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. Presentation of a thesis proposal by the beginning of the fourth quarter of study.
6. Successful completion of an oral examination, covering both the thesis topic and the field of museology in general, following submission of the thesis or thesis project.
7. Completion of all degree requirements within six years.

The following courses are required of all students unless exempted by petition to the Program Coordinating Committee or credited for relevant course work completed at other universities: MUSEUM 480, MUSEUM 481 or MUSEUM 490 or MUSEUM 491, MUSEUM 482, MUSEUM 483, MUSEUM 498, MUSEUM 590, MUSEUM 591, MUSEUM 592, MUSEUM 593 or MUSEUM 594, MUSEUM 595, MUSEUM 600, 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.

## Admission Deadline

The application deadline for autumn quarter admission is February 1. Applications completed and postmarked on or before this date will be 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.

# Near and Middle Eastern Studies

[www.grad.washington.edu/inter/nme.htm](http://www.grad.washington.edu/inter/nme.htm)

## Graduate Program

Graduate Program Coordinator  
311 Loew Hall, Box 352192  
206-543-6398

The interdisciplinary Ph.D. 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 is administered by an interdisciplinary Graduate School faculty group. The program of studies includes courses offered in the Department of Near Eastern Languages and Civilization, the Jackson School of International Studies, and other departments on campus. Students in the program must take courses in both the humanities and social sciences.

## Degree Requirements and Satisfactory Progress

Specific course work and areas of concentration will be 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 B.A. and M.A. 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 will be 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 will decide whether a fourth language will be required and whether the fourth required language will be 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 Exam listed 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 field work 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, Field Techniques of Anthropology, and (b) POL S 491, Political Research Design and Analysis; or (c) their equivalents in appropriate disciplines.  
  
For those students doing both humanities-oriented research and not conducting field work, 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 the 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.

## Annual Review

A subcommittee of the Near and Middle Eastern Studies program faculty will meet each spring to review the progress of all students in the Ph.D. program. Either the chair of the student's committee, the program's graduate adviser, or the program's director will inform students of the results of this annual review.

## Ph.D. Examinations and Dissertation

The student will be expected to take the following examinations: (1) preliminary exams consisting of an area of specialization exam and a theory and discipline exam; (2) a General Examination, consisting of a take-home part and an oral part; and (3) a Final Examination, which is the Ph.D. thesis defense.

Students must meet the general University requirements concerning admission to candidacy for the doctoral degree, the dissertation, and final examinations, including an oral examination.

A student's Ph.D. supervisory committee shall consist of no less than three members of the University of Washington's Graduate School faculty as well as a representative of the Graduate School (GSR). The chair of the committee must be an active member of the Graduate School faculty. At least two members of the committee must be members of the Near and Middle Eastern Studies faculty group. Additional members may be asked to join the committee.

Students will write a dissertation as the final requirement for the Ph.D. degree. The topic of the dissertation will be set in consultation with the Ph.D. candidate's supervisory committee.

## Admission Deadline

The application deadline for autumn quarter admission is February 1. Applications which are completed and postmarked on or before this date will be 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.

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# Neurobiology and Behavior

[depts.washington.edu/behneuro](https://depts.washington.edu/behneuro)

## Graduate Program

Graduate Program Coordinator  
T471Health Sciences, Box 357270  
206-685-1647  
[neubehav@u.washington.edu](mailto:neubehav@u.washington.edu)

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 100 faculty members in more than 20 departments have combined efforts to form the doctoral training program, continuing a long history of collaborative efforts that cross both departmental and 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.

Key aspects of the graduate program that are common to all students include (1) a year-long course which provides core knowledge in the neurosciences, (2) quarterly first-year laboratory rotations, each one of which culminates with a research presentation to students and faculty in the program, (3) a biweekly seminar series featuring both visiting and local scientists, (4) a biweekly journal club designed to provide students an introduction to the subsequent week's seminar, and (5) a program-wide retreat, and (6) a campus-wide poster session where students and postdoctoral candidates present their Society for Neuroscience Annual Meeting posters. Thus, the program exposes students throughout their graduate career to the most exciting and current research and concepts covering all areas of neuroscience.

## Application 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.

## Research Facilities

Extensive research facilities in all areas of neurosciences are available to the student. The University maintains two major natural and health-sciences libraries in addition to individual departmental libraries. Facilities in the participating departments include electronics and machine shops, instrumentation for synthesis and sequence determination of nucleic acids and proteins, calcium imaging, confocal microscopy, and computer facilities. Equipment for ultrastructural studies is readily available. The resources of the Regional Primate Research Center, the W. M. Keck Center for Advanced Studies in Neural Signaling, and the Friday Harbor Laboratories are also available to the student.

## Financial Aid

The program offers stipend and tuition support to students through traineeships derived from NIH training grants and private foundation support and through research assistantships supported by the University or research grant funds. Students with satisfactory academic progress can anticipate that funding will continue for the duration of their program.

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# Nutritional Sciences

[depts.washington.edu/nutr](https://depts.washington.edu/nutr)

## Graduate Program

Graduate Program Coordinator  
305 Raitt, Box 353410  
206-543-1730  
[nutr@u.washington.edu](mailto:nutr@u.washington.edu)

The Interdisciplinary Graduate Program in Nutritional Sciences offers programs of study leading to Master of Science (M.S.), Doctor of Philosophy (Ph.D.), and Master of Public Health Nutrition (M.P.H.) degrees. The graduate 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. Additional training in clinical and community nutrition is provided to those students who wish to satisfy the didactic and internship requirements of the American Dietetic Association, prior to obtaining Registered Dietitian (R.D.) status.

The principal areas of study are biochemical and molecular nutrition, clinical nutrition, and community or public health nutrition. Members of the core faculty represent the School of Public Health and Community Medicine,

the Fred Hutchinson Cancer Research Center, and the University of Washington Medical Center. The program also draws on a larger group of interdisciplinary 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.

Each program of study is designed by the student in consultation with, and with the approval of, a supervisory committee. 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 M.P.H. curriculum.

The research environment at the UW includes research facilities in Raitt Hall, a student computer facility, and library.. Students also have access to faculty mentors and research facilities through the Medical Center, the South Lake Union Research Hub, the Fred Hutchinson Cancer Research Center, the Clinical Research Center, and the Clinical Nutrition Research Unit. Additional clinical facilities include Harborview Medical Center, Northwest Kidney Center, Children's Hospital and Regional Medical Center, Pacific Medical Center, the Cancer Care Alliance, and the Center for Human Development and Disabilities.

Students may enter the graduate degree program after completing a bachelor's or a master's degree. Previous coursework in chemistry, biochemistry, and human physiology is required. Students who wish to supplement their degree program with ADA-approved training leading to R.D. status must complete all didactic requirements before applying to the supervised dietetic internship.

The internship specialty areas are clinical and community nutrition. Applicants should contact the Dietetic Internship Director for detailed admission requirements.

## Master of Science in Nutritional Sciences

### Admission Requirements

- \* Bachelor's degree, preferably with science emphasis
- \* Completion of the following courses:
  - o General chemistry (one quarter)
  - o Organic chemistry (one quarter)
  - o Biochemistry (two quarters at the 400 level)
  - o Human anatomy/physiology (two quarters or one semester)
  - o Basic human nutrition (one quarter)
- \* Minimum GPA of 3.00 for the final 90 quarter credit hours or 60 semester credit hours completed
- \* GRE (general examination) -- minimum score of 1,000 on the verbal and quantitative sections (combined) preferred

### Degree Requirements

Minimum 40 credits, as follows:

- \* *Nutritional Sciences Courses (23 credits):* NUTR 500 (3), NUTR 520 (3), NUTR 521 (3), NUTR 522 (3), NUTR 529 (3), NUTR 531 (4), NUTR 562 (4)
- \* *Non-nutrition Courses (4 credits):* BIOST 511 (4)
- \* *Electives in Nutrition (4 credits)*
- \* *Thesis (9 credits):* NUTR 700

## Master of Public Health in Nutrition Sciences

### Admission Requirements

- \* Bachelor's degree, preferably with science emphasis
- \* Completion of the following courses:
  - o General chemistry (one quarter)
  - o Organic chemistry (one quarter)
  - o Biochemistry (two quarters at the 400 level)
  - o Human anatomy/physiology (two quarters or one semester)
  - o Basic human nutrition (one quarter)
- \* Minimum GPA of 3.00 for the final 90 quarter credit hours or 60 semester credit hours completed
- \* GRE (general examination) -- minimum score of 1,000 on the verbal and quantitative sections (combined) preferred

## Degree Requirements

Minimum 63 credits, as follows:

- \* *Nutrition Courses (20 credits):* NUTR 500 (3), NUTR 520 (3), NUTR 521 (3), NUTR 522 (3), NUTR 531 (4), NUTR 562 (4)
- \* *MPH Courses (17 credits):* BIOST 511 (4), ENV H 511 (3), EPI 511 (4), HSERV 510 (3), HSERV 511 (3)
- \* *Nutrition Public Health Courses (16 credits):* NUTR 532 (2), NUTR 538 (3), NUTR 595 (3); either NUTR 526 (3), NUTR 527 (3), NUTR 528 (3), or NUTR 530 (3)
- \* *Electives in Nutrition (1 credit)*
- \* *Thesis (9 credits):* NUTR 700

## Doctor of Philosophy

### Pre-admission Requirements

- \* Students entering the program must have completed a basic course in foods and a basic course in Human Nutrition prior to or during the first year of this program. In addition, at least 9 quarter credits or equivalent of advanced nutrition and diet therapy are required, and, either prior to entry or during the graduate program, courses must be completed in laboratory methods in nutrition and/or biological sciences.
- \* Students entering the program must also have completed the following within seven years prior to admission or during their first year: 3 quarter credits or equivalent in statistics; 4 quarter credits in biochemistry with an appropriate laboratory experience; 6 quarter credits in physiology. Evidence of success in advanced level science must be presented prior to admission.
- \* Students applying for admission must complete the Graduate Record Examination and provide scores in verbal and quantitative tests. Where appropriate, other test results indicative of proficiency in the English language must be provided.
- \* Other factors that are considered in review of applicants are appropriate GPA in previous academic work, past work experience, personal recommendations and quality of the letter of intent.

It is expected that most applicants hold a master's degree in nutrition; however, students wishing to bypass the master's degree, or qualified holders of graduate degrees in related disciplines, may apply to the program. Students enrolled in the University's master's degree program in nutrition have the option to complete a qualifying examination to enter into the doctoral program after approximately a year.

### Admission Requirements

- \* Master's degree, preferably with science emphasis
- \* Completion of the following courses:
  - o General chemistry
  - o Organic chemistry
  - o Biochemistry (two quarters at the 400 level)
  - o Human anatomy/physiology (two quarters or one semester)
  - o Basic human nutrition (one quarter)
  - o Above-listed Preparation
- \* Minimum GPA of 3.00 for the final 90 quarter credit hours or 60 semester credit hours completed
- \* GRE (general examination) -- minimum score of 1,000 on the verbal and quantitative sections (combined) preferred

### Degree Requirements

Minimum 99 credits, to include:

- \* *Nutrition Courses (32 credits):* NUTR 500 (4), NUTR 520 (3), NUTR 521 (3), NUTR 522 (3), NUTR 529 (3), NUTR 531 (4), NUTR 562 (4); 8 credits of additional 500-level nutrition courses
- \* *Other Sciences (Related to Specific Interests) (24 credits)*
- \* *Biostatistics (8-12 credits)*
- \* *Research Methods (8-12 credits)*
- \* *Dissertation (27-30 credits):* NUTR 800

# Quantitative Ecology and Resource Management

depts.washington.edu/qerm

Graduate Program Coordinator  
304 Loew Hall, Box 352182  
206-616-9571  
qerm@u.washington.edu

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 is designed to attract mathematically trained students interested in working on these problems, and biologically or environmentally trained students wishing to develop or enhance their quantitative skills. QERM offers a program of study leading to the M.S. and Ph.D. degree.

As an interdisciplinary program, QERM draws its faculty from several academic units on campus. The faculty shares a common interest in the application of quantitative techniques in the analysis and solution of resource management and conservation problems.

## Admission Requirements

Applicants are expected to possess an awareness and keen interest in applying quantitative methods to natural resource management, marine, and mathematical biology problems. Minimum requirements for admission include:

- \* Background in probability and mathematical statistics, linear algebra, and differential equations. Students entering the program with little or no statistical background are advised to take additional coursework during their first year of study.
- \* Bachelor's degree from an accredited institution.
- \* Minimum GPA of 3.00 in the most recent 90 graded quarter credits (60-semester credits).
- \* Graduate Record Examination test scores.
- \* Three letters of recommendation.
- \* Statement of professional experience and objectives.
- \* International applicants must have a minimum TOEFL score of 580.

Admission is also dependent upon program resources and fit between student interests and faculty research. Potential applicants should review faculty research interests to determine if their area of research is being conducted at the UW. The application deadline for autumn quarter is January 15.

## Degree Requirements

Required coursework reflects the expectation that the student has a fundamental understanding of the principles of statistical inference and ecological modeling. Required courses include: STAT 512 and STAT 513, QERM 550, AMATH 422, QERM 514, and QERM 597.

Students with little or no statistical background should take one or more of the following courses in their first year: STAT 421, STAT 394 and STAT 395, and possibly STAT 341-342 or STAT 481.

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.

Requirements for successful completion of the M.S. degree include:

1. Passing the applied methods and statistical theory qualifying examinations at the M.S. level.
2. Completing a minimum of 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.
3. Receiving numerical grades in at least 18 quarter credits of course work taken at the UW.
4. Completing a seminar on results of the research and oral defense of the thesis.

5. Satisfying all University requirements for graduation.

Requirements for successful completion of the Ph.D. degree include:

1. Passing the applied methods and statistical theory qualifying examinations at the Ph.D. level.
2. Completing a minimum of 90-quarter credits, including 27 dissertation credits. Completion of an M.S. degree may be applied toward one year of the Ph.D. program. The core QERM courses must be taken if the student has obtained an M.S. from another program.
3. Taking a seminar on results of the research and completing an oral defense of the dissertation.
4. Satisfying all University requirements for graduation.

## Financial Aid

Funding opportunities include fellowships, teaching, and research assistantships and are available for each year of study. The Graduate School or the home department of the QERM faculty adviser provides this funding. Tuition is normally included as part of the financial package. Funding decisions are made yearly; attempts are made to continue support for students making satisfactory progress.

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## Quaternary Research Center

19 Johnson  
depts.washington.edu/qrc

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 will 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 Web site.

## 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 physico-chemical 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 (now undergoing renovation) include off-line and online preparation systems for D/H and 18/16O 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 Web site.

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# Urban Design and Planning

depts.washington.edu/urbdpphd

Graduate Program Coordinator  
311 Loew, Box 352192  
206-543-6398

The Ph.D. in Urban Design and Planning at the University of Washington is one of 39 Ph.D. 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. The program 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.

## Doctor of Philosophy

### Admission Requirements

Admission to the Ph.D. 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 admissions 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 Web site.

### Degree Requirements

90 credits, divided into three main 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.

- \* **Core Sequence:** URDBP 591, URBDP 592, URBDP 593
- \* **Restricted Electives (before completion of Phase I):**
  - o **Qualitative Research Methods** - One of the following: URBDP 598, GEOG 425, HIST 598, HSERV 526, POL S 493.
  - o **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.

- \* **Urban Processes and Patterns:** Three of the following: URBDP 479, URBDP 498, URBDP 561, URBDP 598, URBDP 598, GEOG 440, GEOG 448, GEOG 450, GEOG 466, GEOG 477, GEOG 478, GEOG 479, GEOG 578, SOC 490, POL S 481.
- \* **Research Design and Methods:** Two of the following: CS&SS 536, CS&SS 560, CS&SS 567, CS&SS 594, CS&SS 529, CS&SS 544,

CS&SS 566, URBDP 422, URBDP 525, URBDP 530, URBDP 571, GEOG 460, GEOG 461, PB AF 526, SOC 526, SOC 529

- \* *Urban and Environmental Design and Planning*: Two of the following: URBDP 465, PB AF 513, PB AF 517, PB AF 518, URBDP 598, URBDP 598, POL S 574, CFR 592, ARCH 561, PB AF 565.
- \* *Teaching Methods*: One teaching seminar and experience as a TA for at least one quarter, before completion of Phase III. The following courses or a suitable alternative satisfy this requirement: GEOG 599, GRDSCH 630

*General Examination*: A critical review of the literature in the area of study must be 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/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 Ph.D. 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.

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# Interdisciplinary Undergraduate Programs

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## Education, Learning, and Society

### Undergraduate Program

Adviser  
206 Miller, Box 353600  
206-543-7834  
edinfo@u.washington.edu

#### Minor

The Education, Learning, and Society (ELS) minor -- sponsored jointly 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, as follows:

1. One of the following (5 credits): PSYCH 206 (prerequisite, PSYCH 101), NURS 201, or EDPSY 304.
2. One of the following (5 credits): CHID 210, EDUC 305, EDUC 310, or SOC 292.
3. *Field Experience (5 credits)*: EDUC 401. (Other courses that may fulfill this requirement, with approval, include GEN ST 350, EDC&I 499, EDPSY 499, EDSPE 499, CHID 497, GEN ST 470.
4. *Colloquium (1 credit)*: GEN ST 300
5. *Electives (15 credits)*: Selected from an approved list, available from the program adviser. While taking GEN ST 300, students create a curricular plan to provide a rationale for their choice of electives.
6. Up to 10 credits may overlap with a student's major and up to 5 credits may overlap with another minor.
7. Minimum 10 credits in upper-division courses.

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## Marine Biology

depts.washington.edu/marbio

The minor in marine biology is sponsored jointly by the College of Ocean and Fisheries Science 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.

Adviser  
116 Fishery Sciences Building, Box 355020  
206-543-7457  
marbiol@u.washington.edu

#### Minor

*Minor Requirements:* 35 credits, as follows:

1. *Introductory Courses (18 credits)*: FISH 250/OCEAN 250/BIOL 250, OCEAN 210, BIOL 161 or BIOL 180, Q SCI 381.
2. *Integrative Experience (3 credits)*: FISH 478/BIOL 478/ENVIR 478. (3 credits of FISH 492 may be approved on an individual basis, if the particular apprenticeship satisfies the integrated marine biology requirement).
3. *Electives (14 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: Biology, Aquatic and Fisheries Sciences, and Oceanography.)
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 for courses presented for the minor.

## Program on the Environment

274 Mary Gates Hall  
depts.washington.edu/poeweb

The Program on the Environment (PoE) fosters and promotes interdisciplinary environmental education at the UW. As an interdisciplinary program merging multiple fields of study, PoE draws faculty from a wide array of disciplines, providing a unique opportunity for students and faculty to explore complex environmental issues from multiple perspectives.

### Undergraduate Program

Adviser  
274 Mary Gates Hall, Box 352802  
206-616-1208 or 206-616-2461  
poeadv@u.washington.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, and all foundational courses listed below.

#### Department Admission Requirements

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

#### General Education Requirements

All majors must satisfy the College of Arts and Sciences general education requirements.

#### Major Requirements

88-90 credits as follows:

**Core Courses (15 credits):** ENVIR 100, ENVIR 200, ENVIR 300

#### Foundational Courses (33-35 credits)

- \* *Biology (10 credits)*: BIOL 161, BIOL 162
- \* *Chemistry (5 credits)*: CHEM 120
- \* *Earth Systems Literacy (3-5 credits)*: One course from among ATM S 211, ESS 201, ESS/OCEAN 230, GEOG 205, OCEAN 200
- \* *Statistics (5 credits)*: One course from among Q SCI 381, STAT 220, STAT 311
- \* *Values and Cultures (10 credits)*: Two courses from among ANTH 210, HSTAA 221, and PHIL 243

#### Environmental Perspectives and Experiences (30 credits)

- \* Minimum 30 credits from the list of approved courses (see department Web site or advising office for list). Courses must satisfy the perspectives and experiences sub-requirements shown below. At least 20 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.
- \* *Perspectives*: Minimum three credits in each of the following: natural sciences; human and social dimensions; policy and decision making; and tools and technologies.
- \* *Experiences*: Minimum three credits in each of the following: bioregional studies and experiences; global studies and experiences; fieldwork.

**Capstone Experience (10 credits):** ENVIR 490, ENVIR 491, ENVIR 492

**GPA Requirements:** Minimum 2.0 grade in each course presented for the major, except that courses taken to fulfill the biology, chemistry, and statistics requirements under foundational courses may be satisfied by an overall 2.00 GPA for the four courses combined.



## Minor

**Minor Requirements:** 30 credits, including ENVIR 100 and ENVIR 200. Remaining 20 credits drawn from the environmental perspectives course list (see program Web site or adviser for list). At least one course (minimum three credits) in each environmental perspectives course category, i.e., natural sciences; human and social dimensions; policy and decision making; and tools and technologies. Ten of these 20 credits must be at the 300 or 400 level. Minimum 2.0 for each course presented for the minor.

## 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 B.A. in environmental studies have developed skills in the following:

- a. **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.
- b. **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.
- c. **Experiential Learning:** Understand the connections between classroom and experiential learning and successfully practice multiple forms of hands-on, real world applications.
- d. **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).
- e. **Public Policy and Decision Making:** Understand how uncertainty, risk, law, politics, ethics, economics, and culture interact with environmental public policy and decision making.
- f. **Teamwork:** Collaborate as members of teams, effectively working with multiple stakeholders from various backgrounds to address environmental issues.
- g. **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.
- h. **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.
- i. **Spatial Scales:** Understand various spatial scales inherent in environmental studies spanning the continuum from the local/bioregional to the international/global.
- j. **Diversity:** Understand how environmental perspectives, policies, and decisions are related to issues of diversity, privilege, and power.
- k. **Technical Knowledge:** Be familiar with some of the technological tools commonly used to address environmental challenges.
- l. **Professional Development:** Understand how their education will serve them as environmental professionals.

\* **Instructional and Research Facilities:** The Program on the Environment Multipurpose Room, centrally located in 258 Mary Gates Hall, houses a small library of environmental resources and serves as a meeting and study space. 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:** Departmental Honors. 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. Program on the Environment students receive a weekly email listing of internship and career opportunities. For information on identifying internship, research, and career opportunities, see the "Undergraduate Resources" section of the department's Web site.

\* **Student Organizations/Associations:** The UW Earth Club organizes the annual UW Earth Week events and year-round activities such as public-service projects, panel discussions, and social gatherings.

## Quantitative Science

[depts.washington.edu/cqs](https://depts.washington.edu/cqs)

Adviser  
005 Anderson Hall, Box 352100  
206-543-1191  
[cqs@u.washington.edu](mailto:cqs@u.washington.edu)

The Center for Quantitative Science is an interdisciplinary program administered jointly by the College of Ocean and Fishery Sciences and the College of Forest Resources. 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 College of Forest Resources 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.

## Minor

**Minor Requirements:** A minimum of 26 credits, as follows:

1. **Core courses (20 credits):** Q SCI 291, Q SCI 292 (or MATH 124, MATH 125); Q SCI 381, Q SCI 482
2. **Electives (6-10 credits):** Two Q SCI courses at the 300 or 400 level to include one course from Q SCI 480, Q SCI 483, Q SCI 486
3. A minimum grade of 2.0 is required in each course taken as part of the minor

## Values in Society

345 Savery  
Undergraduate Program  
Adviser  
345 Savery, Box 353350  
206-616-1488  
[philinfo@u.washington.edu](mailto:philinfo@u.washington.edu)

## Minor

**Minor Requirements:** 27 credits, to include:

1. Three courses from the approved list of courses in which normative thinking and conceptual analysis of values and frameworks are central; at least one at the 300 level or above.
2. Two courses from the approved list of courses in which values-laden issues are central; at least one at the 300 level or above.
3. VALUES 498 (2 credit capstone)
4. Minimum 15 credits outside student's major.
5. Minimum 15 credits completed at UW.
6. Minimum 2.00 GPA in courses used for the minor.

# School of Law

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**Interim Dean**  
Gregory A. Hicks

**Associate Deans**  
Penny A. Hazelton  
Lisa Kelly  
Lea Vaughn

**Assistant Deans**  
Sandra E. Madrid  
Naomi Sanchez  
Stephanie Cox (Interim)

[www.law.washington.edu](http://www.law.washington.edu)

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, one of the finest in the country, 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 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. J.D. 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, 661 Penn Street, Newtown, PA 18940-0998, [www.lsac.org](http://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 for admission, 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 of 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@u.washington.edu](mailto:offa@u.washington.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@u.washington.edu](mailto:uwlawaid@u.washington.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](mailto:admissions@law.washington.edu); 206-543-4078.

## Graduate Program

Graduate Program Coordinator  
William Gates Hall, Box 353020  
206-543-4937  
[gradlaw@u.washington.edu](mailto:gradlaw@u.washington.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 (LL.M.) 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 (Ph.D.) degree in Asian and comparative law only.

## Master of Laws

### Admission Requirements

- \* Minimum GPA of 3.00 or B in the most recent two years of study.
- \* U.S. applicants must have completed their first degree in law (J.D. or equivalent) at a school accredited by the American Bar Association.
- \* International students must have a first degree in law (LL.B., B.Law) or equivalent and a minimum TOEFL score of 580 or 237 (TOEFLC).

### Degree Requirements, Asian and Comparative Law

36 credits, as follows:

- \* *Required courses:* LAW B 551 (6), LAW 600 (6), LAW B 550 (3-4); two courses in Asian and comparative law
- \* *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:

- \* *Required core courses:* LAW P 501 (8), LAW P 510 (6)
- \* *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.
- \* Research project and thesis

### Degree Requirements, Law of Sustainable International Development

40 credits, as follows:

- \* 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.
- \* *Writing and Research Requirement:* Completion of a research paper is required and is generally satisfied by LAW B 578 (6).
- \* LAW A 545 (4)

### Degree Requirements, Taxation

36 credits, as follows:

- \* *Required courses:* LAW T 501 (3), LAW T 502 (3), LAW T 503 (2/3), LAW T 504 (3), LAW T 510 (3), LAW T 511 (1-4)

- \* *Core electives:* Two of the following courses: LAW T 515 (3), LAW T 516 (3), LAW T 521 (3), 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 Ph.D. program is limited to exceptional scholar-lawyers who are fluent in English and in another language. Prospective Ph.D. students must normally complete the LL.M. program before being accepted as Ph.D. 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:

- \* An LL.M. degree is counted toward the credit necessary for the Ph.D. program.
- \* Doctoral thesis seminar (4 credits)
- \* *Other coursework (26-29 credits):* Coursework varies according to student's research interest areas and is determined in consultation with supervising committee
- \* 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, U.S.A.; gradlaw@u.washington.edu; 206-543-4937.

## Inquiries

Requests for applications and program brochures for all School of Law LL.M. programs except the LL.M. 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, U.S.A.; gradlaw@u.washington.edu.

Requests for applications and program brochures for the LL.M. in taxation should be addressed to Law School Graduate Tax Admissions, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195; gradlaw@u.washington.edu.

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# School of Medicine

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## Dean

Paul G. Ramsey  
C314 Health Sciences

## Associate Deans

Scott Barnhart  
Albert J. Berger  
John B. Coombs  
D. Daniel Hunt  
Eric B. Larson  
Richard A. Molteni  
Thomas E. Norris  
Gordon A. Starkebaum  
Andrew A. Ziskind

## Assistant Deans

Carol F. MacLaren  
Susan G. Marshall  
Werner E. Samson

## WWAMI Coordinators/Assistant Deans

Dennis Valenzano, University of Alaska (interim)  
James R. Blackman, Boise, Idaho  
Philip D. Cleveland, Spokane, Washington  
Andrew Turner, University of Idaho and Washington State University  
Sylvia J. Moore, University of Wyoming  
Dwight E. Phillips, Montana State University (interim)

[www.uwmedicine.org](http://www.uwmedicine.org)

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, Children's Hospital and Regional Medical Center, and the Veterans Affairs Puget Sound Health Care System, as well as at other clinical affiliates in Seattle and throughout the WWAMI states.

The School admits 178 medical students to its first-year class and has a total enrollment of about 750 students pursuing the Doctor of Medicine degree. The full-time faculty numbers approximately 1,700 members. The affiliated University residency-training network enrolls approximately 900 house officers. Enrollment in the graduate programs in the basic sciences exceeds 500 students, and approximately 800 postdoctoral fellows are enrolled in various advanced training programs. The School has baccalaureate and 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.

## Academic Programs

### Doctor of Medicine

Upon completion of the curriculum of the School of Medicine, the M.D. 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.

### 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 Science in Medical Technology

A curriculum in medical technology 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 technology 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 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.

### Admission Requirements

Students applying for either the bachelor's option or the master's option must have a minimum two years of recent, full-time equivalent, hands-on experience in delivery of medical care to patients, or current professional credentials and at least two years of recent experience in an allied health field. Since academic prerequisites are different for those applying for the bachelor's option and the master's option, applicants should refer to the MEDEX Web site for current academic prerequisites: [www.medex.washington.edu](http://www.medex.washington.edu).

### Bachelor of Clinical Health Services and Master of Clinical Health Services

MEDEX Northwest will offer both a Bachelor of Clinical Health Services degree and a Master of Clinical Health Services degree beginning in 2009. The bachelor's option will be available at MEDEX training sites in Yakima, WA and Anchorage, AK. The master's option will be available to students in the Spokane and Seattle training sites. Approval is currently being requested to proceed with offering both degree options.

*Bachelor's Option:* Candidates without a prior bachelor's degree apply to the sites offering a bachelor's completion option. They must meet both MEDEX prerequisite requirements and UW admission requirements applicable to transfer students. Students pursue an eight-quarter sequence of prescribed studies in the MEDEX Northwest Physician Assistant Training Program. Admission to the professional program is competitive and administered by MEDEX Northwest within the School of Medicine. Because of the program's emphasis on prior medical experience, the great majority of applicants are working adults who have completed their pre-professional undergraduate coursework at other colleges and universities.

MEDEX students must be admitted into the bachelor's option during their time in physician assistant training in order for their MEDEX coursework to be considered as matriculated credits. Matriculation in the Bachelor of Clinical Health Services degree option is dependent upon both acceptance by MEDEX and admission to the University of Washington. For more information regarding application procedures, academic and clinical prerequisites, call 206-616-4001 or refer to the MEDEX Web site.

## Master's Option

Available in 2009:

Candidates applying for the master's option must meet both MEDEX and UW Graduate School requirements. Requirements include a prior baccalaureate degree (no major preference), MEDEX specific academic prerequisite courses (see Web site), an overall GPA minimum of 3.0 or higher for the last two years of coursework, and scores from the GRE. TOEFL is required by the Graduate School of foreign applicants who did not complete a bachelor's degree at an institution in the United States, United Kingdom, Ireland, Australia, New Zealand, or Canada.

Students in the master's option continue to participate in the same core physician assistant curriculum, which focuses on primary care and improving health care access for the medically underserved. In addition, students in the master's level program select a specific pathway, which offers advanced skills and knowledge in their chosen focus area. The four pathways:

- \* Rural and underserved health care
- \* Public health and healthcare administration
- \* Specialty practice and PA education
- \* Global health

With faculty guidance, students develop and complete an individual capstone project within their selected pathway. Projects are presented to faculty and fellow students before graduation. The master's option expands the program to a total of nine quarters, requiring students to be enrolled summer quarter between the first and second years of the program.

Master's specific curriculum content is being developed and no course numbers have been assigned. Content will cover investigative skills, leadership development, current PA issues and trends, master's project design, implementation, and presentation.

## Master of Occupational Therapy

The Department of Rehabilitation Medicine offers graduate degrees 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 graduate degrees 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 M.D. 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 and Community Medicine. 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

### Admissions

(These 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 health-care delivery issues 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 exam 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 admissions process; however, if accepted, the applicant will be required to take the MCAT prior to matriculation.

The following science course requirements must be completed before matriculation but preferably should be completed 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 it 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.

Those 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 course work 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.

### 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 will ask qualified individuals to submit a \$35 application fee and supplemental application materials. Every attempt will be made to notify applicants of the final action by the end of March of the year of matriculation.

Residents of the states of Washington, Wyoming, Alaska, Montana, or Idaho are eligible to apply. Individuals with a demonstrated interest in research may apply for the M.D./Ph.D. program (MSTP) regardless of residency. Applicants from outside this five-state region who come from disadvantaged backgrounds or who have demonstrated a commitment to serving underserved populations will be considered. Foreign applicants, in

addition to the above requirements, must also have a permanent-resident visa. Applications will not be considered from persons who have failed to meet minimum standards at another medical or dental school.

The deadline for submitting the additional application materials is January 15. These supplemental materials include:

1. A supplemental application form. This will be sent to qualified applicants after the School of Medicine has received the AMCAS application.
2. A 300-word autobiographical statement in which the candidate describes the origin and development of his or her motivation to be a physician and any other issues of importance to the candidate. The applicant may request that the Personal Comments section of the AMCAS application be used to fulfill this requirement.
3. A concise statement, not exceeding 200 words, as to why the candidate wants to attend the University of Washington School of Medicine.
4. A premedical-committee letter of recommendation or three letters from instructors from whom the candidate has taken courses. These letters should be critical evaluations of the candidate's academic ability, strengths and weaknesses, the difficulty of course work undertaken, motivation for medicine, personal maturity, and special attributes and assets.
5. A \$35 fee. This will automatically be 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. 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 to be sent with the supplemental application form.
7. Conviction/Criminal History Information Form. Washington state law requires that all individuals who have access to children under 16 years of age, developmentally disabled people, and other vulnerable persons, disclose background information concerning crimes and offenses against these populations.

Candidates from Wyoming, Alaska, Montana, and Idaho will be 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. Those who enter as residents of Wyoming, Alaska, Montana, and Idaho are expected to spend their first year at the university site in their particular state. Twenty Washington students begin their medical education by spending the first year at Washington State University in Pullman. Offers of acceptance, therefore, are conditional upon agreement to participate in the WWAMI Program.

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@u.washington.edu](mailto:askuwsom@u.washington.edu).

## Office of Multicultural Affairs

The Office of Multicultural Affairs assists students from disadvantaged backgrounds who are pursuing M.D. or M.D.-Ph.D. 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 numerous 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 is a high-school summer-enrichment program offered by the Office of Multicultural Affairs. It 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 (M.D.-Ph.D.) Program

A limited number of highly qualified candidates who wish to pursue both the M.D. and Ph.D. degrees are considered annually. M.D./Ph.D. 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, physiology and biophysics, and zoology. 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 M.D./Ph.D. 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 applicants 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 I264  
Box 357470  
Seattle WA 98195-7470  
206-685-0762  
[mstp@pathology.washington.edu](mailto:mstp@pathology.washington.edu)  
[www.pathology.washington.edu/mstp/](http://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](http://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 course work.

## Medical Curriculum

### Basic Science Curriculum (148 Credits)

The first two years of the medical-student curriculum is identified as the Basic Science Curriculum. It consists 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 upon 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.

Students pursue the Basic Science Curriculum during their first two years in the School of Medicine. The academic demands of the Basic Science Curriculum are scaled so that most students also will be able to take elective courses that will broaden the student's background.

#### First-Year Required Courses

Microscopic Anatomy (Histology)  
Gross Anatomy and Embryology (including trunk and head and neck anatomy)  
Mechanisms in Cell Physiology  
Biochemistry  
Systems of Human Behavior I  
Cell and Tissue Response to Injury (Pathology)  
Microbiology and Infectious Disease  
Introduction to Immunology  
Nervous System  
Critical Reading and Evaluation of Medical Literature  
Introduction to Clinical Medicine

#### Second-Year Required Courses

Cardiovascular System  
Respiratory System  
Principles of Pharmacology I  
Endocrine System  
Systemic Pathology  
Genetics  
Skin System  
Gastrointestinal System  
Epidemiology  
Hematology  
Musculoskeletal System  
Medicine, Health, and Society  
Urinary System  
Systems of Human Behavior II

Principles of Pharmacology II  
Reproduction  
Nutrition for Physicians  
Introduction to Clinical Medicine

### Clinical Curriculum (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.

### Independent Investigative Inquiry

In addition to the basic and clinical curricula, each student must complete 8 credits in independent study and 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 for the student to gain an understanding of the philosophy and methods of scientific investigation.

## WWAMI Program

The WWAMI Program was initiated in 1971 as an effort to decentralize medical education to provide a broader range of educational opportunities for students, and to 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.

### First-Year Training

In the first year of the WWAMI Program, approximately 40 percent of the students admitted to the University's School of Medicine receive the first year of medical school training at Washington State University, the University of Wyoming, the University of Alaska, Montana State University, or the University of Idaho. Washington State University positions not filled by volunteers are assigned by lottery. Every Washington-resident applicant should recognize the opportunity of assignment to Washington State University during the first year. Students from Wyoming, Alaska, Montana, and Idaho attend their home-state institutions. While at these institutions, they enroll in prescribed one-year medical school basic-science courses taught by on-site science faculty and are provided supplemental resources from the University of Washington's School of Medicine faculty. These students join their classmates at the University of Washington's campus in Seattle for their second year of medical studies.

### Third- and Fourth-Year Training

At the conclusion of the second year, students enter the portion of the curriculum that is predominantly clinical. Required, selective, and elective clerkships are described above. As part of the clinical training, students complete clerkships at the University of Washington, at its affiliated hospitals, or at community clinical units located in the five-state region. During the 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 throughout the WWAMI region.

## 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 three 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.

## **Student Evaluation and Promotion**

The awarding of the Doctor of Medicine degree is contingent upon satisfactory completion of academic and noncognitive 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 upon 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 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 reviews the Student Progress Committee's actions, 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 Faculty Council on Academic Affairs. Reinstatement will not be considered without substantial evidence that the problems causing the dismissal or withdrawal have been resolved. Only one reinstatement petition through the Faculty Council on Academic Affairs is allowed. If more than one year elapses after the withdrawal or dismissal, the individual may be required to apply for readmission through the admissions process. If a reinstatement petition is denied by the Faculty Council, the decision is final with no further avenue for review. Subsequent requests for admission must be directed through the standard admissions 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 Alpha Omega Alpha. Members are elected by the membership of Alpha Omega Alpha 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, to encourage high standards and conduct, and to recognize high attainment in medical science, practice, and related fields. Its motto is "Worthy to serve the suffering."

### **Grading System**

For students entering in 2002 and subsequent years, the grades awarded in each course in the M.D. 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.

## **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, Children's Hospital and Regional Medical Center, and other affiliated training sites in Seattle and throughout the VVAMI 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 health-care 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 VVAMI region. Information on offerings is available from its Web site at [www.uwcme.org](http://www.uwcme.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 358220  
1325 4th Avenue, Suite 2000  
Seattle, Washington 98101-8220  
Telephone: 206-543-1050 or 1-800-869-2633  
Email: [cme@u.washington.edu](mailto:cme@u.washington.edu)  
Web site: [www.uwcme.org](http://www.uwcme.org)



## Anesthesiology

BB1459 Health Sciences  
depts.washington.edu/anesth

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, neuroanesthesia, 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@u.washington.edu](mailto:bramhall@u.washington.edu). Other training questions may be directed to the Residency Coordinator at 206-543-2773 or [lfg@u.washington.edu](mailto:lfg@u.washington.edu).

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## Biochemistry

109 Bagley  
depts.washington.edu/bioe

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.

For more information on the Biochemistry program, please see its entry in the College of Arts and Sciences section of the General Catalog.

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## Bioengineering

N107 William H. Foege Building  
depts.washington.edu/bioe

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 health care 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 programs in the world. Major areas of research and education include distributed diagnosis and home healthcare (d2h2), molecular bioengineering and nanotechnology, engineered biomaterials and tissue engineering, medical imaging and image-guided therapy, and computational bioengineering.

For more information about the Bioengineering program, please see its entry in the College of Engineering section of the General Catalog.

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## Biological Structure

G514 Health Sciences  
[www.biostr.washington.edu](http://www.biostr.washington.edu)

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 Ph.D. 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 M.S. 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.

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## Comparative Medicine

T142 Health Sciences  
depts.washington.edu/compmed

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 course work, 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 Web site at [depts.washington.edu/compmed/department/](http://depts.washington.edu/compmed/department/).

## 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.

## Predoctoral 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.

## Family Medicine

C408 Health Sciences  
depts.washington.edu/fammed

Family medicine is the medical specialty which provides continuing, comprehensive health care for the individual and family. It is a specialty in breadth that integrates the biological, clinical, and behavioral sciences. The scope of family medicine encompasses all ages, both sexes, each organ system and, every disease entity. The prime instructional goal of the department is the education and training of physicians who will apply the knowledge and skills of this and other medical disciplines in family practice. Implicit in this goal is the necessity for continual development of new knowledge and its application in the clinical activities of the department.

The Department of Family Medicine was founded in 1971 and is involved with instruction of medical students in several ways. These include presentations in the basic curriculum of the first two years, clinical clerkships as part of the clinical core curriculum, and other elective courses and programs, including an underserved, interdisciplinary service-learning program, a four-week rural or urban underserved experience, an introductory continuity preceptorship, and independent investigative inquiry and research opportunities. A graduate residency program in family medicine provides clinical training meeting the standards of the American Board of Family Practice and the Council on Graduate Medical Education of the American Medical Association. Active affiliations are maintained throughout the WWAMI region in predoctoral, residency, fellowship, and continuing medical education in clinical care, teaching, and research.

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## Genome Sciences

S-250 Foege Building  
www.gs.washington.edu

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@u.washington.edu

The Department of Genome Sciences offers a graduate program leading to Doctor of Philosophy degree.

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 Ph.D. 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

- \* 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.
- \* Personal statement describing the applicant's academic and scientific background, research goals, and motivation for applying
- \* Curriculum vitae
- \* Unofficial copies of transcripts.

- \* 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.
- \* 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.
- \* Applicants still in school who will be taking additional courses not yet listed on the transcript should send a list of additional courses to be taken before graduation.

#### Degree Requirements

90 credits, to include:

- \* *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 lab 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.

- \* *Second year:* Thesis research and additional electives. At the end of the second year, the student takes the General Exam for Ph.D. candidacy.
- \* *Third year:* Students serve as teaching assistants for two undergraduate courses.
- \* *Final years:* Most students complete their research and defend their dissertation during their fifth year.
- \* 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.

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## Immunology

H564 Health Sciences  
depts.washington.edu/immunweb

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 that is nowhere more visible than at the University of Washington. The Department of Immunology, launched in 1989, now boasts more than 200 scientists, students, and technicians, all engaged in elucidating mechanisms underlying immune recognition and responsiveness. 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 for a moment the fundamental processes that underlie immune function. First, millions of potentially injurious macromolecules must somehow 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 somehow distinguish the universe of potentially harmful molecules from an equally diverse repertoire of structurally similar 'self' components. How is

such exquisitely specific molecular recognition achieved? How do the cells responsible for mediating host defense develop, and what signaling systems direct their responses? These questions can now be productively addressed using biochemical, genetic, and cell biological techniques.

## Graduate Program

Graduate Program Coordinator  
H564 Health Sciences, Box 357650  
206-685-3955, fax 206-543-1013

The Department of Immunology continues to grow and includes more than 25,000 square feet of laboratory space housed on three floors of the H and I wings of the Health Sciences Center. Joint faculty members (those holding primary appointments in other departments) have laboratory facilities in adjacent buildings. Individual laboratories are well equipped for modern biomedical research, and there are central departmental facilities for fluorescence-activated cell sorting, confocal microscopy, and the production of transgenic animals. Students have access to all the instruments and to state-of-the-art microcomputer-based data manipulation. The departmental library maintains recent copies of all major immunology journals and many more are available online or in the nearby University of Washington Health Sciences Library, which is one of the premier scientific libraries in the United States, providing access to scientific literature in all relevant disciplines.

Students are admitted for autumn quarter; the application deadline is January 1 for U.S. citizens, and November 1 for international applicants. The requirements for admission are flexible; however, most successful applicants will 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 course work or laboratory research is desirable. All immunology graduate students are assured of 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

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, as follows:

- \* 18 graded credits in the first two years of study. First-year coursework consists of consecutive 5-week long courses taken autumn through spring quarters - two per quarter; in winter quarter, all first year students also take Immunology 532 (4 graded credits), for a total of 13 or 13.5 graded credits the first year, depending on course choices (see below). In the second year, 4.5 or 5 additional graded credits are required, earned by taking electives during winter and/or spring quarters. As part of their first- and second-year coursework, students take two 5-week courses that specifically focus on cancer immunology.
- \* In 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 in the program.
- \* All elective courses must be relevant to biomedical research, and be rigorous enough to include either a final exam or required written paper for a grade. Elective classes must be at the 500 level, and receive a numerical grade.

- \* Each graduate student takes the Qualifying Exam during July immediately following his or her second year of classes. (M.S.T.P. students take their Qualifying Exams following their first year of graduate classes.) The qualifying exam itself is two parts - written and oral.
- \* Students who pass the Qualifying Exam then begin preparing for the General Exam, which must be taken within 15 months of the Qualifying Exam.
- \* The dissertation must meet all format requirements before being accepted by the Graduate School.

## Laboratory Medicine

NW 120, UW Medical Center  
depts.washington.edu/labweb

Medical technology, 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@u.washington.edu

The Department of Laboratory Medicine offers the following program of study:

- \* Bachelor of Science degree in Medical Technology

### 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, GENET 351, GENET 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

BIOL 180, BIOL 200, BIOL 220; CHEM 142, CHEM 152, CHEM 162; CHEM 223, CHEM 224 (or CHEM 237, CHEM 238, CHEM 239); MATH 124 or MATH 144 or STAT 220. BIOL 118 is recommended, but not required.

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.

Students admitted to the Medical Technology 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 will be cancelled.

*Application Procedure:* See program adviser for application form. Application deadline is February 15, to begin the following autumn quarter.

## Major requirements

142-146 credits as follows:

1. *Courses Required for Admission (44-47 credits):* See list above.
2. *Didactic Courses (52-53 credits):* BIOC 405, BIOC 406; MICROM 440, MICROM 441, MICROM 442, MICROM 443, MICROM 444, MICROM 445; LAB M 321, LAB M 322, LAB M 418, LAB M 419, LAB M 420, LAB M 421.
3. *Clinical Rotations (46 credits):* LAB M 423, LAB M 424, LAB M 425, LAB M 426, LAB M 427.
4. A minimum grade of 2.0 in all LAB M courses and a minimum GPA of 2.00, both cumulative and in required courses, are required for graduation.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* Graduates of the Medical Technology 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 troubleshooting 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 technologists 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 technologist may practice as a generalist, using knowledge in several of the scientific areas, or may specialize in one scientific area in larger hospitals. Medical technologists 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 Children's Hospital and Regional Medical Center, Dynacare Northwest, Group Health Cooperative, MultiCare Health System, Northwest Hospital, Providence Everett Medical Center, Providence St. Peter Hospital, Veterans' Affairs Puget Sound Health Care System, and Virginia Mason 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:* None offered

- \* *Internship Opportunities:* One or two internships per year in Japan available to graduates of the Medical Technology Program.

- \* *Department Scholarships:* None offered.

- \* *Student Organizations/Associations:* None currently active.

*Of Special Note:* The Medical Technology Program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences, 8410 W. Bryn Mawr Avenue, #670, Chicago, Illinois 60631-3415, (312) 714-8880. 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.

## Medical Education and Biomedical Informatics

E312 Health Sciences  
www.mebi.washington.edu

The Department of Medical Education and Biomedical Informatics (MEBI) is comprised of three units: the Division of General Medical Education, the Division of Biomedical and Health Informatics, and MEDEX Northwest-the Division of Physician Assistant Studies. The Division of General Medical Education serves the medical school and health sciences community through program support, evaluation, and research in the field of medical education (www.mebi.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). MEDEX Northwest is a regional program that selects experienced health care providers for training as physician assistants and is dedicated to improving access to medical care and emphasizes delivery of health care services to medically underserved populations in the Northwest (www.medex.washington.edu).

The Department of Medical Education and Biomedical Informatics 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. MEBI offers masters and doctoral degrees, as well as certificates and fellowship training, in biomedical and health informatics. MEDEX Northwest offers a program of study leading to a certificate with an optional degree available (a Bachelor of Clinical Health Services). MEDEX also offers an optional masters degree pathway link with the Extended Degree Program in Public Health. MEDEX provides full-time training in three sites (Seattle, Spokane, and Yakima) and offers part-time training in Seattle and Spokane.

## Graduate Program

Graduate Program Coordinator  
1264 Health Sciences, Box 357240  
(206) 616-0369  
informat@u.washington.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. A minimum undergraduate GPA of 3.00, 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.
4. GRE scores are required unless the applicant holds an earned doctorate (such as Ph.D., D.D.S., M.D., Ed.D., J.D.) from an accredited U.S. institution. GRE scores must be from testing within the past five years.
5. GRE scores are required for all international applicants, including holders of foreign doctorates (such as Ph.D., D.D.S., M.D., Ed.D., J.D.).
6. 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:

1. *Foundational courses:* MEBI 530 (3), MEBI 550 (3), MEBI 552 (3); either LIS 510 (4) or LIS 544 (3); two of the following courses: MEBI 534 (3), MEBI 535 (3), HSERV 503/EPI 503 (3); a graduate-level statistics class
2. *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.

3. *Research seminars*: At least 3 credits of MEBI 591 and at least 3 credits of MEBI 590
4. *Thesis and final exam*: All students must complete an M.S. thesis and pass a final exam for the master's degree.

## Doctor of Philosophy

### 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. A minimum undergraduate GPA of 3.00, 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.
4. GRE scores are required unless the applicant holds an earned doctorate (such as Ph.D., D.D.S., M.D., Ed.D., J.D.) from an accredited U.S. institution. The GRE scores must be from testing within the past five years.
5. GRE scores are required for all international applicants, including holders of foreign doctorates (such as Ph.D., D.D.S., M.D., Ed.D., J.D.).
6. 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 (2), MEBI 530 (3), MEBI 550 (3), MEBI 552 (3); either LIS 510 (4) or LIS 544 (3); two of the following: MEBI 534 (3), MEBI 535 (3), HSERV 503/EPI 503 (3); 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 6 credits of MEBI 591 and at least 3 credits of MEBI 590
- \* *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*:
  - o *The Qualifying Examination*: All students must pass a qualifying examination (oral and written) that covers breadth of knowledge prior to formally creating a Ph.D. supervisory committee and proceeding with their dissertation research.
  - o *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 his/her area.
  - o *Final Examination (dissertation defense)*: A candidate for the Ph.D. must present a dissertation demonstrating original and independent investigation and significant achievement in the field of Biomedical and Health Informatics.

## Medical History and Ethics

A204 Health Sciences Building  
depts.washington.edu/mhedept

### Undergraduate Program

Adviser  
A204 Health Sciences Building, Box 357120  
206-543-5145  
mhinfo@u.washington.edu

The Department of Medical History and Ethics offers the following programs of study:

- \* A minor in medical history and ethics

## Minor

*Minor Requirements*: 25 credits, as follows:

1. *Core Requirement*: One of the following: MHE 411, MHE 474/PHIL 411, PHIL 240, or PHIL 242. One of the following: MHE 401, MHE 417, or MHE 481.
2. *Additional courses from the following to total 25 credits (15 credits must be MHE courses)*: MHE 401, MHE 402/PHIL 412, MHE 404/PHIL 413, MHE 411, MHE 417, MHE 440/PHIL 459, MHE 474/PHIL 411, MHE 481, MHE 483, MHE 485, MHE 497, MHE 498, MHE 499; ANTH 308, ANTH 375, ANTH 474, ANTH 475/HSERV 475, ANTH 476, ANTH 477; CHID 332, CHID 433; GEOG 280, GEOG 380, GEOG 480; HIST 311, HIST 312, HSTAA 316; NURS 200, NURS 410; PHIL 102, PHIL 160, PHIL 240, PHIL 242, PHIL 345, PHIL 360, PHIL 409, PHIL 410, PHIL 415, PHIL 460, PHIL 481, PHIL 482. Any of the core requirement courses listed above may be used as an elective if not counted toward the core requirements. If an MHE course is jointly offered with another department's course, MHE credits toward the required 15 credits is accepted.
3. A minimum grade of 2.0 is required in each course presented for the minor.

## Medicine

RR512 University of Washington Medical Center

domchair@u.washington.edu

Active programs in teaching, research, and patient care are carried on at the University of Washington Medical Center, Veteran's 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.

## Microbiology

K353A Health Sciences  
depts.washington.edu/micro

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 details of the undergraduate program in microbiology, see the College of Arts and Sciences section of the General Catalog.

### Graduate Program

Graduate Program Coordinator  
K335A Health Sciences, Box 357242  
206-543-2572  
advmicro@u.washington.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 Ph.D. 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:

- \* *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).
- \* *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 (3), MCB 542 (3), MICROM 441 (4), MICROM 450 (3), MICROM 510 (3), MICROM 530 (3), MICROM 553 (3)
- \* *Faculty Research Presentations for first-year students:* MICROM 599 (2)
- \* *Lab Rotation:* MICROM 500, minimum of three quarters
- \* *Journal Club:* MICROM 522, continuous enrollment
- \* *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.
- \* *Research Discussion Groups:* To be taken every quarter. Students should register for the appropriate course number for credit.
- \* *Additional requirements:*
  - a. Teaching assistantship in at least two lab 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 would satisfy this requirement.
- \* General examination, dissertation, final exam

## Neurological Surgery

700 9th Avenue, Harborview Medical Center  
depts.washington.edu/neurosurg

askuwns@u.washington.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 Children's Hospital and Regional Medical Center. 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.

## Neurology

RR650 University of Washington Medical Center  
depts.washington.edu/neurolog

neurolog@u.washington.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, Children's Hospital and Medical Center, 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.

## Obstetrics and Gynecology

BB667 Health Sciences Building  
depts.washington.edu/obgyn

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.

## Ophthalmology

RR801 University of Washington Medical Center  
depts.washington.edu/ophthweb

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 Children's Hospital and Regional Medical Center.

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@u.washington.edu](mailto:ingrid@u.washington.edu). For more information on medical student clerkships, contact Dorrie Quirante at [dorrieq@u.washington.edu](mailto:dorrieq@u.washington.edu).

# 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.

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## 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.

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## 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 M.D.s, it includes the laboratory evaluation of organs, tissues and fluids to assist other physicians in reaching a diagnosis. As a basic science, practiced by Ph.D.s, pathology focuses on the experimental investigation of the molecular processes of disease, using techniques of cell and organ culture, biochemistry, molecular biology, and genetics.

## Graduate Program

Graduate Program Coordinator  
C516 Health Sciences, Box 357470  
206-616-7551

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.

## Doctor of Philosophy

### Admission Requirements

- \* Copy of the Graduate School Application
- \* Official transcripts
- \* Official GRE scores. The department also recommends that applicants take the Subject Test in Biology or related area.

- \* Statement of purpose and research interests
- \* Three or more letters of recommendation
- \* 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 M.D. and Ph.D. degrees must gain admission to both the Graduate School and the School of Medicine.

### Degree Requirements

90 credits, to include:

- \* *Required coursework:* PATH 500 (3), PATH 501 (1), PATH 507 (2), PATH 512 (1.5), PATH 513 (1.5), PATH 515 (1.5), PATH 516 (3), PATH 520 (1), PATH 551 (2-5); BIOST 511 (4); CONJ 538 (1/1.5), CONJ 539 (1.5)
- \* *Research before the General Examination:* PATH 600
- \* *Research after the General Examination:* PATH 800
- \* *Recommended courses:* CONJ 531 (1.5), CONJ 532 (1.5)
- \* General Examination
- \* Dissertation
- \* 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 Web site.

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## Pediatrics

RR314 Health Sciences  
[www.washington.edu/medicine/pediatrics/home](http://www.washington.edu/medicine/pediatrics/home)

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 Children's Hospital and Regional Medical Center, University of Washington Medical Center, and Harborview Medical Center.

# Pharmacology

E401 Health Sciences  
depts.washington.edu/phcol

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@u.washington.edu

The Department of Pharmacology offers the Doctor of Philosophy degree.

### Doctor of Philosophy

#### Admission Requirements

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:

PHCOL 510, PHCOL 511, PHCOL 512, and PHCOL 513 (2 credits each) with a grade of 2.7 or above for each class. Enrollment in PHCOL 507 throughout graduate school. PHCOL 514 in the first, second, and third years of graduate study.

PHCOL 519 (laboratory rotations) for autumn, winter, and spring quarters of the first year with the purpose of 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 Ph.D. program with an M.S. degree or equivalent may petition to enroll in only one quarter of PHCOL 519 before selecting a lab. Rotations may occur outside the department by special permission only.

Four advanced 2-3 credit graded elective courses in pharmacology in addition to the 510-513 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.

Creditable passage of a comprehensive written exam on general pharmacology, to be taken during summer quarter of the second year. During the first quarter of the third year of study, students take the oral General Examination. This examination is given by the Supervisory Committee. The examination is based in part on an evaluation of the student's proposed research for the dissertation and on his or her knowledge of the major disciplines important to the research. Based on the result, the committee may recommend termination, further work and subsequent re-examination, or approval of the student's performance and candidacy for the Ph.D. degree.

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.

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 will obtain approval of the

Graduate School and set 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.

# Physiology and Biophysics

G424 Health Sciences  
depts.washington.edu/pbiopage

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, and 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@u.washington.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 Ph.D. 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. With additional training, graduates have been successful in medicine, law, creative writing, and high-level computer programming.

The department participates in interdisciplinary Ph.D. degree programs in Neurobiology and Behavior, and in Molecular and Cellular Biology.

### 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 the 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. The 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:

- \* CONJ 531 (1.5), CONJ 532 (1.5), P BIO 532 (2), NEUBEH 501, NEUBEH 502 (3, 3), P BIO 508 (2-5, max. 5, must be taken three times), P BIO 513 (4), P BIO 519 (1)
- \* Six departmental mini-courses to be completed prior to the General Exam, taken from the following: P BIO 509 (3), P BIO 545 (3), P BIO 550 (1), P BIO 551 (1), P BIO 552 (1), P BIO 553 (2), P BIO 554 (1), P BIO 555 (1), P BIO 556 (1), P BIO 557 (1), P BIO 559 (3)
- \* P BIO 600 (before General Examination)
- \* P BIO 800 (after General Examination)
- \* *Note:* P BIO 503 (4) is highly recommended, but not required

### General Exam

The General Exam must be taken by the last day of autumn quarter of the third year. After passing the General Exam the student is advanced to candidacy for the doctoral degree. The student then registers for P BIO 800 and continue working on thesis research.

### Final Exam

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.

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## Psychiatry and Behavioral Sciences

BB1644 Health Sciences  
www.uwpsychiatry.org

pbsci@u.washington.edu

The department offers course work, 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

Contact: Deborah Cowley

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

Contact: Joan Romano

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

Contact: Richard Veith

Postdoctoral fellowships for advanced clinical and research training in behavioral medicine, broadly construed, are also offered.

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## Radiation Oncology

NN106 University of Washington Medical Center  
www.radonc.washington.edu

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.

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## Radiology

RR215 University of Washington Medical Center  
www.rad.washington.edu

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.

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## Rehabilitation Medicine

BB919 Health Sciences  
depts.washington.edu/rehab

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, and a Bachelor of Science in the field of prosthetics and orthotics. The department also offers post-professional degrees in rehabilitation science (M.S. and Ph.D.) with options for individuals with previous rehabilitation-related training to pursue academic or research careers.

## Occupational Therapy

**Head**  
Elizabeth M. Kanny

Occupational therapists provide services related to occupational performance in everyday life in the areas of self-care, work and productive activities, and play/leisure. Occupational therapists 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 that promote well being. They work with people in all age groups from diverse cultural and ethnic groups and socioeconomic levels.

Occupational therapists help people with impairments or limitations to live as productive a life as possible. They work with people to increase independent function in life activities, enhance development, and to minimize or prevent disability. They use a variety of therapeutic methods including training in self-care activities; design, fabrication, and application of splints; sensorimotor activities; therapeutic group activities; selection and use of adaptive equipment; adaptation of physical environments in the home, school, work, or community; activities to enhance functional performance in everyday life; and work evaluation, work hardening, and workplace adaptations.

Today's occupational therapists work in clinical and community practice, administration, education, and research. Work settings include rehabilitation centers and hospitals; public and private schools; home health agencies; mental health centers and psychiatric hospitals; private practice; vocational rehabilitation centers and industrial clinics; private industry, wellness and prevention programs; and hospices.

The curriculum is designed to link theoretical and technical knowledge in occupational therapy with professional values, attitudes, and skills. The education of each student is based on the philosophy that "occupational performance" (including self-care, work, and leisure/play) is central and provides a purpose and meaning to one's life. Professional standards of practice, ethics, and continued professional growth are emphasized throughout the program. Program requirements include seven quarters of professional coursework and six months of full-time fieldwork training. Fieldwork training must be completed within 24 months after completion of professional course work. Completion of all program requirements leads to a Master of Occupational Therapy degree awarded by the School of Medicine, Department of Rehabilitation Medicine.

The occupational therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), 4720 Montgomery Lane, P.O. Box 31220, Bethesda, MD 20824-1220, phone 301-652-2682. Graduates of the program are eligible to sit for the national certification examination for the occupational therapist. The National Board for Certification in Occupational Therapy (NBCOT) is the certifying agency responsible for the development and implementation of this exam. Most states, including Washington, require state licensure in order to practice.

## Master of Occupational Therapy

### Admission Requirements

Applicants must have completed a bachelor's degree in any major and taken the Graduate Record Exam (GRE) within the past five years. Eight prerequisite courses must be completed prior to admission to the program. In addition, applicants must have volunteer or work experience in at least two practice areas of occupational therapy. The admission process occurs once a year for entry autumn quarter of each year; applications are evaluated starting January 15 of each year.

Specific prerequisite courses at the UW include the following. For students who have attended schools other than the UW, comparable courses must be taken:

- \* *Natural Sciences*: ZOOL 118 (5 credits), B STR 301 (4), CHEM 120 (5), PHYS 114 (4), PHYS 117 (1), EDPSY 490 (3).
- \* *Social Sciences*: PSYCH 305 (5 credits), PSYCH 306 (5), either SOC 110 (5) or ANTH 202 (5).

To apply, students must have completed five of the prerequisite courses, with three courses in the natural sciences. They must have earned a minimum GPA of 3.00 in the prerequisite courses with no single course graded less than 2.0; and have a GPA of 3.00 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 may be obtained by calling 206-598-5392, from the program's Web page), or by sending an email to [ot@u.washington.edu](mailto:ot@u.washington.edu).

### Degree Requirements

The following courses must be completed satisfactorily in the scheduled sequence, beginning autumn quarter only, at the UW: REHAB 400, REHAB 401, REHAB 403, REHAB 414, REHAB 442, REHAB 444, REHAB 445, REHAB 448, REHAB 451, REHAB 452, REHAB 566, REHAB 570, REHAB 571, REHAB 572, REHAB 573, REHAB 574, REHAB 575, REHAB 576, REHAB 577, REHAB 578, REHAB 579, REHAB 580, REHAB 581, REHAB 582, REHAB 584, REHAB 585, REHAB 587, REHAB 591, REHAB 594, CONJ 480, and HUBIO 563.

*Student Evaluation*: The University grade-point system is used in student evaluation. A student must maintain a cumulative GPA of 3.0 in all required professional coursework to retain satisfactory standing and to graduate. Detailed scholastic requirements are available on the program's Web page.

If at any point the OT curriculum cumulative GPA falls below 3.0, the student is placed on academic probation and the student must raise it to 3.0 by the end of two subsequent quarters. If a student is unable to remove his/her probation status, he/she is 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.

The student must satisfactorily complete all academic coursework before taking the two required Level II Fieldwork placements (REHAB 594). Both placements must be satisfactorily completed within two years following completion of the academic portion of the program in order to graduate from the program.

For more information on the Master of Occupational Therapy program, visit the department's Web site.

# Physical Therapy

## Head

Mark Guthrie

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 problems.

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 health care 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, sensation and sensory perception, orthotic and prosthetic fit, reflexes and muscle tone, and functional skills. Some intervention procedures used may include ultrasound, superficial heat and cold, electrical stimulation, massage, traction, joint mobilization, biofeedback, therapeutic exercise, and training in the use of orthotic, prosthetic, and other assistive devices, such as crutches, canes, and wheelchairs.

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 formalized 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.

## Doctor of Physical Therapy

### Admission Requirements

Enrollment is limited to 30 students each year and admission is competitive.

Application is restricted to those who are U.S. citizens or U.S. permanent residents by the autumn program entrance date.

Applicants are required to submit scores from the General Test portion of the Graduate Record Examinations (GRE).

Prior to the application deadline of December 15, the student must have met the following minimum academic requirements:

- \* Minimum 3.00 GPA on all college-level courses
- \* Minimum 3.00 GPA on PT prerequisite courses
- \* Minimum 2.0 (C) grade on each PT prerequisite course
- \* 22 quarter credits (or 50%) of PT prerequisite courses completed. For a list of PT prerequisite course descriptions, see the program Web site at [http://depts.washington.edu/rehab/pt/dpt\\_apply.html](http://depts.washington.edu/rehab/pt/dpt_apply.html)

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.

Most clinical internship placement sites require potential trainees to undergo a Washington State Patrol 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 will be able to finish the clinical portion of the curriculum, the completion of a criminal background check is required of applicants accepting admission.

### Degree Requirements

148 credits, as follows:

#### Year One

- \* *Autumn Quarter:* MEDEX 452 (6), REHAB 403 (2), REHAB 444 (4), REHAB 451 (1), REHAB 504 (2), REHAB 509 (1), REHAB 517 (2)
- \* *Winter Quarter:* CONJ 480 (5), REHAB 400 (4), REHAB 445 (4), REHAB 452 (1), REHAB 506 (2), REHAB 517 (2)
- \* *Spring Quarter:* REHAB 401 (4), REHAB 442 (4), REHAB 448 (1), REHAB 507 (3), REHAB 517 (2), REHAB 536 (1)
- \* *Summer Quarter:* REHAB 500 (4), REHAB 508 (4), REHAB 517 (2), REHAB 537 (2), REHAB 538 (2), REHAB 540 (2)

#### Year Two

- \* *Autumn Quarter:* REHAB 414 (2), REHAB 476 (2), REHAB 511 (5), REHAB 523 (4), REHAB 566 (1)
- \* *Winter Quarter:* REHAB 502 (4), REHAB 512 (4), REHAB 527 (3), REHAB 529 (2)
- \* *Spring Quarter:* REHAB 502 (4), REHAB 503 (3), REHAB 513 (3), REHAB 566 (1)
- \* *Summer Quarter:* REHAB 416 (2), REHAB 505 (2), REHAB 514 (3), REHAB 591 (3)

#### Year Three

- \* *Autumn Quarter:* REHAB 591 (1), REHAB 595 (10)
- \* *Winter Quarter:* REHAB 591 (1), REHAB 595 (10)
- \* *Spring Quarter:* REHAB 591 (2), REHAB 595 (10)

## Prosthetics and Orthotics

### Director

Ann Yamane

The prosthetist-orthotist is a member of the rehabilitation health care team, which also includes physicians, surgeons, physical and occupational therapists, psychologists, vocational rehabilitation counselors, and other appropriate specialists. Team members work together with physically challenged individuals to enhance their daily life and increase their functional abilities.

The two groups of prosthetic-orthotic devices which can potentially enter into the rehabilitation of an individual are (1) prosthetic devices, which replace or substitute for a missing limb or part of a limb, and (2) orthotic devices, which help with the control of motion and the support of a weakened body segment.

Practitioners provide direct patient care and management. Practitioners work in conjunction with physicians, surgeons, and therapists to evaluate the prosthetic or orthotic needs of the patient. They design the appropriate device, supervise technicians who fabricate them, and evaluate the fit and functional use for each patient. To evaluate function, the prosthetist-orthotist must have a detailed knowledge of anatomy and kinesiology, joint range of motion, muscle strength and human locomotion.

Before designing a prosthesis or orthosis, the prosthetist-orthotist examines a patient to find any conditions that might affect the future success of the orthosis or prosthesis. 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 fits the patient and makes changes as necessary.

### Adviser

BB810A Health Sciences Center  
206-616-8586  
[pardo96@u.washington.edu](mailto:pardo96@u.washington.edu)

The prosthetics and orthotics division offers the following program of study:

\* The Bachelor of Science degree with a major in prosthetics and orthotics

## Bachelor of Science

*Suggested First- and Second-Year Courses:* Courses fulfilling the general education requirements including proficiency and areas of knowledge (20 VLPA, 20 I & S) should be completed during the first two years prior to entry into the program. Prerequisite coursework (general biology, general physics, human anatomy and physiology, general chemistry, psychology) is also completed during this time. Suggested courses include SOC 110, STAT 220, COM 201, COM 220, PSYCH 203, PSYCH 306, and courses using computer applications.

### Department Admission Requirements

1. Minimum 2.70 cumulative GPA
2. Prior to admission, students must complete the following prerequisites with a minimum combined GPA of 2.70: BIOL 161-BIOL 162 or MICROM 301-MICROM 302; PHYS 114, PHYS 117, PHYS 115, PHYS 118; PSYCH 101; CHEM 120; B STR 301; BIOL 118; STAT 220.
3. Completion of the University writing and reasoning requirements (5 credits of English composition and 5 credits of quantitative and symbolic reasoning with a minimum grade of 2.0; two additional writing courses totaling a minimum of 10 credits with a minimum grade of 0.7; and the College of Arts and Sciences Areas of Knowledge requirements (20 credits in Visual, Literary & Performing Arts, 20 credits in Individuals & Societies, and 20 credits in the Natural World). Courses listed above may apply to Areas of Knowledge requirements. Postbaccalaureate (fifth-year) students are exempt from the writing and reasoning requirements but not from the Areas of Knowledge requirements.
4. Admission to the program is competitive based on scholastic achievement, written skills, references and involvement in activities or work related to the health professions.
5. Departmental Application Deadline: January 15 for entry autumn quarter.

### Major Requirements

90 credits as follows:

1. *Courses:* The following courses must be taken in the scheduled sequence beginning autumn quarter only at the University of Washington: REHAB 340, REHAB 341, REHAB 342, REHAB 343, REHAB 400, REHAB 401, REHAB 402, REHAB 403, REHAB 414, REHAB 420, REHAB 421, REHAB 423, REHAB 424, REHAB 427, REHAB 428, REHAB 430, REHAB 442, REHAB 444, REHAB 445, REHAB 451, REHAB 452, REHAB 448, REHAB 499; CONJ 480.
2. *Grade Requirements:* A student must maintain a minimum cumulative program GPA of 2.50, and "credit" grades in all courses that are graded credit/no credit, to maintain good standing in the program and be eligible for graduation. A minimum grade of 2.0 is required in each course. A grade below 2.0 in a required course must be repeated at the next offering with a minimum grade of 2.0 received in the repeated course.
3. *Continuation Policy:* If at any point the cumulative grade point in the curriculum courses falls below 2.50, the student is placed on academic probation. In order to be taken off probation, the student must achieve a curriculum grade point average of 2.50 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/her probation status, he/she is subject to dismissal from the program.

### Student Outcomes and Opportunities

\* *Learning Objectives and Expected Outcomes:* The prosthetics-orthotics degree is recognized as a broad, undifferentiated degree requiring the acquisition of general knowledge and basic skills in applicable domains of medicine. The educational process of a prosthetist-orthotist includes the assimilation of knowledge, acquisition of technical skills, and development of judgment through patient care experiences in preparation for independent analysis and problem solving required in clinical practice. Prosthetists and orthotists are employed in private practices and hospitals. There are also a limited number of opportunities in research positions throughout the country.

Upon successful completion of the prosthetics and orthotics program, the student has learned the skills necessary to function as an entry-level resident in prosthetics-orthotics, and is awarded a Bachelor of Science degree by the University of Washington School of Medicine. The practitioner program is accredited through the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park

Street, Clearwater FL 33756, 727-210-2350 (phone), 727-210-2354 (fax), [www.caahep.org](http://www.caahep.org).

The degree in prosthetics-orthotics gives the student eligibility to enter a one-year clinical residency for each discipline at a National Commission on Orthotics and Prosthetics Education (NCOPE) approved site. This residency requirement must be completed for eligibility to apply for the National Certification Boards administered by the American Board for Certification in Orthotics and Prosthetics, Inc. (ABCOP).

National Commission on Orthotic and Prosthetic Education  
330 John Carlyle Street, Suite 200  
Alexandria, VA 22314  
phone: 703-836-7114  
[www.ncope.org](http://www.ncope.org)

American Board for Certification in Orthotics and Prosthetics, Inc.  
330 John Carlyle Street, Suite 210  
Alexandria, VA 22314  
phone: 703-836-7114  
fax: 703-836-0838  
[www.abcop.com](http://www.abcop.com)

\* *Instructional and Research Facilities:* Much of the didactic and patient clinical instruction occurs in the ninth-floor classroom areas in the "BB" wing of the Health Sciences Building. A student fabrication laboratory on the eighth floor of the Health Sciences Building accommodates the technical laboratory components of the curriculum.

Students are placed throughout the curriculum in eighteen facilities in the surrounding Seattle area for their required 500 hours of clinical experience.

\* *Honors Options Available:* None

\* *Research, Internships, and Service Learning:* None available

\* *Department Scholarships:* None offered

\* *Student Organizations/Associations:* Prosthetics-Orthotics Student Association

## Post-Professional Programs

### Master of Science in Rehabilitation Science

The Master of Science in Rehabilitation Medicine has three primary pathways: occupational therapy, physical therapy, and rehabilitation medicine. This program is designed for rehabilitation practitioners who want to pursue a program of coursework and research to enhance their professional growth. For selected students lacking appropriate post-professional training, it is the degree that precedes the Ph.D. in Rehabilitation Science.

### 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 are directed toward (1) enhancing physical and psychosocial functioning, participation in life situations, and quality of life of people with disabilities; and (2) informing relevant social and health care 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 Ph.D. program in rehabilitation science is to prepare researchers, educators, and leaders in the area of rehabilitation science to contribute to the development of rehabilitation practice, research, and policy. Graduates of the Ph.D. program in rehabilitation science are prepared as researchers, educators, and leaders in the field of rehabilitation science, who work in academic 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. Following are three overarching outcomes for graduates of this program:

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

- \* Baccalaureate degree from a college or university of recognized rank.
- \* Official Graduate Record Examination (GRE) General Test Scores.
- \* Copy of current professional certification/licensure to practice (as appropriate).
- \* Recent sample of scholarly writing. This may include a published or unpublished manuscript such as in-depth literature review in a focused area; a research report; or a concept analysis.
- \* Letters of recommendation from three persons knowledgeable about the individual's potential for doctoral-level work in rehabilitation science.
- \* Letter of application in response to specific questions listed on the application related to the pursuit of doctoral studies.
- \* Resume/CV.

### Degree Requirements

100 credits minimum, as follows:

Core course series (21 credits), coursework and practicum experiences in teaching (minimum of 5 credits), and coursework in research methods (minimum of 18 credits). Relative to the latter, credit requirements may partially be met through independent study. In addition, each student must complete three cognates (minimum of 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.

In addition to meeting all requirements of the UW Graduate School, all students are expected to meet the following general requirements.

- \* Minimum cumulative and quarterly GPA of 3.00
- \* 100 credits minimum, of which 30 are dissertation credits
- \* Completion of at least one teaching practicum (3 credits minimum)
- \* Satisfactory completion of a Research and Scientific Inquiry Day manuscript and presentation
- \* Satisfactory completion of General Examinations
- \* Dissertation
- \* Final Examination

For more information on the Ph.D. Program in Rehabilitation Science, visit the program's Web site at <http://depts.washington.edu/rehab/phd>.

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## Surgery

BB487 University of Washington Medical Center  
[depts.washington.edu/surgery](http://depts.washington.edu/surgery)

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.

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## Urology

BB1115 Health Sciences  
[depts.washington.edu/uroweb](http://depts.washington.edu/uroweb)

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.

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# School of Nursing

T310 Health Sciences

## Dean

Nancy F. Woods

T318 Health Sciences

## Associate Deans

Brenda Zierler, Technology Innovations in Education & Research

Pamela H. Mitchell, Research

Susan L. Woods, Academic Services

[www.son.washington.edu](http://www.son.washington.edu)

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 health care needs in both urban and rural settings, often for portions of the population who have not received adequate health care. 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

T310 Health Sciences, Box 357260

206-543-8736

[sonas@u.washington.edu](mailto:sonas@u.washington.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.
- \* A four-quarter modification of the basic curriculum is available for the registered nurse who is able to validate selected nursing courses through written examination and who intends to complete a master's degree program. This B.S.N. completion program is available at UW Bothell and UW Tacoma.

## 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

1. 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 GPA in these three courses of 3.00
  - b. Four out of the total prerequisite science courses with a minimum GPA in these four courses of 2.80.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 (Microbiology lab strongly recommended - MICROM 302 for UW students. Non-UW applicants should take a separate microbiology lab if lab is not included in the general microbiology course.); NUTR 300.
2. 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).
3. 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. The majority of applicants present health care experiences of several hundred hours for nine months or more.
4. 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 (Microbiology lab strongly recommended - MICROM 302 for UW students. Non-UW applicants should take a separate microbiology lab if lab not included in general microbiology course.); NUTR 300.
  - f. Electives to complete 90 credits.
2. A minimum 2.00 cumulative GPA is required, and a minimum grade of 2.0 for each prerequisite course. Because admission is competitive, the GPA for admission is usually significantly higher.

For additional information on admission criteria, specific prerequisites, and deadlines, as well as application forms, contact the Office of Academic Services, School of Nursing, (206) 543-8736 or 1-800-759-NURS. Monthly information sessions are offered in the School of Nursing, Health Sciences Building T310, on the first Thursday of each month from noon to 1 p.m. as well as evening sessions from 5:30 to 6:30p.m. on the first Thursday of January, May, September, and November.

### 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 90; thus 90 credits must be earned through general education, nursing prerequisite, and elective courses.

### Year One of Program

- \* *Quarter 1 -- Autumn (15 credits):* NCLIN 302 (3), NCLIN 306 (4), NURS 301 (3), NURS 304 (3), NURS 309 (2)
- \* *Quarter 2 -- Winter (15 credits):* NCLIN 402 (4), NURS 308 (3), NURS 310 (3), NURS 401 (5)
- \* *Quarter 3 -- Spring (17 credits):* NCLIN 406 (4), NURS 303 (3), NURS 404 (2), NURS 405 (5), NURS 407 (3)

### Year Two of Program

- \* *Quarter 4/5\* -- Autumn (15 credits):* NCLIN 416 (4), NMETH 403 (3), NURS 410 (3), NURS 415 (5)  
\*Half of senior class completes courses listed above in Quarter 4, followed by those in Quarter 5; the other half of the class completes courses listed under Quarter 5, followed by those listed in Quarter 4.
- \* *Quarter 4/5\* -- Winter (13 credits):* NCLIN 409 (6), NCLIN 418 (4), NURS 417 (3)  
\*Half of senior class completes courses listed above in Quarter 4, followed by those in Quarter 5; the other half of the class completes courses listed under Quarter 5, followed by those listed in Quarter 4.
- \* *Quarter 6 -- Spring (15 credits):* NCLIN 411 (12), NURS 412 (3)

### 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 six-quarter 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. The ten goals of the BSN program are online at [http://www.son.washington.edu/eo/bsn\\_description\\_goals.asp](http://www.son.washington.edu/eo/bsn_description_goals.asp).
- \* *Instructional and Research Facilities:* Learning Laboratory
- \* *Honors Options Available:* With College Honors; With Distinction (Program Honors). See adviser for requirements.

- \* *Research Internships and Service Learning:* Students complete eight clinical courses during the B.S.N. 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 FAWSA. 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  
T310 Health Sciences, Box 357260  
206-543-8736  
sonas@u.washington.edu

The School of Nursing offers graduate study leading to the degrees of Master of Nursing, Master of Science, and Doctor of Philosophy in nursing science. At the master's level, programs are designed to meet the many needs of a diverse student body by providing opportunities for advanced study, practice, and research in nursing.

The Masters Entry Program in Nursing (M.E.P.N.) is a Master of Nursing (M.N.) option for students without previous nursing preparation who have a baccalaureate degree in a non-nursing field, and who wish to earn a Master of Nursing degree. It is a two part program. The first five quarters of M.E.P.N. are full time, provide a generalist foundation in nursing, and qualify the student to take the state RN licensure (NCLEX) examination. Once students have completed the first five quarters of M.E.P.N., they begin regular graduate course work in one of 18 M.N. focal areas (see below).

The Master of Nursing program develops increased competence in selected areas of advanced practice nursing. The following focus areas are available: adult acute-care nurse practitioner (cardiovascular/AIDS/oncology), adult/older adult nurse practitioner, advanced practice community-health systems nursing (cross-cultural nursing/occupational health nursing/healthy aging/communities for youth, rural health), advanced practice in care systems management, advanced practice forensic nurse specialist, adult nurse practitioner and home care, advanced practice genetics nursing, advanced practice options in bio-behavioral nursing, family-centered pediatric nursing, infectious disease nurse practitioner, nurse midwifery, perinatal nursing/neonatal nurse practitioner, psychiatric-mental health nurse practitioner, family nurse practitioner, pediatric nurse practitioner, adult and women's health nurse practitioner, rural adult nurse practitioner, and an independent M.N. Research is an integral part of all programs. A thesis is required in the Master of Science program. The Master of Nursing program provides the option of a thesis or non-thesis project.

Part-time study is available in most focus areas of the M.N. program. Course work may be started prior to formal admission to a program as a graduate nonmatriculated student (GNM). GNM status allows the student to earn up to 12 graduate-level credits which 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.

The Doctor of Nursing Practice (DNP) program enhances evidenced-based, culturally competent, innovative, interdisciplinary, outcomes-effective, quality health care for patients throughout the country and globe. It prepares RNs for advanced practice in health and illness, with expanded expertise in clinical inquiry, leadership, and informational technology utilization. The term "practice," specifically nursing practice, refers to any form of nursing intervention that influences health care outcomes for individuals or populations, including direct care, management of care, administration of nursing and health care organizations, and development and implementation of health policy. Preparation at the DNP level is based on nursing science and is at the highest level of nursing practice.

The Doctor of Philosophy in Nursing Science program prepares scientists capable of advancing nursing practice and education through research and

scholarly activity. The program provides for rigorous research training designed for individuals interested in careers in academia or for other types of leadership positions in health-service agencies in which the ability to design, plan, and implement research in nursing is a significant expectation.

## Master Entry Program in Nursing

### Admission Requirements

M.E.P.N. applicants apply to a specific Master of Nursing focal area at time of application, and have the option of specifying a first and second choice of Master of Nursing focal area.

- \* Baccalaureate degree from a regionally accredited institution of higher learning with a minimum GPA of 3.00 on a 4.00 scale for the last 90 graded quarter credits by date of enrollment.
- \* Minimum 3.00 GPA for all college level work.
- \* Completion of required prerequisite courses, including:
  - o Chemistry (three-quarter CHEM 120, CHEM 220, CHEM 221 for all UW students; two-quarter sequence – one general chemistry and one organic - for non-UW applicants), anatomy, physiology, nutrition, and microbiology. In addition, microbiology lab strongly recommended - MICROM 302 for UW students (non-UW applicants should take separate microbiology lab if lab not included in general microbiology course). A minimum grade of 3.0 is required in each prerequisite course. Three of the six or seven courses must be completed at the time of the application. A fourth course must be completed by the end of autumn quarter (i.e., students applying for summer 2008 admission must complete the fourth course by the end of fall quarter 2007), and all six or seven courses before enrollment, with at least a 3.0 grade in each.
  - o A 5-credit course in life span growth and development with a grade of at least 3.0, to be completed before enrollment.
  - o A 3-credit basic course in descriptive and inferential statistics with a grade of at least 3.0.
- \* GRE (General Exam) scores
- \* International applicants, as well as immigrants to the United States and U.S. permanent residents, whose native language is not English, and who have not received a bachelor's degree or higher in the U.S., Australia, Canada, Ireland, New Zealand, or the United Kingdom, must submit both TOEFL and TSE scores.
- \* Resume and background summary.
- \* Three letters of reference consisting of one health care reference, one academic reference, and one character reference (cannot be completed by a family member). School of Nursing forms for each of these reference letters must be used and are provided with the online application form.
- \* Goal statement relevant to the M.E.P.N. program and to the Master of Nursing focal area selected. Students who choose a first and second choice of master's focal areas must submit a separate goal statement for each one. M.E.P.N. applicants may apply to any of the Master of Nursing focal areas, with the exception of adult and women's health care nurse practitioner and neonatal nurse practitioner.
- \* Criminal history/background check clearances: From Washington State and, for students who have lived outside Washington during the past three years, a background check from each state in which they resided.
- \* One official transcript from each collegiate institution attended.
- \* School of Nursing interview(s). Applicants considered competitive for M.E.P.N. after an initial review are invited for group interviews to determine if the applicant (1) is a potential match for the profession of nursing; (2) is a match for the Master of Nursing focal area(s) applied to; (3) demonstrates breadth of understanding; (4) is an effective and sensitive communicator; and (5) demonstrates emotional maturity, insight, sound judgment, and critical thinking skills. Group interview invitations are sent out no later than December 15; interviews are scheduled the first week in January. Several focal areas require individual interviews in addition to the M.E.P.N. committee group interviews; selected applicants to those areas are contacted directly to arrange the additional interview.

### Degree Requirements

117-120 credits, as follows:

- \* *Pre-licensure Coursework:* NCLIN 302 (1-5, max. 5), NCLIN 306 (4), NCLIN 402 (4), NCLIN 406 (1-10, max. 10), NCLIN 409 (6), NCLIN 411 (12-20, max 20), NCLIN 416 (4), NCLIN 418 (4), NURS 303 (2/3), NURS 304 (3), NURS 308 (3), NURS 309 (2), NURS 310 (2/3), NURS 401 (5), NURS 405 (5), either NURS 407 (3) or NURS 579 (3), NURS 412 (3), NURS 415 (5), NURS 417 (3), NURS 522 (3)

- \* M.N. Portion: Students who have made satisfactory progress in the first five quarters of M.E.P.N., i.e., earning a minimum 2.0 in all graded classes and "Credit" in non-graded classes; earning a minimum 3.00 cumulative GPA; meeting essential qualifications; and who have taken the NCLEX, may begin regular graduate coursework in one of 18 M.N. focal areas. Time required to complete the M.N. portion of M.E.P.N. varies between four and seven quarters of full time study. Focal areas within the M.N. program must comply with the following minimum requirements: 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). Many focal area requirements exceed this minimum. Part-time study is available for some programs.

## Master of Nursing

### Admission Requirements

- \* Baccalaureate degree from a nationally accredited nursing program with a minimum GPA of 3.00 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, RN's 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 grade of at least 2.0.
- \* Official Graduate Record Examination (GRE) General Test Scores.
- \* International applicants, as well as immigrants to the U. S. and U. S. permanent residents whose native language is not English, and who have not received a bachelor's degree or higher in the U.S., Australia, Canada, Ireland, New Zealand or the United Kingdom, must submit TOEFL and TSE scores. A minimum official TOEFL score of 580 (or a TOEFLC score of 237) and a minimum TSE score of 55 are required. Test scores must be less than two years old from the test date. No waivers are allowed.
- \* Resume and background summary.
- \* Three letters of recommendation, one academic, one clinical, and one other.
- \* Admission essay relevant to the program objectives. (If applying to another focal area as a second choice, a second goal statement must be submitted.)
- \* Criminal history/background check clearances: Forms required to perform a background check in Washington State, and a check against the federal register of persons excluded from participation in federally funded health programs, are included in the application packet and must be completed and submitted with the application. In addition, students who have resided outside Washington State over the past three years are asked to submit an official criminal history background check from each state in which they have resided.
- \* Resume describing relevant work, professional, and volunteer experiences.
- \* Applications to both the School of Nursing and to the UW Graduate Admissions Office. The School of Nursing application must be accompanied by one official transcript from each collegiate institution attended.
- \* All applicants to the Master of Nursing program must have an active, unrestricted U.S. RN license at the time of application. If the applicant does not have such a Washington State license, he/she must obtain one prior to beginning the UW Master of Nursing program, should the applicant be admitted.

### 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 Science

### Admission Requirements

- \* A baccalaureate degree in any discipline from a regionally accredited institution of higher learning with a minimum GPA of 3.00 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.
- \* A 3-credit basic course in descriptive and inferential statistics with a grade of at least 2.0. Click here for a list of Approved Statistics Courses.
- \* Official Graduate Record Examination (GRE) General Test Scores.
- \* International applicants, as well as immigrants to the U.S. and U.S. permanent residents whose native language is not English, and who have not received a bachelor's degree or higher in the U.S., Australia, Canada, Ireland, New Zealand or the United Kingdom, must submit official TOEFL scores. Test of Spoken English (TSE) scores for international Master of Science applicants are not required. More information for international applicants is found under International Applicants.
- \* 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.
- \* Admission essay relevant to the program objectives. (If applying to another focal area as a second choice, a second goal statement must be submitted. The application is reviewed for the second choice after a decision has been made on the application to the first choice and after the application deadline.)
- \* Criminal history/background check clearances: Forms required for a background check in Washington State, and a check against the federal register of persons excluded from participation in federally funded health programs, are included in the application packet. Students who have resided outside Washington State over the past three years submit an official criminal history background check from each state in which they have resided.
- \* Resume describing relevant work, professional, and volunteer experiences.

For students planning to take clinical nursing courses as part of their program of study, an active, unrestricted Washington RN license. 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

49 credits, as follows:

Nursing science (15 credits); professional foundations (3 credits); theory development (5 credits); modes of inquiry (11 credits); thesis (9 credits); 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

### Admission Requirements

See admission requirements for M.N. and M.P.H. 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 studies in one school before entering the other.

### Degree Requirements

See M.N. and M.P.H. individual degree requirements; differences are as follows:

At least 18 quarter credits for the master's degree in each program must be numbered 500 and above. Numerical grades must be received in at least 18 quarter credits of coursework for each degree and all required courses must be 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 department can be fulfilled by taking the required courses of the other department.

One thesis is required. The nine 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.

## Doctor of Nursing Practice

### Admission Requirements

- \* A baccalaureate degree from a nationally accredited nursing program with a minimum GPA of 3.00 on a 4.00 scale for the last 90 graded quarter credits (or)
- \* An 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 (or)
- \* A Master of Nursing degree from an accredited nursing program. Applications are accepted both from Post-Master of Nursing students already credentialed to their chosen area of DNP study and from those applicants who wish to apply to an area of study different from any in which they are already credentialed.
- \* Completion of a 3-quarter credit basic course in descriptive and inferential statistics with a grade of at least 2.0. post-Master of Nursing applicants are exempt from this requirement.
- \* Official Graduate Record Examination (GRE) General Test Scores. All applicants, including Post-Master of Nursing students, must submit GRE scores. The School of Nursing accepts scores, so long as they are official, from any year.
- \* International applicants, as well as immigrants to the U.S. and U.S. permanent residents whose native language is not English, who have not received a bachelor's degree or higher in the U.S., Australia, Canada, Ireland, New Zealand, or the United Kingdom, must submit TOEFL and TSE scores. A minimum official TOEFL score of 580, A TOEFLC score of 237, or a TOEFLIBT score of 70 (average of listening, writing, and reading section scores only; speaking section score not included in score average) and a minimum TSE score of 55 are required for admission to the Master of Nursing program. Test scores must be less than two years old from the test date. No waivers of this English competency requirement are given.
- \* Three letters of recommendation. Highly recommended is one academic reference, one from a current clinical nursing supervisor, and a third either academic or clinical. Current references or those written within the last two years are preferable.
- \* Admission essay question responses relevant to program objectives (five double spaced pages). If applying to another focal area as a second choice, a second set of essay question responses must be submitted. The application is reviewed for a second choice after a decision has been made on the application to the first choice and after the application deadline.
- \* Short scholarly paper on a topic related to nursing to provide an example of the student's current skills in scholarly writing. This formal paper is used to evaluate academic writing skills and the cognitive abilities these skills can reflect. The topic can be any subject related to nursing. Possible examples include clinical, policy, health, inter- or intra-professional issues, health disparities, and a proposed clinical inquiry project. The paper must be written solely by the applicant and be a maximum of five double spaced pages. The paper is evaluated on multiple factors including clarity, logical consistency, insight, and creativity or innovation.
- \* Detailed resume describing educational, professional, and community experiences.
- \* Criminal history/background check clearances. Completion and submission of forms required to perform background check in Washington State and a check against the federal register of persons excluded from participation in federally funded health programs. In addition, submission of official criminal history background check from each state outside Washington resided in over last three years is required.

\* Applications to both the School of Nursing and to the UW Graduate Admissions Office. The School of Nursing application must be accompanied by one official transcript from each college or university the student has attended (not solely schools from which the applicant received degrees). International applicants must submit a second set of these official transcripts with Graduate Admission application at time of application. All other applicants, at the time they are admitted to the UW, must submit one set of official transcripts from each school which awarded them degrees in the past.

\* All applicants to the DNP program must have an active, unrestricted U.S. RN license at the time of application. If the applicant does not have such a license, she/he needs to obtain one prior to beginning the UW Doctor of Nursing Practice program, should the student be admitted.

### Degree Requirements

90 credits minimum, as follows:

1. Advanced practice - minimum 45 credits
2. Leadership - minimum 15 credits
3. Practice inquiry - minimum 30 credits (coursework, 18 credits; capstone project, 12 credits)

## Doctor of Philosophy

### Admission Requirements

- \* A baccalaureate degree from a college or university of recognized rank. Though a master's degree in nursing is the background of the majority of applicants, neither a nursing background nor RN licensure is required.
- \* Official Graduate Record Examination (GRE) General Test Scores.
- \* International applicants, as well as immigrants to the U.S. and U. S. permanent residents whose native language is not English, and who have not received a bachelor's degree or higher in the U.S., Australia, Canada, Ireland, New Zealand, or the United Kingdom, must submit official TOEFL scores. More information for international applicants is found under International Applicants.
- \* An example of applicant's scholarly writing (25 pages or less). Examples are a published or unpublished manuscript illustrative of concept analysis, an in-depth literature review in a focused area, or a research report. Theses are not accepted. The paper is reviewed for clarity and thoroughness, its articulation with relevant published literature, and the degree to which it raises important issues for the development of nursing science. (International students whose original scholarly writing is not in English should submit a copy of the writing translated into English);
- \* Letters of recommendation from three persons knowledgeable about the individual's potential for a research career in nursing;
- \* Personal statement 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.

Criminal history/background check clearances: Forms required for a background check in Washington State, and a check against the federal register of persons excluded from participation in federally funded health programs, are included in the application packet and must be completed. In addition, applicants who have resided outside Washington State over the past three years are asked to submit an official criminal history background check from each state in which they resided.

### Degree Requirements

93 credits minimum, as follows:

*Theory and Domain of Knowledge (minimum 43 credits):* Courses include: NURS 588 (3); NURS 589 (3) NURS 590 (5); NURS 592 (4); NURS 591 (3); NURS 595 (3); NURS 587 (2, 2); graduate nursing courses (6 credits); related fields (12 credits).

*Scholarly Inquiry (minimum 50 credits):* Courses deal with the means of developing knowledge. There is exposure to a variety of approaches with encouragement to develop advanced skills in at least one methodology. Courses in this category are grouped into four required sub-categories:

- \* *Methodological Perspectives in Nursing Science:* NMETH 580 (5 credits)
- \* *Design/Methods/Analysis Sequence:* 18 credits

- \* *Advanced Methods*: 8 credits minimum, from the following: NMETH 581 (2-6); NMETH 582, NMETH 583 (4, 4); NMETH 591 (4); NMETH 592 (2-4); NMETH 593 (4); NMETH 584 (4); NMETH 586 (4); NMETH 587 (4)
- \* *Statistics*: 10 credits minimum, from the following: BIOST 511, BIOST 512, BIOST 513 (4, 4, 4); EDPSY 593 (5), EDPSY 594 (5), PSYCH 513 (4), PSYCH 514 (4), PSYCH 515 (4); SOC 424, SOC 425 (3, 3); NMETH 590 (2). Optional advanced statistics courses include BIOST 524 (3), BIOST 574 (3), SOC 526 (3), SOC 529 (3)
- \* *Dissertation*: 27 credits of NMETH 800
- \* *Optional Elective Colloquium*: NURS 596 (2-6 credits)

## Financial Aid

A limited number of nurse traineeships are available for premaster'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 predoctoral students.

Contact the Academic Services Office, School of Nursing, for current information.

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# College of Ocean and Fishery Sciences

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## Dean

Arthur R.M. Nowell  
207 Ocean Sciences

## Associate Dean

Ken Chew

[www.cofs.washington.edu](http://www.cofs.washington.edu)

The marine environment has been a dominant factor in the history of the Pacific Northwest from the time of the first Native American settlements to the modern days of aquaculture, container ships, and waterfront condominiums. It is not surprising, therefore, that the University of Washington has a long tradition of commitment to teaching, research, and public service in subjects related to marine and freshwater activities.

The College of Ocean and Fishery Sciences comprises five major units of the University in the marine and freshwater sciences: the Applied Physics Laboratory; the Schools of Aquatic and Fishery Sciences, Marine Affairs, and Oceanography; and the Office of Marine Environmental and Resource Programs, which includes the Washington Sea Grant Program. Each of the units of the College focuses on a different aspect of the aquatic environment, but there is much overlap of interests.

The College offers both undergraduate and graduate instructional programs in fisheries and oceanography, and graduate programs in marine affairs. Undergraduates may pursue complementary joint undergraduate degrees with departments such as Biology, Chemistry, and Earth and Space Sciences in the College of Arts and Sciences. College faculty, staff, and students carry out research in oceans, estuaries, and freshwater lakes and rivers all over the world. Facilities for research and teaching range from ocean-going vessels to well-equipped laboratories and classrooms.

The College also supports career-oriented resources for students to complement traditional course work and research. An annual Career Fair, held each February, brings more than 30 potential employers to campus to meet with students and discuss career possibilities and employment opportunities. A well-equipped Career Center is available for students, providing information about career planning and job opportunities in the marine and freshwater sciences. Northwest WaterWork, a publication of current employment opportunities and internships available in water-related areas, is published by the College as a service to students. Internships are encouraged as a way to help students bridge the transition from the classroom to employment after graduation. The College also supports educational outreach activities and innovative learning technologies.

In 2003, the College had 200 undergraduate and 250 graduate students enrolled, a faculty of 198 members, and a total budget of \$60 million, making it one of the largest institutions of its kind in the nation.

The School of Aquatic and Fishery Sciences provides nationally recognized learning experiences in applied aquatic sciences, with an emphasis on fisheries management and conservation. Faculty, staff, and students have access to the region's wealth of aquatic habitats and living resources as well as synergistic partnerships with other academic programs throughout the nation and the world. Critical program areas in aquatic sciences include aquaculture, physiology and genetics, habitat and species ecology, and quantitative fisheries analyses, management, conservation, and restoration.

The School of Oceanography was established in 1930 for teaching and research focused on coastal and blue-water oceanography. Faculty, staff, and students explore ocean-climate interactions, biological, chemical, and geophysical aspects of deep-sea hydrothermal systems, the oceanography of coastal ecosystems, and other interdisciplinary topics. The School offers graduate degrees and is the only leading oceanography program to offer a bachelor's degree, with approximately 100 undergraduate majors currently enrolled.

The School of Marine Affairs fosters comprehensive, long-term, and anticipatory approaches to marine policy and ocean and coastal management. An interdisciplinary curriculum and interactions with public and private organizations, environmental groups, and regulatory agencies enrich student understanding of contemporary issues in ocean and coastal management. The school provides guidance to all levels of government in the U.S. and abroad; to non-governmental organizations that promote resolution of ocean and coastal issues; and to the marine trades, shipping, and transportation industries.

The Applied Physics Laboratory (APL) is a self-sustaining research center within the College established in 1943 at the request of the U.S. government to address urgent wartime problems. Today, as one of only four Navy University Affiliated Research Centers in the country, it is a premier center for research, development, and advanced education in science and engineering. About half of APL's programs are devoted to developing innovative solutions to complex technical problems, primarily related to naval operations. The remaining programs are committed to fundamental research in ocean physics, ocean acoustics, polar science, remote sensing, and medical and industrial ultrasound.

The Washington Sea Grant Program (WSGP) supports a broad range of research, education, outreach, and technology transfer activities on coastal and marine issues, placing particular emphasis on those situations where resources, the environment, and people interact. It works extensively with university and external partners to identify needs and opportunities in the marine environment and to develop projects and partnership programs that address them. WSGP is nationally recognized for its quality, innovation, and positive impact.

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## Aquatic and Fishery Sciences

116 Fishery Sciences  
[www.fish.washington.edu](http://www.fish.washington.edu)

The School of Aquatic and Fishery Sciences (SAFS) encompasses multidisciplinary 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  
[safs@u.washington.edu](mailto:safs@u.washington.edu)

The School of Aquatic and Fishery Sciences (SAFS) offers the following programs of study:

- \* The Bachelor of Science 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:* Calculus and either the chemistry or biology series the first year, followed by the other series immediately following. English composition, public speaking or other visual, literary and performing arts courses, and FISH 250.

### 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, to include 44 credits in FISH-prefix courses; 44 credits of Natural World; 15 credits of mathematics; 10 credits each of Individuals & Societies and Visual, Literary, & Performing Arts; 12 credits of writing; and 45 credits of free electives.

**The Natural World:** Minimum of 44 credits, to include:

- \* *Biological Sciences:* BIOL 180, BIOL 200, BIOL 220 (5, 5, 5); or BIOL 201, BIOL 202, BIOL 203 (5,5,5); or BIOL 101-BIOL 102 or BIOL 161-BIOL 162 and GENOME 371 or FISH 340/BIOL 340 (5-5, 5). One of BIOL 356 (3), FISH 447 (3), or BIOL 473 and BIOL 474 (3,2).
- \* *Physical Sciences:* PHYS 114, PHYS 115 (4,4), OCEAN 210 (3). Option A: CHEM 142, CHEM 152, CHEM 162 (5,5,6), and CHEM 220 (5) or CHEM 223 and CHEM 224 (4, 4); Option B: CHEM 120, CHEM 220, CHEM 221 (5, 5, 5).

**Mathematics and Statistics:** Minimum of 15 credits beyond MATH 120, to include Q SCI 291, Q SCI 292 (5, 5) or MATH 124, MATH 125 (5, 5) or MATH 144, MATH 145 (5,5). Q SCI 381 (5).

### General Education

- \* *Individuals & Societies (I&S):* Minimum of 10 credits to include one course (3 credits minimum) in economics and one course (3 credits minimum) in law, policy, or ethics. See program Web site for list of acceptable courses.
- \* *Visual, Literary, & Performing Arts (VLPA):* Minimum of 10 credits.
- \* *Writing Proficiency:* Minimum of 12 credits, to include 5 credits of English composition drawn from the University list, and at least 7 additional credits of writing-intensive (W) courses.

### Major Requirements

Minimum of 44 credits to include FISH 210, FISH 310, and FISH 311 (5,5,5); one from FISH 312 (5), FISH 323 (5), or FISH 324 (5); 18 additional credits of upper-division FISH courses, including 12 credits in the student's chosen focus area; FISH 494 and FISH 495 (3-9,3).

### Minor

#### *Aquatic and Fishery Sciences*

*Minor Requirements:* Minimum of 28 credits to include FISH 210 (5); two from FISH 310 (5), FISH 311 (5), FISH 312 (5), FISH 323 (5) and FISH 324 (5); Q SCI 381 (5) or Q SCI 482 (5); minimum of two upper-division FISH courses totaling at least 8 credits.

#### *Marine Biology*

The minor in marine biology is sponsored jointly by the College of Ocean and Fisheries Science 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. 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 College of Forest Resources. More information may be found on the Center for Quantitative Science Web site.

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* Aquatic and Fishery Sciences is a life science degree 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:
  - a. Skills in written and oral communication, data analysis, field and lab skills. Skill sets have been integrated into all core and flagship courses.
  - b. 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.
  - c. 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.
  - d. Strong encouragement to pursue multiple internship and research experiences, including opportunities like FHL research apprenticeships and Alaska Ecological Research Program.
  - e. Understanding not only of the science, but also the socio-political-economic environment and its impact on the field of aquatic and fishery sciences.
  - f. 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 (Four-Year Honors); With Distinction (Two-Year Honors). See [cofs.washington.edu/students/honors.html](http://cofs.washington.edu/students/honors.html) for requirements.
- \* *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 College of Ocean 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 College of Ocean and Fishery Sciences has its own career coordinator who organizes quarterly workshops, an annual career fair, an email list of openings related to the aquatic sciences, and who meets individually with both current students and alumni.
- \* Since 1999, the School of Aquatic and Fishery Sciences has sent six 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@u.washington.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 as one of the best graduate programs, especially in the area of quantitative fisheries management, but all of the 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 Ph.D. 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 Ph.D. will be reviewed by the Recruitment, Admissions, and Scholarship Committee before being accepted into the Ph.D. program.

## Master of Science

### Admission Requirements

Minimum requirements for admission to the graduate program in the School are

- \* A bachelor's degree from an institution of recognized standing with a minimum GPA of 3.00 in the last two years (90 quarter credits or 60 semester credits) of college work.
- \* 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).
- \* If an International Student, a minimum TOEFL score of 580 on written exam or 237 on computerized exam, or 70 on the Internet-based exam.

### Degree Requirements

45 credits as follows:

- \* *School of Aquatic & Fishery Sciences Core Courses:*
  - o Q SCI 482 (5)
  - o 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
  - o FISH 521 (4)
  - o FISH 522 (2)
  - o 18 credits of thesis research: FISH 700
- \* *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

- \* Minimum GPA of 3.00 for last two years (90 quarter credits or 60 semester credits) of graded college work
- \* GRE scores of 500 on the verbal and quantitative sections and 5 on the analytical section (500 if before October 2002)
- \* If an International Student, a minimum TOEFL score of 580 on written exam or 237 on computerized exam, or 70 on the internet-based exam.

Admission to the Ph.D. Program After Receiving a M.S. 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 will be considered by the Recruitment, Admission and Scholarship Committee and a recommendation will then be 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, please 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 Ph.D. requirements within ten years of beginning graduate study, including M.S. coursework if used to fulfill any Ph.D. requirements.

## Degree Requirements

Minimum 90 credits, as follows:

- \* *SAFS Core Courses:* The following core courses are required of all Ph.D. students. They are the same as those required of M.S. students and must be taken as part of the doctoral program if they or their equivalents have not been taken during an M.S. program.
  - o Q SCI 482 (5)
  - o 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
  - o FISH 521 (4)
  - o FISH 522 (2)
  - o 27 credits of doctoral dissertation: FISH 800 (a maximum of 10 dissertation credits may be taken in any one academic quarter)
- \* *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 will automatically be considered for any fellowships, research assistantships, or teaching assistantships available from the School of Aquatic and Fishery Sciences when the admissions application is submitted.

## Marine Affairs

3707 Brooklyn Avenue Northeast  
www.sma.washington.edu

## Graduate Program

Graduate Program Coordinator  
3707 Brooklyn NE, Box 355685  
206-543-4326, 206-543-7004  
uwsma@u.washington.edu

The School of Marine 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 from marine affairs, economics, law, marine sciences, and public affairs.

## Master of Marine Affairs

The School of Marine 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 M.M.A. 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 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:

- \* *The Core Curriculum (29 credits minimum)*
  1. *Introduction to Marine Affairs*: SMA 500 (5), SMA 501 (3)
  2. *Economics*: SMA 536 (3). (Students may be waived by the Graduate Program Coordinator from SMA 536 due to adequate undergraduate training, but are required to take at least one economics course at the 400 or 500 level. The following courses are suggested: SMA 537 (3), SMA 538 (3), ECON 435 (5), ECON 436 (5).)
  3. *Marine Law*: SMA 506/LAW 561 (3) or SMA 515/LAW 565(3)
  4. *Policy Analysis*: SMA 519 (3) or PB AF 513 (3)
  5. *Policy Processes*: One of the following: SMA 507 (3), SMA 508 (3), SMA 521 (3), SMA 523 (3), PB AF 590/CFR 592 (3) (when course content appropriate; check with Graduate Program Coordinator); PB AF 592/FM 571 (5)
  6. *Marine Science*: SMA 591 (3). (Students may be waived by the Graduate Program Coordinator from SMA 591, but are required to take at least one 400- or 500-level science course. The following courses are suggested: SMA 510 (3); FISH 450 (4); FISH 454 (3); BIOL 472 (5); or BIOL 473 (3).)
  7. *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 SMA. Recommended courses include: Q SCI 381 (5), STAT 301 (5), or STAT 311 (5). (Note: Although 300-level courses do not qualify for graduation credits, the School will waive 3 credits of the 59-credit SMA graduation requirement for students completing one of these courses.)
  8. *Social Science Data Collection and Analysis*: One of the following: SMA 476 (3), SMA 512 (3), PB AF 507 (3), GEOG 425 (5), or CRF 400 (3)
  9. *Marine Affairs Seminar*: SMA 550 (3)
- \* *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 with 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 SMA courses: SMA 433 (5), SMA 480 (3), SMA 485 (3), SMA 499 (var.) (when subject is African Population, Development and Marine Environment), SMA 509 (3), SMA

510 (3), SMA 514 (3), SMA 516 (3), SMA 517 (3), SMA 540 (3), SMA 555 (3), SMA 581 (3), SMA 550 (1-3) (cannot simultaneously be used to meet core requirements).

- \* *The Thesis and Thesis Presentation (10 credits minimum – for thesis track students)*: SMA 700 (minimum 9 credits); SMA 570 (1).
- \* *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.

## Oceanography

108 Oceanography Teaching Building  
[www.ocean.washington.edu/ocean\\_web](http://www.ocean.washington.edu/ocean_web)

Oceanography -- the 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](mailto: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

### 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*: BIOL 161- BIOL 162 or BIOL 180, BIOL 200, BIOL 220; CHEM 142, CHEM 152; ESS 101 or ESS

210; MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123. Students should complete the calculus, general chemistry, and either the biology or physics sequences before autumn quarter of the junior year.

### Department Admission Requirements

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

### 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.

### Graduation Requirements

Minimum 180 credits, to include the following:

1. MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123; ESS 101 or 210; and BIOL 161-BIOL 162 or BIOL 180, BIOL 200, BIOL 220 (55-60 credits)
2. OCEAN 200, OCEAN 210, OCEAN 220 (taken for writing credit), OCEAN 400, OCEAN 410, OCEAN 420, OCEAN 430, OCEAN 442, OCEAN 443, OCEAN 444 (taken for writing credit), and one from the following: OCEAN 401, OCEAN 411, OCEAN 421, OCEAN 431 (39 credits)
3. 20 credits of upper-division science, mathematics, or engineering to be selected in the student's area of specialization in consultation with a faculty adviser (20 credits)
4. 20 credits of Visual, Literary, & Performing Arts and 20 credits of Individuals & Societies from the University Areas of Knowledge lists (40 credits)
5. 5 credits of English composition and 10 credits of W (writing) courses. 8 of the 10 credits of University-approved W (writing) courses are included within the curriculum, as noted in item 2 above. (7 credits)
6. Free electives to bring credit total to minimum 180.

### 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. OCEAN 442
4. 9 credits of OCEAN electives, chosen from 300- and 400-level oceanography courses

*Minor in Marine Biology:* See the entry for Marine Biology 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; With Distinction (School Honors). 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 specialized courses. Interdisciplinary research is encouraged, and students enjoy the opportunity to work across the usual scientific boundaries. Course work during the first two years is required in each option; specialized course work 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 course work 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

- \* One official copy of transcript(s) from all colleges or universities attended.
- \* Minimum GPA of 3.00 or B for last 90 quarter (60 semester) credits
- \* GRE scores
- \* TOEFL scores for international students.
- \* Statement of goals and objectives (provided 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.
- \* 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 of 36 or more quarter credits (27 course credits and a minimum of 9 credits of thesis). Nonthesis program: Minimum of 36 or more quarter credits of coursework.
- \* At least 18 of the minimum 36 quarter credits for the master's degree must be for work numbered 500 and above. (In a thesis program, 9 of the 18 credits must be course credits and 9 may be OCEAN 700, Masters thesis.)
- \* 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.
- \* A minimum of three full-time quarters of residence credit. Part-time quarters may be accumulated to meet this requirement.
- \* 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 10 credits of thesis (OCEAN 700). With the exception of summer quarter, students are limited to a maximum of 10 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.
- \* *Biological Oceanography Option:* The core curriculum consists of OCEAN 530 (3), OCEAN 531 (3), OCEAN 532 (3), OCEAN 533 (3). Master's level students must take a minimum of 3 credits of advance biological oceanography courses.
- \* *Chemical Oceanography Option:* The core curriculum consists of OCEAN 520 (3). 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 (3), OCEAN 541 (3), OCEAN 545 (3).
- \* *Physical Oceanography Option:* The core curriculum consists of OCEAN 500 (1), OCEAN 510 (3), OCEAN 511 (3), OCEAN 512 (3), OCEAN 513 (3), OCEAN 514 (3), OCEAN 515 (3), OCEAN 517 (2). Physical oceanography students must take a sequence of three courses in applied mathematics.
- \* *Out-of-Option Requirement:* A minimum of 12 credits of numerically graded, 500-level courses, 6 credits of which must be taken as 3-credit courses in two options outside a student's option. The remaining 6 out-of-option credits may be in courses in oceanography (outside a student's option) or in a related science selected at the discretion of the student and supervisory committee. These courses must be completed with the first two years of study. A grade of less than a 3.0 in any course will necessitate repeating the course or taking another course in that area as recommended by the student's committee.

## Doctor of Philosophy

The degree program places a strong emphasis on research following completion of course requirements and a 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

- \* One official copy of transcript(s) from all colleges or universities attended.
- \* Minimum GPA of 3.00 or B for last 90 quarter (60 semester) credits
- \* GRE scores
- \* TOEFL scores for international students.
- \* Statement of goals and objectives (provided 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.
- \* 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

Minimum 90 credits, as follows:

- \* 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 of the total program, including dissertation credits, must be in courses numbered 500 and above. At least 18 credits of course work at the 500 level and above must be completed prior to scheduling the General Examination.
- \* 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 University of Washington 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.
- 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.
- \* 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 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 examination is taken and candidacy is conferred.
- \* 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 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 (OCEAN 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 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 masters degree from another institution, if applied toward one year of resident study.

- \* *Biological Oceanography Option:* The core curriculum consists of OCEAN 530 (3), OCEAN 531 (3), OCEAN 532 (3), OCEAN 533 (3). Doctor's level students must take a minimum of 9 credits of advance biological oceanography courses.
- \* *Chemical Oceanography Option:* The core curriculum consists of OCEAN 520 (3). Doctor's level students must take a minimum of six advanced chemical oceanography courses.
- \* *Marine Geology and Geophysics Option:* The core curriculum consists of OCEAN 540 (3), OCEAN 541 (3), OCEAN 545 (3).
- \* *Physical Oceanography Option:* The core curriculum consists of OCEAN 500 (1), OCEAN 510 (3), OCEAN 511 (3), OCEAN 512 (3), OCEAN 513 (3), OCEAN 514 (3), OCEAN 515 (3), OCEAN 517 (2). Physical oceanography students must take a sequence of three courses in applied mathematics.



\* *Out-of-Option Requirement:* A minimum of 12 credits of numerically graded, 500-level courses, 6 credits of which must be taken as 3-credit courses in two options outside a student's option. The remaining 6 out-of-option credits may be in courses in oceanography (outside a student's option) or in a related science selected at the discretion of the student and supervisory committee. These courses must be completed with the first two years of study. A grade of less than a 3.0 in any course necessitates repeating the course or taking another course in that area as recommended by the student's committee.

## 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.

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# School of Pharmacy

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## Dean

Sidney D. Nelson

## Associate Deans

Nanci L. Murphy

Kenneth E. Thummel

Stanley S. Weber

[depts.washington.edu/pha/](http://depts.washington.edu/pha/)

Established in 1894, the University of Washington School of Pharmacy is proud of its strong commitment to excellence and the recognition given to its faculty and graduates for their outstanding educational, research, and service activities. The School's Dean's Office and three departments -- Medicinal Chemistry, Pharmaceutics, and Pharmacy -- are located in the H-Wing of the Health Sciences Building.

The School of Pharmacy offers a four-year professional program leading to the Doctor of Pharmacy (Pharm.D.) degree. The curriculum is designed to provide students with the scientific background and clinical skills necessary to render pharmaceutical care in a changing health care system. Instructional methods strive to enhance the critical-thinking and problem-solving skills necessary to provide rational drug therapy, promote healthy lifestyles and disease prevention, enhance patient compliance, reduce medication-related problems, and improve health outcomes. The School aspires to foster a commitment to life-long learning and provide an environment where students develop the knowledge, attitudes, and skills consistent with the profession's high standards.

Students have the opportunity to pursue elective choices to design a program compatible with individual areas of interest. Dual degree options include the Pharm.D./Ph.D. programs in Pharmaceutics and Medicinal Chemistry, the Pharm.D./M.S. program in Pharmaceutical Outcomes Research and Policy, and the Pharm.D./Physician Assistant program. Students also have the option of earning the Geriatric Certificate in Pharmacy Practice, the Pharmacy Management Certificate, and the Biomedical Regulatory Affairs Certificate concurrently with their degree. In the final year of the program students complete experiential training at a variety of practice settings. The School of Pharmacy is a member of the American Association of the Colleges of Pharmacy and its programs are accredited by the American Council on Pharmaceutical Education ([www.acpe-accredit.org](http://www.acpe-accredit.org)).

Consideration for admission to the professional program requires a minimum of two years of prepharmacy training. An applicant who is admissible to the University is not assured admission to the School of Pharmacy. Admission is competitive and 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 pharmacy 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 may be obtained from the School's Office of Academic and Student Programs or its Web site.

The School also seeks to promote the life-long learning of pharmacists by offering opportunities for post-graduate education and continuing-education seminars. An external Pharm.D. program is available for those pharmacists who would like to pursue an advanced degree beyond the baccalaureate degree. Continuing-education programs are provided throughout the year to meet the needs of the community.

To foster the interests of students who seek to engage in creative discovery and research, the School also offers graduate education leading to the M.S. and/or Ph.D. degrees in medicinal chemistry, pharmaceutics, or pharmaceutical outcomes research and policy.

## Medicinal Chemistry

[depts.washington.edu/medchem](http://depts.washington.edu/medchem)

## Graduate Program

Graduate Program Coordinator  
H164 Health Sciences, Box 357610  
206-543-2224  
[medchem@u.washington.edu](mailto:medchem@u.washington.edu)

The Department of Medicinal Chemistry offers programs of graduate study leading to the degrees of Master of Science and Doctor of Philosophy. The primary mission of the program is to train versatile scientists for careers in the pharmaceutical and medical sciences. To this end, graduates of the program acquire a broad knowledge base in medicinal chemistry, pharmacology, and biochemistry, which is important in the rapidly evolving, multidisciplinary biomedical arena. The department further offers diverse opportunities for research at the interface between biology and chemistry, with emphasis on issues of biomedical importance.

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.

## 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.

## Master of Science

### Degree Requirements

At least 27 credits of coursework, inclusive of thesis and non-thesis research, including a research project, preparation of an acceptable thesis, and passing a final examination.

## Doctor of Philosophy

### Degree Requirements

90 credits minimum, to include:

Achieving a level of proficiency in organic, medicinal and physical chemistry, pharmacology, biochemistry, and molecular biology. Most course work is completed in the first two to two-and-a-half years of the graduate program. The program is flexible and easily adaptable to meet individual interests and needs.

In the first year of the program, 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.

- \* *First year:* CHEM 530, CHEM 531, CHEM 532 (3, 3, 3); MEDCH 501, MEDCH 502, MEDCH 503 (4, 4, 4); MEDCH 520 (1 credit each quarter); MEDCH 582 (1 credit each quarter); MEDCH 600
- \* *Second year:* BIOC 530 (3); MEDCH 527 (3) MEDCH 541 (3); PHCOL 510, (2) PHCOL 511 (2); MEDCH 520 (1 credit each quarter); MEDCH 582 (1 credit each quarter); MEDCH 600
- \* *Third year:* MEDCH 520 (1 credit each quarter); MEDCH 582 (1 credit each quarter); MEDCH 600 (7 credits each quarter)
- \* *Fourth year:* MEDCH 700 or 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.

## Pharmaceutics

depts.washington.edu/pceut

## Graduate Program

Graduate Program Coordinator  
H272 Health Sciences, Box 357610  
206-543-9434  
pceut@u.washington.edu

The Department of Pharmaceutics offers programs of study leading to the Doctor of Philosophy degree.

## Program Description

The doctoral degree program in pharmaceutics trains research scholars in the fundamental aspects of drug disposition and drug action. Drug disposition pertains to the facets of drug absorption, distribution, and elimination. Areas of emphasis include: drug delivery – processes for enhancing the absorption of a drug and targeting it to the site of action in order to improve therapeutic effect; drug metabolism – enzyme-catalyzed molecular transformations that often impart different disposition and pharmacological properties compared to the parent molecule; and drug excretion – the transport of drug molecules into excretory fluids such as the renal filtrate and bile. Pharmacokinetics is the study of the time course of these processes and its relationship to pharmacological effects. Students in the program gain expertise in basic biochemical, cellular, and molecular techniques, quantitative analytical methods, and in the elaboration of mathematical models to describe the kinetics of drug disposition and action. Scientists graduating from this program are capable of investigating the causes of inadequate exposure to a drug at the target site. They are able to elucidate the relationship between the kinetics of drug and metabolites in various body compartments or tissues and the manifestation of pharmacologic, therapeutic, and toxic effects. They are also able to probe the effects of alteration of physiological and biochemical processes (which may occur due to disease states or genetic variations) on drug disposition and pharmacological response. Many of these studies require expertise with in vitro methodologies, which students also acquire. Often students gain experience in the conduct of pharmacokinetic and pharmacodynamic studies in animals and man.

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.

## Doctor of Philosophy

### Admission Requirements

- \* One copy of official transcripts in a sealed envelope from each college attended
- \* Official GRE score report
- \* All foreign students must take the TOEFL and TSE test and send in the official score report
- \* Statement of personal goals describing the applicant's background, academic interests, and career objectives
- \* A résumé or curriculum vitae listing educational and employment history
- \* Three letters of recommendation from persons who are in a position to evaluate the applicant's potential for graduate school.

### Degree Requirements

Minimum 90 credits, to include:

- \* *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.
- \* *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.
- \* *Examinations and Progress Evaluation:* A series of preliminary, cumulative (written) examinations; a General Examination (oral) for advancement to Ph.D. candidacy; a Final Examination (defense of the thesis). See Appendix A, "Progression Steps In Relation to the Doctoral Degree," 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.
- \* *Master's Degree Bypass:* Students who qualify for continuation to the Ph.D. degree may be allowed to bypass the M.S. degree. See Appendix A for petition procedure.
- \* *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.
- \* *Didactic:* Coursework for the doctoral program is divided into four components: (1) prerequisites which define the level of entry into the program; (2) a required core program which is analogous to the major; (3) elective courses, which are not required but are encouraged; (4) seminars and literature review.
  1. *Prerequisites:* MATH 124 (5 credits), MEDCH 400 (3). Applicants with a Pharm.D. 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.
  2. *Core Program:* PCEUT 506 (6 credits); PCEUT 501 (5), PCEUT 502 (4), PCEUT 503 (5); PHCOL 510; PHCOL 511, PHCOL 512, PHCOL 513 (2 credits each); BIOC 511(4), BIOC 512(4); T C 509 (3); PCEUT 600, PCEUT 800 (variable credit)

Students entering with previous graduate-level course work 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.
- 3. *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.

4. *Seminars and Literature Review*: 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.

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.

5. *Research*: PCEUT 600, PCEUT 800 (variable credit). Students complete three research laboratory rotations (PCEUT 600, 2 credits), 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, variable credit). 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 (variable credit), until the defense of their thesis.

6. *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 and those from the American Foundation for Pharmaceutical Education and from several pharmaceutical companies.

## Pharmacy

[depts.washington.edu/pharma](https://depts.washington.edu/pharma)

## Graduate Program

Graduate Program Coordinator  
H375 Health Sciences, Box 357630  
206-616-1383

The Department of Pharmacy offers graduate training leading to either the Master of Science or Doctor of Philosophy degree.

The graduate program in pharmaceutical outcomes research in the Department of Pharmacy provides M.S.- and Ph.D.-level training with a focus on economic evaluation of pharmaceuticals, biopharmaceuticals and medical technology, pharmacoepidemiology, and pharmaceutical-policy evaluation. Outcomes research is the study of the health and cost consequences of pharmaceuticals and pharmaceutical-related policies on

individuals and populations. Graduates of this program are trained to assess the use, outcomes, and cost of pharmaceuticals, biopharmaceuticals, medical technologies, and pharmaceutical policies and practices. Students are prepared for careers in (1) teaching and research in colleges and universities; (2) pre- and post-marketing efficacy and safety; (3) policy analysis for industry, health insurance, and governmental agencies; and (4) drug-use management and evaluation within managed health-care organizations.

## Doctor of Philosophy

### Admission Requirements

- \* One copy of official transcripts from each college attended outside the United States. Transcripts from U.S. institutions are required by the department only.
- \* Official GRE Scores, unless the applicant has a terminal doctoral degree.
- \* For international students for whom English is not the native language, TOEFL and TSE scores.
- \* Statement of personal goals describing the student's background, academic interests, and career objectives in the field of outcomes research and policy.
- \* A resume or curriculum vitae listing educational and employment history.
- \* Three letters of recommendation from persons in a position to evaluate the applicant's potential for graduate school. At least one recommendation must be from a person at the last school attended for full-time study, unless the applicant has been out of school for five years or longer. Due to the online application procedures of the Graduate School, referees will receive an email directly from the Graduate School. Instructions should be followed so letters will be uploaded, and available only to the admissions committee of the department to which the student is applying.

### Degree Requirements

90 credits, as follows:

- \* *Core courses*: Epidemiology – EPI 512 (4), EPI 513 (4), BIOST 511 (4), BIOST 512 (4), BIOST 513 (4), PHARM 532 (4), PHARM 533 (3), PHARM 534 (3), PHARM 535 (3), PHARM 597 (9)
- \* *Electives*: A sufficient number of electives to meet program credit requirements, determined in consultation with adviser to meet the student's interests and focus
- \* General Exam
- \* Dissertation and Final Exam

## Doctor of Pharmacy

A four-year professional program leading to the Doctor of Pharmacy (Pharm.D.) degree, the curriculum is designed to provide students the scientific background and clinical skills necessary to render pharmaceutical care in various health care settings. Individuals who wish to practice pharmacy in the United States must earn a Doctor of Pharmacy (Pharm.D.) degree from an accredited college or school of pharmacy, complete state-specific required internship hours, pass licensing examinations, and meet other licensing requirements.

### Admission Requirements

- \* Applicants to the UW School of Pharmacy Pharm.D. program must complete BOTH 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 Web site, for additional admission requirements and the most current information regarding the Pharm.D. program.
- \* Minimum 90 quarter credits or 60 semester credits of undergraduate coursework, at any accredited college or university, to include the following (given as quarter credits): general biology with labs (15), microbiology with lab (5), general chemistry with labs (15), organic chemistry with labs (15), calculus (5), statistics (4-5), English composition (10), Individuals and Societies -- I&S (Social Sciences) (10), Visual, Literary & Performing Arts -- VLPA (Humanities) (10, must include public speaking/speech communication).
- \* 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.
- \* Applicants who have completed all prerequisite (Pre-Pharm) 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-Pharm) 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 upon the size and competitiveness of the applicant pool.

- \* An interview is required as part of the UW School's Pharm.D. 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 Pharm.D. Admissions Committee. Admissions 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 carefully research the pharmacy profession and the attributes, skills, and abilities essential for pharmacists in the provision of care. Although 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 are eligible to apply. TOEFL scores are not required.
- \* *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

197 credits, as follows:

- \* *Theory and methods (112 credits):* CONJ 401 (4), CONJ 402 (4), CONJ 403 (4), MEDCH 401 (4), MEDCH 402 (3), MEDCH 403 (3), MEDCH 404 (3), MEDCH 450 (3), MEDCH 451 (3), PCEUT 531 (4), PCEUT 532 (5), PCEUT 533 (3), PHARM 500 (3), PHARM 501 (3), PHARM 504 (3), PHARM 508 (4), PHARM 509 (2), PHARM 511 (2), PHARM 512 (3), PHARM 527 (4), PHARM 537 (2), PHARM 541 (3), PHARM 543 (4), PHARM 546 (3), PHARM 560 (9), PHARM 561 (9), PHARM 562 (7), PHARM 563 (2), PHARM 564 (2), PHARM 565 (2), PHARM 574 (1), PHCOL 401(3), PHCOL 402 (3)
- \* *Electives (32 credits):* Refer to the School of Pharmacy's Web site for a list of professional electives
- \* *Practicum (53 credits):* Introductory Pharmacy Practice Experience (8 credits) and Advanced Pharmacy Practice Experience (45 credits), to be completed in the last year of the program

The program of study listed above is current for students who entered the program in 2006 and beyond.

## Pharm.D./Ph.D. Concurrent Program

Pharm.D./Ph.D. Program Coordinator  
H272 Health Sciences, Box 357610  
206-543-3796

The accelerated dual-degree program is intended for outstanding students committed to earning the Pharm.D. degree and a Ph.D. degree in either Pharmaceutics or Medicinal Chemistry. Students are equipped to enter academic careers that require competence in both teaching and research. Graduates of this program 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 applicants 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 seven academic years, rather than the nine academic years normally required to receive both degrees. Applicants must meet competitive admission requirements of both the Pharm.D. and Ph.D. programs. Admission to the Pharm.D./Ph.D. program is based on the recommendation of the admission committees of the professional degree program, the graduate program, and the Pharm.D./Ph.D. program. For additional admission criteria, see respective programs.

## Admissions Requirements

Applicants must complete admission requirements of both the Pharm.D. and Ph.D. programs. Consideration for the Pharm.D./Ph.D. program is contingent upon completion of Pharm.D. application, Graduate School application, and Pharm.D./Ph.D. application (available online at [depts.washington.edu/soprin/pharmdphd/](http://depts.washington.edu/soprin/pharmdphd/)).

- \* The Pharm.D. program application is composed of (1) a verified completion of all application materials by the stated January 4 deadline, (2) PCAT scores, (3) prerequisite and cumulative GPA, and (4) the ability to complete prerequisite courses by the end of spring term prior to School of Pharmacy matriculation. For details, see Pharm.D. admission requirements.
- \* The Graduate School application for Medicinal Chemistry or Pharmaceutics includes (1) an undergraduate degree in chemistry, biochemistry, pharmacy, biology, or a closely related field, (2) a statement of purpose, (3) GRE scores, (4) prior research experience, (5) three letters of recommendation. The Graduate School application deadline is January 15.
- \* In addition, applicants are required to submit information requested in the Pharm.D./Ph.D. concurrent program application checklist, available on the above stated Web site.

## 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.

# Daniel J. Evans School of Public Affairs

## Dean

Sandra O. Archibald  
208E Parrington Hall

## Associate Dean

Steven Rathgeb Smith  
203 Parrington Hall

## Associate Dean for Research

Alison Cullen  
209B Parrington Hall

evans.washington.edu

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 Traditional Master of Public Administration (M.P.A.), the Midcareer Master of Public Administration, the Executive Master of Public Administration, Peace Corps Master's International, and the Ph.D. 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. M.P.A. 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 Ph.D. 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 Ph.D. 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  
109 Parrington Hall, Box 353055  
206-543-4900  
evansuw@u.washington.edu

## Master of Public Administration

### Traditional M.P.A. Program

The Traditional M.P.A. Program is designed for students at an early stage in their career, who typically have three to five years of relevant work experience. Students must complete 60 credit hours of course work, including core requirements, an internship, and a degree project. Most students enroll on a full-time basis and complete the program in approximately two years or six quarters, while part-time students often take three or more academic years.

#### Degree requirements

60 credits, as follows:

- \* *Core Curriculum (23 credits):*
  - o Managing Politics and the Policy Process (PB AF 511)
  - o Managing Organizational Performance (PB AF 512)
  - o Public Policy Analysis (PB AF 513)
  - o Microeconomics (PB AF 516)
  - o Public Budgeting and Financial Management (PB AF 522)
  - o Quantitative Analysis (PB AF 527, PB AF 528)
- \* Concentrated study in three curricular areas: economics (3 credits), analysis (3 credits), and values (3 credits)

- \* Specialized plan of study chosen from one or more of the following gateways: Education and Social Policy, Environmental Policy and Natural Resource Management, International Affairs, Nonprofit Management, Urban and Regional Affairs (15 credits)
- \* An internship (PB AF 600) (6 credits)
- \* 6-credit degree project (PB AF 605) or Public Service Clinics (PB AF 606, PB AF 607)

For full program details, visit <http://evans.washington.edu/degree/mpa/index.php>

### Midcareer M.P.A. Program

The Midcareer M.P.A. Program is designed for students with seven to 10 years of progressively responsible, professional work experience in the public, nonprofit, or private sectors who have had exposure to public issues. Students must successfully complete 54 credits of coursework, including an integrated core sequence, electives and leadership seminars. Many courses are offered in the evening. Most students, typically midlevel managers, are able to work full-time while developing leadership and analytic tools needed to attain higher leadership positions. Students complete the program in approximately three years if they follow the part-time plan of study. The program can be completed in less time depending on the student's ability to take more classes.

#### Degree requirements

54 credits, as follows:

- \* *Leadership Seminars:* PB AF 543, PB AF 544, PB AF 545
- \* *Integrated Management Sequence:* PB AF 540, PB AF 541, PB AF 542
- \* *Microeconomics:* PB AF 516
- \* *Budgeting and Financial Management:* PB AF 522
- \* *Quantitative Analysis:* PB AF 527, PB AF 528
- \* *Values:* Chosen from PB AF 504, PB AF 506, PB AF 596, or PB AF 599
- \* *Electives:* Chosen in consultation with a faculty adviser
- \* Degree project not required

For full program details, visit <http://evans.washington.edu/degree/exmpa/index.php>

### Executive M.P.A. Program

The Executive M.P.A. 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 two intensive weeks, 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. Because the program relies on a cohort model, 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:

- \* Two "Foundation Weeks" in Strategic Leadership and Performance Challenges: PA EX 501, PA EX 506
- \* Nine three-day weekend core modules in Organizational Culture (PA EX 502), Negotiation and Conflict Management (PA EX 503), Effective Communication (PA EX 504), Leading with Integrity (PA EX 505), Strategic Financial Management I (PA EX 507), Public-Private Partnerships (PA EX 508), Policies and Politics (PA EX 509), Human Resource Management (PA EX 510), and Leadership, Legacy and Commitment (PA EX 511)
- \* Online assignments
- \* Degree project not required

For full program details, visit <http://evans.washington.edu/degree/exmpa/index.php>

## 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, except for Public Policy Analysis, in three quarters prior to leaving for Peace Corps service, and upon returning to UW, complete their coursework and a final degree project in one to 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 international 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:

- \* *Core Curriculum:*
  - o Managing Politics and the Policy Process (PB AF 511)
  - o Managing Organizational Performance (PB AF 512)
  - o Public Policy Analysis (PB AF 513)
  - o Microeconomics (PB AF 516)
  - o Public Budgeting and Financial Management (PB AF 522)
  - o Quantitative Analysis (PB AF 527, PB AF 528)
- \* Concentrated study in three curricular areas: economics (3 credits), analysis (3 credits), and values (3 credits)
- \* Two years of Peace Corps service
- \* 6-credit degree project related to Peace Corps field work

For full program details, visit <http://evans.washington.edu/degree/pcmi/index.php>.

## Doctor of Philosophy

The Ph.D. 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. It takes an interdisciplinary perspective in its curriculum and 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 five to seven excellent applicants each year, and provides funding and mentoring to help them succeed. The new 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:

The program consists of 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 (PB AF 599 or URDP 591), Institutional Perspectives on Management and Leadership (PB AF 599), Public Policy Processes (PB AF 575), Microeconomics (PB AF 599), Policy Analysis and Evaluation (PB AF 599), Quantitative Methods Sequence (SOC 505 and SOC 506 or ECON 580 and ECON 581), a data analysis practicum, and a qualifying examination.

In the second year, doctoral students increase their analytic and methodological skills. Requirements include at least two additional courses in qualitative and quantitative analysis methods, selected from a list of restricted electives, and at least three courses in a substantive policy field or in management studies.

Beyond the second year, requirements include: a general examination (advancing to candidacy), preparation of a dissertation of original research, and a final examination (dissertation defense).

Students are expected to complete the degree on average in four to five years, depending on the individual student. Prior coursework in calculus is expected before matriculation.

For full program details, visit: <http://evans.washington.edu/degree/phd.php/>.

## Concurrent Degree Programs

The Evans School offers the M.P.A. degree concurrently with the following five programs: Master of Urban Planning (M.U.P.), Master of Arts in International Studies (M.A.I.S.), Master of Urban Planning (M.U.P.), Master of Public Health (M.P.H.), Master of Science in Forest Resources (M.S.), Juris Doctor (J.D.). Concurrent degree applicants must apply through, and be accepted into, both programs. Admission criteria are those of each individual program.

### Master of Public Affairs and Master of Urban Planning Concurrent Degree Program

Modern urban problems - including community development, environmental quality, transportation, and growth management - are at the intersection of policy, planning, and management and require leaders with skills beyond traditional disciplinary boundaries.

Students earn both the Master of Public Administration (M.P.A.) and Master of Urban Planning (M.U.P.) in approximately three years. The concurrent degree includes the following:

- \* an integrated curriculum with knowledge and skills-based training in organizational management, policy analysis, urban planning, and community development
- \* a collaborative, interdisciplinary program where graduate students from different backgrounds contribute to each other's educational experiences
- \* practical experience and detailed analysis through a thesis, whereby students demonstrate competency in both degree areas.

### Degree Requirements

70 credits, as follows:

- \* *Joint Core*
  - o Public Affairs Gateway Base Course
  - o Urban Design and Planning Specialization or Certificate Course
- \* *Urban Planning Core:* URB DP 479 (3), URB DP 500 (4), URB DP 503 (3), URB DP 507 (4), URB DP 512 (3), URB DP 580 (3)
- \* *Public Affairs Core:* PB AF 511 (3), PB AF 512 (3), PB AF 513 (3), PB AF 516 (3), PB AF 522 (3), PB AF 527 (3)
- \* *Restricted Electives:* One course from each of the following areas: Land Use/Growth Management, Specialized Planning Studio, Analysis, Values, Economics, Conflict Resolution
- \* *Internship:* Graduate-level internship equivalent to three months' full-time work.
- \* *M.U.P. Thesis Requirement:* Combined urban planning thesis/professional project and public affairs degree project.

### Master of Public Affairs and Master of Arts in International Studies Concurrent Degree Program

### Degree Requirements

60 credits, as follows:

- \* *International Studies Requirements*
  - o *Language:* Proficiency equivalent to two years of college-level work in a modern foreign language (three years for Chinese and Japanese).
  - o *Required Core:* Colloquia in International Studies (three quarters); SIS 500 (3), SIS 501 (3), SIS 502 (3), SIS 511 (3), intermediate economics (option to waive)
  - o *Electives:* Two fields of study: the professional field completed by courses relevant to both programs; the second field can be either a regional studies field or a special topics field.
  - o *Final Papers and Oral Exam:* Students present two research papers to a faculty examining committee.
- \* *Public Affairs Requirements*
  - o *Core Curriculum:* PB AF 511 (3), PB AF 512 (3), PB AF 513 (3), PB AF 516 (3), PB AF 522 (3), PB AF 527 (3), PB AF 528 (3)
  - o *Restricted Electives (9 credits):* Economics (3 credits), analysis (3), values (3)
  - o *Plan of Study:* 15 credits generally from one or a combination of the following gateway courses: International Affairs, Environmental Policy and Natural Resources Management, Urban and Regional Affairs, Education and Social Policy, Nonprofit Management
  - o *Internship:* Three months of full-time work, or equivalent

- o *Degree Project*: May also be used as one of two final papers required by International Studies program if it has an international focus.

## Master of Public Affairs and Master of Science in Public Health Concurrent Degree Program

### Degree Requirements

90 credits, as follows:

- \* *Public Affairs Requirements*
  - o *Core Courses*: PB AF 510 (1); PB AF 511, PB AF 512 (3, 3); PB AF 513 (3); PB AF 516 (3); PB AF 522 (3)
  - o *Restricted Electives*: ENV H 577 (3); either HSERV 585 (3), HSERV 587 (3), or HSMGMT 514 (3); one approved class in values (3)
- \* *Public Health Requirements*
  - o *Core Courses*: ENV H 580 (3), ENV H 581 (1), ENV H 583 (1); ENV H 700 (9); either BIOC 511, BIOC 512 (4, 4) or BIOC 517, BIOC 518 (4, 4); EPI 511 (4)
  - o *Degree Pathway Requirements*: One of the following:
    - + *Environmental Health*
      - \* *Core Courses*: ENV H 405 (3); ENV H 453 (3); ENV H 541 (3); either ENV H 543 (3) or ENV H 577 (3/4); ENV H 552 (3); ENV H 594 (1, max. 2); courses from two of the following three areas:
        - o *Waste management*: Either ENV H 445 (3) or ENV H 446 (3)
        - o *Air pollution*: ENV H 490 (3)
        - o *Water and wastewater*: ENV H 545 (3)
      - \* *Representative electives*: 9 credits from an approved list
    - + *Toxicology*
      - \* *Core courses*: ENV H 514, ENV H 515, ENV H 516 (4, 4, 4); ENV H 552 (3); ENV H 577 (3/4); either BIOC 405, BIOC 406 (3, 3) or BIOC 440, BIOC 441, BIOC 442 (4, 4, 4); one course in industrial hygiene or occupational medicine
      - \* *Electives*: 9 additional credits from approved list. (If student took the three-quarter biochemistry sequence above, only 3 credits of electives are required.)
    - + *Industrial Hygiene*
      - \* *Core Courses*: ENV H 405 (3), ENV H 553 (3), ENV H 555 (3), ENV H 557 (4), ENV H 560 (4), ENV H 564 (4); either BIOC 512 (4) or BIOC 518 (4); either ENV H 552 (3) or ENV H 570 (3)
      - \* *Electives*: Minimum 12 credits from approved list (available from adviser)
  - o *Additional Electives*: Sufficient number of electives to reach a total of 90 credits

## Master of Public Affairs and Master of Public Health in Environmental and Occupational Health Concurrent Degree Program

### Degree Requirements

90 credits, as follows:

- \* *Public Affairs Requirements*
  - o *Core Courses*: PB AF 510 (1); PB AF 511, PB AF 512 (3, 3); PB AF 513 (3); PB AF 516 (3); PB AF 522 (3)
  - o *Restricted Electives*: ENV H 577 (3); either HSERV 585 (3), HSERV 587 (3), or HSMGMT 514 (3); one approved class in values (3)
- \* *Public Health Requirements*
  - o *Public Health Core Courses*: Either EPI 511 (4) or EPI 512, EPI 513 (3, 3); either BIOC 511 (4) or BIOC 517 (4); HSERV 510 (3); HSERV 511 (3/4)
  - o *Environmental and Occupational Health Required Courses*: Either ENV H 405 (3) or ENV H 514, ENV H 515, ENV H 516 (3, 3, 3); either ENV H 453 (3), ENV H 553 (3), or ENV H 564 (3); ENV H 570 (3); either ENV H 472 (3), ENV H 543 (3), or ENV H 577 (3/4); ENV H 580 (1 credit for three quarters); ENV H 581 (1); either ENV H 583 (1) or HSERV 522 (3/4); either ENV H 446 (3), ENV H 490 (3), ENV H 541 (3), ENV H 545 (3), or ENV H 552 (3); ENV H 599 (3); ENV H 700 (9)
- \* *Additional Electives*: Sufficient number of electives to total 90 credits

## Master of Public Affairs and Master of Health Administration Concurrent Degree Program

### Degree Requirements

90 credits, as follows:

Health Administration course load is approximately 62 credits, which includes the M.H.A. capstone project credits and M.H.A. credits typically substituted by M.P.A. credits. M.P.A. core credit load is 22, with additional elective credits (approximately 12) and degree project credits (6). Program includes up to 12 shared credits.

Because of ongoing changes in the M.H.A. core curriculum, the schedule of courses below is expected to evolve. Contact the program office.

#### Course requirements:

- \* *Health Administration Core*: ACCTG 503 (4); HSERV 511 (4), either HSERV 522 (4) or HSERV 552 (3), HSERV 551 (2), HSERV 587 (3); HSMGMT 501 (3), HSMGMT 502 (3), HSMGMT 513 (4), HSMGMT 523 (3), HSMGMT 545 (4), HSMGMT 560 (4), HSMGMT 562 (4), HSMGMT 571 (3), HSMGMT 590 (2, 2, 2, 4), HSMGMT 592 (2, 2); one class in values/ethics (3)
- \* *Public Affairs Core*: PB AF 510 (1); PB AF 511, PB AF 512 (3, 3); PB AF 513 (3); PB AF 516 (3); PB AF 522 (3)
- \* *Internship*: Students work with faculty advisers to coordinate a single internship if possible or desirable.
- \* *Degree Projects*: Students work with faculty advisers and instructors of the M.H.A. capstone project (HSMGMT 545) and M.P.A. degree project (PB AF 605) to attempt collaboration on a single project. A minimum of 10 project credits are required.
- \* *Additional Electives*: Sufficient electives to reach 90 credits

## Master of Public Affairs and Master of Science in Forest Resources Concurrent Degree Program

### Degree Requirements

90 credits, as follows:

- \* *Mini-core*: PB AF 591/CFR 591 (1 credit each year); PB AF 590/CFR 592 (3/4); PB AF 592/CFR 571 (5)
- \* *Opportunity to Specialize*: Focuses on training public, private, and nonprofit leaders to synthesize the worlds of science, management, and policy.
  - o *Forest Economics and Policy*:
    - + *Core classes*: CFR 500 (1); PB AF 510 (1); PB AF 511, PB AF 512 (3, 3); PB AF 513 (3); PB AF 522 (3); PB AF 527, PB AF 528 (3, 3); ECON 500, ECON 502 (4, 4); either CFR 504 (4) or QERM 521 (4); applied professional field (6 credits approved by graduation committee); topics seminar or independent study in forest economics (2); forest biology, ecology, hydrology or forest products (3-5 credits, 500-level)
    - + *Restricted Electives*: Economics (3-5 credits); analysis (3-5 credits); values (PB AF 569 or approved values course, 3 credits)
    - + *Electives*: Electives include additional courses, skills workshops, or independent study.
    - + *Thesis*: CFR 600/700 (6-9 credits)
  - o *Social Systems and Natural Resource Policy*:
    - + *Core Classes*: CFR 500 (1); PB AF 510 (1); PB AF 511, PB AF 512 (3, 3); PB AF 513 (3); PB AF 516 (3); PB AF 522 (3); PB AF 527, PB AF 528 (3, 3); CFR 501 (5) or approved 500-level resource-related natural science course (3-5 credits); CFR 573 (3) or CFR 570 (3); approved seminar on natural resources (3 credits)
    - + *Restricted Electives*: Economics (3-5 credits); analysis (3-5 credits); values (PB AF 596 or approved values course, 3 credits)
    - + *Electives*: At least 12 credits must be taken from CFR courses
    - + *Thesis*: CFR 600/700 (6-9 credits)
  - o *Wildlife Conservation Policy*:
    - + *Core Classes*: CFR 500 (1); PB AF 510 (1); PB AF 511, PB AF 512 (3, 3); PB AF 513 (3); PB AF 516 (3); PB AF 522 (3); PB AF 527, PB AF 528 (3, 3); ESRM 450 (5); ESRM 458 (5); CFR 554 (1-2); CFR 521; two of the following: ESRM 424 (3), ESRM 441 (5), CFR 501 (5), CFR 528 (3), Q SCI 477 (5)
    - + *Restricted Electives*: Economics (3-5 credits); analysis (3-5 credits); values (PB AF 596 or approved values course, 3 credits)
    - + *Electives*: Electives include additional courses, skills workshops, or independent study.
    - + *Thesis*: CFR 700 (9 credits)
- \* *Additional Electives*: Sufficient electives to reach 90 credits



## Master of Public Affairs and Juris Doctor Concurrent Degree Program

### Degree Requirements

90 credits minimum, as follows:

- \* *Law Requirements:*
  - o *First Year:* LAW A 501 (2-8), LAW A 502 (2-6), LAW A 503 (2-8), LAW A 504 (2-8), LAW A 507 (4), LAW A 505 (2-5), LAW A 506 (1-6, three quarters)
  - o *Second and Third Years:* The only prescribed courses are LAW B 510 (2-4) and LAW E 500 (1-3). Students prepare for subjects on the state bar exam and are encouraged to undertake independent work under supervision of a faculty member.
  - o *Public Service Requirement:* Students perform 60 hours of public service legal work during the second or third year of law school. This requirement may be satisfied by successfully completing any approved clinical program course, a public service externship that carries at least two credits, or the street law course.
- \* *Public Affairs Requirements:*
  - o *Core Curriculum:* PB AF 511, PB AF 512 (3, 3); PB AF 513 (3); PB AF 516 (3); PB AF 522 (3); PB AF 527, PB AF 528 (3, 3)
  - o *Restricted Electives:* Economics (3 credits), analysis (3 credits), values (3 credits)
  - o *Plan of Study:* 15 credits generally from one or a combination of the following gateways: International Affairs, Environmental Policy and Natural Resources Management, Urban and Regional Affairs, Education and Social Policy, Nonprofit Management
  - o *Internship:* Equivalent to three months of full-time work.
  - o *Degree Project:* Independent research. While not a thesis, the degree project enables students to work closely with UW faculty members on a topic of interest.

### 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) course work, 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 grade point average of 3.0 on 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 [www.evans.washington.edu/degree](http://www.evans.washington.edu/degree) for specific requirements of each program.

### Application deadlines

Due to class-size limitations in our competitive programs, applicants are encouraged to submit their applications as early as possible.

Application materials to the Traditional M.P.A. 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 will be accepted for review on a space available basis until March 1.

Application materials for the Midcareer M.P.A. Degree Program must be received online and postmarked by March 1. Applications received after this date will be accepted for review on a space-available basis until June 1.

Application materials for the Executive M.P.A. Degree Program must be received online and postmarked by May 1. Applications received after this date will be accepted for review on a space-available basis until July 1.

Application materials for the Ph.D. Program in Public Policy and Management must be submitted and postmarked by February 1st. Applications postmarked after February 1st will not be reviewed.

Applicants to all programs must also apply to the UW Graduate Admissions Office by the specific program deadlines above.

### Financial Aid

For further information, visit: <http://evans.washington.edu/degree/financialaid/index.php/>.

### 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 M.P.A. students and to Ph.D. students. First-year M.P.A. 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 Ph.D. students. Teaching assistants are hired for some 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.

## 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.

### Center for Urban Simulation and Policy Analysis

The center fosters understanding of the relationship between urban growth and public policy. "UrbanSim," a software-based simulation model for integrated planning and analysis of urban development, incorporates interactions between land use, transportation, and public policy. The software enables metropolitan planning organizations and others to forecast the likely effects of land use and transportation plans and policies by taking into account environmental, sociological, and economic dimensions.

### Center on Reinventing Public Education (CRPE)

How can urban school systems provide strong, coherent schools for all children while upholding the commitment to equal opportunity on which public education is founded? The answer, CRPE believes, is to reinvent city school systems around principles of school autonomy, accountability for performance, and family choice. The center develops new models of public education based on these principles and helps public officials and community leaders choose and implement reform strategies. CRPE projects address district finance, leadership and human resources, school accountability, teacher development and quality, and charter schools.

### 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 learning 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 U.S.

Cascade Center courses are offered at the UW campus in Seattle. With prior permission, traditional and mid-career M.P.A. 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 M.P.A. 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. Wolffe Memorial Lecture in Science and Public

Policy, the Betty Jane Narver Lecture on Women in Public Policy, the Civic Engagement for the 21st 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 U.S. 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, [www.hallway.org](http://www.hallway.org), 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.

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# School of Public Health and Community Medicine

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## Dean

Patricia W. Wahl

F350 Health Sciences  
sphcm.washington.edu

The School of Public Health and Community Medicine (SPHCM) is composed of five departments: Biostatistics, Environmental and Occupational Health Sciences, Epidemiology, Health Services, and Pathobiology.

## Undergraduate Program

A Bachelor of Science degree and an undergraduate minor are offered in the Department of Environmental and Occupational Health Sciences. The Department of Health Services offers a Bachelor of Science degree in health information administration through the UW Evening Degree Program. Students may pursue a general studies bachelor's degree with an emphasis in public health by working with faculty in SPHCM and the College of Arts and Sciences, UW General Studies Office, 171 Mary Gates Hall. The SPHCM also offers a school-wide public health minor, requirements for which are described in the Health Services section.

## Graduate Program

The SPHCM offers graduate programs leading to the degrees of Master of Public Health (M.P.H.), Master of Health Administration (M.H.A.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.). Admission requirements vary by degree and field and are described in the sections of each department.

**Master of Public Health Degree:** The M.P.H. is a professional degree that provides broad training in public health. Each track or program provides additional training in a particular area. Graduates pursue careers in public health practice settings, academia, or research. The M.P.H. degree is offered in the departments of Biostatistics, Environmental and Occupational Health Sciences, Epidemiology, and Health Services. Students earning the M.P.H. may choose from several areas including biostatistics, community oriented public health practice, environmental and occupational health, epidemiology, health and policy research, international health (in Epidemiology or Health Services), maternal and child health (in Epidemiology or Health Services), occupational and environmental medicine, public health genetics, public health nutrition, or social and behavioral sciences. The M.P.H. degree in public health nutrition is offered through the Nutritional Sciences Interdisciplinary Graduate Program and the M.P.H. in public health genetics is a multidisciplinary program that involves faculty from throughout the University. The Extended M.P.H. Program is a three-year, part-time program that allows mid-career public health professionals to pursue the M.P.H. degree in community practice, health education, maternal and child health, or oral health while continuing their employment.

**Master of Health Administration Degree:** The M.H.A. degree is offered by the interdisciplinary Health Services Administration Group in the Department of Health Services under the auspices of the Graduate School. The program prepares students for careers in management, planning, and policy analysis in a variety of settings in the health care field. The purpose of the M.H.A. 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 M.H.A. 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 M.H.A. degree. The program provides a balance of theory and practical management skills.

**Master of Science and Doctor of Philosophy Degrees:** The M.S. and Ph.D. programs in the departments of Biostatistics, Environmental and Occupational Health Sciences, Epidemiology, Health Services, and Pathobiology prepare students for academic or research careers. The M.S. and Ph.D. programs in the Nutritional Sciences program, and the Ph.D. program in the Institute for Public Health Genetics are administered in SPHCM, although the degrees are awarded through the Graduate School's interdisciplinary group structure.

The M.S. programs in biostatistics, environmental health, epidemiology, genetic epidemiology, health and policy research, industrial hygiene and safety, nutritional sciences, pathobiology, statistical genetics, and toxicology 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 M.S. program differs from the Ph.D. 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 Ph.D. programs in biostatistics, environmental and occupational hygiene, epidemiology, health services, pathobiology, statistical genetics, toxicology, and the interdisciplinary Ph.D. programs in nutritional sciences 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 M.S. programs by the addition of advanced coursework and the nature and scope of the dissertation research project.

**Concurrent Degree Programs:** The SPHCM has concurrent degree programs with the School of Business Administration, the Daniel J. Evans School of Public Affairs, and the School of Nursing that lead to concurrent M.H.A.-M.B.A., M.H.A.-M.P.A., and M.H.A.-M.N. degrees, respectively. The SPHCM and the schools of Business Administration and Public Affairs offer these degree programs during both day and evening times. The SPHCM has concurrent degree programs with the Henry M. Jackson School of International Studies, the School of Social Work, the School of Nursing, and the School of Public Affairs that lead to the M.P.H.-M.A.I.S., M.P.H.-M.S.W., M.P.H.-M.N., and MPH-MPA and MS-MPA degrees, respectively. The M.P.H.-M.N. concurrent degree program provides students opportunities to study the areas of community health care nursing and child nursing. The School of Medicine and SPHCM have a concurrent degree programs that lead to the M.P.H.-M.D., M.H.A.-M.D. and Ph.D.-MD degrees. In the autumn of 2003 the concurrent degree program with the School of Dentistry that leads to the M.P.H.-M.S.D. degrees was approved, and the concurrent M.P.H.-J.D. degree program with the School of Law is expected to be approved during the 2004-2005 year.

**Residency Programs:** The SPHCM offers a residency in occupational and environmental medicine. Physicians are also welcome to apply to any of the School's graduate programs.

**Certificate and Graduate Certificate Programs:** The SPHCM offers several graduate certificate programs including a joint program with the School of Medicine in Biomedical and Health Informatics. The Department of Biostatistics offers a graduate certificate program in statistical genetics; the Department of Health Services in health behavior and health promotion, health policy, international health, and maternal and child health; the Extended Degree Program in public health; and the Institute of Public Health Genetics in public health genetics. The Department of Health Services also offers certificate programs in health information administration (HIA) and medical management.

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## Biostatistics

[www.biostat.washington.edu](http://www.biostat.washington.edu)

## Graduate Program

Graduate Program Coordinator  
F664 Health Sciences, Box 357232  
206-543-1044  
[bioadmit@u.washington.edu](mailto:bioadmit@u.washington.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 services are undergoing major changes in their development as quantitative sciences. As technological advances find expression in new research tools, new theoretical concepts are being employed in the analysis of quantitative 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 exciting 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 health services.

Because of the quality of the faculty and their involvement in a diversity of statistical applications, as well as the quality of the students, students receive an excellent education. Students are recruited from undergraduate programs in mathematics, statistics, and biology and are selected on the basis of outstanding quantitative ability.

## Master of Public Health

### Admission Requirements

Applicants to Biostatistics graduate programs are formally applying to the Graduate School of the University of Washington. 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., M.D., Ph.D., J.D.) or be currently working on such a doctoral degree. Candidates who have not yet been awarded a doctoral degree will not be awarded the Biostatistics-pathway M.P.H. until they are awarded their doctoral degree. All other prerequisites and required materials are the same for M.S., M.P.H., and Ph.D. applicants.

### Degree Requirements

In addition to meeting the minimum Graduate School requirements, students must also obtain a minimum grade point average of 3.00 in each of the biostatistics core courses (BIOST 514, BIOST 515, BIOST 524, BIOST 536, BIOST 537), a minimum cumulative GPA of 3.00 in non-biostatistics core courses (EPI 512, EPI 513, HSERV 511, ENV H 511, P BIO 511, and HSERV 510), and earn a minimum GPA of 2.70 in each non-biostatistics core course

63 credits, as follows:

- \* *Biostatistics core courses:* BIOST 514, BIOST 515 (8); BIOST 524 (3); BIOST 536, BIOST 537 (8); BIOST 580 (3); BIOST 590 (3); BIOST 700 (9). (Note: BIOST 514, BIOST 515, BIOST 524, BIOST 536, and BIOST 537 must be taken for a numerical grade.)
- \* *Non-biostatistics core courses:* EPI 512, EPI 513 (8); HSERV 511 (3); HSERV 510 (3-4); ENV H 511 (3); P BIO 511 (3). All non-biostatistics core courses must be taken for a numerical grade.
- \* *Biostatistics elective courses:* 6 credits of any approved biostatistics M.S. elective, or STAT 512 or STAT 513
- \* *Biostatistics M.P.H. practicum:* MPH students must also complete a practicum experience for 3 credits in an organization or agency that provides planning or services relevant to public health.

## Master of Science

### Admission Requirements

Applicants to Biostatistics graduate programs are formally applying to the Graduate School of the University of Washington. 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 M.S. 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

73 credits minimum, as follows:

- \* *Required courses:* BIOST 514 (4), BIOST 515 (4), BIOST 536 (4), BIOST 537 (4), BIOST 580 (\*, max. 9), STAT 512 (4), STAT 513 (4)
- \* *Elective credits:* 12 required elective credits must be taken, with at least 6 credits of elective courses with a methodology emphasis, and 6 credits of elective with a biology or public health emphasis (list provided).
- \* *Biostatistical consulting:* BIOST 590 (\*). Students must take BIOST 598 before or during the quarter in which they take BIOST 590.
- \* *Master's Thesis:* 18 credits of BIOST 700
- \* *Computer Proficiency:* The department requires a basic level of computing proficiency from all graduates, but encourages them to take the opportunity to gain greater expertise with a variety of computing tools. The computing proficiency requirement is met when a student writes and documents a computer program sophisticated enough to demonstrate the necessary basic competence in programming, or completes an approved programming course. The student's faculty advisor can approve the proficiency requirement or refer the matter to an ad hoc faculty committee for approval. Approved courses include STAT/BIOST 534, STAT/BIOST 535; CSE 142; and MEDED 531.

## Doctor of Philosophy

### Admission Requirements

Applicants to Biostatistics graduate programs are formally applying to the Graduate School of the University of Washington. 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 Ph.D. 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

Minimum 100 credits, as follows:

- \* *Required courses:* BIOST 514 (4); BIOST 515 (4); BIOST 533 (3); BIOST 570 (3); BIOST 571 (3); BIOST 580 (\*, max. 9); MATH 574, MATH 575, MATH 576 (3, 3, 3) or equivalent.; STAT 512, STAT 513 (4, 4); STAT 581, STAT 582, STAT 583 (3, 3, 3).
- \* Students must earn a minimum 3.0 grade in each of the required courses. At the faculty's discretion, qualifying exam performance may outweigh a course grade below the minimum. (Note: The minimum grade requirement for elective courses is 2.7.)
- \* *Elective credits:* 15 elective credits must be taken, consisting of at least 6 credits of elective courses with a methodology emphasis and 9 credits of elective with a biology or public health emphasis (list provided).
- \* In addition to the above courses, students in the Ph.D. program must complete 36 credits of BIOST 800, write a dissertation, complete a consulting class, and demonstrate proficiency in a computer language.
- \* If a Ph.D. student enrolls in STAT 512 and STAT 513, he or she must take the M.S. Theory Exam in the following June for advisory purposes. Ph.D. students must also take the Ph.D. Statistical Theory exam during the summer following enrollment in STAT 581, STAT 582, STAT 533 and the Ph.D. applied exam during the summer following enrollment in BIOST 571 and BIOST 572, or in BIOST 570 and BIOST 571, or if both STAT 581, STAT 582, STAT 583 and BIOST 570 and BIOST 571 are taken in the same year the student may elect to delay the Ph.D. applied exam by one year. If either exam is failed, it must be passed the following year.
- \* Students in the Ph.D. program must also complete a biology project, and pass the General and Final Examinations.
- \* *Computer Proficiency:* The department requires a basic level of computing proficiency from all graduates, but encourages them to take the opportunity to gain greater expertise with a variety of computing

tools. The computing proficiency requirement is met when a student writes and documents a computer program sophisticated enough to demonstrate the necessary basic competence in programming, or completes an approved programming course. Approved courses include: STAT/BIOST 534, STAT/BIOST 535; and CSE 142.

## Environmental and Occupational Health Sciences

F461 Health Sciences  
depts.washington.edu/envhlth

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@u.washington.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:* ECON 200; POL S 202; COM 220; STAT 220 or STAT 311.

#### Department Admission Requirements

1. Admission to the major is competitive. Applicants must complete substantial prerequisite coursework (see below) and an application to be considered. Completing the prerequisites and submitting an application do not guarantee 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 Web site at <http://depts.washington.edu/ehug>. Prospective students should apply one quarter before they wish to enter the major; ideally, students enter the major by or before the beginning of their junior year.
3. Applicants must complete the following, with a minimum grade of 2.0 in each course, to be considered for admission:
  - a. Minimum cumulative GPA of 2.50
  - b. 5 credits of English composition
  - c. BIOL 180, BIOL 200, BIOL 220
  - d. CHEM 142, CHEM 152, CHEM 162
  - e. CHEM 237, CHEM 238, CHEM 239 (or CHEM 223, CHEM 224)
  - f. Either MATH 124 or MATH 144 or Q SCI 291 (MATH 112 does not satisfy this requirement)
4. The program manager, department advisers, and the chair evaluate applications based on overall GPA, grades in math, science, and composition courses; demonstrated writing ability; and stated reasons for applying to the major. Grades in chemistry, biology, math, and ENV H courses weigh heavily in the admission process.
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. Please consult the UW Equivalency Guide or a UW adviser to verify transferability of coursework.

#### Major Requirements

85-98 credits, as follows:

1. *General Education and Basic Skills:* Completion of 10 credits in VLPA-designated courses and 10 credits in I&S-designated courses (of which 6 credits are specified under requirement 3), plus 7 credits in W-designated courses (of which 4 credits are specified under requirement 4).
2. PHYS 114, PHYS 115, PHYS 117, PHYS 118 (or PHYS 121 and PHYS 122). Completion of these courses prior to entering the program is recommended.
3. ENV H 311, ENV H 405, ENV H 431, ENV H 432, ENV H 433, ENV H 472, ENV H 482 (2 credits minimum), and two of the following: ENV H 440, ENV H 441, ENV H 445 (or ENV H 446), ENV H 490.
4. EPI 420, STAT 311 (or STAT 220 or Q SCI 381), T C 333, MICROM 301, MICROM 302.
5. 30 additional credits of approved electives.
6. Sufficient elective credits to reach a total of 180 credits.

#### Minor

*Minor Requirements:* 29 credits as follows:

1. *Core Courses:* 14 credits of the following: ENV H 311, ENV H 405, EPI 420; STAT 200 or STAT 311.
2. *Approved Electives:* 15 credits of electives from the approved departmental list. See Web site or adviser for details.

#### Student Outcomes and Opportunities

- \* *Instructional and Research Facilities:* The department houses thirteen centers and institutes and twenty labs.
- \* *Honors Options Available:* None offered.
- \* *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 (Ph.D.) industrial hygiene and safety (M.S.), toxicology (Ph.D./M.S.), environmental health (M.S.), and occupational and environmental medicine or environmental and occupational health (M.P.H.).

The Ph.D. 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 M.P.H. 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 M.P.H. 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 M.P.H./M.P.A. or M.S./M.P.A. 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

Prerequisites for admission to the M.S. industrial hygiene and safety, toxicology, and environmental health programs and the M.P.H. 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 M.P.H. Occupational and Environmental Medicine program include a doctoral degree (M.D., D.O. or equivalent) with prior coursework in physics, chemistry, calculus, and biology. Concurrent residency applicants must satisfy additional prerequisites including graduation from a Class A medical school (U.S., 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 Ph.D. environmental and occupational hygiene and 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 M.S., M.P.H., and Ph.D. programs.

## Master of Public Health

### Degree Requirements

63 credits, as follows:

- \* *Core Requirements:* EPI 511 (or EPI 512, EPI 513), BOST 511 (or BOST 517). M.P.H./M.P.A. students are also required to take BOST 512 (or BOST 518), HSERV 510, and HSERV 511.
- \* *Required Courses:* ENV H 405 (or ENV H 514, ENV H 515, and ENV H 516), ENV H 453 (or ENV H 553 or ENV H 564), ENV H 570, ENV H 577 (or ENV H 472 or ENV H 543), ENV H 446 (or ENV H 490, or ENV H 541, or ENV H 545, or ENV H 552). Courses in environmental health not chosen can be taken as electives.
- \* *Electives*
  - o *Thesis Track:* At least two additional 400- or 500-level departmental courses (minimum 6 credits).
  - o *Project Track:* At least four additional 400- or 500-level departmental courses (minimum 9 credits).
- \* *Practicum:* ENV H 599
- \* *Degree Project:*
  - o *Thesis Track:* ENV H 700
  - o *Project Track:* ENV H 598

## Master of Science, Environmental Health

### Degree Requirements

64 credits, as follows:

- \* *Core Courses:* ENV H 580, ENV H 581, ENV H 583, ENV H 700, BOST 511 (or BOST 517 or higher), EPI 511
- \* *Required Courses:* ENV H 405, 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 490, ENV H 545
- \* *Representative Electives:* 9 graded elective credits, approved by the student's academic adviser.

## Master of Science, Industrial Hygiene

### Degree Requirements

62 credits, as follows:

- \* *Core Courses:* ENV H 580, ENV H 581, ENV H 583, ENV H 700, BOST 511 (or BOST 517, or higher), EPI 511. Higher level biostatistics and epidemiology courses can be substituted for BOST 511 or BOST 517, and for EPI 511.
- \* *Required Courses:* ENV H 405, ENV H 553, ENV H 555, ENV H 557, ENV H 560, ENV H 564, BOST 512 (or BOST 518, or higher level), ENV H 552 (or ENV H 570). If both ENV H 552 and ENV H 570 are taken, one can be used toward the 12 elective credits (see below).
- \* *Electives:* 12 or more credits from the list below, in consultation with the program director or adviser. If both ENV H 552 and ENV H 570 (above) are taken, one may count toward required elective credits. Courses include ENV H 417, ENV H 446, ENV H 457, ENV H 556, ENV H 559, ENV H 562, ENV H 566, ENV H 584, ENV H 596 (taken winter quarter).

## Master of Science, Safety and Ergonomics

### Degree Requirements

62 credits, as follows:

- \* *Core Courses:* ENV H 580, ENV H 581, ENV H 583, ENV H 700, BOST 511 (or BOST 517, or higher), EPI 511. (Higher level biostatistics and epidemiology courses can be substituted for BOST 511 or BOST 517, and for EPI 511.)
- \* *Required Courses:* ENV H 405, ENV H 553, ENV H 560, ENV H 562, ENV H 564, ENV H 566, ENV H 596, BOST 512 (or BOST 518). (Higher level biostatistics courses can be substituted for BOST 512 or BOST 518). IND E/ENV H 537, MGMT 300.
- \* *Representative Electives:* ENV H 457, ENV H 512, ENV H 555, ENV H 557, ENV H 559, ENV H 569, ENV H 570, ENV H 572, ENV H 584, T C 517, UCONJ 420.

## Master of Science, Toxicology

### Degree Requirements

63 credits, as follows:

- \* *Core Courses:* ENV H 580, ENV H 581, ENV H 583, ENV H 700, BOST 511 (or BOST 517, or higher), EPI 511.
- \* *Required Courses:* ENV H 514, ENV H 515, ENV H 516, ENV H 552, ENV H 577, BIOC 405, BIOC 406 (or BIOC 440, BIOC 441, BIOC 442), ENV H course in industrial hygiene or occupational medicine).
- \* *Representative Electives:* Toxicology students who take the two-quarter biochemistry series (BIOC 405, BIOC 406) must have an additional 9 graded elective credits. Students who choose the three-quarter biochemistry 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 535, ENV H 550, ENV H 553, ENV H 555, ENV H 567, ENV H 570, ENV H 582, ENV H 584, ENV H 591, BIOL 403, BIOL 411, BOST 521, C MED 407, MICROM 441, MICROM 442, MICROM 518, PATH 444, PATH 555, P BIO 500-level courses, P BIO 405, P BIO 406, P BIO 507, PEDS 512, PHCOL 401, PHCOL 402, PHCOL 403, PHCOL 527.

## Doctor of Philosophy, Environmental and Occupational Hygiene

### Degree Requirements

90 credits minimum, as follows:

- \* *Core Sciences (11-12 credits)*: Sequence of three courses in one area, to be approved by adviser.
- \* *Biostatistics (3 credits)*: BIOST 512 (or BIOST518 or higher)
- \* *Epidemiology (4 credits)*: EPI 511 (or higher)
- \* *Environmental and Occupational Health Seminar (6 credits)*: ENV H 580
- \* *Dissertation (27 credits)*: ENV H 800
- \* *Lab Rotations (6-9 credits)*: ENV H 595
- \* *Required courses*:
  - o *Industrial Hygiene (6 credits)*: ENV H 553 and ENV H 555
  - o *Toxicology (3 credits)*: ENV H 405 (or more advanced)
  - o *Environmental Chemistry (3 credits)*: ENV H 552
  - o *Occupational and Environmental Epidemiology (3 credits)*: ENV H 570
  - o *Electives (20 credits)*: 10 elective credits are unspecified and 10 must be in courses taught by Industrial Hygiene or Environmental Health program faculty.

## Doctor of Philosophy, Toxicology

### Degree Requirements

90 credits minimum, as follows:

- \* *Core Sciences (11-12 credits)*: Sequence of three courses in one area, to be approved by adviser.
- \* *Biostatistics (3 credits)*: BIOST 512 (or BIOST518 or higher)
- \* *Epidemiology (4 credits)*: EPI 511 (or higher)
- \* *Environmental and Occupational Health Seminar (6 credits)*: ENV H 580
- \* *Dissertation (27 credits)*: ENV H 800
- \* *Lab Rotations (6-9 credits)*: ENV H 595
- \* *Required courses*:
  - o *Toxicology (9 credits)*: ENV H 514, ENV H 515, ENV H 516
  - o *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.
  - o *Advanced Toxicology*: 6 credits from approved list
  - o *Physiology*: 3 credits from approved list
  - o *Electives (20 credits)*: 10 elective credits are unspecified and 10 must be in courses taught by Industrial Hygiene or Environmental Health program faculty.

## 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.

## Epidemiology

depts.washington.edu/epidem

## Graduate Program

Graduate Program Coordinator  
F262 Health Sciences, Box 357236  
206-685-1762 or 206-543-8226  
epi@u.washington.edu

The Department of Epidemiology offers 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 degree programs, as well as several graduate certificates.

The Master of Public Health degree 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 Doctor of Philosophy program. Three tracks are available: the General Track, which is selected by most students; the Maternal and Child Health Track (MCH); and the Global Health Track (GH). The MCH and GH tracks require coursework in the respective specialty areas in addition to the requirements of the General Track. Applicants may choose to apply to two additional specialized programs: Public Health Nutrition and Public Health Genetics.

Formal concurrent degree programs involving the M.P.H. (Epidemiology) include the following: Doctor of Medicine (M.D.), Master of Arts in International Studies (M.A.I.S.), and Master of Public Affairs (M.P.A.). An informal concurrent degree program involving the M.P.H., M.S., or Ph.D. in Epidemiology and another graduate degree at the UW may be pursued with the permission of both departments.

The Master of Science degree requires concentration on courses and research in epidemiology and biostatistics as preparation for a research specialization or as a prelude to the Doctor of Philosophy program. It also requires electives from the School of Public Health and Community Medicine. Two tracks are available, the General Track and the Clinical Research Track. Applicants also may choose to apply for an M.S. in Genetic Epidemiology.

The Ph.D. course requirements differ from the M.S. program requirements primarily in the scope and complexity of research for the dissertation. Coursework includes a core series in epidemiology 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. M.D. students at the UW may apply for formal concurrent M.D. and Ph.D. degrees.

The Department offers several graduate certificate programs open to any qualified graduate student at the University. Some certificate programs are open to Graduate Non-Matriculated students, as indicated on the certificate Web sites. They offer specialization in the following specific areas:

- \* Advanced Clinical Research Methods
- \* Basic Clinical Research Methods
- \* Global Health
- \* Maternal and Child Health
- \* Public Health Genetics
- \* HIV and Sexually Transmitted Infections

## 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
2. Undergraduate and graduate grades (if applicable)
3. GRE scores (except for master's degree applicants with a prior doctorate from a U.S. university, M.D./M.P.H. applicants, and M.D./Ph.D. applicants funded by the Medical Scientist Training Program)
4. TOEFL or IELTS score from international applicants
5. Letters of reference

## Master of Public Health

### Degree Requirements

Minimum 63 credits, as follows:

1. 27 to 38 course credits
2. *Core Courses*: 21 or 22 graded credits, including EPI 512 (4), EPI 513 (4), BIOST 511 (4), HSERV 510 (3), HSERV 511 (3), and
3. One of the following environmental health courses: ENV H 511 (3), ENV H 517 (3), ENV H 577 (3/4), ENV H 584 (3)



4. *Electives*: 6 credits of EPI course electives of 2 or more credits each (EPI 514 recommended; contact program for acceptable 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 relevant departments and for independent study (EPI 600) to bring the total to 63 credits. Relevant 400-level coursework may count toward the total. Coursework unrelated to health and at the 300-level or below does not count toward the degree.

*M.P.H. Specialized Program Options*: The M.P.H. degree offers specialized tracks as listed below. They have additional admission and course requirements detailed at the program Web sites.

- \* Global Health
- \* Maternal and Child Health

The following two tracks are officially under the Epidemiology Department, but have different application procedures and requirements.

- \* Public Health Nutrition
- \* Public Health Genetics

## Master of Science

### Degree Requirements

60 credits, to include:

- \* 28 to 42 course credits
- \* *Core Courses*: 24 graded credits, including EPI 512 (4), EPI 513 (4), EPI 514 (4), BIOST 511 (4), BIOST 512 (4), BIOST 513 (4)
- \* *Electives*: Two EPI courses of at least 2 credits each
- \* *School of Public Health Electives*: Two additional courses (2 or more credits each) in any department of the School of Public Health and Community Medicine (including Epidemiology) or other University of Washington courses related to the biological, physical, or social/behavioral factors that affect health.
- \* Contact program for acceptable elective courses.
- \* 9 to 18 thesis credits (EPI 700)
- \* Students may also enroll in additional elective courses in epidemiology, independent study (EPI 600) and in other relevant departments for a total of 60 credits. Relevant 400-level coursework may count toward the total. Coursework unrelated to health and at the 300-level or below does not count toward the degree.

*M.S. Clinical Research Track*: The Clinical Research Track in Epidemiology is chiefly intended for professionals who have already completed clinical training and who plan to conduct research with patients in health care settings as a significant part of their future career. For specific coursework requirements, visit the program Web site.

The Genetic Epidemiology track is officially under the Epidemiology Department, but has different application procedures and requirements. See the following Web site: [http://depts.washington.edu/phgen/degreeprograms/MSGGE\\_degree.shtml](http://depts.washington.edu/phgen/degreeprograms/MSGGE_degree.shtml).

## Doctor of Philosophy

### Admission Requirements

Admission requirements specific to the Ph.D

- \* Admission requirements listed here are in addition to the admission requirements for all degrees listed above.
- \* U.S. master's degree in epidemiology or other health-related field, including mathematics and quantitative social sciences. For information about conditions for very rare exceptions to the U.S. master's requirement, see [http://depts.washington.edu/epidem/adm/on-line\\_submission.shtml#phd](http://depts.washington.edu/epidem/adm/on-line_submission.shtml#phd).
- \* Applicants do not need to locate faculty mentors in advance in order to be admitted.

### Degree Requirements

Minimum of 90 total credits, to include:

- \* The minimum credit requirement may be reduced to 60 for students with a prior relevant master's degree.
- \* 30 to 49 course credits

- \* *Core Courses*: 28 graded credits including EPI 512 (4), EPI 513 (4), EPI 514 (4), EPI 536 (4), EPI 537 (4), BIOST 517 (4), BIOST 518 (4)
- \* Three quarters of EPI 584 (1 credit each, maximum 3)
- \* *Minimum required electives (minimum 2 credits each)*: One course in infectious disease epidemiology; two courses in advanced epidemiologic methods or non-infectious disease epidemiology; and three additional courses in any department of the School of Public Health and Community Medicine (including Epidemiology) or other University courses related to the biological, physical or social/behavioral factors that affect health.
- \* Contact program for acceptable elective courses.
- \* Students are encouraged to take EPI 583 (1) each quarter of the first year, and to take EPI 591 (1) each quarter after the first year.
- \* The student's Supervisory Committee may require additional courses to ensure that the student has adequate training in the area of epidemiology that he or she is pursuing.
- \* *Dissertation*: 27 credits of EPI 800
- \* Additional epidemiology courses, as well as courses offered by other departments or schools, may be taken depending on the student's area of interest and prior academic background. Relevant 400-level coursework may count toward the total credits. Coursework unrelated to health and at the 300-level or below does not count toward the degree.
- \* Students may also enroll in additional EPI 800 or EPI 600 to reach the total credits required.

## Financial Aid

Research assistantships for work on various projects provide salary and tuition waivers for students working 20 hours/week. (Although funding is not guaranteed with admission, most students find a research assistantship before the start of Autumn Quarter.) 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.

## Research Facilities

University facilities include well-equipped laboratories, an excellent library system, and access to computers. Various opportunities for field research are provided in Seattle and elsewhere in the state, including Children's Hospital and Regional Medical Center, Fred Hutchinson Cancer Research Center, Group Health's Center for Health Studies, Harborview Medical Center, the Center for AIDS and STD, Public Health: Seattle-King County, Washington State Department of Health, VA Puget Sound Health Care Systems and many other local health institutions. Consult the program Web site under "Affiliated Institutions" for an additional, but not exhaustive, list.

## Health Services

H668 Health Sciences  
[depts.washington.edu/hserv](http://depts.washington.edu/hserv)

Health information management professionals serve the healthcare industry and the public by managing, analyzing, and utilizing data vital for patient care. From paper and electronic health records to health informatics, maintaining access, quality, and privacy of patients' test results, diagnoses, prescriptions, and treatments is core to this discipline. Health information management standards and policies also assure data is accessible for accurate patient billing and reimbursement, optimal health services utilization, public health reporting, and research.

## Undergraduate Program

Adviser  
1100 NE 45th Street, Suite 405, Box 354943  
206-543-8810  
[hihim@u.washington.edu](mailto:hihim@u.washington.edu)

The program in Health Informatics and Health Information Management (HIHIM) offers both a postbaccalaureate certificate and a Bachelor of Science degree (Evening Degree Program).

Health information management professionals serve the healthcare industry and the public by managing, analyzing, and utilizing data vital for patient care. From paper and electronic health records to health informatics, maintaining access, quality, and privacy of patients' test results, diagnoses, prescriptions, and treatments is core to this discipline.

Health information management standards and policies also assure data is accessible for accurate patient billing and reimbursement, optimal health services utilization, public health reporting, and research.

The program is accredited by the Commission on Accreditation for Health Informatics and Information Management Education, in cooperation with the American Health Information Management Association (AHIMA). Students acquire a sound background in health data systems, organizational theory, computer systems in health care, health information systems analysis, management theory and application, quality assurance theory and application, and finance and legal issues. Upon completion of this program, students are eligible to take the national certification examination for Registered Health Information Administrator.

## Health Informatics and Health Information Management Postbaccalaureate Certificate

### Admission Requirements

Applicants must hold a baccalaureate degree from an accredited college or university with a minimum GPA of 2.50. They must also have taken courses in, or have the requisite knowledge and skills pertaining to, the following: human anatomy and physiology (laboratory course); patho-physiology; 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

55 credits as follows:

1. HIHM 409 (4,4), HIHM 410 (6), HIHM 412 (5), HIHM 420 (5), HIHM 421 (5), HIHM 450 (3), HIHM 454 (4), HIHM 455 (5), HIHM 456 (5), HIHM 460 (3), HIHM 462 (3), HIHM 470 (3), HIHM 480 (4).
2. The program may be completed in either one or two academic years.

For current information, please visit the Health Informatics and Health Information Management Web site.

## Bachelor of Science

### Health Informatics and Health Information Management Major

*Suggested First- and Second-Year College Courses:* Human anatomy and physiology (laboratory course); patho-physiology; introduction to basic computer applications such as spreadsheets, data bases, or word processing, or introductory programming; principles of management; statistics (any discipline); English composition; and medical terminology.

### Department Admission Requirements

1. Admission to UW Evening Degree Program for summer quarter of planned entry to Health Informatics and Health Information Management (HIHM)
2. Minimum 90 transferable credits.
3. Completion of the following prerequisites (With the exception of medical terminology, prerequisite courses may be taken at the UW or elsewhere):
  - a. *Statistics (one of the following):* STAT 220, STAT 311, QMETH 201, PSYCH 315, EDPSY 490, or equivalent. (4-5 credits)
  - b. *Anatomy and physiology with laboratory:* BIOL 118 and BIOL 119, or equivalent (6 credits)
  - c. *Management:* MGMT 300, or equivalent (4 credits)
  - d. *Computer applications and information technology:* CSE 100, INFO 100, or equivalent (5 credits)
  - e. *Medical terminology:* Not offered at UW. Available at various community colleges (3-5 credits)
4. *Grades:* Minimum cumulative GPA of 2.50. Minimum cumulative GPA of 2.50 in prerequisite coursework. Minimum 2.0 grade in each prerequisite course.
5. Prerequisites must be completed prior to admission, with the following exception: A maximum of one (1) prerequisite course may be in progress during summer quarter. Applicant must include written petition with HIHM application. Applicant may be considered for conditional admission. Offer of admission to HIHM is withdrawn if prerequisite is not completed by the end of summer quarter or if prerequisite grade requirement is not met.

6. 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.

### Program Requirements

1. *General Education Requirements*
  - a. *English Composition and Additional Writing (15 credits):* English composition (5 credits); additional writing (W courses) (10 credits)
  - b. *Quantitative and Symbolic Reasoning (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, & 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. *Program Requirements (57 credits)*
  - a. *Disease concepts (4 credits):* HIHM 409
  - b. *Information systems (16 credits):* HIHM 410, HIHM 420, HIHM 421
  - c. *Coding and vocabulary (5 credits):* HIHM 412
  - d. *Management (24 credits):* HIHM 450, HIHM 454, HIHM 455, HIHM 456, HIHM 470, HIHM 480
  - e. *Internships and projects (8 credits):* HIHM 460, HIHM 462, HIHM 499
3. Additional electives to complete minimum of 180 credits required for a degree.

For current information, visit the Health Informatics and Health Information Management Web site.

## General Studies Major

The general studies major allows undergraduate students to create an interdisciplinary, individually designed program of study in public health. The student identifies public health as a central organizing theme and designs the course of study under the guidance and supervision of at least two faculty members and a general studies adviser. The general studies major usually requires 50-70 credits, many of which come from the courses required for the public health minor. A complete description of the general studies major can be found in the Arts and Sciences section of this catalog.

## Minor

The public health minor includes the study of historical and contemporary issues in public health including social and behavioral determinants of health, the geography of health and illness, the etiology of infectious and chronic diseases, the relationship between environmental factors and health, and access to health care and modes of delivery of health services.

*Minor Requirements:* 30 credits, including 20 credits of required courses and 10 credits of electives. Required courses include: BIOST 111 (1); ENVH 311 (3); EPI 420 (3); GEOG 280 (5); HSERV 480A (3); MHE 417 (3); PABIO 201 (2). Electives may be taken from the following courses or an approved substitute: ANTH 375 (3); ANTH 475 (5); ANTH 476 (5); ANTH 477 (3); GEOG 380 (4); HSERV 480B (1-3, max. 6); HSERV 480C (1-3, max. 6); MHE 474/PHIL 411 (5); MHE 481 (3); NUTR 300 (3); PSYCH 451 (5); SOC 212 (5); SOC 331 (5); STAT 311 (5); UCONJ 490 (3); UCONJ 497 (3).

## 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 health care information, and prepares students for the Registered Health Information Administrator (R.H.I.A.) national certifying examination of the American Health Information Management Association. The program gives students the tools to work in a wide variety of health care positions upon graduation, including health information management, health informatics with emphasis on electronic health records, health care 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  
H673 Health Sciences, Box 357660  
206-616-2926  
hservmph@u.washington.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 M.P.H. 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 M.P.H. in community-oriented public health practice (C-O.P.H.P.) 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 M.P.H. specialty options. The department also offers a three-year extended degree program in community-health management, leading to the M.P.H. degree for employed professionals working full-time.

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 M.H.A. degree, designed for mid-career health care professionals, is offered. The M.H.A. degree provides full academic preparation for careers in management and policy positions in health systems, hospitals, medical groups, health plans and other types of health care organizations.

The department offers a Ph.D. in health services and participates in the training of doctoral fellows.

## Master of Public Health

For current listings of M.P.H. options and their requirements, please visit the program Web site.

### Admission Requirements

1. One set of official transcripts from all institutions of higher learning attended
2. Official scores from the general Graduate Record Examination (GRE) (required for applicants who have not already earned a doctoral-level degree (e.g., M.D., Ph.D., J.D.) from a U.S. institution of higher learning)
3. Test of English as a Foreign Language (TOEFL) scores, if applicable.
4. Admission application
5. Applicant's statement, including a description of the applicant's professional background, career goals, and the educational objectives which the applicant expects to meet while completing the program
6. Three recent letters of recommendation, preferably from former supervisors and teachers.
7. An in-person or telephone interview with a Health Services faculty person is highly recommended, but not required

### Degree Requirements, Community-Oriented Public Health Practice Track

63 credits, as follows:

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

### Degree Requirements, Health Policy and Research Option

Minimum 63 credits, to include:

- \* At least 30 credits be from graduate-level courses
- \* At least 18 credits from graduate-level Health Services courses
- \* *Coursework:*
  1. Either BIOST 511 (4) or BIOST 517 (4)
  2. One of the following: ENV H 511 (3), ENV H 517 (3), ENV H 570 (3), ENV H 577 (3-4), or ENV H 584 (3)
  3. Either EPI 511 (4) or EPI 512/EPI 513 (4/4)
  4. HSERV 511 (3-4)
  5. HSMGMT 560 (4), HSERV 510 (3)
  6. HSERV 592 (1-6, max. 6) for each quarter in residence
  7. 3 credits of practicum: HSERV 595 (3-6, max. 6)
  8. 9 credits of thesis: HSERV 700
  9. Remaining credits as electives

### Degree Requirements, International Health Option

The department no longer offers this option. Please see the Global Health program.

### Degree Requirements, Maternal and Child Health Option

Minimum 69 credits, to include:

1. HSERV 510 (3), HSERV 511 (3/4), HSERV 541 (3), HSERV 542 (4)
2. Either HSERV 527 (4), HSERV 581 (4), EPI 514 (4), HSERV 543(3), or HSERV 561 (3)
3. HSMGMT 560 (4)
4. One of the following environmental health classes: ENV H 511 (3), ENV H 517 (3), ENV H 570 (3), ENV H 577 (3/4), or ENV H 584 (3)
5. Either EPI 511 (3/4) or both EPI 512 (4) and EPI 513 (4)
6. Either BIOST 511 (4) or BIOST 517 (4); either BIOST 512 (4) or BIOST 518 (4)
7. HSERV 592 (1 credit for each of six quarters)
8. *Practicum:* HSERV 595 (3-6, max. 6)
9. *Thesis:* HSERV 700 (9)

### Degree Requirements, Social and Behavioral Sciences Option

Minimum 63 credits, to include:

1. The MPH in Health Services SBS track requires the following specific courses:
  - a. HSERV 511 (4), HSMGMT 560 (4), BIOST 511 (4)
  - b. One of the following: ENV H 511 (3), ENV H 517 (3), ENV H 570 (3), ENV H 577 (3/4), or ENV H 584 (3)
  - c. Either EPI 511 (3/4), or EPI 512 and EPI 513 (4, 4) (recommended)
  - d. HSERV 510 (3)
  - e. HSERV 592 (1-6, max. 6; six quarters total required)
  - f. BIOST 512 (4) (may be replaced with BIOST 517 by advanced students with the permission of their adviser)
  - g. Designated Health Services methods course to support thesis research
  - h. One of the following: HSERV 507 (3), HSERV 513 (3), HSERV 580 (3), HSERV 581 (4), HSERV 582 (3/4), HSERV 586 (3), HSERV 588 (3), or HSMGMT 514 (3/4)
2. At least 18 credit hours in 500-level Health Services classroom courses. HSERV and HSMGMT courses listed above count toward this requirement, but independent study does not. SBS Seminar does count towards this requirement.
3. At least 30 credits in graduate-level classroom courses in the School of Public Health and Community Medicine, or in other schools at the University if approved by the student's advisor.
4. HSERV 595 (3-6, max. 6)
5. HSERV 700, master's thesis (9)

## Master of Health Administration

For the most current information, please visit the M.H.A. program Web site.

### Admission Requirements

- \* A baccalaureate degree from an accredited university
- \* Minimum GPA of 3.00 in the last 90 graded credits
- \* GRE scores

## Degree Requirements

79 credits, as follows:

- \* *Year One Required Courses:* ACCTG 503 (4); HSERV 511 (4); either HSERV 587 (3) or HSMGMT 514 (4), HSMGMT 501 (3); HSMGMT 513 (4); HSMGMT 523 (3); HSMGMT 560 (3); HSMGMT 571 (4); 12 credits of HSMGMT 590 (1-6, max. 12); 4 credits of HSMGMT 592 (2, 2)
- \* *Year Two Required Courses:* Either HSERV 551 (3), HSERV 552 (3), or HSERV 553 (2-3); HSMGMT 500 (3), HSMGMT 502 (3), HSMGMT 545 (4), HSMGMT 562 (4), and MHE 523 (3).

## Master of Science, Health Care and Population Health

### Admission Requirements

For the most current information, please visit the M.S. program Web site.

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. Admission application
5. Applicant's statement, including a description of the applicant's professional background, career goals, and the educational objectives which the applicant expects to meet while completing the program
6. Three recent letters of recommendation, preferably from former supervisors and teachers.
7. An in-person or telephone interview with a Health Services faculty person is highly recommended

### Degree Requirements

Minimum 63 credits, to include:

1. Either HSERV 511 (3/4) or HSERV 512 (3)
2. Either HSERV 587 (3), HSMGMT 513 (4), or HSMGMT 514 (3)
3. EPI 512 (4), EPI 513 (4)
4. Either BIOST 511, BIOST 512, BIOST 513 (4, 4, 4), or BIOST 517, BIOST 518 (4, 4)
5. Two of the following: HSERV 522 (4), HSERV 523 (4), HSERV 524 (4), HSERV 525 (4), HSERV 526 (4), HSERV 527 (4), HSERV 539 (3/4), HSERV 583 (3), HSERV 584 (3), or HSERV 586 (3)
6. Three quarters of HSERV 592 (1-6, max. 6)
7. 9 credits of HSERV 700

## Doctor of Philosophy

For the most current information, please visit the Ph.D. program Web site.

### Admission Requirements

Admission priority is given to applicants who have graduated from a master's program with high academic standing. Students with only a bachelor's degree with health services research experience are occasionally admitted. Generally these students are admitted to the master of science program and then may be admitted to the doctoral program.

Applicants who have a bachelor's, master's, or professional degree in a field related to health services are given preference over applicants who do not have such experience.

Applicants with research experience and publications are typically rated more highly.

Students admitted to the program generally have GRE scores in or above the 80th percentile.

International applicants must submit the results of the Test of English as a Foreign Language (TOEFL), unless they are a citizen of Australia, Canada, Ireland, New Zealand, or the United Kingdom, or have earned a bachelor's or higher degree from the United States or one of the countries listed above. 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:

- \* *Required core competencies (35 credits):* HSERV 512 (3), HSERV 513 (3), HSERV 514 (3); HSERV 523 (4), HSERV 524 (4), HSERV 525 (4); one of the following: HSMGMT 514 (3), HSERV 587 (3), or ECON 500 (3); HSERV 522 (3); BIOST 517 (4), BIOST 518 (4) (or BIOST 511, BIOST 512, BIOST 513 (4, 4, 4) or BIOST 514, BIOST 515 (4, 4); EPI 512 (4), EPI 513 (4)
- \* *Area of emphasis:* Five courses or 15 credits in an area of emphasis. Suggested areas of emphasis are as follows:
  - o Economics or Finance
  - o Health Behavior and Health Promotion
  - o Occupational Health
  - o Cancer Prevention and Control
  - o Evaluation Sciences
  - o Population Health and Social Determinants
  - o Global Health
  - o Maternal and Child Health
  - o Sociology/Demography
  - o Bioinformatics
  - o *Customized area of emphasis:* The specific courses to be taken are selected by the student and the adviser based on the student's past coursework, experience, proposed dissertation topic, and future career goals.
- \* Doctoral courses in advanced theory and methods in health services (50 credits including a minimum of 30 dissertation credits)
- \* Written preliminary examination
- \* Written and oral General Examinations
- \* Dissertation
- \* Dissertation defense (Final Examination)

## Financial Aid

Every attempt is made to ensure that students admitted are not prevented from pursuing graduate studies due to 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 health-care delivery systems and agencies for research and training.

## Extended M.P.H.

Graduate Program Coordinator  
H674 Health Sciences, Box 357660  
206-685-7580

For the most current information, visit the Extended M.P.H. program Web site.

The Extended M.P.H. 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 Extended M.P.H. 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 M.D., D.O., or Ph.D. degrees from an accredited U.S. college or university may waive the GRE requirement.)

## Degree Requirements

63 credits minimum, as follows:

- \* *Year 1 Required Courses:* BIOS 502 (4), EPI 511 (3/4), HSERV 501 (3), HSERV 516 (4), HSERV 520 (1-3, max. 3), HSMGMT 560 (1-4, max. 4)
- \* *Year 2 Required Courses:* BIOS 503 (4), ENV H 511 (1-3, max. 3), HSERV 504 (1-3, max. 3), HSERV 522 (1-4, max. 4), HSMGMT 514 (3/4), HSMGMT 563 (3)
- \* *Year 3 Required Courses:* HSMGMT 566 (3), HSMGMT 572 (3)
- \* *Thesis or Project Option:* HSERV 700 (master's thesis) or HSERV 598 (project); EPI 600/ENV H 600
- \* *Practicum (required):* focus based on pathway choice
- \* *Elective or Pathway Credits (required):* Pathway courses may be spread out over two years. Electives may be taken at any time.

## Pathobiology

depts.washington.edu/pathobio

### Graduate Program

Graduate Program Coordinator  
F161F Health Sciences, Box 357238  
206-543-4338  
pathobio@u.washington.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

- \* *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 your 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 ALSO required to submit official Test of English as a Foreign Language (TOEFL) Scores. The Department of Pathobiology will not admit international applicants that have less than a TOEFL score of 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

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.

*M.S. Thesis Research Proposal:* The M.S. thesis research proposal should be done by the end of the fourth quarter of the first year. The proposal 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.

*M.S. Thesis:* The thesis must be provided to the M.S. 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.

*M.S. Oral Presentation and Defense:* All students are required to give a formal seminar prior to the completion of 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 your 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 ALSO required to submit official Test of English as a Foreign Language (TOEFL) Scores. The Department of Pathobiology will not admit international applicants that have less than a TOEFL score of 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. Students may be excused for up to two quarters while writing the dissertation. Students will give research presentations in the Graduate Research Symposium annually after the first year. 3 credits each of Seminar and Journal Club may each be counted towards the degree.
- \* *Electives:* The following are recommended tracks for elective credits:
  - o *Eukaryotic Pathogens:* PABIO 536, PABIO 548, CONJ 531 through CONJ 544, EPI 532, MICROM 444
  - o *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.)
  - o *Viral Pathogens:* Two or more of the following are strongly recommended: CONJ 531-544, 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 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.

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## Public Health Genetics

F363 Health Sciences Building  
depts.washington.edu/phgen

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 Ph.D. 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  
F363 Health Sciences Building, Box 357236  
206-616-9286  
phgen@u.washington.edu

## Master of Science, Genetic Epidemiology

### Admission Requirements

1. Completed program application form.
2. Statement of purpose
3. Official sealed transcripts, including courses, grades, and degrees from all institutions attended after secondary school
4. 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).
5. *International applicants:* Official TOEFL scores
6. 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.
7. Printed copy of completed Graduate School web application, sent along with the Public Health Genetics program application
8. Recent copy of the student's resume or curriculum vitae

## Degree Requirements

68 credits minimum, to include:

- \* *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/MHE 514 (3); EPI 512 (4), EPI 513 (4); either BIOST 511, BIOST 512, BIOST 513 (4, 4, 4), or BIOST 517, BIOST 518 (4, 4); PHG 536/MEDE 536/PABIO 536 (3), GENOME 552 (1.5), GENOME 553 (1.5)
- \* *Elective Courses:* At least two elective courses (excluding independent study and thesis credits) of 2 or more credits each. Courses 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.
- \* *Thesis:* PHG 700 (9 credits minimum)

## Master of Public Health, Public Health Genetics

### Admission Requirements

1. Completed appropriate program application form.
2. Statement of purpose.
3. Official sealed transcripts, including courses, grades and degrees from all institutions attended after secondary school
4. 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).
5. *International applicants:* Official TOEFL scores
6. 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.
7. A printed copy of the applicant's completed Graduate School web application
8. A recent copy of the applicant's resume or curriculum vitae

### Degree Requirements

63 credits, as follows:

1. *Required Courses:* 52 credits as follows: EPI 511 (3/4), BIOST 511 (4), HSERV 511 (3/4), ENV H 511 (1-3), HSERV 510 (3); PHG 511 (3), PHG 512 (3), PHG 513 (3), PHG 521 (3), PHG 522 (2) or PHG 525 (3), PHG 523 (2), PHG 581 (1); PHG 580 (3); PHG 595(3); at least 9 credits of PHG 700
2. *Electives:* Remaining 11 credits may combine approved elective courses, PHG 600 credits, and PHG 700 credits

## Doctor of Philosophy

### Admission Requirements

1. Completed appropriate program application form.
2. Statement of purpose.
3. Official sealed transcripts, including courses, grades and degrees from all institutions attended after secondary school.
4. 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).
5. *International applicants:* Official TOEFL scores
6. 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.
7. A printed copy of the applicant's completed Graduate School web application.
8. A recent copy of the applicant's resume or curriculum vitae.

### Degree Requirements

90 credits minimum, to include:

1. For students who require additional training in written communication for a multidisciplinary audience, TC 509 may be required.
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 (3/4); BIOST 511 (4) or BIOST 517 (4); ENV H 511 (1-3); HSERV 511 (3-4)
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 (2) or PHG 525 (3), PHG 523 (2), PHG 541 (3), PHG 543 (3)
  - 5. PHG 580 is required each quarter for all Ph.D. students till 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*
    - a. *All Students*: PHG 518 (2-4), PHG 519 (3), EPI 573 (3)
    - b. *Genomics in Public Health*: EPI 512 (4), EPI 513 (4), ENV H 514 (3), ENV H 515 (3), ENV H 516 (3), ENV H 567 (2), ENV H 577 (3/4), MEDCH 527 (4), PCEUT 502 (4)
    - c. *Implications of Genetics for Society*: PHG 537 (2), MHE 402 (5), MHE 474 (5), LAW A 596 (1-4), HSERV 551 (2), HSERV 510 (3), ANTH 475 (5), HSERV 552 (3), HSERV 583 (3), HSERV 584 (3), HSERV 587 (3)
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# Reserve Officer Training Corps Programs

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## Aerospace Studies

711A Condon Hall  
depts.washington.edu/afrotc/web

The Air Force Reserve Officer Training Corps program (AFROTC) is designed to motivate, educate, and commission highly qualified students for active duty as officers in the U.S. Air Force. The curriculum provides the opportunity for students in any major to gain military knowledge and to become effective Air Force officers and leaders in the aerospace environment.

## General Program Requirements

All aerospace studies courses are open to all University students. Additionally, any student may join the AFROTC program as a cadet and enroll in the 100- and 200-level general military courses. Entry into the professional officer courses (300- and 400-level courses) as a cadet seeking a commission in the Air Force is on a controlled, selective basis.

## Commissioning Requirements

Students who successfully complete the AFROTC program and receive an academic degree from the University 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, one-and-a-half 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, 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. Non-ROTC students take the AS classes without any additional requirements for leadership laboratory or physical fitness.

## 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, three hours of leadership-laboratory and two hours of physical fitness per week. Non-ROTC students take the AS classes without any additional requirements to attend leadership laboratory or physical fitness. Non-ROTC students earn academic credits for 300- and 400-level courses, but do not earn an Air Force commission.

## Financial Assistance

The Air Force offers one-, two-, and three-year scholarships to college students. AFROTC scholarships pay tuition, certain fees, and textbook reimbursement. In addition, scholarship winners receive a monthly subsistence allowance. To apply for one of these scholarships, students should contact the Unit Admissions Officer in the Department of Aerospace Studies (AFROTC), 206-543-2360 or at [afrotc@u.washington.edu](mailto:afrotc@u.washington.edu).

## Two-Year Program

To provide for those students wishing to join AFROTC but unable to take the general military courses, a two-year professional officer course is available on a competitive basis. This program is open to graduate

students and full-time undergraduate students in select majors who will complete a bachelor's degree in two years.

Students in this program are required to attend a six-week field-training course at an Air Force base during the summer preceding program entry. The student is paid during the six-week period. Upon return to the campus, students enter the professional officer course. Uniform, texts, and a monthly subsistence are provided. Students interested in this program should contact the AFROTC department by February prior to the autumn quarter they desire to enter, at 206-543-2360 or at [afrotc@u.washington.edu](mailto:afrotc@u.washington.edu).

## Undergraduate Program

Adviser  
711A Condon Hall, Box 353830  
206-543-2360  
[afrotc@u.washington.edu](mailto:afrotc@u.washington.edu)

The Air Force ROTC program offers a minor in air and space leadership studies.

## Minor

*Minor Requirements:* 29 credits, to include the following:

1. 24 credits of Air and Space Studies coursework
2. 5 credits in a foreign language beyond the first-year level
3. Minimum 18 upper-division credits in Air and Space Studies coursework
4. Minimum 24 credits in residence at the UW
5. Minimum 2.5 grade in each course presented for the minor.

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## Military Science

104 Clark Hall  
[depts.washington.edu/armyrotc](http://depts.washington.edu/armyrotc)

The ROTC program provides students an opportunity to learn and practice the art of leading people. Recognizing that there is a great difference between cognition and volition, the program is structured in such a way as 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. The courses enable such knowledge to be acquired on the campus without serving in the military forces.

Army ROTC electives enrich the student's course of study. Taking such courses also opens 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 are the nation's way of ensuring 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.

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 course, 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 in the Reserves or National Guard, then he or she will serve 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, is 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

This program is open to qualified students 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

This program is open to qualified undergraduate and graduate students who have at least two years remaining in school and who have completed 81 credits. Students may qualify for entrance into the advanced course under this program in two ways.

First, 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.

The second alternative under this program 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

Adviser  
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 at the UW.
5. Minimum 2.5 grade in each course presented for the minor.

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## Naval Science

305 Clark  
depts.washington.edu/uwnrotc

The Department of 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 the Department of 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.

Adviser  
305 Clark, Box 353840  
206-543-0170  
nrotc@u.washington.edu

### 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 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 nonscholarship 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 within 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  
305 Clark, Box 353840  
206-543-0170  
nrotc@u.washington.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 at the UW.
  5. Minimum 2.5 grade in each course presented for the minor.
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# School of Social Work

## Dean

Edwina Uehara

210 Social Work/Speech and Hearing Sciences  
depts.washington.edu/sswwweb

The School of Social Work offers two professional programs, one at the undergraduate level and one at the graduate level, as well as a Ph.D. program. The Bachelor of Arts in Social Welfare (B.A.S.W.) 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 B.A.S.W. and M.S.W. 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 and Community Medicine leading to the M.S.W. and M.P.H. degrees, and a second with the Evans School of Public Affairs, leading to M.S.W. and M.P.A. degrees.

## Undergraduate Program

### Adviser

23D Social Work, Box 354900  
206-543-8617  
sswstsr@u.washington.edu

The School of Social Work offers the following program of study

- \* The Bachelor of Arts 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. Students enter at the start of their junior year after completing most of the liberal arts requirements established by the College of Arts and Sciences. 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

*Suggested First- and Second-Year College Courses:* SOC WF 101, SOC WF 200, SOC WF 201; PSYCH 101; SOC 110; BIOL 100 or BIOL 118; ECON 200 or ECON 201; also courses in American ethnic studies, sociology, psychology, and women studies.

## Department Admission Requirements

Approximately 40 juniors are admitted each year. Admission, which is for autumn quarter only, is competitive and completion of the requirements listed below does not guarantee acceptance. May 1 is the application deadline. To be considered for admission to the program applicants must meet the following criteria by the time of application:

1. Completion of a minimum of 65 credits.
2. Completion of the following courses: PSYCH 101 (or PSYCH 102); introductory sociology; ECON 100, ECON 200, or ECON 201; and BIOL 100 or BIOL 118, with a minimum grade of 2.0 in each course.
3. A minimum 2.00 cumulative GPA.
4. Have some paid or volunteer social service experience.
5. Applicants must submit a completed application, admissions essay, resume, and provide copies of their college transcripts.

Application forms and a detailed description of the social welfare major are available at the School's admissions office, 23C Social Work/Speech and Hearing Sciences (SWS), or are mailed upon request, 206-543-5676. A student may discuss the program in person by contacting the Director of Admissions, 206-543-5676, sswadmis@u.washington.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

63 credits as follows:

- \* *Junior year (34 credits):* SOC WF 200 (5); SOC WF 310 (3); SOC WF 315 (2, 2, 2); SOC WF 320 (5); SOC WF 402 (5); SOC WF 403 (5); and SOC WF 404 (5).
- \* *Senior year (29 credits):* SOC WF 311 (3); SOC WF 312 (3); SOC WF 390 (5); SOC WF 405 (3); SOC WF 415 (12); SOC WF 445 (3).

## Student Outcomes and Opportunities

- \* *Learning Objectives and Expected Outcomes:* The B.A.S.W. 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 B.A.S.W. program:

1. Preparation of entry-level baccalaureate social workers for generalist practice in a multicultural context.
2. 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.
3. 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.
4. Preparation for graduate education.

- \* *Instructional and Research Facilities:* The School of Social Work houses a number of centers and projects. For more information on these research activities, visit [depts.washington.edu/sswwweb/centers\\_proj.html](http://depts.washington.edu/sswwweb/centers_proj.html).

- \* *Honors Options Available:* None offered.

- \* *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  
sswstsr@u.washington.edu

## Master of Social Work

The School of Social Work offers a Master of Social Work degree with four options for completion: a two-year full-time program; a one-year advanced

standing program for qualified students with a degree in social work/social welfare from an accredited undergraduate program; a three-year Evening Degree program; and a three-year M.S.W. outreach 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. Please check the School's Web site for the most current information.

Students in the Evening Degree and weekend options may also select from courses in advanced policy services and methods. Elective offerings are determined by a vote of students in the cohort.

## Admission Requirements

Admission to the M.S.W. program requires formal admission to the Graduate School as well as to the School of Social Work. Applicants must have a bachelor's degree, a strong academic background, and social-service experience. Applicants must submit official transcripts from all colleges and universities attended, references, application forms, Graduate Record Examination scores, resume, 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, 23 Social Work/Speech and Hearing Sciences Building, or by calling 206-543-5676 in Seattle or 1-800-558-8703.

## Degree Requirements

Minimum 46 credits (Advanced Standing program); 75 credits (Day and Extended Degree programs), as follows:

- \* M.S.W. program requirements include completion of required professional foundation and advanced curriculum credits and demonstrated competence in both academic and field practicum work.
- \* *Human Biology Requirements:* BIOL 100, BIOL 101-, BIOL 118, BIOL 161, NUTR 300, or GENOME 261 (or equivalent), taken within ten years before or during the M.S.W. program. Course must be completed before beginning the advanced year (including practicum). Credit may not be applied to the M.S.W. degree. Courses in nutrition, psychobiology of women, and biology of aging also fulfill this requirement.
- \* *Basic Statistics Requirement:* An introductory course in statistics (any discipline) is a prerequisite for SOC W 505.
- \* *Professional Foundation Courses Required for the Day and Extended Degree Program:* SOC W 500 (3), SOC W 501 (3), SOC W 504 (1-3), SOC W 505 (3), SOC W 506 (3), SOC W 510 (3), SOC W 511 (3), SOC W 512 (3), SOC W 513 (3), SOC W 514 (3), SOC W 523 (1), SOC W 524 (8). All foundation courses must be completed before beginning the advanced curriculum.
- \* *Advanced Curriculum for the M.S.W. Day Program:* Specialization in an advanced methods area in combination with a particular population or problem focus. Areas of concentration might include policy practice in health care, clinical practice in transnational communities, administration in mental health settings, or clinical and contextual practice with a focus on low-income children and families. 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.

A minimum program of study includes:

1. One policy/services course (3 credits), consistent with the student's second year specialization

2. 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
3. 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. Students are encouraged to take one elective course from outside the school. Elective courses range from 1 to 3 credits.
4. Advanced practicum (SOC W 525, 18 credits) aligns with the student's policy/services course and with the student's primary intervention method area.

\* *Advanced Curriculum for the M.S.W. Extended Degree Program:* Consists of an advanced generalist policy/services course, a two-quarter advanced generalist practice sequence, 9 credits of electives, and a 720-hour advanced generalist practicum. Students consult with their adviser and practicum coordinator to determine electives and a practicum appropriate to the student's career goals. Students graduate with theory, knowledge, and skills to assess, intervene, and evaluate across levels of social work practice -- from micro to mezzo to macro -- and across client populations and practice settings.

\* *M.S.W. 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 M.S.W. 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. Inquiries may be directed to the Chair of the Scholarship Committee, School of Social Work.

## Master of Social Work/Master of Public Health Concurrent Degrees

The 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 extended 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 M.S.W. program in September. They then apply to Public Health the following January and begin the M.P.H. 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.

- 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.
- The M.P.H. requires a thesis.

## Master of Social Work/Master of Public Affairs Concurrent Degrees

The University of Washington Evans School of Public Affairs and School of Social Work concurrent degree option offers interdisciplinary preparation in the fields of social work and public affairs, leading to the Master of Social Work and Master of Public Administration. Earning degrees in both areas prepares students to be professionals who work at the interface of the two fields in practice, research, planning, administration, and policy development.

Students are able to combine their studies at the Schools of Social Work and Public Affairs to meet the requirements for both degrees in approximately three years.

### Admission

Students must apply to and be accepted by both schools. Application decisions are made independently by both schools although students interested in the concurrent degree should indicate that interest in their admission materials.

Current students in either Public Affairs or Social Work who decide in the fall of their first year that they wish to apply to the other school may request a courtesy transfer of some application materials from their current school to the other school's admissions office. Students are responsible for monitoring the completeness of their own admissions materials.

The concurrent degree option is only available for students in the School of Social Work Policy Practice concentration (day program). Course sequencing and quarters-to-completion information given assumes students pursue the Public Affairs traditional day program.

### Program Entry and Foundation Preparation

Given the integrated first-year curriculum in both programs, students complete the first year of foundation study in each program largely without substitution. See the sample plans of study below for greater detail.

The concurrent degree option is flexible enough to allow students who begin in either program to decide during the first year to pursue the concurrent degree. However, students who know at the point of initial application that they will pursue the concurrent option are strongly advised to complete the Social Work foundation in year 1 and the Public Affairs foundation year 2. This allows greater flexibility in scheduling electives and provides a marginally more coherent sequencing of theoretical and research methods content.

### Advanced Specializations

Students in both programs choose an area of specialization for advanced work and work with an adviser to plan an individual advanced curriculum. Public Affairs students choose one of five gateway areas and outline their advanced work in a plan of study. Advanced concentrations in Social Work consist of a methodological area and practice, or topical, area. The M.S.W./M.P.A. option described here is available to social work students in the policy practice methods concentration. M.S.W./M.P.A. students can pursue any of the social work 'practice field' specializations. Social Work students combine their advanced concentration elements into one learning plan.

## Doctor of Philosophy in Social Welfare

The Ph.D. 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 are expected to 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 include 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 will be the focus of their General Examination and, typically, their subsequent dissertation research. The 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 award of the degree is the Final Examination, which serves as the defense of the dissertation. Students are strongly encouraged to remain in residence at the University until the dissertation is accepted. The Ph.D. 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 [phdmhpr@u.washington.edu](mailto:phdmhpr@u.washington.edu).

### Degree Requirements

90 credits minimum, to include:

- \* *Required Courses:* All required Ph.D. courses must include content on diverse populations, including the disadvantaged and oppressed. This includes content on people of color, women, gay men and lesbians, and persons with disabilities. The 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 the 800 tutorials) must be completed before or during the quarter in which the oral section of the General Examination takes place.

The following courses are required of all students in the program and must be taken on a graded basis unless only offered as Credit/No Credit Only (i.e., they cannot be taken on a Satisfactory/Non Satisfactory basis).

- Introduction to Advanced Research Methods and Design.* Two quarters during first year.
- Fundamentals of Social Work Statistics.* Two quarters during the first year.
- Research Issues and Priorities in Social Welfare.* Two quarters during the first year.
- Social Welfare Policy.* Two quarters during the first year (contemporary policy, and international and global policy).
- Research Practicum.* Two quarters; to be completed by the end of the second year. (Credit/no credit only.)
- Teaching Practicum.* One quarter; to be taken after successful completion of first year. (Credit/no credit only)
- Doctoral Seminars.* One-credit seminars in the first year (Credit/no credit only). These focus on professional development issues and skills with emphasis on academic and research careers.
- Teaching Preparation.* One quarter in the second year.

9. A minimum of 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.
10. A minimum of 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 in one of the professional schools, these courses 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.
11. *Dissertation Tutorials (SOC WL 800)*. Taken after the student has successfully completed the oral General Examination and has been advanced to candidacy for the Ph.D. Students must complete a total of 27 credit hours over at least three quarters to satisfy the Graduate School requirement

\* *Elective Courses in the School of Social Work*

1. *Qualitative Methods in Social Work Research*. One or two quarters offered alternate years.
2. *Analytical Perspectives on Social Welfare Policy*. One quarter, offered annually.
3. *Advanced Topics in Data Analysis*. One quarter offered annually, covering advanced quantitative methods.
4. *Social Movements and Participatory Action Research Methods*. One quarter, offered alternate years.
5. *Psychosocial scale construction and measurement*. One quarter, offered alternate years.
6. *Interdisciplinary Prevention Science*. One quarter, offered annually.

- \* *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.

\* *Prevention Research Training Program Courses*: (Trainee requirements in addition to all Ph.D. program courses)

1. *Seminar in Prevention Science*. One-credit seminars taken autumn, winter, and spring quarters each year of the traineeship. Credit/No Credit Only.
2. *Interdisciplinary Prevention Science: Children and Adolescents*. Overview of developmental perspective examining factors that promote or inhibit health development at different stages and during transitions. Three-credit course taken spring of first year in the training program.
3. Two additional graduate level (500+) courses, one social science theory and one research methods, related to the prevention research area of study.

## Financial Aid

All students have some means of financial support during the nine-month school year for the first three years in the program and the School is frequently able to continue support beyond this point. In each of the first three years, the Ph.D. 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 they match with areas of student interest. Financial assistance provided is not usually adequate to cover all educational and living expenses. Forms required for financial assistance must be submitted by February 15 by completing the Free Application for Federal Student Aid (FAFSA).

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# Course Descriptions

## College of Architecture and Urban Planning

### Architecture

**ARCH 100 Introduction to Architecture Study (8) VLPA** Introduces design studio instruction to students contemplating architecture as a field of study of 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 210 Design Drawing I (4) VLPA** Projects, lectures, demonstrations, and exercises to develop skill in freehand drawing and an understanding of drawing as a vital means to see, analyze, and represent essential aspects of the visual environment.

**ARCH 211 Design Drawing II (4) VLPA** Projects, lectures, demonstrations, and exercises to introduce the language of architectural drawing, with emphasis on freehand drawing as the primary means to imagine, explore, and develop design ideas. Prerequisite: ARCH 210.

**ARCH 220 Introduction to Architectural Structures (2) Onouye** Introduces basic structural behavior and concepts of structural systems. Uses lectures, demonstrations, and testing of student-built projects to examine structural concepts of systems, subsystems, and components in a non-numerical manner. Prerequisite: ARCH 210.

**ARCH 251 World Architecture: Non-Western Cultures (3) I&S/VLPA 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. Offered: Sp.

**ARCH 300 Introduction to Architectural Design I (6)** Studio problems to develop awareness, knowledge, and basic skills needed in the synthesis of building form.

**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.

**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.

**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.

**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.

**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.

**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 303 studio to integrate drawing in all phases of the design process.

**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 304 studio to integrate drawing in all phases of the design process.

**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 305 studio to integrate drawing in all phases of the design process.

**ARCH 314 Introduction to Architectural Drawing (2)** Skill development in conceptualization of forms and their relationships through observation and recording in freehand graphic manner. Proportion, scales, light effect, value, texture, and various perspective techniques.

**ARCH 315 Design Drawing III (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 211; corequisite: ARCH 300.

**ARCH 316 Design Drawing IV (3)** Lectures, demonstrations, and exercises to develop drawing skills and techniques applicable to architectural design problems. Topics include advanced perspective construction, shade and shadow calculations, descriptive geometry, topographical manipulation, and additional appropriate topics at the request of the class. Prerequisite: ARCH 315.

**ARCH 320 Introduction to Structures I (3)** Statics — 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.

**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.

**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.

**ARCH 331 Environmental Control Systems (3) NW** Description of thermal comfort needs and the means by which buildings can be designed to satisfy those needs. Consideration of how climate determines building forms, site analysis and planning *vis-a-vis* the local climate, basic heat transfer mechanisms, and design strategies for overcoming heat loss through the building envelope.

**ARCH 332 Construction Materials and Assemblies I (3)** Lectures and readings pertaining to a survey of residential and light-commercial construction materials, assemblies, and techniques of assembly.

**ARCH 350 Architecture of the Ancient World (3) VLPA** Architectural history in the Western world from beginnings to AD 550.

**ARCH 351 Romanesque, Gothic, and Renaissance Architecture (3) VLPA** Architectural history in the Western world from AD 550 to 1750. Recommended: ARCH 350.

**ARCH 352 History of Modern Architecture (3) VLPA Ochsner** Architectural history in the Western world from 1750 to the present. Recommended: ARCH 351.

**ARCH 360 Introduction to Architectural Theory (3) I&S/VLPA** Function of architectural theory in comprehending and ordering various human purposes in architecture, types of architectural purpose, and types of theories. Current concerns.

**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 student's understanding of the ideas and technologies of architecture. Prerequisite: ARCH 302.

**ARCH 401 Architectural Design V (6)** Offers studio problems in non-residential building design to advance student's understanding of the ideas and technologies of architecture. Prerequisite: ARCH 400.

**ARCH 402 Design/Build Studio (6)** 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 402; W.

**ARCH 403 Architectural Problems (6)**

**ARCH 410 Introduction to Architectural Photography (3/5) VLPA Stamets** 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. Offered: AWS.

**ARCH 412 Architectural Illustration and Presentation (3)** Issues, conventions, and techniques used in architectural renderings, including line drawings, shaded drawings, use of color, composition, organization, advanced perspective, scale figures, entourage, reflections, and media. Prerequisite: ARCH 315.

**ARCH 413 Architectural Photography Projects (3)** Students develop in-depth photo essays relating to architecture, the urban movement, or landscape design following the principles introduced in ARCH 313. Lectures, seminar, and discussion. Prerequisite: ARCH 410.

**ARCH 415 Architectural Sketching (3)** Exercises in freehand 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 416 Freehand Drawing and the Digital Realm (3) VLPA Stevens** Explores the potential role of freehand drawing in digital media. Students use stylus and tablet to draw in print and photo-imaging programs, combining the flexibility of digital tools with the rich traditions of freehand drawing. Focus alternates between Internet as context for image making and printed output. Offered: AW.

**ARCH 417 Advanced Topics in Digital Drawing (3) VLPA Stevens** Provides a context for developing an individual project exploring drawing or painting in digital media. Explores advanced issues in digital image creation and production through a book, film, or Web project. Each student completes and publishes a project during the quarter. Prerequisite: ARCH 416. Offered: Sp.

**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 210 or ART 104.

**ARCH 420 Structural Design I (4) NW** Reinforced concrete fundamentals; establishes basics of reinforced concrete behavior and introduces methods of design used in current engineering practice. Basic mechanics of structural concrete introduced in examining bending, shear, and axial forces. Topic areas include beams, slabs systems, columns, foundations, retaining walls, and an introduction to prestressed concrete. Prerequisite: ARCH 322.

**ARCH 421 Structural Design II (4)** Design of steel structures.

**ARCH 422 Structural Design III (4)** Design of reinforced concrete structures.

**ARCH 426 Structural Unit Masonry (3) Lebert** Structural behavior and design of reinforced brick, tile, and unit masonry structures. Prerequisite: CEE 381. Offered: jointly with CEE 455.

**ARCH 430 Materials and Processes (3) Vanags** 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 432 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 constructions systems. Prerequisite: either ARCH 400 or CM 313.

**ARCH 433 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.

**ARCH 434 Color and Light (3)** Lectures, demonstrations, exercises, and projects focusing on the use of color applied to the three-dimensional architectural context. Color theory is explored 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 Light Frame Building Assemblies (3)** Fundamentals of light-frame construction from soils examination, foundation systems to framing systems, and the integration of electrical, plumbing, and heating/cooling into the structure. Prerequisite: either ARCH 332 or CM 313.

**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-19th 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 past 50 years since India's independence in 1947.

**ARCH 450 Modern Architecture and the Decorative Arts (3) VLPA Anderson** History/theory seminar investigates parallel and interactive developments in European architecture and the decorative arts from 1870 to 1930. Examines the production of designers as well as the economic, political, and cultural circumstances that affected their work.

**ARCH 451 Traditional Chinese Architecture and Gardens (3) I&S/VLPA** Introduction to Chinese architecture (palaces, homes, temples, tombs), urban planning, and gardens; each area examined in terms of techniques of production, visual styles, historical development, and relationship to traditional Chinese cultural values. Recommended: some background in Chinese art, history, language, or literature.

**ARCH 452 History of Architecture in Seattle and Environs (3) I&S Ochsner** Historical



development of architectural 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. Offered: jointly with ART H 419.

**ARCH 454 Greek Architecture (3) VLPA**  
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 446.

**ARCH 455 Special Studies in Gothic Art and Architecture (3) VLPA**  
Detailed study of Gothic architecture and its accompanying sculpture and stained glass, with special emphasis on the twelfth and thirteenth centuries in France and England. Offered: jointly with ART H 455.

**ARCH 456 Nineteenth-Century Architecture (3) VLPA**  
*Clausen* 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. Offered: jointly with ART H 490.

**ARCH 457 Twentieth-Century Architecture (3) VLPA**  
*Clausen* 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. Offered: jointly with ART H 491.

**ARCH 459 Architecture Since 1945 (3) VLPA**  
*Clausen* 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. Offered: jointly with ART H 493.

**ARCH 460 Design Theory and Analysis (3) I&S/VLPA**  
Problematical nature of philosophies of architecture; interaction of philosophical concepts and architectural form and expression. Fundamentals of architectural criticism.

**ARCH 461 Recent Developments in Architectural Theory (3) I&S/VLPA**  
Concentrates particularly on developments that spring from recent work in the epistemology of science and in philosophy.

**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 463 Theories of Representation (3)**  
*Anderson* Seminar focusing on the development of representational techniques in western architecture from antiquity to the present which seeks to discover how these techniques have affected the realization and interpretation of architecture. Prerequisite: ARCH 350; ARCH 351; ARCH 352.

**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 476 Design and the International Building Code (3)**  
Provides detailed review of non-structural sections of the International Building Code (IBC) including designer responsibility, code background, purpose and requirements based on occupancy, construction type, and building design features. Discusses amendments by both the State of Washington and the City of Seattle. Prerequisite: either ARCH 302 or CM 313.

**ARCH 477 Healthcare Facilities Planning and Design (3)**  
*Parker* Focuses on a broad understanding of healthcare facility planning and design through a combination of class seminars, field work, and research reports. Site visits to Seattle health care institutions provide examples for the application of problem analysis and research methods. Offered: W.

**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. Offered: ASp.

**ARCH 482 Web Weaving (3)**  
*B. Johnson* Examines the function, limitations, and uses of primary World Wide Web technologies and fundamental Web site design and implementation. Participants develop hands-on design/build expertise for Web site 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 485 Digital Craft Workshop: Advanced Projects in CAD (3)**  
Advanced topics for students who have completed one or more design computing courses and wish to develop a project further. Offered: W.

**ARCH 486 Computer Graphics Programming for Design (3)**  
Introduction to fundamental concepts of computer programming for design applications with an emphasis on interactive graphics. Basic control and data structures for interactive graphics programming; weekly exercises with term project. Significant lab time required. Offered: ASp.

**ARCH 488 American Architecture (3) VLPA**  
*Clausen* American architecture from indigenous native American traditions to the present. Offered: jointly with ART H 488.

**ARCH 493 Rome Preparation Seminar (2)**  
Seminar dealing with history, culture, topography, and customs of Rome, Italy. Required for students enrolling in ARCH 495, ARCH 496, or ARCH 497.

**ARCH 495 Architectural Studies Abroad (9)**  
Architectural, urban and historic studies in international cities and towns. Prerequisite: ARCH 493.

**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 that is 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 530. 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.

**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.

**ARCH 505 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.

**ARCH 506 Advanced Architectural Studies (6)** Advanced experimental studies dealing with significant architectural relationships that involve scholarly investigation, development, and presentation of results.

**ARCH 520 Advanced Wood Structures Design (3)** Design methods related to wood structures. Nature of wood as a building material, plywood, glued laminated wood structures, timber piles and pile foundations, pole buildings, and conventional wood building framing.

**ARCH 529 Seminar in American Architecture (5)** *Clausen* Topics vary. Offered: jointly with ART H 592.

**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 532 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. Offered: W.

**ARCH 535 Graduate Seminar: Study Topics in Environmental Lighting (3)** Focus on individual student projects involving research and design for lighting.

**ARCH 551 Scandinavian Architecture of the Nineteenth and Twentieth Centuries (3)** Introduction to the contribution of Scandinavian architecture to early functionalism with emphasis on its relationship to neoclassicism and vernacular architecture.

**ARCH 553 Historic Preservation of Architecture, USA (3)** American achievements in historic preservation and restoration of architecture. Prerequisite: specialization in preservation design or permission of instructor.

**ARCH 554 Special Studies in Modern Architecture (3)** Study and critical analysis of a selected number of distinguished professionals (architects, planners, educators, critics) and their contributions to the evolution of modern and contemporary architectural practice and thought.

**ARCH 556 The Arts & 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)** *Clausen* Specific focus changes from quarter to quarter. Prerequisite:

graduate standing with background in 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 Graduate 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 562 Regionalism (3)** Exploration of design ideas that address the cultivation of regional character by acknowledging the commonplace, including both the landscape and its buildings. The many disruptive forces that threaten the possibilities of local culture are also considered from a political, social, and economic point of view.

**ARCH 563 Graduate 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. Offered: W.

**ARCH 570 Design Development (3)** *Miller* Lectures and case studies emphasizing the design development phase of architectural practice.

**ARCH 572 Specifications and Contracts (3)** Detailed organization and composition of contracts, specifications, and related contract documents.

**ARCH 573 Professional Practice (3)** *Rees* Operation of an architectural office and professional practice.

**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.

**ARCH 576 Community Leadership Practices (4)** *Sutton* Examines how to facilitate community design processes. Explores theories and methods of participation and applies them to creating community visioning tools. These tools are put to use during the spring charrette when city officials, neighborhood residents, K-12 students, and others create a shared vision for their community. Offered: W.

**ARCH 577 Ethical Practice (3)** *Sutton* Helps students develop ethical reasoning skills. Examines the sociology of professional practice leading to and understanding of the dilemmas associated with serving a diverse society.

Reviews exemplary case studies in ethical practice. Communication skills developed through writing and dialogue, and creation of an exhibit exploring an ethical issue. Offered: W.

**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 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.

**ARCH 591 Architecture in the 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. Ways in which the architect can design places that landscape taxonomy are explored.

**ARCH 593 Residential Design: Methods and Practices (3)** Review of approaches to housing people in growing metropolises and cities, nineteenth century to present. Emphasis on Western Europe, North and South America. Focus on selected contemporary issues in neighborhood and dwelling design, methods, and practices. Offered: jointly with URBDP 574.

**ARCH 595 Master's Thesis Studio and Pre-Design (3)** Preparation of master's design thesis pre-design document within a structured, faculty supervised setting. Student product covers programming; site analysis; land use, building, and accessibility code compliance; building systems selection (material, structural, and mechanical); cost implications; conceptual approach and schematic design exploration. Required for admission to the master's thesis design studio. Offered: A/W.

**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. May be repeated for credit.

**ARCH 599 Thesis Preparation (3)** Explores development of a proposal for thesis-level research. Participants identify a research area, find relevant literature and prepare an annotated bibliography, articulate a specific question within the research area, and write, present, and defend a proposal. Participants may use this course to develop a thesis proposal. Offered: Sp.

**ARCH 600 Independent Study or Research (\*)** Credit/no credit only.

**ARCH 700 Master's Thesis (\*)** Credit/no credit only.

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## Architecture and Urban Planning

### Built Environment

**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 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 800 Doctoral Dissertation (\*)** Credit/no credit only. Offered: AWSpS.

## College of Architecture and Urban Planning

**CAUP 496 Practical Experience (3-6, max. 6)** Credit/no credit only.

**CAUP 498 Special Projects (1-12, max. 12)**

## Community and Environmental Planning

**CEP 200 Introduction to Community and Environmental Planning (5) I&S** *Purcell* 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: ASP.

**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. Credit/no credit only. Prerequisite: Majors 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. Witness essentials of community through service and field experiences, students construct individual curriculum and learning plans for major, selecting cross-disciplinary work. Credit/no credit only. 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. Concurrently, experiential education in challenges and practical responses to building sustainable society through participation in community-based environmental effort. Credit/no credit only. Offered: W.

**CEP 303 Social Structures and Processes (5) I&S** *Campbell* 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. Credit/no credit only. Offered: Sp.

**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** *Ryan* 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. Credit/no credit only. Offered: A.

**CEP 461 Ethics and Identity (5) I&S** 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. Credit/no credit only. 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. Credit/no credit only. Offered: Sp.

**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. Report on the purposes, procedures, and results of study is required. Credit/no credit only. Offered: AWSpS.

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## Strategic Planning for Critical Infrastructures

**SPCI 500 Strategic Planning and Systems Analysis (4)** Introduction to two major planning and analytic processes, strategic planning and systems analysis, as applied to the public sector. Includes study of the various elements and types of systems as well as the strategic planning process for public organizations.

**SPCI 501 Introduction to Comprehensive Emergency Management (3)** Introduction to emergency management and risk reduction concepts and principles. Includes emergency management tools, techniques, and resources as well as governmental programs, relationships, and the broader social context.

**SPCI 502 Constitutional Issues in Homeland Security (3)** Explores the balance between individual liberties and national security. Examines the moral concepts underlying American civil rights and acts of terrorism against the United States. Discusses application of the U.S. Constitution to Homeland Security laws and other governmental actions to protect the nation at home and abroad.

**SPCI 503 Physical Critical Infrastructure: Power and Fuel Systems, SCADA, Telecommunications, and Water Supply (3)** Introduction to Model-Based Vulnerability Analysis (MBVA) approach to the study of physical critical

infrastructures, including power and fuel systems, SCADA, telecommunications, and water supply.

**SPCI 504 Applied Geo Spatial Analysis (4)**

Provides the theoretical and practical skills needed to use a Geographic Information System (GIS) for analyzing spatial phenomena on the urban and regional scale. Focuses on principles and methods of spatial analysis and their application to strategic planning, risk management, and hazard mitigation. Credit/no credit only.

**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 507 Epidemiology of Biological and Chemical Hazards Mitigation II: Application (3)**

The second of a two-course sequence, focusing on the applications of the principles of epidemiology covered in Epidemiology of Biological and Chemical Hazards I: Principles. Study cases drawn from actual outbreaks: compare and contrast types, apply knowledge to solve, propose interventions for control, and formulate strategies for preventing outbreaks. Credit/no credit only.

**SPCI 508 Risk Assessment and Management (4)**

Introduction to processes and methods of risk assessment and management, focusing on how these principles can be integrated into strategic planning and decision making.

**SPCI 509 Critical Infrastructure Systems: Cyberterrorism and Communications Systems (3)**

Survey of issues surrounding telecommunication and computer infrastructures, with the objective of developing a working knowledge of these systems, the hazards confronting them, and preventative measures.

**SPCI 510 Strategic Planning Practicum 2 (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.

**SPCI 511 Critical Infrastructure Systems: Government Services, Banking, and Finance (3)**

Survey of issues surrounding the economy as a critical infrastructure system, including government services and banking/finance systems, with the objective of developing a working knowledge of these systems, the hazards confronting them, and preventative measures.

**SPCI 512 Critical Infrastructure Systems: Public Health (3)**

Survey of issues surrounding private and public health-care systems in relation to emergency health-care services. Includes health-care cultures, critical communication, government funding, emergency preparedness, and psychological recovery from major traumatic events.

**SPCI 513 Strategic Planning Practicum 3 (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 514 Capstone A (3) Whittington**

First of two-part capstone course that provides students with the expertise to develop and teach the problem-based case. Offered: ASp.

**SPCI 515 Capstone B (3) Whittington**

Second of two-part capstone course that provides students with the expertise to develop and teach the problem-based case. Offered: ASp.

**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.

**SPCI 599 Special Projects (1-4, max. 12)**

Independent/tutorial study for graduate students in the Masters in Strategic Planning for Critical Infrastructures Program. Individual reading, research, fieldwork, or other special project, outlined in advance, approved by, and under the direction of, the faculty advisor most appropriate for the project proposed.

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## Construction Management

**CM 250 Construction and Culture (3) I&S**

Rolle Study of the evolution of modern building construction with emphasis on the relationship between the projects that have been built over time and the people who built them. Focuses on the development of building technology, equipment, and materials used by Western civilizations. Offered: A.

**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.

**CM 310 Introduction to the Construction Industry (3) Emam**

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) Kim**

Introduction to accounting for the contractor, placing emphasis on the analysis and use of financial statements and a job cost accounting system. Open to nonmajors on space-available basis. Offered: A.

**CM 313 Construction Methods and Materials I (4) Dossick**

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: WS.

**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) Abdel-Aziz**

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) Schaufelberger**

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)**

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) Jacobson**

Introduction to construction surveying including layout of construction features, distance and elevation measurement, and use and care of surveying equipment. Offered: Sp.

**CM 402 Design/Build Studio (6) 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 402; W.

**CM 410 Construction Estimating II (5) Rojas**

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)**

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 413 Competitive Business Presentations (1)** *Schaufelberger* 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 415 Heavy Construction Practices (3)** *Schaufelberger* Introduction to heavy construction with emphasis on highway and bridge construction. Topics include: contract analysis, work breakdown, equipment selection, unit-price cost estimating, site logistics planning, and project scheduling. Offered: A.

**CM 420 Temporary Structures (3)** *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: W.

**CM 421 Project Management I (3)** *Kim* 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)** *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. Offered: A.

**CM 423 Construction Law (3)** *Goldblatt* 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. Washington state law is emphasized. Entry code required. Open to nonmajors on space-available basis. Prerequisite: CM 421. Offered: Sp.

**CM 425 Concrete Technology (3)** *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. 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)** *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)** *Goldblatt* Introduction to construction labor topics, including labor-management organization, legislation, and regulation, collective bargaining, and job site administration. Offered: W.

**CM 455 Real Estate Development (5)** *Rolfe* 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. Offered: A.

**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.

**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.

**CM 485 Facility Management Studio (6)** Applies skills learned through the three facility life cycle courses to the completion of a project that demonstrates the ability to identify and resolve facility management issues. Students are matched with a client in their region.

**CM 498 Special Topics (1-10, max. 20)**

**CM 499 Undergraduate Research (\*, max. 12)** Individual or small-group studies in which students may select topics with approval of faculty sponsor and department.

**CM 500 Design and Construction Law (3)** *Goldblatt* 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. Offered: Sp.

**CM 505 Advanced Integrated Computer Applications (3)** *Rojas* Study of management information systems used in the construction industry. Emphasis on the utilization of current state-of-the-art integration of Computer Aided Design (CAD), scheduling (including advanced concepts such as resource leveling, schedule compression, and cash flow projections), and estimating programs. Offered: S.

**CM 510 Advanced Construction Techniques (3)** *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)** *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: Sp.

**CM 520 Construction Procurement Systems (3)** *Schaufelberger* 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)** *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)** *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: W.

**CM 535 Research Methods in Construction (3)** *Rojas* 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: S.

**CM 540 Sustainable Construction (3)** Study of sustainable construction techniques and best practices. Focuses on use of US Green Building Council's Leadership in Energy and Environmental Design standards to evaluate alternatives and select techniques for constructing sustainable projects. : Sp.

**CM 545 Real Estate Development (3)** *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: A.

**CM 550 Residential Project Development (3)** *Leahy* 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: Sp.

**CM 555 Construction Firm Management (3)** *Schaufelberger* 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 565 Managing International Projects (3)** *Schaufelberger* 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: Sp.

**CM 570 Facilities Management (3)** *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: A.

**CM 575 Leadership in Construction (3)** *Rojas* Studies leadership principles applicable to the construction industry. Addresses both organizational leadership and leadership of construction processes. Offered: S.

**CM 580 Temporary Structures (3)** *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: W.

**CM 582 Heavy Construction Estimating (3)** *Abdel-Aziz* Study of the principles used in developing cost estimates for heavy construction projects. Includes interpretation of contact 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)** *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)** *Schaufelberger* 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: W.

**CM 588 Construction Operations and Productivity (3)** *Rojas* 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: A.

**CM 590 Research Methods in Construction Engineering (2)** *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: Sp.

**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.

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## Landscape Architecture

**L ARCH 200 Landscape Architecture Field Trips (2) I&S/VLPA** 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 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 Foundation Studio (5)** Introduces site planning and design process, principles, and skills through experiential learning. Using design principles, studio develops vocabulary for site design. Activities foster skills in design process, form, language, creativity, communication, group dynamics, and organization. Methods include readings, discussion, design exercise and projects, critiques, precedent studies, site visits. Majors only.

**L ARCH 302 Site Design in Urban Context (5)** Explores the application of design ideas and principles to urban sites. Theory and research informing the design of human environments and lessons from urban and ecological design precedents are implemented in the design of plazas, urban parks, waterfronts, streets, campuses, commercial areas, and historical sites.

**L ARCH 303 Natural Processes Studio (5)** Project design studies related to natural systems. Emphasizes the innovative use of historical landscape forms to achieve more sustainable landscape performance, using both biophysical and social criteria to define sustainability. Introduces computer mapping applications.

**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 Landscape Construction (4)** Basic course in site engineering, correlating the design and technical aspects of site development and suitability. Grading, drainage, circulation requirements and alignment, organization concepts relative to landscape resources, site evaluation, utilization and protection, and building and site program analysis and coordination.

**L ARCH 332 Landscape Construction (4)** 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 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 (3) I&S/VLPA** 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 nonmajors.

**L ARCH 353 History of Modern Landscape Architecture (3) I&S/VLPA** 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 nonmajors.

**L ARCH 361 The Human Experience of Place (3) I&S/VLPA** 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 Designing Urban Landscapes: Theory and Politics (3) VLPA** Introduction to the design of landscape in urban contexts. Overview of major urban design theories and examples of historic and contemporary work. Discussion of the contesting urban processes: visions of city, social and cultural factors, public and community process, and the discourses of nature, urban ecology, and ecological design.

**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) I&S/VLPA** 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 Graphics (3)** Introduces fundamental hand-drawn graphic conventions, drawing techniques, and media used in environmental design. Emphasizes building drawing and media skills that support design ability development. Includes lectures, demonstrations, display of examples, drawing from slides, and in-class workshops.

**L ARCH 412 Landscape Communications (2)** Development of advanced skills of visual representation to communicate students' visions for urban ecological design. Discussion of professional portfolio requirements and portfolio design issues.

**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 (2)** Analyzes the complex relationship between plants, man, and environment and affords opportunity to explore methods of utilizing these relationships to plant and to design more responsive landscapes.

**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 433 Large-Scale Site Construction (4)** Includes studies of natural determinants and restraints on large-scale construction, development affected by service and utility systems, physiographic suitability of site, cost-benefit analysis, and critical path methodology for site construction projects.

**L ARCH 440 Computers in Landscape Architecture (1-3, max. 3)** Laboratory, lecture, and demonstration classes to introduce software applications specific to required landscape architecture courses. Credit/no credit only.

**L ARCH 441 CAD for Landscape Architecture (3)** An introduction to computer-aided drafting for professional landscape architectural practice. Students work in a variety of scales from detail, to planting design, to master plan graphics, to gain a broad-based knowledge of current industry CAD practices and techniques. Emphasizes using CAD as an effective design tool.

**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 452 History of Urban Landscapes (3)** Introduces the history of urban landscape design of public spaces in cities. Comparative survey of non-western cultures, including China, Japan, Islamic world, and Pre-Columbian countries to the western world from the Pre-Classical through nineteenth and twentieth century in Europe and USA. Examines as pragmatic practices or works of art.

**L ARCH 463 Urban Recreational Design (3) I&S/VLPA** 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 work loads, 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 Project Design (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.

**L ARCH 475 Advanced Project Design Studio (1-6, max. 6)**

**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 is on site analysis, master planning, schematic designs and detailed design, working drawings, and planting plans associated with student projects.

**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 Landscape Design and Planning I (1-6)** Enhances perceptual awareness and design sensitivity to natural and man-made landscapes. Basic skills necessary for more advanced course work required in the Master of Landscape Architecture degree program. Examination of landscape environment through problem-solving techniques that acknowledge holistic approach to the environment.

**L ARCH 503 Landscape Design of Communities (1-6)** Methods and techniques for developing physical design solutions and implementation strategies in neighborhoods and small communi-

ties. 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)** 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 Regional Landscape Design (1-6)** Theory/techniques of regional design to analyze, evaluate, plan, design, and manage the resources of the regional landscape continuum.

**L ARCH 506 Landscape Visual Resources (1-6)** 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 Landscape Art (1-6)** 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)** 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 550 History and Theory of Modern Landscape Architecture (3)** Lecture/seminar on history and theory of landscape architecture from the eighteenth century to the present. Relation to theory in related environmental design disciplines such as architecture and urban planning and other disciplines such as geography.

**L ARCH 561 Regional Landscape Planning and Design (2)** Discussion of theories and case studies that provide a framework for defining sustainable urban design as both a cultural and biophysical phenomenon.

**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 570 Scholarship and Inquiry (3)** The first of two required courses on the nature of scholarship and theory building in landscape architecture. Investigate scholarship related to the design process, design critique, research, and practice. Students begin to frame their own scholarship for their master's thesis.

**L ARCH 571 Seminar on Landscape Architecture Research (3)** Introduction and exploration of problems and opportunities of several basic research methods currently employed in landscape architecture research. Emphasis on how researchers identify research topics and develop appropriate research methods. Introduce 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)** Credit/no credit only.

**L ARCH 700 Master's Thesis (\*)**

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## Urban Design and Planning

**URBDP 300 Introduction to Urban Planning (5) I&S** *Ludwig* 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) I&S/VLPA** *Ryan* 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 field work.

**URBDP 407 Urban Planning Studio (5) I&S/VLPA** Synthesis of urban design and planning problems and methods in a laboratory section.

**URBDP 420 Database Systems and Planning Analysis (3)** Applications of relational database management systems in urban design and planning. Emphasis on practical aspects of database design and use. Design, create, and modify databases and database applications, including spatial databases. Introduction to GIS. Use of personal computers linked to desktop mapping packages and relational database management systems.

**URBDP 422 Urban and Regional Geospatial Analysis (5)** *Alberti* 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: 3.0 in URBDP 420. Offered: W.

**URBDP 429 Computer-Aided Planning of Urban Systems (3)** Survey of on-line planning applications; use of various on-line systems to solve urban systems design problems; investigation of hardware/software trade-offs; human factors in man-computer systems design theory as it relates to problem-solving activity. Offered: jointly with CEE 418.

**URBDP 443 Problem Analysis in Urban Ecology (5) I&S/NW** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Investigates pressing local issues in urban ecology and develops each into a researchable project proposal. Examines and evaluated how different disciplines study environmental issues, explores criteria for conducting and evaluating quality research, develops skills in problem formulation, and sharpens proposal writing skills. Offered: jointly with ESRM 474/GEOG 486/ENVIR 486; A.

**URBDP 444 Applied Theory and Methods in Urban Ecology (5) I&S/NW** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Discusses broad perspectives in urban ecology and how to analyze data relevant to urban ecology problems. Students write objectives and methods for a selected urban ecology problem that critiques different methodological approaches and reviews/synthesizes literature. Prerequisite: URBDP 443. Offered: jointly with CFR 475/GEOG 487/ENVIR 487; W.

**URBDP 445 Research in Urban Ecology (5) I&S/NW** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Teams analyze, present, and begin to interpret data that is relevant to addressing issues in urban ecology. Students write and orally present revised objectives and methods sections of their interdisciplinary project and present a draft results section. Prerequisite: URBDP 444. Offered: jointly with CFR 476/GEOG 488/ENVIR 488; Sp.

**URBDP 446 Practical Experience (4, max. 8)** *Rolfe* 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)** *Bae* 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. Offered: A.

**URBDP 451 Housing (3) I&S** *Ludwig* 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 452 Urban Development and Spatial Structure (3) I&S** *Miller* Physical and functional structure of urban areas, with major focus on locational decision making in households, firms, and other organizations, and space demands of these urban activities. Selected land-use models illustrating use of this theoretical understanding for forecasting competition, land-use conflicts, and the land-conversion process.

**URBDP 453 Introduction to Urban Economics and Development (4) I&S** *Waddell* Introduction to urban economics and impacts on real estate development with emphasis on land allocation, location theory, rent/value theory, factors affecting growth and decline of cities, and the role of governmental regulation/policy/finance in controlling real estate development. Offered: jointly with CM 453.

**URBDP 457 Housing in Developing Countries (3)** *Ludwig* 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 460 History of City Development (3) I&S/VLPA** *Dubrow* Analysis of city forms and designs, emphasizing their relation to the culture of each period.

**URBDP 461 History of Urban Planning in the United States (3) I&S** *Hancock* Seminar in origins, development, and significance of the American planning movement and the profession that emerged from it, as defined by some of its seminal innovators, theories, practices, and achievements, and as evaluated by cultural realities thereby served.

**URBDP 465 Land Use (3) I&S** *Westerlund* Land use as a substantive focus for urban and regional planning and growth management. Consideration of data collection, analysis, plan development, and implementation methods. Seminar and group project sections.

**URBDP 466 Infrastructure and Community Facilities (4) Blanco** 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) Westerlund** 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 468 Land Use From Satellite Data (3) Westerlund** Digital data from Landsat and other sources used to determine land-use and land-cover classification in urban and rural areas. Hands-on exercises on computer. Photo interpretation, statistics, land-use classification, and verification are incorporated.

**URBDP 470 Introduction to Urban Design (3) I&S/VLPA** *Rolfe* 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 471 History of Urban Design (3) I&S/VLPA** *Streatfield* Aspects of form, pattern, and space that mark efforts of individuals and groups to express their values and goals in the design of their cities. Special attention given to both historical and modern examples.

**URBDP 472 Creativity and Culture in Design (3) Kasprisin** Exploration of creativity in design from a system theory perspective. Theoretical readings in physics, biology, and behavioral science balanced with practical approaches and case studies in urban design and architecture literature. Offered: A.

**URBDP 474 Site Planning: Issues and Techniques (3) Abramson** 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** *Moudon* 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** *Ludwig* 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 482 Politics and Planning (3) I&S** Explores the need to understand the crucial role of politics in the planned development of American communities, to think critically and constructively about the relationship of politics and development and ways to make it as democratic and equitable as possible, and to strengthen analytical and writing skills.

**URBDP 494 Alaska Field Study (2-5, max. 10) Kasprisin, Westerlund** Travel to Alaskan communities for interpretation of natural systems, history, cultures, settlement patterns, and current issues of planning and economic development. Meetings with community leaders and planners. Students either select a topic for field and documentary research, or participate in intensive charrette-type projects or quarter-long projects in communities. Offered: Sp.

**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. A report on the purposes, procedures, and results of the study is required.

**URBDP 500 Survey of Urban Planning (4) Miller** 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) Born, Spangenberg, Tovar** 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 503 Communication and Analysis (3) Kasprisin** 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, programming, implementation, and presentation phases of the planning process.

**URBDP 508 Specialized Planning Laboratory (5, max. 10) Blanco, Dubrow, Kasprisin, Moudon, Rolfe, Westerlund** 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) Bae** 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 511 Theories and Methodologies of Planning II (4) Blanco**

**URBDP 512 Research Seminar (3) Miller** 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. Offered: A.

**URBDP 519 Qualitative Research Planning (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.

**URBDP 520 Quantitative Methods in Urban Design and Planning (4)** *Bae* 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)** *Miller* 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 530 Land-Use/Transportation Models (3)** *Waddell* Review of theoretical basis of several existing models used to forecast urban growth patterns and their associated land-use, transportation, and energy requirements. Model validation studies in relation to empirical studies of urban growth and change. Environmental implications of alternative urban growth patterns. Offered: jointly with CEE 588.

**URBDP 537 Open Space Land Uses (3)** *Westerlund* Exploration of public and private values of open space; its aesthetic, environmental, recreational, natural resource uses from development sites to metropolitan regions. Methods of open space inventory, analysis; legal and administrative tools for preserving and managing open space; development of multipurpose open space programs in local governments. Prerequisite: URBDP 500.

**URBDP 543 Problem Analysis in Urban Ecology (5)** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Investigates pressing local issues in urban ecology and develops each into a researchable project proposal. Examines and evaluates how different disciplines study environmental issues, explores criteria for conducting and evaluating quality research, develops skills in problem formulation, and sharpens proposal writing skills. Offered: jointly with CFR 574; A.

**URBDP 544 Applied Theory and Methods in Urban Ecology (5)** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Discusses broad perspectives in urban ecology and how to analyze data relevant to urban ecology problems. Students write objective and methods for a selected urban ecology problem that critiques different methodological approaches and reviews/synthesizes literature. Prerequisite:

URBDG 543 or permission of instructor. Offered: jointly with CFR 575; W.

**URBDP 545 Research in Urban Ecology (5)** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Teams analyze, present, and begin to interpret data that is relevant to addressing issues in urban ecology. Write and orally present revised objectives and methods sections of interdisciplinary project and present a draft results section. Prerequisite: URBDP 544. Offered: jointly with CFR 576; Sp.

**URBDP 546 Practicum (4, max. 8)** *Rolle* Off-campus experience under academic supervision in situations useful to the education of planners, such as planning offices, public bureaucracies, projects related to the environment, cross-cultural matters, and decision making. Assistance in identifying appropriate projects. Credit/no credit only. Prerequisite: permission of instructor.

**URBDP 547 Professional Project (1-9, max. 9)** Independent development of client oriented project involving application of professional planning/design methods and approaches. Professional-quality report relates project to larger professional context, addresses alternative approaches/methods and includes an evaluation of the project. Master of Urban Planning students only, taken in lieu of 700. Not recommended for those continuing into Ph.D. program. Credit/no credit only.

**URBDP 548 Advanced Urban Ecology (5)** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Discussion of current and important theoretical and empirical papers in urban ecology. Students continue to research interdisciplinary urban ecology projects while developing publishable manuscripts and oral presentations. Emphasizes research ethics, diverse views, and presentation skills. Prerequisite: URBDP 543, 544, 545. Offered: jointly with CFR 580/GEOG 588; AWSp.

**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)** *De Lisle* Introduction to the real estate process including concept generation, market research, design, construction, finance, and transactions. Offered: A.

**URBDP 553 Real Estate Appraisal and Feasibility (4)** Introduction to real estate feasibility analysis, including an emphasis on individual property market analysis, permitting, investment, decision-making, and market behavior. Focuses on building basic research skills to determine economic viability and marketability of real estate projects. Prerequisite: URBDP 552.

**URBDP 554 Real Estate Finance (4)** *De Lisle* Overview of real estate finance and investment analysis, including a survey of capital markets, banking regulations, interest/discounting theories, debt instruments, and project financing. Prerequisite: URBDP 552.

**URBDP 555 Real Estate Development (4)** *Rolle* 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 522.

**URBDP 556 Real Estate Investment (4)** *Rolle* Analysis of private and public real-estate investment decisions using case studies of individual development projects. Focuses on application of principles introduced in URBDP 552, 553, 554 and 555. Offered: Sp.

**URBDP 558 Real Estate Market Analysis (4)** Fundamentals of market analysis for commercial and residential real estate projects. Demand for real estate by property type, methods for analyzing and forecasting population, employment, and income in a regional economy; competitive supply and capture rate analysis; retail trade area analysis; and integrating market studies into financial feasibility analysis.

**URBDP 560 Urban Affairs (3)** 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)** 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 563 Seminar in Urban Planning and Policy (1)** Seminar for students in the MPA/MUP concurrent degree program. Explores topics that intersect urban planning and policy, through exchange with faculty and professionals working in this arena. Focuses on developing thesis topics that explore this intersection. Offered: jointly with PB AF 563.

**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 the immersion in historical scholarship that addresses the social, economical, political, technological, and cultural forces that have shaped the development of American cities.

**URBDP 567 Democracy, Citizenship, and Participation in the City (3)** *Purcell* Graduate seminar on democracy in cities. Focuses on contemporary ideas, debates, and initiatives. Offered: Sp.

**URBDP 570 Urban Design Process (3)** *Rolfe* The study of concepts, methods, and processes basic to planning, design, and effectuation. Credit/no credit only. Prerequisite: specialization in urban design or permission of instructor.

**URBDP 571 Research and Analytical Methods for Urban Design (3)** *Moudon* Conceptual framework for an epistemology of urban design and physical planning. Review of relevant research in related fields and disciplines. Prerequisite: specialization in urban design or permission of instructor.

**URBDP 572 Case Studies in Urban Design and Development (3)** *Kasprisin* Wide range of urban design and development projects recently completed. Effective urban design implementation, including design process, decision making, administration, management. Tools and techniques such as design analysis, policy making, regulation, design review, taxation, financing. Prerequisite: URBDP 510 and URBDP 580 and/or permission of instructor.

**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. Offered: Sp.

**URBDP 574 Residential Design: Methods and Practices (3)** *Dubrow* Review of approaches to housing people in growing metropolises and cities, nineteenth century to present. Emphasis on Western Europe, North and South America.

Focus on selected contemporary issues in neighborhood and dwelling design, methods and practices. Offered: jointly with ARCH 593.

**URBDP 576 Pedestrian Travel, Land Use, and Urban Form (3)** *Vernez Moudon* Graduate 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; Sp.

**URBDP 580 Legal and Administrative Framework for Planning (3)** *Blanco* 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)** *Dubrow* Theories, methods, and practices associated with historic preservation planning. Overview of preservation planning 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. Offered: Sp.

**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)** *Dubrow* Exploration of theoretical, methodological, and practical issues related to the preservation of vernacular architecture and cultural landscapes in the United States. Offered: W.

**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 research proposed by members of the seminar. Prerequisite: master's degree or equivalent in a planning discipline.

**URBDP 597 Pacific Northwest Bioregion Forum (1)** *Kasprisin* Exchange between universities of Pacific Northwest to share ideas and information on planning related ecological issues within the bioregion.

**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 (\*)**

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## College of Arts and Sciences

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### American Ethnic Studies

#### Afro-American Studies

**AFRAM 101 Introduction to African American Studies (5) I&S** 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 Third World Images in Film (5) I&S/VLPA**

**AFRAM 246 African American Politics (5) I&S** *P. Rivers* 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** This course 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) I&S/VLPA** *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** *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** *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 306 Basic Swahili (5) Maulana** Structure of spoken and written Swahili. Concentration on the acquisition of elemental conversational skill

and an introduction to written texts of graded difficulty.

**AFRAM 307 Basic Swahili (5)** *Maulana* Structure of spoken and written Swahili. Concentration on the acquisition of elemental conversational skill and an introduction to written texts of graded difficulty. Prerequisite: AFRAM 306.

**AFRAM 308 Basic Swahili (5)** *Maulana* Structure of spoken and written Swahili. Concentration on the acquisition of elemental conversational skill and an introduction to written texts of graded difficulty. Prerequisite: AFRAM 307.

**AFRAM 309 Intensive Basic Swahili (15)** *Maulana* First-year Kiswahili language. Introduces students to Kiswahili and allows them to explore and understand not only the language but also the diverse cultures and customs of the people of East Africa. Provides a basic foundation in speaking, reading, and writing. Primary emphasis on basic structure of Kiswahili and its operation. Offered: S.

**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 320 Black Women in Drama (5)** *VLPA* 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 Grimke, 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: joint with WOMEN 321.

**AFRAM 323 African-American Women's History (5)** *I&S Yee* Survey of African-American women's experience in United States, 1600 to present. Includes: social, political, economic status of Black women in slavery, freedom, education, activism, Civil Rights, women's rights, other social movements. Explores individual and collective interactions with African-American men, white men and women, other people of color.

**AFRAM 334 The Sixties in America: Conflict, Confrontation, and Concession (5)** *I&S Walter* Politico-cultural movements that collided in the sixties. Includes politics of confrontation and civil disobedience, economics of "guns and butter," literature of conflict and angst, polarization of arts, transformation of race relations, role of Rock, and influence of domestic politics on foreign relations. Recommended: AFRAM 150; AFRAM 270. Offered: jointly with HSTAA 334.

**AFRAM 337 Music and Social Change in the Sixties Era (5)** *I&S/VLPA 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 The Black Aesthetic (3)** *I&S/VLPA*

**AFRAM 358 Literature of Black Americans (5)** *VLPA Butler, Moody* Selected writings—novels, short-stories, plays, poems—by Afro-American writers. 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 401 Intermediate Swahili (5)** *VLPA* Readings from prose to traditional poetry. Emphasis on acquiring an ability to manipulate ideas in Swahili. Review of structure. Prerequisite: either AFRAM 308 or AFRAM 309.

**AFRAM 402 Intermediate Swahili (5)** *VLPA* Readings from prose to traditional poetry. Emphasis on acquiring an ability to manipulate ideas in Swahili. Review of structure. Prerequisite: AFRAM 401.

**AFRAM 403 Intermediate Swahili (5)** *VLPA* Readings from prose to traditional poetry. Emphasis on acquiring an ability to manipulate ideas in Swahili. Review of structure. Prerequisite: AFRAM 402.

**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 Introductory History of American Ethnic Groups (5)** *I&S Gamboa, Salas* Survey of the history of African Americans, Asian Americans, Chicanos, and American Indians in the United States.

**AES 151 Introduction to the Cultures of American Ethnic Groups (5)** *I&S* Survey of the cultures of Chicano, African-American, Asian-American, and American-Indian communities of the United States. Each group's culture is examined in its isolation and in its interaction with mainstream culture.

**AES 212 Comparative American Ethnic Literature (5)** *I&S/VLPA Butler* Selected texts from the African-American, American-Indian, Asian-American, Chicano/Latino, and Euro-American traditions of American literature. Examines the American Dream, identity, community, conformity, individualism, and family. Explores themes of assimilation, double consciousness, *meziz*a consciousness, and wholeness as an introduction to multiple American voices in literary expression.

**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 310 Women of Color as Cross-Cultural Artists (5)** *I&S/VLPA 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 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. Offered: jointly with WOMEN 351.

**AES 322 Race and Gender: Historical Perspectives (5)** *I&S* The intersection of race and gender in the lives of women of color in the United States from historical and contemporary perspectives. Topics include racism, sexism, activism, sexuality, and inter-racial dynamics between women of color groups. Offered: jointly with WOMEN 322.

**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 *pas*se. Recommended: LSJ 363 or one course in either AES or WOMEN. 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 US and its importance for US culture and society. Covers increased centrality of athletic competition as part of the new leisure time in the late-19th 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** 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 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** Introduction to media representations of gender, race, and sexuality. Offered: jointly with COM 389/WOMEN 389.

**AES 404 Critical Pedagogies of Social Change (5) I&S** Examines theories of critical pedagogy as developed in struggles against race, class, and gender oppression in the U.S. and transnationally. Topics include the relation between theory and practice, the position of educators in struggles for social change, and the role of the arts in movement-building. Offered: jointly with WOMEN 404.

**AES 446 Music in American Cultures (3) I&S/ VLPA** 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 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** *Scott* Race and ethnicity are examined 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** *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 490 Representing Beyond the Binaries: Mixing Race, Gender, and Sexuality in the Media (5) I&S** *Joeseeph* Cultural studies approach to examining the mixed formations that race, sexuality, and gender take in the contemporary United States media. Draws upon multidisciplinary scholarship in examination of the media. Offered: jointly with COM 490/WOMEN 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 495 Senior Seminar (5) I&S** Focus on a central comparative theme for individual research topics.

**AES 496 Senior Thesis (5-10) I&S** Supervised individual and independent/tutorial study for seniors involving research, writing, and completion of major 20-30 page paper. Offered: AWPSP.

**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 Cultures (5) I&S** Asian-American subcultures; evolution of Asian-American cultures in the United States from 1850 to 1950-immigration patterns, evolution of subcultures, evacuation, interracial relations, assimilation, and signs of social disorganization.

**AAS 206 Contemporary Problems of Asian Americans (5) I&S** Recent Asian-American issues from 1950 to the present. Topics include ghetto communities, civil rights, identity problems and ethnicity, social organizations, political movements, and recent immigration.

**AAS 210 Asian-American Identity (5) I&S** Examines the nature of Asian-American identity from a multidisciplinary approach. Explores influences and manifestations of Asian-American identity, using literature, history, and other texts. Topics to include gender issues, interracial relationships, and Amerasians. 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 300 U.S. Pacific Islander Contemporary Culture (5) I&S** *McGrath* Examines U.S. Pacific Islander culture as informed by Pacific history, social and cultural organization. Emphasis on understanding contemporary experience in the U.S. 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. Offered: Sp.

**AAS 306 Basic Tagalog (5)** Structure of spoken and written Tagalog. Concentration on the acquisition of elemental conversational skill and introduction to written texts of graded difficulty. Offered: A.

**AAS 307 Basic Tagalog (5)** Structure of spoken and written Tagalog. Concentration on the acquisition of elemental conversational skill and introduction to written texts of graded difficulty. Prerequisite: AAS 306. Offered: W.

**AAS 308 Basic Tagalog (5)** Structure of spoken and written Tagalog. Concentration on the acquisition of elemental conversational skill and introduction to written texts of graded difficulty. Prerequisite: AAS 307. Offered: Sp.

**AAS 314 Ethnography, Transnationalism, and Community in Island Southeast Asia/Asian American (5) I&S** *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** *Sumida* Prose fiction, historical narratives, and poetry (including lyrics and songs) of Hawaii by Native Hawaiian and multicultural local writers and composers of the nineteenth and twentieth centuries. Analyses of colonization and its consequences frame the literary studies.

**AAS 330 Asian American Theater (5) VLPA** *Sumida* Explores works of Asian American plays in historical, interpretive, and artistic contests and dimensions. Includes students' performances of dramatic readings.

**AAS 350 Chinese American History and Culture (5) I&S** Experience of the Chinese in America from 1850 to the present. Transformation from an immigrant to Chinese American community: immigration patterns, anti-Chinese movements, ethnic sociopolitical and economic institutions, community issues, Chinese American culture. Recommended: AAS 205.

**AAS 360 Filipino-American History and Culture (5) I&S** *Revilla* History and culture of the Filipino in America and the influence of an admixture of Filipino, Spanish, and American traditions on the Filipino immigrant and his or her descendants. Recommended: AAS 205.

**AAS 370 Japanese-American History and Culture (5) I&S** Historical roots and subsequent changes in the Japanese-American group examined through an interdisciplinary approach. Topics include historical events, culture, values, social and community structures, institutions, occupations, and future orientations. Recommended: AAS 205.

**AAS 372 Internment Camps in North America: United States and Canada (5) I&S** Comparative study of United States and Canadian internment camps incarcerating Japanese Americans and Japanese Canadians during World War II. Focuses on early history, dislocation and internment, effects (disorganization and adjustments), effects on the internees and society, and present situation.

**AAS 380 Asian-American Communities and Social Policies (5) I&S** History, culture, social organization, leadership patterns and interethnic relations of Asian-American (Chinese, Filipino, Japanese, and Korean) communities. Origins and impact of social policies relevant to Asian-American communities. Recommended: AAS 205

**AAS 385 Asian Americans: The Law and Immigration (5) I&S** Traces the evolution of United States immigration law and policy from the nineteenth century to modern day, from free immigration to immigration restriction, through the elimination of race as a criterion, and culmination in the passage of the Simpson-Mezzoli bill. Recommended: AAS 205 or AAS 206.

**AAS 392 Asian-American Women (5) I&S** History of and contemporary issues related to Asian-American women in the United States. Recommended: AAS 205 or AAS 206. Offered: jointly with WOMEN 392.

**AAS 395 Southeast-Asian Americans: History and Culture (5) I&S**

**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: AAS 205 or AAS 206.

**AAS 402 Contemporary Asian-American Literature (5) VLPA** Asian-American literature from the 1940s to the present. Emphasis on the development of attitudes and identities in contemporary Asian-American literature, the role of the writer in a minority culture, and the relationship of literature to self and society.

**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** 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 416 Intermediate Tagalog (5) VLPA** Readings from prose to traditional poetry. Emphasis on acquiring an ability to manipulate ideas in Tagalog. Review of structure. Prerequisite: AAS 308. Offered: A.

**AAS 417 Intermediate Tagalog (5) VLPA** Readings from prose to traditional poetry. Emphasis on acquiring an ability to manipulate ideas in Tagalog. Review of structure. Prerequisite: AAS 416. Offered: W.

**AAS 418 Intermediate Tagalog (5) VLPA** Readings from prose to traditional poetry. Emphasis on acquiring an ability to manipulate ideas in Tagalog. Review of structure. Prerequisite: AAS 417. Offered: Sp

**AAS 426 Advanced Tagalog (5) VLPA** Reading of contemporary Filipino (Tagalog) prose, poetry, and drama. Advanced conversation and composition. Prerequisite: AAS 418. Offered: A.

**AAS 427 Advanced Tagalog (5) VLPA** Reading of contemporary Filipino (Tagalog) prose, poetry,

and drama. Advanced conversation and composition. Prerequisite: AAS 426. Offered: W.

**AAS 428 Advanced Tagalog (5) VLPA** Reading of contemporary Filipino (Tagalog) prose, poetry, and drama. Advanced conversation and composition. Prerequisite: AAS 427. Offered: Sp.

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

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

## Chicano Studies

**CHSTU 101 Introduction to Chicano Studies (5) I&S Gamboa, Salas** Selected themes in Chicano experience; studies in Chicano politics and Chicano socioeconomic concerns.

**CHSTU 180 History of the Chicano People to 1848 (5) I&S Gil** Historical survey of the Chicano people from pre-Hispanic times to the war between the United States and Mexico. Offered: jointly with HSTAA 283.

**CHSTU 200 Latinos in the United States (5) I&S Gamboa, Salas** Historical, social, and economic experience of Latinos in the United States. Major themes include education, labor, class, and gender identity. Analyzes rapid growth of old and newly established Latino communities, based on emigration from Latin America.

**CHSTU 254 Northwest Latinos: History, Community, Culture (5) I&S Gamboa** Traces the history, extent, and development of the Chicano/Latino presence from the early Spanish period to the present. Examines the major contemporary political, social, and economic issues affecting Northwest Chicano/Latinos in a broader national and international context.

**CHSTU 255 Mexican Women: Past and Present (5) I&S 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** 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 United States life, (2) contributions of the Chicano people to United States politics.

**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 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 352 Mexican Immigration: A Comparative Analysis (5) I&S Gamboa, Salas** Examines and compares constant Mexican immigration with that of other immigrants to the United States as one of the most important issues confronting Chicanos and other Americans in the United States.

**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 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 410 Latina Cultural Production (5) I&S/VLPA** 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. Offered: jointly with WOMEN 451.

**CHSTU 416 Comparative Social Movements: Mexico and the United States (5) I&S 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 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.

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## American Indian Studies

**AIS 102 Survey of American Indian Studies (5) I&S** 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 (3) 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 113 American Indian Language: Navajo (5) Witherspoon** Conversation, reading, and

writing in Navajo. Oral literature and other aspects of Navajo culture integrated into language study.

**AIS 114 American Indian Language: Navajo (5)** *Witherspoon* Conversation, reading, and writing in Navajo. Oral literature and other aspects of Navajo culture integrated into language study. Prerequisite: AIS 113.

**AIS 115 American Indian Language: Navajo (5)** *Witherspoon* Conversation, reading, and writing in Navajo. Oral literature and other aspects of Navajo culture integrated into language study. Prerequisite: AIS 114.

**AIS 151 Indian Art of Northwest Coast (3)** *VLPA Oliver* Studio course on Pacific Northwest coast Indian/Eskimo art. Traditional and contemporary forms; principles of form, style, and techniques; values that influence Indian/Eskimo art styles.

**AIS 170 Survey of North American Indian Art (5)** *VLPA* Major American Indian art traditions of North America. Precontact 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 Harmon* Survey of histories of Indians in the U. S. 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* 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 Wright* 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. Offered: .W.

**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)** *VLPA 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* 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.

**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 317 North American Indians: The Southwest (5)** *I&S Witherspoon* Overview of history and ethnography of the Southwest with emphasis on Apaches, 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 Harmon* History of relations between American Indians and non-Indians in the U. S. 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: European Discovery to 1840 (5)** *I&S 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: 1840 to Present (5)** *I&S 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 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, family life, cultural and spiritual practices, crimes and punishment, and federal responsibilities for Indians.

**AIS 340 Indian Children and Families (5)** *I&S* 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 WOMEN 341. Offered: AWSpS.

**AIS 350 Two-Dimensional Art of the Northwest Coast Indians (5)** *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 Colonnese* 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. Offered: ASpS.

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

**AIS 376 First Nations Literature (5)** *VLPA Cote* Literature written by First Nations Canadian authors as a form of cultural resistance and a reasserting of identity. Offered: S.

**AIS 377 Contemporary American Indian Literature (5)** *VLPA Colonnese* 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* 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. Offered: AW.

**AIS 379 Powwow: Tradition and Innovation (5)** *VLPA/I&S* Explores the historical and cultural roots of powwow. Discusses the ways this Indigenous Native art form has adapted since prehistoric times. Includes planning and staging of the annual UW First Nations Powwow.

**AIS 425 Indians in Western Washington History (5)** *I&S 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 Wright* 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. Offered: W.

**AIS 440 Reading Native American Women's Lives (5, max. 10) I&S** Ross 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 WOMEN 440.

**AIS 441 Gender in Native American Societies (5) I&S** Cote\*f 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 regards 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) I&S/VLPA** 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 WOMEN 442.

**AIS 443 Indigenous Films, Sovereign Visions (5) VLPA/I&S** Cote\*f, Hart, Ross Explores fiction, documentary, experimental film, and digital media from 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) I&S** 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. Prerequisite: AIS 330; WOMEN 200; WOMEN 310. Offered: jointly with WOMEN 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 450 American Indian Song and Dance Tradition: Performance (3) VLPA** Performance of various American Indian social dances, songs, and games. In-depth study of various American Indian vocal styles.

**AIS 451 Critical Conversations in American Indian Studies (5, max 10) Critical** issues in American Indian Studies. Topics vary. Offered: Sp.

**AIS 461 First Nations Government and Politics in Canada (5) I&S** Cote\*f 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.

**AIS 465 First Nations Filmmaking in Canada (5) VLPA** Cote\*f 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.

**AIS 466 Producing the Documentary Short (5) VLPA** Cote\*f, Gibbons, Hart, 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 469 Special Studies in American Indians (3, max. 6) I&S** Delineation and analysis of a specific problem or related problems in American Indian Studies. Offered occasionally by visitors or resident faculty.

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

**AIS 498 Senior Project (5)** Intensive research and presentation on a selected issue. For students majoring in American Indian Studies or other advanced students by permission. Offered: AWSp.

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

**AIS 501 Documentary Film/Video Research Methods in Native Communities (5)** Seminar exploring theoretical, methodological, and aesthetic issues when research 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: AWSpS.

**AIS 503 Documentary Theory, Form, and Practice (5)** 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.

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## Anthropology

### 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. May not be counted toward the 55 credits required for the major in anthropology. Offered: AWSp.

**ANTH 101 Exploring Sociocultural Anthropology (5) I&S** Chapman, Hoffman, Lowe, Taylor 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. Offered: AWSp.

**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 foundations 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 lifeways of various non-Western and Western peoples. Introduction to basic theories and methods used in the field.

**ANTH 203 Introduction to Anthropological Linguistics (5) I&S/VLPA** 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 U.S. 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** 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) I&S/VLPA** 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** 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 228 Identities: Race, Class, Gender, and Sexuality in Anthropology (5) I&S** 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 269 Special Topics in Anthropology (3-5, max, 10)** Delineation and analysis of a specific problem or related problems in anthropology. Offered: occasionally.

**ANTH 289 Identities: Service Learning (3) I&S** . Engages students in volunteer activities in order to explore the process of social change around intersections of race, class, gender, and sexuality. A service learning companion course to ANTH 228. Students must be enrolled in ANTH 228 in order to enroll in ANTH 289

**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 Representations of the Pacific Islands and Islanders (3) I&S/VLPA Kahn** Explores written texts and visual images about the Pacific Islands and Islanders in an effort to understand the power of representation and its relationship to the construction of knowledge. Examples drawn from early explorers, artists, novelists, anthropologists, the tourist industry, and Pacific Islanders.

**ANTH 307 U.S. Pacific Islander Contemporary Culture (5) I&S McGrath** Examines U.S. Pacific Islander culture as informed by Pacific history, social and cultural organization. Emphasis on understanding contemporary experience in the U.S. 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. Offered: Sp.

**ANTH 308 Anthropology of Women's Health and Reproduction (5) I&S Chapman** Introduction to anthropological approaches to women's health, addressing women's health status and participation in healthcare. Topics include reproductive health, women's bodies and sexuality, social policy in relation to gender, race, ethnicity, and class. Emphasis on how the politics of gender shapes women's experiences of health care institutions in the U.S.

**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 312 Pacific Islands Literature (5) I&S/VLPA** 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 American (5) I&S 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 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 SISSE 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 SISSA 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 Peoples and Cultures of the Islamic Middle East (3) I&S** Survey of cultures and peoples of Islamic Middle East and North Africa. First half of the course emphasizes the integration of peasant, urban, and nomadic societies in the traditional culture and economy; the second half concentrates on the transformation of the traditional life styles through the process of westernization and modernization.

**ANTH 320 Game Theory, Evolution, and Behavior (4) I&S, QSR Bergstrom, Smith** Introduction to the logic and basic techniques of modern game theory, and exemplary applications to understand behavioral variation and social interaction in humans and other species. Emphasizes non-mathematical representations

of fundamental concepts and processes, with considerable use of computer-based exercises and experiments. Offered: jointly with BIOL 320.

**ANTH 321 Comparative Religion (3) I&S** Anthropological approaches to religious experience and belief with emphasis on conceptual issues such as ritual, symbolism, identify, 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 RELIG 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 RELIG 320.

**ANTH 323 Human Rights Law in Culture and Practice (5) I&S** 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 324 Culture and Politics of Africa (5) I&S Hoffman** Introduction to African cultural responses to the slave trade, European colonialism, and globalization. Topics include an examination of Euro-American representations of Africa and how they are often at odds with African realities.

**ANTH 330 Religion, Identity, and Cultural Pluralism (5) I&S** 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 RELIG 330.

**ANTH 331 Native Art of the Pacific Northwest Coast (5) I&S/VLPA** 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) Ramamurthy, Sivaramakrishnan** 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 WOMEN 339/SISA 339.

**ANTH 341 Political Violence and the Post-Colonial State in South Asia (5) I&S** 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 SISSA 341.

**ANTH 345 Women and International Economic Development (5) I&S Ramamurthy**

Questions how women are affected by economic development in Third World and celebrates redefinitions of what development means. Theoretical perspectives and methods to interrogate gender and development policies introduced. Current processes of globalization and potential for changing gender and economic inequalities assessed. Offered: jointly with SIS 345/WOMEN 345.

**ANTH 352 Buddhism and Society: The Theravada Buddhist Tradition in South and Southeast Asia (5) I&S** Introduction to the religious tradition of Theravada Buddhism (as practiced in Sri Lanka, Burma, Thailand, Laos, and Cambodia) and examination of the variations in ethical orientations developed through Theravada Buddhist ideas. Recommended: RELIG 202 or one eastern religions course. Offered: jointly with RELIG 350.

**ANTH 353 Anthropological Studies of Women (5) I&S** Critical examination of the intersections between anthropology, research on gender issues, and feminism. Readings and class discussions examine the ways women have been represented in the field of anthropology and the repercussions of these anthropological images of women on contemporary understandings of gender. Offered: jointly with WOMEN 353.

**ANTH 356 Visual Anthropology (3) I&S** 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 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 acquire 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 movements. Prerequisite: one 200-level ANTH course.

**ANTH 362 Anthropology of Tourism (5) I&S 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 370 Han Chinese Society and Culture (5) I&S Anagnost, 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 SISEA 370.

**ANTH 371 Anthropology of Development (5) I&S Sivaramakrishnan** 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 374 Narrative, Literature, and Medical Anthropology (5) I&S 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 (3) I&S** Introduction to the anthropological study of healing. Examines four healing traditions and addresses their similarities and differences. Includes anthropological theories of healing and religion.

**ANTH 379 Prisons in Anthropological Perspective (5) I&S Rhodes** An introduction to prisons from an anthropological point of view, with focus on prisons as total institutions. Topics include the experiences of prisoners and staff, prison history, issues of race and gender associated with incarceration, and the imprisonment of the mentally ill. Offered: jointly with LSJ 379.

**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 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 life-styles 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** 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, SIS 200, SIS 201, or SIS 202. Offered: jointly with SISEA 406.

**ANTH 407 Global Futures in East Asia (5) I&S 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 SISEA 407; AWSpS.

**ANTH 412 South Asian Social Structure (5) I&S** 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 SISSA 412.

**ANTH 416 Comparative Social Movements: Mexico and the United States (5) I&S 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** Indian civilization 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 420 Psychoanalysis and the Study of Culture (3) I&S Spain** Anthropological use of theories developed by Freud to understand culture. Reviews psychoanalytic theory as a foundation for examining the work of Roheim, LaBarre, Devereaux, Kardiner, and Spiro, among others. Topics covered include the universality of oedipality and the utility of psychoanalysis in non-Western cultures.

**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 RELIG 201; RELIG 202.

**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** Analysis of Soviet and post-Soviet culture and identity. Historical transformations in Soviet approaches to ethnicity and nationality; contemporary processes of nationbuilding and interethnic conflict. Examination of culture through the intersection of social ritual, government policies, language, economic practices, and daily life. Regional focus will vary. Offered: jointly with SISRE 425.

**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** 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** 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) I&S/ VLPA** 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; alternate years.

**ANTH 432 Sociolinguistics I (5) I&S/VLPA** Social variation in the phonology, morphology, syntax, lexicon of languages and dialects. Nonstandard language, diglossia, pidgins and 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 ANTH 451 or LING 450. Offered: jointly with LING 432.

**ANTH 433 Sociolinguistics II (5) I&S/VLPA** *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 436 Comparative Family Organization (5) I&S** Function and structure of family developmental processes in band, tribal, peasant, and modern societies. Illustrates inter- and intrasocietal variation and provides data for construction of formal models of process and variation in family systems. Prerequisite: either one 200-level ANTH course, LING 203, or SOC 352.

**ANTH 437 Political Anthropology and Social Change (5) I&S** *Sivaramakrishnan* Study of politics from different anthropological perspectives, specially 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 438 The Analysis of Kinship Systems (5) I&S** Data, theories, and analytical technique used in the study of kinship systems, including our own, from around the world. Prerequisite: either one 200-level ANTH course or LING 203.

**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 440 Child Rearing, Culture, and Health (3) I&S** Cross-cultural study of the child-rearing practices, cultural norms, and health behavior of children and adolescents in different societies. Comparative approaches, diverse theoretical postures, and empirical research findings are used. Offered: jointly with NURS 495.

**ANTH 441 Psychological Anthropology (5) I&S** Assessment of mutual relevance of cultural and psychological variables in anthropology. Historical development of principal topics, e.g., cognition, national character, enculturation, personality and social change, cross-cultural psychiatry, sex and temperament, deviance, and psychoanalytic studies of culture. Prerequisite: either PSYCH 101 or PSYCH 205.

**ANTH 442 GLOBAL ASIA (5) I&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 SISA 442/WOMEN 446; W.

**ANTH 444 Politics of Representation in Modern China (5) I&S** 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 SISEA 444.

**ANTH 445 Literature and Society in Southeast Asia (5, max. 10) I&S/VLPA** 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 SISSE 445.

**ANTH 446 Class and Culture in East Asia (5) I&S** 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 SISEA 443.

**ANTH 447 Anthropology of Chinese Religion (5) I&S** Chinese religions, including folk, popular, and new religions, viewed from an anthropological perspective. Prerequisite: either ANTH 202, 204, 208, 321, 421, 370, or RELIG 202, or SISEA 370, 454.

**ANTH 448 Modern Korean Society (5) I&S** 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/SISEA 212. Offered: jointly with SISEA 448.

**ANTH 449 Social Transformation of Modern East Asia (5) I&S** 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 SIS 449.

**ANTH 450 Language and Gender (5) I&S, VLPA** *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 WOMEN 450/LING 458.

**ANTH 451 Comparative Historical and Social Ecology of the Tropics (5) I&S** *Sivaramakrishnan* Historical and social aspects of tropical environmental change. Comparative analysis of resource management, conservation, and environmental regulation issues in Asia, Africa, and Latin America from cultural and political economic perspectives. Special focus on issues of state policy, expert knowledge, social conflict, and international politics. Prerequisite: ANTH 210. Offered: jointly with ENVIR 451.

**ANTH 454 Women, Words, Music, and Change (5) I&S/VLPA** 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: WOMEN 353. Offered: jointly with WOMEN 454.

**ANTH 455 Areal Linguistics (3, max. 6) I&S/ VLPA** 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. 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** Techniques and theories of ethnographic description for the anthropological analysis of contemporary life. Materials drawn from the contemporary United States, with a focus on issues and events in the Seattle area. Includes fieldwork projects. Prerequisite: either one 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** *Hunn* 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** *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 464 Language Politics and Cultural Identity (3) I&S/LPA** *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 advisor, 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 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** 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/ISEA 370 or HSTAS 454. Offered: jointly with SISEA 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 473 Anthropology of Science and Technology (5) I&S/NW** *Lowe, Taylor* 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** *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** 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 biomedicine, 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** *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) I&S** *Chapman, Rhodes, Taylor* Explores theoretical and ethnographic advanced topics in medical anthropology. Prerequisite: permission of instructor.

**ANTH 480 Introduction to Museology (5) I&S** Museum history, philosophy, and basic operations, including organization, income, collection management, conservation, exhibition, security, education, research, and ethics.

**ANTH 481 Museum Collection Management (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.

**ANTH 482 Museum Conservation (5) I&S** 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.

**ANTH 484 Motherhood: Ideologies and Technologies (5) I&S** *Twine* 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: WOMEN 200. Offered: jointly with WOMEN 458.

**ANTH 485 Cultural Property: Legal and Ethical Issues (3) I&S** Examines the complex history of legal and ethical issues affecting the acquisition, ownership, and disposition of cultural property, with special attention to modern indigenous peoples' requests for repatriation of collections from museums, as well as concerns with intellectual property rights, national patrimony policies, and related trade issues.

**ANTH 486 Human Family Systems: Biological and Social Aspects (5) I&S** Biological bases for human mating and reproduction and an examination of the range of cross-cultural variability in human systems of kinship and marriage; comparisons among a wide range of human and nonhuman species and between Western and non-Western human societies; interplay of biological, ecological, and sociocultural factors in determining the structure and function of human family systems. Offered: jointly with SOC 486.

**ANTH 487 Cultures and Politics of Environmental Justice (5) I&S** *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** *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** 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** 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 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. Credit/no credit only. Prerequisite: first-year sociocultural graduate students in good standing or permission of sociocultural faculty.

**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. Credit/no credit only. Prerequisite: first-year sociocultural graduate students in good standing or permission of sociocultural faculty.

**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 517 Seminar on South Asia (3)** Advanced analysis of selected problems in South Asian ethnology and social structure. Prerequisite: ANTH 412.

**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 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 SIS 523.

**ANTH 525 Seminar in Culture Processes (3, max. 6)** The concept of process and its application to the study of culture.

**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 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) Ramamurthy, Sivaramakrishnan** 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 SSSA 539/ WOMEN 539.

**ANTH 540 Anthropology of Place (5) Kahn, 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) Sivaramakrishnan** 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 542 Seminar in Cognitive Anthropology (3)** Examines the intellectual history of cognitive anthropology; assesses its major findings in kinship, folk biology, color classification, and decision and planning theory. Replicates key studies, using cognitive anthropological methods. Evaluates influences from linguistics, psychology, and artificial intelligence research. Practical applications and future prospects.

**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 (3)** Principles of research design, including problem delineation and selection of appropriate methods, as applied to current issues in sociocultural anthropology. 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 553 Analysis of Linguistic Structures (3, max. 6)** Syntactic, semantic, or phonological analysis. Languages to be analyzed vary.

Prerequisite: permission of instructor. Offered: jointly with LING 553.

**ANTH 555 Discourses in Feminist Anthropology Seminar (5)** *Jacobs* Exploration of feminist anthropological theories and the works of their critics. Ways of using feminist anthropology in preparation for and conducting fieldwork. Topics include foundations in feminist anthropology, grand theories, variation in feminist theoretical foci within the "four fields," responses to critics. Prerequisite: graduate standing. Offered: jointly with WOMEN 553.

**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. Offered: jointly with SOC 556.

**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 health care. Cultural variation in illness beliefs and behavior, types of healing practice, illness prevention, and social support networks. Prerequisite: graduate standing and 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 environ-

ment 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. Credit/no credit only. Prerequisite: graduate standing in any field of anthropology or permission of instructor.

**ANTH 574 Culture, Society, and Genomics (3)** 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.

**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.

**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 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: MUS 480. Offered: jointly with MUSEUM 590.

**ANTH 591 Seminar in Museum Operations (5)** Designing hypothetical museums and creating a first year of operations. Design elements include architectural plan, staffing plan, initial and recurring budgets, security system, records system, educational plan, and policy making. Recommended: 590. Offered: jointly with MUSEUM 591.

**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** *Lape* 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. Offered: AWPSP.

**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 "civilized" ? progress, setbacks, failures, relationships with social and natural environments, and the role of technology. Examines the astonishing variety of adaptations humans have made.

**ARCHY 205 Principles of Archaeology (5) I&S** Techniques, methods, and goals of archaeological research. Excavation and dating of archaeological materials. General problems encountered in explaining archaeological phenomena. Offered: AWPSP.

**ARCHY 212 The Archaeology of Egypt (5) I&S** *Wenke* A survey of ancient Egyptian culture history between about 6000 BC and AD 400, based on a synthesis of archaeological and textual evidence. Focuses on the origins and evolution of the Egyptian state and the elements of pharaonic religion, society, economy, art, architecture, and science.

**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. Offered: S.

**ARCHY 272 Short Field Course in Archaeology (5)** *Fitzhugh, Grayson, Lape, Stein* 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. The location for this course may change from year to year. Recommended: ARCHY 205. Offered: A.

**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 Old World Prehistory (5) I&S** Old World prehistory from beginnings of human culture to rise of civilizations. First tools made by humans, spread of humans out of Africa, origins of agriculture, rise of state society. Africa, Near East, Egypt, China, India, Europe.

**ARCHY 304 New World Prehistory (5) I&S** 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 civilizations. Mexico, Yucatan, Peru, southwestern and eastern United States, Washington.

**ARCHY 320 Prehistory 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. .

**ARCHY 325 Archaeology of Island Southeast Asia and the Pacific (5) I&S** 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 371 Analysis of Archaeological Data (5) I&S** Analyzing archaeological data by measuring and describing such artifacts as stone tools and ceramics. Analysis of such environmental data as bones, plant remains, and sediments. Prerequisite: ARCHY 205.

**ARCHY 401 Archaeology of Human Origins (5) I&S** *Close* Early part of the prehistoric archaeological record in Africa and Eurasia, from >2,000,000 years ago until the spread of modern human beings; development of stone and bone technologies; ways of making a living; cultural adaptations; intellectual and social development. Prerequisite: ARCHY 205. Offered: Sp.

**ARCHY 402 Archaeology and Social Difference (5) I&S** *Close* Examines case studies in prehistoric archaeological record for intersections of socially constructed differences including age, gender, and class. Contrasts past perceptions of difference with projection of modern differences backward to validate the present. Prerequisite: ARCHY 205; either ARCHY 105, ARCHY 303, or ARCHY 401.

**ARCHY 403 The Archaeology of Landscapes (5) I&S/NW** *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: ARCH 205.

**ARCHY 465 Public Archaeology (5) I&S** 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 advisor, culminating in a senior honors thesis. Open only to upper-class students in departmental honors program.

**ARCHY 468 Issues in Cultural Resource Management (1) I&S** Review of federal and state cultural resource management policies and the effects of these policies on the conduct of projects that may impact cultural resources on public lands. Survey of related issues in museum management. Credit/no credit only. Prerequisite: ARCHY 205; either one 200-level ANTH course or LING 203.

**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** *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. Offered: even years; A.

**ARCHY 475 Maya Prehistory (3) I&S** Considers prehistoric cultural developments throughout the Central American region occupied by the prehistoric Maya. Temporal focus spans the late Preclassic, Classic, and Postclassic periods, from 300 BC to 1530 AD. Contrasts traditional and contemporary models of ancient Maya civilization. Prerequisite: ARCHY 205; ARCHY 304.

**ARCHY 476 New World States and Empires (5) I&S** Considers theoretical and methodological scholarship on complex societies in Meso-America and the Andes. Highlights current research on population dynamics, subsistence strategies, economic foundations, and political processes in the development of states and empires. Considers archaeological evidence and texts of native and European documents. Prerequisite: ARCHY 205; ARCHY 304.

**ARCHY 477 Archaeology of the North (5) I&S** *Fitzhugh* Archaeological history of the circumpolar arctic and subarctic from Pleistocene to the 19th century. Variability in human adaptation and social evolution in some of the world's most extreme environments such as Eurasian tundra, North Pacific rim, Beringia, and North American high arctic. Prerequisite: ARCHY 205. Offered: Sp.

**ARCHY 478 Prehistory of the Arid West (5) I&S** 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-gatherers of the Great Basin and Southwest. Prerequisite: ARCHY 205.

**ARCHY 479 Prehistoric Cultures of North America: Eastern North America (5) I&S** Ecological and evolutionary account of prehistoric cultural developments in North America east of the Rocky Mountains. Cultural and environmental change from appearance of people in New World to collapse of indigenous cultural systems. Prerequisite: ARCHY 304.

**ARCHY 480 Advanced Archaeological Analysis: Ceramics (6) I&S** Human technology in traditional societies. Ceramic tools as evidence for technological innovation, continuity, and change; and as evidence for ancient economic systems involving production, consumption, and distribution. Examines variety of approaches to the study of material culture — especially ceramics — including archaeological, ethnographic, experimental, and technical. Prerequisite: ARCHY 371.

**ARCHY 481 Advanced Archaeological Analysis: Faunal Remains (6) I&S** 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 Advanced Archaeological Analysis: Geoarchaeology (6) I&S** Identification, analysis, and interpretation of sediments and soils associated with archaeological remains. Laboratories deal with sediment description and chemical analysis; field trips and student projects focus on archaeological applications of these subjects.

**ARCHY 483 Analyses of Stone Artifacts (6) I&S** *Close* 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 371.

**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 archeological 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: Recommended: MUS 481. Offered: jointly with MUSEUM 490.

**ARCHY 495 Quantitative Archaeological Analytic Techniques (5) I&S** 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.

**ARCHY 497 Archaeological Method and Theory I: Formal Theory (5) I&S** Examination of theoretical constructs in the analysis of archaeological data. Terminology, typologies, and interregional comparisons. Prerequisite: ARCHY 205.

**ARCHY 498 Archaeological Method and Theory II: Explanatory Theory (5) I&S** Conceptual frameworks employed by archaeologists in obtaining explanation in the three major areas of culture history, cultural reconstruction, and explanatory prehistory, considering the nature of explanation as conceived in these areas, the basic assumptions employed in achieving these aims, and an introduction to the methods employed. Prerequisite: ARCHY 205; ARCHY 497.

**ARCHY 499 Undergraduate Research (\*, max. 12) .**

**ARCHY 501 Preceptorial Reading (6)** For beginning graduate students who have not had adequate training in the problems, principles, and methods involved in the reconstruction of prehistory. Not open to graduate students in the archaeology program.

**ARCHY 520 Principles of Archaeological Theory (5)** 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)** 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)** 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.

**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)** *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. Prerequisite: ARCHY 497, ARCHY 498.

**ARCHY 571 Field Course in Archaeology (5)** Introduction to field acquisition of archaeological data through survey and excavation. Ongoing field projects; instructional emphasis on recovery and recording techniques and on management of field projects. Prerequisite: permission of department.

**ARCHY 572 Seminar in North American Archaeology (3, max. 6)** Selected problems in the archaeology of America north of Mexico. Prerequisite: permission of instructor.

**ARCHY 574 Meta-archaeology: Philosophy and Archaeology (4)** *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 Text Offered: jointly with PHIL 574; Sp.

**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)** 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 591 Advanced Field Course in Archaeology (6-9)** For students with previous field experience and graduate work in archaeology. Emphasis on decision making in field and project management. Prerequisite: ARCHY 497, ARCHY 498, ARCHY 571, and ARCHY 575 or permission of instructor.

**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** *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 370 Introduction to Primates (5) NW** *Newell* 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. Offered: A.

**BIO A 372 Uses and Abuses of Evolutionary Views of Human Behavior (5) I&S/NW** *Newell* 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: either BIO A 201, BIOL 101, BIOL 180, or BIOL 201.

**BIO A 387 Ecological Perspectives on Environmental Stress, Adaptation, and Health (5) NW** *Leonetti* 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** *Eck* 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 201, BIOL 202, and BIOL 203, or both BIOL 101 and BIOL 102, or both BIOL 180 and BIOL 200. Offered: W.

**BIO A 389 Human Fossils and Evolution (5-) NW** *Eck* 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 450 Biodemography Seminar (5) I&S/NW** 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** 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. Offered: Sp.

**BIO A 465 Nutritional Anthropology (3) I&S/NW** Concerns 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, 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 advisor, 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,QSR** *Smith* 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 473 Biological Adaptability of Human Populations (5) NW** *Shell-Duncan* 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 475 Environmental Impacts of Small Scale Societies (5) I&S/NW** *Grayson, Smith* Examines the environmental impacts (positive and negative) among prehistoric and historic/ethnographic small-scale (hunter-gatherer and horticultural) societies worldwide, and debates these impacts, within a theoretical framework provided by evolutionary ecology and biogeography. Offered: jointly with ENVIR 475.

**BIO A 476 Sociocultural Ecology and Health (3) NW** *Leonetti* 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** *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** 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** *Newell* 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 (3) NW** 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** *Eck* 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** *Eck* Addresses five major unanswered questions concerning human evolution as represented by the fossil record. Prerequisite: BIO A 389.

**BIO A 495 Growth and Development: Infancy (5) NW** *Newell* 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** *Newell* 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)** *Smith* 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)** *Shell-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)** 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)** *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) 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 Demographic Analysis in Biological and Social Anthropology (5)** *Leonetti* 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. Theoretical approaches emphasized.

**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 Current Issues in Human and Non-Human Primate Evolution (2, max. 18)**

Biweekly presentation 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 600 Independent Study or Research (\*)**

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## 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, MATH 128, 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. Laplace transforms. Emphasis on formulation, solution, and interpretation of results. Examples from physical and biological sciences and engineering. Introduction to MATLAB as a tool for solving differential equations. 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.

**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: AWSpS.

**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: AWSpS.

**AMATH 401 Vector Calculus and Complex**

**Variables (4) NW** Emphasis on acquisition of solution techniques; ideas illustrated with specific example problems arising in science and engineering. Applications of vector differential calculus, complex variables. Line-surface integrals; integral theorems; Taylor and Laurent series, contour integration. Prerequisite: MATH 126. Offered: A.

**AMATH 402 Introduction to Dynamical**

**Systems and Chaos (4) NW** Overview of methods to describe the qualitative behavior of solutions of nonlinear differential equations. Phase space analysis of fixed points and periodic orbits. Bifurcation methods. Description of strange attractors and chaos. Introductions to maps. Applications from engineering, physics, chemistry and biology. Prerequisite: either AMATH 351 or MATH 307. Offered: W.

**AMATH 403 Methods for Partial Differential**

**Equations (4) NW** See 401. 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 402.

**AMATH 410 Computational Biology and**

**Chemistry (4)** Introduction to computational methods in biology and chemistry. Applications focus on statistical models, equilibrium models, discrete- and continuous- time deterministic models, and stochastic models arising in the biological and life sciences, and chemistry. Uses MATLAB for numerical computation and data analysis. Teaches tools in parallel with their computational implementation.

**AMATH 422 Introduction to Mathematical**

**Biology (3) NW** Mathematical modeling in biology and medicine. Introduction to chaos and nonlinear dynamics, population models (predator-prey and competition systems), epidemic models with applications to sexually transmitted diseases and dynamic diseases, enzyme kinetics, biological oscillators and switches. Prerequisite: either AMATH 351, MATH 136, or MATH 307. Offered: A.

**AMATH 423 Mathematical Biology: Stochastic**

**Models (3) NW** Introduction to the basics of stochastic models. Applications are taken from the biomedical sciences such as random movement of cells and molecules, activation of neurons, cancer growth and spread, population dynamics, kinetics of unimolecular reactions. Prerequisite: either AMATH 351 or MATH 307, MATH/STAT 390. Offered: W.

**AMATH 441 Introduction to Fluid Dynamics**

**(3) NW** Eulerian equations of mass and motion. Surface forces. Vorticity and vortex dynamics. Water waves and interfacial waves; concept of phase and group velocities. Linear instability theory. Simple viscous flows; boundary layer theory, potential theory. Low Reynolds-number flows, application to biological fluid flows. Prerequisite: AMATH 353.

**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. 12)** 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 Seminar in Applied Mathematics**

**(1, max. 6)** Special topics and selected problems of current interest in applied mathematics. Credit/no credit only. Offered: AWSpS.

**AMATH 502 Applied Mathematics Clinic (1)**

The clinic provides consulting service for problems from different academic units requiring assistance in formulation, analysis, and interpretation of mathematical models. Students learn to delineate sources of difficulties, identify or devise a method of solution, and effectively communicate it to clients. Credit/no credit only. Prerequisite: AMATH 568, AMATH 569, and AMATH 584. Offered: AWSpS.

**AMATH 503 Mathematical Biology I (3)**

Mathematical modeling in biomedical sciences (mainly ecology, epidemiology, physiology, and zoology). Topics covered include modeling (continuous and discrete), population interactions, dynamic diseases, reaction kinetics, biological oscillators, oscillator generated wave phenomena, epidemics, and the dynamics of infectious diseases. Prerequisite: AMATH 402 or equivalent knowledge of ordinary differential equations. Offered: A.

**AMATH 504 Mathematical Biology II (3)**

Mathematical modeling in the biomedical sciences (mainly ecology, epidemiology, and zoology). Topics include spatial spread of populations, traveling wave phenomena in biology, reaction diffusion theory, biological pattern formation mechanisms, mechanochemical theory of morphogenesis, spatial spread of epidemics. (May be taken independently of 503.) Prerequisite: AMATH 402, AMATH 403 or equivalents; ordinary, partial differential equations. Offered: W.

**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: AMATH 403 or permission of instructor. Offered: jointly with ATM S 505/OCEAN 511; A.

**AMATH 506 Applied Probability 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 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: AMATH 351 or MATH 307; MATH 324, 327; recommended: AMATH 402 and AMATH 403 or MATH 428 and 429.

**AMATH 509 Theory of Optimal Control (3)**

Trajectories obtained from ordinary differential equations with control variables. Controllability, optimality, the maximum principle. Relaxation

and the existence of solutions. Techniques of nonsmooth analysis. Prerequisite: real analysis on the level of MATH 426; background in optimization corresponding to AMATH 507 or AMATH 515. Offered: jointly with MATH 509; even years.

**AMATH 510 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/MATH/IND E 515 and MATH 328 or permission of instructor. Offered: jointly with IND E 516.

**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. Offered: jointly with CHEM E 512; A.

**AMATH 514 Networks and Combinatorial Optimization (3)** Networks and directed graphs. Paths and trees. Feasible and optimal flows and potentials. Transportation problems, matching and assignment problems. Algorithms and applications. Prerequisite: MATH 308 or AMATH 352 and MATH 324. 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: AMATH 515. Offered: jointly with MATH 516.

**AMATH 517 Optimization Under Uncertainty (3)** Sequential optimization problems involving random variables. Dynamic programming, stochastic programming. Control of uncertain dynamic systems in finite, discrete time. Risk, feedback, adaptivity. Problems with imperfect state information. Applications to optimal stopping, inventory control, resource management. Prerequisite: AMATH 506 (or an introduction to basic concepts of probability such as STAT 390 or 394, 395), MATH 308 and 324. Offered: jointly with MATH 517.

**AMATH 520 Special Topics in Mathematical Applications (5, max. 15)** In-depth study of an application topic in applied mathematics. Topics may include special studies in geophysical fluid dynamics, hydrodynamic stability, turbulence, analytic dynamics, solid mechanics, applied optimization, tensor analysis, stochastic analysis, and nonlinear optics and lasers. Offered: W.

**AMATH 521 Special Topics in Mathematical Biology (5, max. 15)** DNA-folding, patterning systems, stochastic analysis. Prerequisite: AMATH 402 or equivalent. Offered: Sp.

**AMATH 563 Methods of Partial Differential Equations II (3)** Nonlinear first-order partial differential equations: characteristics, applications to geometrical optics and Hamilton-Jacobi theory. Linear and quasilinear hyperbolic equations: conservation laws, characteristics, shocks, examples from fluid dynamics. Approximate solution methods: regular, singular, and multiple-scale perturbations. Prerequisite: AMATH 569. Offered: odd years.

**AMATH 564 Methods of Partial Differential Equations III (3)** Nonlinear first-order partial differential equations: characteristics, applications to geometrical optics and Hamilton-Jacobi theory. Linear and quasilinear hyperbolic equations: conservation laws, characteristics, shocks, examples from fluid dynamics. Approximate solution methods: regular, singular, and multiple-scale perturbations. Prerequisite: AMATH 569. Offered: odd years.

**AMATH 567 Complex Variables (5)** Complex variable and associated topics. Branch cuts, series and product expansions. Contour integration, numerical implications. Harmonic functions. Complex potential (and singularities) in physical problems. Conformal mapping; applications and examples. Fourier and Laplace transforms and applications. Recommended: 401 or equivalent. 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. Recommended: 402 or equivalent. Offered: W.

**AMATH 569 Advanced Methods for Partial Differential Equations (5)** Analytical solution techniques for linear partial 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: AMATH 403, AMATH 568 or MATH 428 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 571 Spectral Methods (5)** Analysis and application of spectral methods for the numerical solution of differential equations. Fourier methods and the FFT; collocation methods; polynomial interpolation and Chebyshev series; approximation theory and spectral accuracy; boundary conditions. Prerequisite: AMATH 584, AMATH 585, AMATH 586, or permission of instructor. Offered: W.

**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: AMATH/STAT 506, AMATH 402, or equivalent knowledge of probability and ordinary differential equations. Offered: Sp.

**AMATH 573 Solitons and Nonlinear Waves (5)** Methods for integrable and near-integrable nonlinear partial differential equations such as the Korteweg-de Vries equation and the Nonlinear Schrödinger equation; symmetry reductions and solitons; soliton interactions; infinite-dimensional Hamiltonian systems; Lax pairs and inverse scattering; Painlevé analysis. Prerequisite: AMATH 569, or permission of instructor. Offered: A.

**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: 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: AMATH 568 or equivalent.

**AMATH 577 Perturbation Theory I (3)** Regular perturbations. Singular perturbations: matched asymptotic expansions, boundary layers, shock layers, uniformly valid solutions. The methods of multiple scales and averaging, weakly nonlinear wave propagation problems and resonance phenomena, homogenization, nonlinear wave propagation in fluid, solid, and particle mechanics. Prerequisite: AMATH 567, AMATH 568, AMATH 569, or equivalent. Offered: even years.

**AMATH 578 Perturbation Theory II (3)** Regular perturbations. Singular perturbations: matched asymptotic expansions, boundary layers, shock layers, uniformly valid solutions. The methods of multiple scales and averaging, weakly nonlinear wave propagation problems and resonance phenomena, homogenization, nonlinear wave propagation in fluid, solid, and particle mechanics. Prerequisite: AMATH 567, AMATH 568, AMATH 569, or equivalent. Offered: even years.

**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: Proficiency in basic MATLAB or AMATH 301, or permission of instructor.

**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. 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: AMATH 581 or MATH 584 which may be taken concurrently. 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: AMATH 581 or AMATH 584. Offered: jointly with ATM S 581/MATH 586; Sp.

**AMATH 587 Asymptotics and Special Functions (3)** Origin and properties of higher transcendental functions; theoretical basis and applications of Laplace, Fourier, Bessel, Mellin transforms; asymptotic analysis, including methods of steepest descent and stationary phase, WKB. Prerequisite: AMATH 567, AMATH 568, AMATH 569, or equivalent.

**AMATH 588 Green's Functions and Integral Equations (3)** Review of Sturm-Liouville theory. Green's functions and integral representation of solution to PDEs. Fredholm and Volterra integral equations. Hilbert-Schmidt theory. Singular integral equations of Cauchy type. Applications to science and engineering. Prerequisite: AMATH 567, AMATH 568, AMATH 569, or equivalent.

**AMATH 592 Special Topics in Stochastic Analysis and Modeling (5)** Stochastic techniques and models with applications. Markov process and diffusion, stochastic differential equations, randomly perturbed dynamical systems, and statistical mechanics. Prerequisite: AMATH 572, or permission of instructor.

**AMATH 594 Special Topics in Numerical Analysis (2-3, max. 15)** Various advanced topics in numerical analysis and scientific computing, such as iterative methods, eigenvalue computations, approximation theory, finite element methods, inverse problems, nonlinear conservation laws, computational fluid dynamics. Prerequisite: AMATH 584, 585, 586, or equivalent. Offered: jointly with MATH 594.

**AMATH 595 Special Topics in Numerical Analysis (2-3, max. 15)** Various advanced topics in numerical analysis and scientific computing. See the description for 594 for sample topics. Prerequisite: AMATH 584, 585, 586, or equivalent. Offered: jointly with MATH 595.

**AMATH 596 Special Topics in Numerical Analysis (2-3, max. 15)** Various advanced topics in numerical analysis and scientific computing. See the description for 594 for sample topics. AMATH 584, 585, 586, or equivalent. Offered: jointly with MATH 596.

**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.

## Art

**ART 120 Influences in Contemporary Art (5) VLPA** Introduction to recurring themes and practices in the visual arts. Moves beyond medium-based categories, surveying a diverse range of issues that motivate artists and create content in contemporary art. Examines the importance and influence of the visual arts in the larger context of contemporary culture and society.

**ART 121 Drawing (5) VLPA** Drawing studied as the means of creating a coherent visual and expressive statement. Development of ability in the fundamentals of drawing: line, tone, and gesture, theory and practice of linear and aerial perspective, and basic concepts of composition. Offered: AWSp.

**ART 124 Three-Dimensional Design Fundamentals (5) VLPA** Through use of a variety of materials, three-dimensional fundamentals are investigated for formal and conceptual concerns as they apply to the visual arts. Offered: AWSp.

**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. Offered: AWSpS.

**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 133 Color Theory and Practice (5) VLPA** Examination of color as distinct visual phenomenon with investigations of its practical, theoretical, and illusionary aspects. Various media and materials employed in exercises and compositions that demonstrate properties of color structure, symbolism, and perception and their potential applications to art and design.

**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** Introduction to theory, techniques, and processes of still photography. Projects stress the visual and creative potential of the medium. (Students must provide a camera with lens, shutter, and aperture controls.) Offered: AWSpS.

**ART 150 Three-Dimensional Design Fundamentals (5) VLPA** Introduction to fundamentals of three-dimensional design process. Both practical and conceptual skills explored and demonstrated through assigned project or projects.

**ART 166 Design Foundations (5) VLPA** The rudiments of visual structure and organization in

two-dimensional design. Covers formal principles of composition with an emphasis on design processes and serves as the groundwork for subsequent design courses. Required for application to the Visual Communication Design major. Offered: A.

**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. Offered: AWSp.

**ART 201 Ceramic Art: Handbuilding (5) VLPA** Introduction to handbuilding; kiln firing and glazing processes. Examination of contemporary sculpture in clay.

**ART 202 Ceramic Art: Wheel Throwing (5) VLPA** Introduction to wheel throwing, glazing, and kiln firing processes. Examination of contemporary vessel form in clay.

**ART 206 Photographic Visualizations (5, max. 15) VLPA** Explores photography as a means of visualizing ideas in the context of learning in the field of documentary photography. Includes a series of assignments that consider technical and formal issues, critical thinking, concept development, and experimentation. Offered: S.

**ART 207 Drawing for Design Communication (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. Offered: A.

**ART 208 Survey of Design History (5) VLPA** Comprehensive survey of the ideas, events, and individuals that determined the design of information, objects, culture, and commerce across societies. Examines the social, political and cultural contexts that shape graphic design and the ideologies and relationships of similar movement in art and architecture. Late 19th Century - contemporary issues.

**ART 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: ART 207. Offered: W.

**ART 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: ART 207.

**ART 211 Image Methodology (5) VLPA** Imagery as essential to visual communication. Ways that meaning and representation in images profoundly impact understanding. Focus on expanding image making, ideation skills, developing experimental visual processes to

create meaning, finding engaging and imaginative solutions. Exploration of symbolism, abstraction, metaphors. Prerequisite: ART 207. Offered: Sp.

**ART 212 Human-Centered Design (5) VLPA** Introduces design methodologies including ergonomics, participatory design, user research, ethnography, inclusive design, usability testing. Focuses on design methods leading to more humane technology, providing platforms for innovation, reframing problems in unique ways, explaining complex information, exploring alternatives, visualizing and communicating solutions. Prerequisite: ART 207. Offered: .

**ART 226 Introduction to Structure (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 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. Offered: W.

**ART 241 Intermediate Photography I (5) VLPA** Studio projects examining the expressive and conceptual uses of alternative photographic materials and techniques. Prerequisite: ART 140. Offered: A.

**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 260 Art Works on Paper (5, max. 15) VLPA** Experiments and projects in various techniques of drawing, assemblage, and painting on paper.

**ART 272 Beginning Sculpture — Casting (5) VLPA** *Taylor* Fundamentals of composition in the round and relief with an emphasis on non-metal casting.

**ART 273 Beginning Sculpture — Wood and Metal (5) VLPA** *Lynn* Introduction to sculpture, focusing on the use of wood and metal. Investigations center on a wide variety of methods and approaches, from traditional to technical, to promote visual expression. Class discussions and critiques focus on better understanding of the creative process.

**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. Offered: AWSpS.

**ART 291 Beginning Drawing Topics (5) VLPA** Revolving topics in the study of drawing at the beginning level Prerequisite: ART 190. Not open for credit to students having taken ART 290.

**ART 292 Beginning Painting (5) VLPA** Beginning oil painting. Prerequisite: ART 290.

**ART 293 Beginning Painting Topics (5) VLPA** Revolving topics in the study of painting at the beginning level. Prerequisite: ART 292.

**ART 316 Introduction to Industrial Design (5) VLPA** Product design, working drawings, models, presentation drawings, product analysis, display, marketing. Prerequisite: ART 211; ART 212.

**ART 317 Intermediate ID Studio 1 (5) VLPA** Product design, working drawings, models, presentation drawings, product analysis, display, marketing. Prerequisite: ART 211; ART 212.

**ART 318 Intermediate ID Studio 2 (5) VLPA** Product design, working drawings, models, presentation drawings, product analysis, display, marketing. Prerequisite: ART 211; ART 212.

**ART 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.

**ART 321 Furniture Design (5) VLPA** Design of a furniture piece. Methodologies and construction, types of hardware, special shop techniques, scale modeling and full-scale functional designs.

**ART 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: ART 211; ART 212.

**ART 328 Intermediate Fiber Studio (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. Prerequisite: either ART 226 or ART 227.

**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 Composition — Public Art (5, max. 15) VLPA** Intermediate work in various media and techniques with an emphasis on the creation of public art. .

**ART 333 New Materials and Processes (5, max. 15) VLPA** Exploration of the process through which artists discover and translate ideas, feelings, and concerns into images or objects. Introduction of new ways of thinking, new materials and processes in the investigation of a variety of sculpture methods and approaches.

**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) I&S/VLPA** 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 Intermediate Photography: Color (5) VLPA** Introduction to photographic color theory and processes with emphasis on color printing on type-C darkroom printing. Additional traditional and experimental color materials explored. Offered: Sp.

**ART 340 Digital Imaging I (5) VLPA** Introduction to the creative use of 2-D image manipulation and transformation of photographic and non-photographic imagery on the computer. Variety of programs, procedures, hardware (Macintosh platform), input, and output considered and employed. Previous computer experience not required. Prerequisite: ART 241. Offered: W.

**ART 341 Digital Imaging II (5) VLPA** *Berger* Advanced topics in 2-D imaging, with emphasis on creative exploration of both software tools and possible integration with traditional art media. Prerequisite: ART 340.

**ART 342 Contemporary Issues in Photography (5) VLPA** An in-depth survey of contemporary artists and issues in photography. Prerequisite: ART 241; ART 340. Offered: S.

**ART 343 Advanced Photography (5, max. 15) VLPA** Topics in advanced photography, including: color printing, large-format photography, artificial lighting, and photography image transformation. Prerequisite: ART 340. Offered: AWSp.

**ART 345 Intermediate Printmaking (5, max. 25) VLPA** Development of mature and personal statement within context 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** Approaches to water based printmaking. Introduces serigraphy, collagraph and relief printing through lecture, critique, class discussion, and creative practice.

**ART 353 Intermediate Ceramic Art (5, max. 20) VLPA** Advanced work in forming, decorating, and glazing. Prerequisite: ART 201; ART 202.

**ART 354 History of Body Adornment (5) VLPA** Covers jewelry and other body adornment from Neolithic times to the present, worldwide. Discusses social and cultural relevance of forms, uses, and materials. Emphasis on today's studio craftspeople who make jewelry as a form of aesthetic expression outside the fashion mainstream.

**ART 357 Interdisciplinary Concepts in Metal (5, max. 25) VLPA** *Hu* Variable topics, introducing concepts that cross traditional studio definitions and address interdisciplinary approaches to artistic investigation. Topics include textile/metal processes, printmaking/metal processes, color and metal, chemical, electrical, and mechanical processes in sculpture.

**ART 358 Topics in Metal (5, max. 25) VLPA** *Hu* Variable topics introducing issues and practices in metal smithing and jewelry, and their application to contemporary artmaking. Topics include casting and stone setting, ancient techniques, forming metal, production and business practices.

**ART 360 Topics in Studio Art and Practice (5, max. 20) VLPA** Examines a variety of cutting edge, emerging, and interdisciplinary approached in studio art and practice. Topics vary.

**ART 366 Editorial Visualizations (5) VLPA** Builds on skills developed in ART 206 while expanding the focus on design process through a broad variety of image production techniques. Emphasizes concept development through assignments that address the communication of editorial and/or persuasive content. Prerequisite: ART 211; ART 212. Offered: A.

**ART 367 Communications Programs (5) VLPA** Investigation of strategies and graphic interpretations using typography, images, and diverse applications of design. Emphasis on development of conceptual themes, graphically implemented across an array of communications media. Prerequisite: ART 366, ART 376. Offered: W.

**ART 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: ART 211, ART 212. Offered: Sp.

**ART 370 Drawing for Motion (5) VLPA** *Stevens* Draws connections between freehand work and the visual capacities engaged in conceptualization, modeling, and rendering in computer graphics-based animation. Recommended: drawing experience. Offered: W.

**ART 376 Typography (5) VLPA** Explores how meaning, hierarchy, and legibility are affected by typographic contrast, organization and composition. Prerequisite: ART 211; ART 212.

**ART 377 Marks and Symbols (5) VLPA** Investigation of semiotics in the context of visual communication design through the study of symbolic representation. Students complete a quarter-long project in symbol design that emphasizes research analysis, design process,

translation, and abstraction. Prerequisite: ART 366, ART 376.

**ART 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 a prototype. Prerequisite: ART 211; ART 212. Offered: Sp.

**ART 381 Design Case Studies (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: ART 211; ART 212.

**ART 383 Fundamentals of Interaction Design (5) VLPA** Focus on human-to-product interaction and ways we perceive, understand, and experience the world regards to objects, environments, or on-screen controls/information. Prerequisite: ART 211; ART 212.

**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: ART 293, ART 390. Offered: AWSp.

**ART 393 Intermediate Painting Topics (5) VLPA** Revolving topics in the study of painting at the intermediate level. Prerequisite: ART 292.

**ART 400 Interdisciplinary Visual Arts Senior Studio (5, max. 10) VLPA** *Labitzke* Focuses on the development of exhibition quality artwork and 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 422 Computer Aided Industrial Design (5) VLPA**

**ART 428 Senior Thesis in Fiber Arts (5, max. 20) VLPA** Specialized investigation involving surface design and/or fabric structures. Prerequisite: ART 328; ART 329.

**ART 436 Sculpture Composition (5, max. 15) VLPA** Individual compositions in various media in large scale. Prerequisite: either ART 332, ART 333 or ART 335.

**ART 440 Senior Thesis in Photography (5, max. 20) VLPA** Development of a coherent photographic theme or topic evolved over two consecutive quarters resulting in a finished thesis portfolio. Prerequisite: ART 343. Offered: AWSp.

**ART 445 Advanced Industrial Design (5) VLPA** Market analysis and selected professional

problems in industrial design. Consultation techniques; psychological, sociological, and economic factors involved in designing for consumer acceptance. Prerequisite: ART 318.

**ART 446 Advanced Industrial Design (5) VLPA** Market analysis and selected professional problems in industrial design. Consultation techniques; psychological, sociological, and economic factors involved in designing for consumer acceptance. Prerequisite: ART 211; ART 212.

**ART 447 Advanced Industrial Design (5) VLPA** Market analysis and selected professional problems in industrial design. Consultation techniques; psychological, sociological, and economic factors involved in designing for consumer acceptance. Prerequisite: ART 446.

**ART 450 Individual Projects in Printmaking (5, max. 15) VLPA** Individual media study within the context of group discussion and critique.

**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 460 Advanced Metal Design (5, max. 25) VLPA** Advanced individual projects in metal design. Prerequisite: either ART 357 or ART 358.

**ART 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: ART 368; ART 378. Offered: A.

**ART 467 Environmental Design (5) VLPA** Working with 3-dimensional space, students explore the integration and presentation of graphic images and typographic messages sequenced in a given space. Explores the possibilities and multi-disciplinary character of exhibition planning and design. Prerequisite: ART 466, ART 478. Offered: W.

**ART 478 Information Design (5) VLPA** Exploration of strategies for enhancing and visually presenting complex statistics and data. Various information subjects are select 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: ART 368; ART 378.

**ART 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: ART 466, ART 478. Offered: W.

**ART 480 Senior Project/Presentation (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: ART 467, ART 479. Offered: W.

**ART 481 Design Field Studies (5) VLPA** Students develop an understanding of significant theoretical models related to design through a series of readings, lectures, discussions, and assignments. Prerequisite: ART 211; ART 212.

**ART 482 Capstone Design Project (5, max. 10) VLPA** Two-quarter sequence capstone for students in the design studies program. Develop individual projects that address issues of theory and practice in the design field. Students present their projects in a public forum. Prerequisite: ART 381; ART 481.

**ART 483 Fundamentals of Interface Design (5) VLPA** Highlights the role visual interface designers play in the multi-disciplinary attempt to achieve functionality and usability. Introduces the unique challenges of designing within the realm of a digital and interactive medium to create products that humans find usable, useful, and desirable. Prerequisite: ART 211; ART 212.

**ART 484 Projects in Interaction Design (5) VLPA** Project-based course gives students the opportunity to explore key issues and theories in the field of interaction design. Multi-disciplinary studio requiring collaboration between students from a variety of backgrounds including design, engineering, and computer science. Prerequisite: ART 383; ART 483.

**ART 485 Advanced Ceramic Art (5, max. 20) VLPA** Pottery design and construction, stoneware, clay bodies, glazes. Prerequisite: ART 353.

**ART 488 Senior Source Presentation, Ceramics (5) VLPA** Designed to allow ceramics majors to explore and define the primary sources of inspiration for their interest in art and why they make it.

**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. Offered: AWP.

**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 392. Offered: AWP.

**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. Offered: AWP.

**ART 496 Undergraduate Internship (2-5, max. 10)** Faculty supervised fieldwork in art related activities. Credit/no credit only.

**ART 497 Study Abroad-Studio Individual Projects (3-10, max. 20) VLPA**

**ART 498 Individual Projects-Painting/ Sculpture (2-5, max. 15)**

**ART 499 Individual Projects-Design (2-5, max. 15)**

**ART 512 Graduate Seminar (3, max. 9)**

**ART 513 Contemporary Studio Theories and Problems (3)**

**ART 515 Photography (3-15, max. 60)**

**ART 522 Sculpture (3-15, max. 60)**

**ART 540 Fiber Arts (3-15, max. 60)**

**ART 550 Printmaking (3-15, max. 60)**

**ART 553 Ceramic Art (3-15, max. 60)**

**ART 558 Metal Design (3-15, max. 60)**

**ART 581 Graduate Seminar in Design (5, max. 30)** Critical issues in design. Topics vary. Offered: AWP.

**ART 582 Design Graduate Studio (5, max. 40)** Topics vary.

**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 (3, 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: AWP.

**ART 594 Graduate Seminar in Painting and Drawing (3, max. 18)** 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. 9)** 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 (\*)**

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## 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** The arts of the Byzantine Empire, Islam, and Western Christendom through 1520 AD.

**ART H 203 Survey of Western Art—Modern (5) VLPA** Western art from 1520 to the present.

**ART H 204 Survey of Asian Art (5) I&S/VLPA** Origins and interplay of major movements of South and East Asian art.

**ART H 205 Survey of Tribal Art (5) I&S/VLPA** 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) I&S/VLPA** 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 230 The African-American Tradition: A Transatlantic View of Art and Culture (5) I&S/VLPA** 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 290 History of Architecture (5) I&S/VLPA** Introduction to the history of architecture across a broad range of cultural contexts.

**ART H 250 Rome (5) I&S/VLPA** 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 ITAL 250 and HSTEU 250.

**ART H 300 Ideas in Art (5) VLPA** Selected monuments of art and architecture in the Western tradition, from the Greeks to the twentieth century, studied in relation to the intellectual background of the ages and civilizations that produced them. Slide lectures accompanied by discussion of assigned readings in philosophical, religious, scientific, political, literary, and artistic texts. Offered: jointly with CHID 300.

**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 Southeast Asia are briefly introduced.

**ART H 309 Topics in ART History (5, max. 15) VLPA** Topics vary.

**ART H 311 Chinese Painting (5) I&S/VLPA** An introduction to the role of painting in Chinese cultural history, with attention to regional geography, social structure, gender, traditional philosophies, twentieth-century socialism, and the patterns of Chinese history.

**ART H 312 Chinese Art and Visual Culture (5) I&S/VLPA** Introduction to Chinese art and visual culture from the ancient period to the present day. Examines the visual traits of important monuments of architecture, calligraphy, film, furniture, ceramics, bronze, painting, and sculpture. Emphasizes how different artistic styles are tied to different historical, social, and cultural contexts.

**ART H 313 East Asian Art: Arts in China, Japan, and Korea (5) I&S/VLPA** East Asian art and visual culture introduced through examples of art in China, Japan, and Korea 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 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 321 Arts of Japan (5, max. 15) I&S/VLPA** The spectrum of Japanese art from prehistory to modern times. Examines the interrelationship of the major media for each historical period. Central theme: the appreciation of the varied aesthetics active in the development of Japanese painting, architecture, sculpture, and ceramics.

**ART H 330 Tribal Art and Philosophy (5) I&S/VLPA** Philosophical inquiry and thought in African, Ameri-Indian, and Pacific island societies as expressed through the visual, musical, choreographic, and oral arts. Natural, moral, and ethical ideas as expressed in the arts.

**ART H 331 Native Art of the Pacific Northwest Coast (5) I&S/VLPA** 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) I&S/VLPA** 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** Art and the other material remains of the civilizations in the Aegean from the Neolithic period 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. Offered: jointly with CL AR 340.

**ART H 341 Greek Art and Archaeology (3) VLPA** 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** 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** 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 with slides. Offered: jointly with CL AR 343.

**ART H 350 The City of Cairo (3) I&S/VLPA** Development of Fustat and Cairo, 600-1800, with special emphasis on art and architecture. Economic, social, and geographic influences on the creation of the distinctive Egyptian styles of Islamic art. Offered: jointly with NEAR E 350.

**ART H 351 Early Medieval and Byzantine Art (5) I&S/VLPA** 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) I&S/VLPA** 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 372 Rococo to Romanticism (5) VLPA** Mainstream of European art and architecture from about 1710 to about 1830. Attention is also given to central and eastern Europe, Scandinavia, and the colonial Americas.

**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) I&S/VLPA** 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 (3) VLPA** Major issues in art and architectural criticism: nature of art criticism, aims of the critic, differences between art and architectural criticism. Works by major critics and artists, mostly twentieth century.

**ART H 384 American Art (5) I&S/VLPA** 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** 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 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 Song China: Painting Production and Cultural Encounters (5) VLPA** Examines diverse regional development of painting production and cultural exchange by Song China (960-1279) and its neighbors, Japan, Korea, Khitan/Liao, Jurchen/Jin, Tangut/Xi Xia. Focuses on well-known masterpieces, newly excavated material from tombs and archaeological sites, and little-studied anonymous works preserved in Japan.

**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 430 Chinese Cinema (5) I&S/VLPA** Chinese film, 1930s to the present, studied as a visual art form, set in relation to traditional and modern Chinese arts and literature, modern history, gender, and other social issues. Recommended: some background in Chinese art, history, language, or literature.

**ART H 432 Oceanic Art (3) I&S/VLPA** Arts of Oceania, studied through cultures of Polynesia, Micronesia, Melanesia, and Australia.

**ART H 433 Northern Northwest Coast Native-American Art: Methodologies in Stylistic Analysis (3) 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) I&S/VLPA** 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 traditions. Recommended: some background in Native American art, history, languages, or literature.

**ART H 435 Thematic Studies in Native-American Art (3, max. 9) I&S/VLPA** *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 Arts of Sub-Saharan Africa I (3) I&S/VLPA** Traditional arts of the Western Sudan and the Western Guinea coast with their archaeological antecedents. Recommended: some background in African art, history, languages, or literature.

**ART H 437 Arts of Sub-Saharan Africa II (3) I&S/VLPA** Traditional arts of the Central Guinea coast, Nigeria, Cameroon, and Gabon, from precontact times to the present. Recommended: some background in African art, history, languages, or literature.

**ART H 438 Arts of Sub-Saharan Africa III (3) I&S/VLPA** Arts of Zaire, Angola, the Swahili coast, and southern Africa. Recommended: some background in African art, history, languages, or literature.

**ART H 442 Greek Painting (3) VLPA** 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** 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** 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** 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/ARCH 454.

**ART H 447 The Archaeology of Early Italy (3) VLPA** *Harmon* 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** *Harmon* 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 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) I&S/VLPA** *Karstons* 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 RELIG 442.

**ART H 453 Art, Religion, and Politics in Byzantium, 700-1453 AD (3) I&S/VLPA** *Karstons* 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 RELIG 443.

**ART H 455 Special Studies in Gothic Art and Architecture (3) VLPA** Detailed study of Gothic architecture and its accompanying sculpture and stained glass, with special emphasis on the twelfth and thirteenth centuries in France and England. Offered: jointly with ARCH 455.

**ART H 457 Flemish Art 1585-1700 (3) VLPA** *Goettler* History of art in the southern Netherlands during the so-called Counter-Reformation period. Discusses works by Antwerp's major painters (Rubens, van Dyck, Jordaens); new specializations in the various genres (portraiture, genre, landscape, and still-life painting); and developments of northern Baroque sculpture, architecture, and the decorative arts.

**ART H 458 The Imagery of Heaven, Hell, and Purgatory (1300-1800) (3) VLPA** *Goettler* Interdisciplinary approach to the aspects of devotional and visionary art that links art history with religious studies, literary history, and gender studies. Focuses on the media and pictorial genres created for different social groups of worshippers and viewers, from humble devotional objects to sophisticated artifacts of aesthetic and intellectual delight.

**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 463 Italian Renaissance Sculpture (3) VLPA** From Nicola Pisano to Giambologna. 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: Pontormo, 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 470 English Art: 1500-1800 (3) VLPA** English art, principally painting, and, to a lesser extent, architecture. Emphasis on patronage, on the conditions that produced the decided peculiarities of English art, and on the final triumph of the native tradition. Recommended: some background in English history.

**ART H 471 Rome in the Seventeenth Century (3) 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 476 French Art: Eighteenth Century (3) VLPA** Painting, sculpture, and prints; emphasis on the successive phases of Rococo style and iconography and the emergence of Neoclassicism.

**ART H 481 Romanticism (3) VLPA** Romantic tendencies of the late eighteenth and early nineteenth centuries, with emphasis on stylistic and iconographic study of painting in Spain, England, Germany, France, and the United States to about 1830. Recommended: some background in the art or history of the period.

**ART H 482 Realism and Impressionism (3) VLPA** Art and the world, 1830-80: high Romanticism through Realism and Impressionism, with emphasis on painting in France. Recommended: some background in the art or history of the period.

**ART H 483 Post-Impressionism to 1918 (3) 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 (3, max. 9) VLPA** Approach to art of the nineteenth and twentieth centuries through particular themes, genres, contexts, or other issues. 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) VLPA** 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 488.

**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 World Wide 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) I&S/VLPA** Spans the architectural history of Paris, from its Gallic, pre-roman origins in the 2nd century BCE through the work of 21st 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 EURO 496.

**ART H 495 Italian Fascism: Architecture and Power (5) I&S/VLPA** *Clausen, Sbragia* 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; A.

**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 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 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 Indian Art (5, max. 15)** Problems in North American Indian visual arts. Content varies.

**ART H 541 Seminar in Greek and Roman Art (5)** 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 529.

**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.

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## Asian Languages and Literature

### Asian Languages and Literature

**ASIAN 201 Literature and Culture of China: Ancient and Classical (5) I&S/VLPA** Introduction to ancient and classical Chinese literature in its cultural context. Texts in English translation. Offered: alternate years; A.

**ASIAN 202 Literature and Culture of Japan: Traditional Japan (5) I&S/VLPA** Introduction to traditional Japanese literature in its cultural context. Texts in English translation. Offered: alternate years; W.

**ASIAN 203 Literature and Culture of Ancient and Classical India (5) I&S/VLPA** Introduction to ancient and classical Indian literature in its cultural context. Texts in English translation. Offered: alternate years; Sp.

**ASIAN 204 Literature and Culture of China from Tradition to Modernity (5) I&S/VLPA** Introduction to modern Chinese literature in its cultural context. Texts in English translation. Offered: alternate years; A.

**ASIAN 205 Literature and Culture of Japan from Tradition to Modernity (5) I&S/VLPA**

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) I&S/VLPA**

*Pauwels, Shapiro* Introduction to medieval and modern South Asian literature in its cultural context. Texts in English translation. Offered: alternate years; Sp.

**ASIAN 207 Special Topics in Literature and Culture of Asia (5) I&S/VLPA**

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. Offered: AWSp.

**ASIAN 211 Languages and Cultures of China (5) I&S/VLPA**

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. Prerequisite: ASIAN 401. Offered: alternate years.

**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. Prerequisite: either RELIG 202, or RELIG 354. Offered: W.

**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. Offered: alternate years.

**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 SISSA 494.

**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 Assistant Training Workshop (3) A.**

*Ohta* Introduction to issues and methods of teaching Asian languages in American college classrooms. Recommended for all new teaching assistants. Prerequisite: concurrent registration in ASIAN 518 and permission of instructor. Offered: A.

**ASIAN 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/SLAV 518.

**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 RELIG 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: AWSpS.

**ASIAN 700 Master's Thesis (\*)**

Offered: AWSpS.

**ASIAN 800 Doctoral Dissertation (\*)**

Offered: AWSpS.

## 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. Offered: W.

**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. 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. Prerequisite: BENG 312. Offered: Sp.

**BENG 321 Intermediate Bengali (5) VLPA**

*Salomon* 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. Prerequisite: BENG 313. Offered: A.

**BENG 322 Intermediate Bengali (5) VLPA**

*Salomon* 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. Prerequisite: BENG 321. Offered: W.

**BENG 323 Intermediate Bengali (5) VLPA**

*Salomon* 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. Prerequisite: BENG 322. Offered: Sp.

**BENG 401 Advanced Bengali (5) VLPA**

*Salomon* 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. Prerequisite: BENG 323. Offered: A.

**BENG 402 Advanced Bengali (5) VLPA**

*Salomon* 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. Prerequisite: BENG 401. Offered: W.

**BENG 403 Advanced Bengali (5) VLPA**

*Salomon* 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. Prerequisite: BENG 402. Offered: Sp.

**BENG 499 Independent Study (3-5, max. 15)**

For Bengali language and literature majors. 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. 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. 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. 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 and speaking Mandarin. Focuses on reading comprehension and writing characters in context. Offered: A.

**CHIN 112 First-Year Chinese for Heritage Learners (5)** Intended for students who have some formal or home training in listening and speaking Mandarin. Focuses on reading comprehension and writing characters in context. 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 and speaking Mandarin. Focuses on reading comprehension and writing characters in context. Prerequisite: minimum grade of 2.0 in CHIN 112. Offered: Sp.

**CHIN 121 Accelerated Chinese (10)** Covers same material as 111 and 112. In conjunction with 222 and 223, allows completion of two years' language study in one academic year. Cannot be taken for credit in combination with 111 or 112. Offered: A.

**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, 102, or 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 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** Continuation of CHIN 103. Advanced grammar and vocabulary expansion stressed. Aural and oral practice and structural drills continued. Cannot be taken for

credit in combination with CHIN 234. 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. 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. Prerequisite: minimum grade of 2.0 in CHIN 202. Offered: Sp.

**CHIN 211 Second-Year Chinese for Heritage Learners (5) VLPA** Continuation of 111, 112, 113. Stresses advanced grammar and vocabulary expansion. Continues Aural and oral practice. Cannot be taken for credit in combination with 234. Prerequisite: 2.0 in either CHIN 113 or CHIN 138. Offered: A.

**CHIN 212 Second-Year Chinese for Heritage Learners (5) VLPA** Continuation of CHIN 211. Stresses advanced grammar and vocabulary expansion. Cannot be taken for credit in combination with CHIN 234. Prerequisite: 2.0 in CHIN 211. Offered: W.

**CHIN 213 Second-Year Chinese for Heritage Learners (5) VLPA** Continuation of CHIN 212. 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. Prerequisite: 2.0 in CHIN 212. Offered: Sp.

**CHIN 222 Accelerated Chinese (10) VLPA** Covers same material as 113 and 211. In conjunction with 121 and 223, allows completion of two years' language study in one academic year. Cannot be taken for credit in combination with 113 or 211. Prerequisite: CHIN 121. Offered: W.

**CHIN 223 Accelerated Chinese (10) VLPA** Covers same material as 212 and 213. In conjunction with 121 and 222, allows completion of two years' language study in one academic year. Cannot be taken for credit in combination with 212 or 213. Prerequisite: CHIN 222. 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 201, 2202, or 203 taken. 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. Prerequisite: 2.0 in CHIN 203.

**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. Prerequisite: 2.0 in CHIN 301.

**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. Prerequisite: 2.0 in CHIN 302.

**CHIN 311 Third-Year Chinese for Heritage Learners (5) VLPA** Designed for students at the advanced third-year level who wish to improve their speaking, reading, writing, and comprehension skills while increasing knowledge of the culture and the society in which the Chinese language is spoken. Focuses on Chinese as spoken in day-to-day life. Offered: A.

**CHIN 312 Third-Year Chinese for Heritage Learners (5) VLPA** Designed for students at the advanced third-year level who wish to improve their speaking, reading, writing, and comprehension skills while increasing knowledge of the culture and the society in which the Chinese language is spoken. Focuses on Chinese as spoken in day-to-day life. Offered: W.

**CHIN 313 Third-Year Chinese for Heritage Learners (5) VLPA** Designed for students at the advanced third-year level who wish to improve their speaking, reading, writing, and comprehension skills while increasing knowledge of the culture and the society in which the Chinese language is spoken. Focuses on Chinese as spoken in day-to-day life. 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 or CHIN 134; recommended: either CHIN 201, CHIN 211 or CHIN 234. Offered: W.

**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. Offered: W.

**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. Offered: Sp.

**CHIN 380 Premodern Chinese Narrative in Translation (5) VLPA** Premodern Chinese fiction in English translation. Historical and cultural contexts of narrative traditions. Emphasis on the Ming and Ch'ing periods; works and topics vary from year to year. Offered: Sp.

**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) I&S/VLPA** 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. 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. 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. Prerequisite: minimum grade of 2.0 in CHIN 412. Offered: Sp.

**CHIN 421 Business Chinese I (5) VLPA** *Chang* Focus on international trade issues of Greater China in the contemporary world. Subjects include international business activities such as trade, banking, marketing, finance, and investment. Prerequisite: CHIN 313. Offered: A.

**CHIN 422 Business Chinese II (5) VLPA** *Chang* Focus on international trade issues of Greater China in the contemporary world. Subjects include international business activities such as trade, banking, marketing, finance, and investment. Prerequisite: CHIN 421. Offered: W.

**CHIN 423 Business Chinese III (5) VLPA** *Chang* Focus on international trade issues of Greater China in the contemporary world. Subjects include international business activities such as trade, banking, marketing, finance, and investment. Prerequisite: CHIN 422. 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. Offered: W.

**CHIN 443 Structure of Chinese (5) VLPA** *Yue-Hashimoto* Outline of the major grammatical structures of Chinese. Focus on learning and teaching problems. Prerequisite: either CHIN 313 or CHIN 334. Offered: W.

**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. To be taken in sequence. 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. To be taken in sequence. Prerequisite: 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. To be taken in sequence. Prerequisite: 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 T'ang 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. Offered: A.

**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. Offered: W.

**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 (3) Handel** Sources and methods in the study of Chinese phonology; modern standard Chinese. Prerequisite: ASIAN 401. Offered: A.

**CHIN 532 Studies in Chinese Phonology (3) Handel** Sources and methods in the study of Chinese phonology; medieval period. Offered: W.

**CHIN 533 Studies in Chinese Phonology (3) Handel** Sources and methods in the study of Chinese phonology; advanced topics in Chinese historical phonology. Offered: Sp.

**CHIN 540 Seminar on Chinese Linguistics (3, max. 9) Handel, Yue-Hashimoto** Advanced topics in Chinese linguistics. Subject emphasis varies from year to year. Offered: Sp.

**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 (3) Handel** Introduction to Chinese historical phonology; emphasis on the Middle Chinese period. Prerequisite: ASIAN 401 and permission of instructor.

**CHIN 544 Chinese Dialectology (3, max. 9) 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. Offered: A.

**CHIN 552 Second-Year Classical Chinese (5) Knechtges** Problems of grammar, rhetoric, and textual criticism. Later literary texts. Offered: W.

**CHIN 553 Second-Year Classical Chinese (5) Boltz** Continuation of 551, 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. Offered: alternate years.

**CHIN 555 Readings in Chinese Prose (5) Knechtges** Selected readings in parallel prose (pian wen). Offered: alternate years.

**CHIN 556 Readings in Chinese Prose (5) Knechtges** Selected readings in guwen prose of the T'ang and Sung periods. Offered: alternate years.

**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. Offered: alternate years; W.

**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. Offered: alternate years.

**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. Offered: alternate years; A.

**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 Ch'in. Prerequisite: permission of instructor. Offered: W.

**CHIN 562 Studies in Chinese Literature (5)** *Knechtges* Poetry of the T'ang and Sung periods. Prerequisite: permission of instructor. Offered: Sp.

**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. Offered: alternate years; W.

**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. Offered: alternate years; Sp.

**CHIN 575 Studies in Chinese Drama (5, max. 15)** Readings and discussion of Chinese drama. Subject emphasis varies. Prerequisite: permission of instructor. Offered: alternate years.

**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. Offered: A.

**CHIN 578 Advanced Readings in Classical Chinese (4)** Study of texts from all periods. Prerequisite: CHIN 553 or permission of instructor. Offered: W.

**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 Ch'ing fiction. Introduction to various critical approaches to the study of Chinese narrative. Offered: A.

**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. Offered: W.

**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. Offered: Sp.

**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 and CHIN 557. Offered: alternate years.

**CHIN 591 Studies in the History of Chinese Thought (5)** *Knechtges* Directed readings in selected traditional philosophical texts. Han through T'ang. 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 Ch'ing. Prerequisite: permission of instructor.

## Hindi

**HINDI 311 Elementary Hindi (5)** Modern literary Hindi. Reading, writing, and conversation. Introduction to Devanagari script. Offered: A.

**HINDI 312 Elementary Hindi (5)** Modern literary Hindi. Reading, writing, and conversation. Introduction to Devanagari script. Prerequisite: HINDI 311. Offered: W.

**HINDI 313 Elementary Hindi (5)** Modern literary Hindi. Reading, writing, and conversation. Introduction to Devanagari script. 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. Prerequisite: HINDI 313. Offered: AS.

**HINDI 322 Intermediate Hindi (5) VLPA** Systematic expansion of vocabulary and grammar. Intermediate-level prose and poetry readings. Oral drills. Prerequisite: HINDI 321. Offered: WS.

**HINDI 323 Intermediate Hindi (5) VLPA** Systematic expansion of vocabulary and grammar. Intermediate-level prose and poetry readings. Oral drills. Prerequisite: HINDI 322. Offered: SpS.

**HINDI 401 Advanced Hindi (5) VLPA** Rapid reading of contemporary Hindi prose, poetry, and drama. Advanced conversation and composition. Offered: A.

**HINDI 402 Advanced Hindi (5) VLPA** Rapid reading of contemporary Hindi prose, poetry, and drama. Advanced conversation and composition. Offered: W.

**HINDI 403 Advanced Hindi (5) VLPA** Rapid reading of contemporary Hindi prose, poetry, and drama. Advanced conversation and composition. 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. Offered: alternate years; W.

**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. Offered: Sp.

**HINDI 451 Advanced Hindi Readings (3, max. 9) VLPA** Readings in Modern Standard Hindi prose texts drawn from diverse disciplines. Prerequisite: HINDI 403. Offered: W.

**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. Offered: A.

**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. Offered: W.

**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 400 Practicum in South Asian Languages (3, max. 18) VLPA** Introduction to any one of various South Asian languages (e.g., Kannada, Nepali, Punjabi, Sinhala, Marathi, Telugu, Urdu) not taught on a regular basis. Students may receive credit for more than one such language.

**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 403 Introduction to Written Urdu (3) VLPA** Modern written Urdu for students with at least elementary knowledge of Hindi. Prerequisite: HINDI 313.

**INDN 404 Readings in Urdu Literature (3, max. 18) VLPA** Readings in Urdu prose and poetry. Urdu prose composition. Prerequisite: INDN 403.

**INDN 410 Prakrit (3, max. 6) VLPA** *Salomon* Introduction to the various Prakrit or Middle Indo-Aryan dialects (Gandhari, Magadhi, Mahāśāstrī, Sauraseni) from literary, canonical, and inscriptional sources. Prerequisite: SNKRT 303.

**INDN 411 First-Year Intensive Bengali (15)** *Salomon* Study of modern Standard Bengali, including reading, writing, and conversation. Introduction to Bengali script. If Bengali is the student's language of admission, only 10 credits count towards graduation. Offered: S.

**INDN 499 Undergraduate Research (3-5, max. 15)** Primarily for South Asian language and literature majors. Offered: AWSp.

**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. Offered: Sp.

## Indonesian

**INDON 111 Elementary Indonesian (5)** Introduction to modern standard Indonesian-Malay. Emphasis on grammar and conversational drills. Practice with basic phonological, morphological, and syntactic structures. Offered: A.

**INDON 112 Elementary Indonesian (5)** Introduction to modern standard Indonesian-Malay. Emphasis on grammar and conversational drills. Practice with basic phonological, morphological, and syntactic structures. Prerequisite: INDON 111. Offered: W.

**INDON 113 Elementary Indonesian (5)** Introduction to modern standard Indonesian-Malay. Emphasis on grammar and conversational drills. Practice with basic phonological, morphological, and syntactic structures. Prerequisite: INDON 112. Offered: Sp.

**INDON 211 Intermediate Indonesian (5) VLPA** Continuation of 111, 112, 113. Review/expansion of fundamental grammatical patterns: morphological and syntactic structures, development of conversational skills, reading some literary and cultural materials, writing compositions. Prerequisite: INDON 113. Offered: A.

**INDON 212 Intermediate Indonesian (5) VLPA** Continuation of 111, 112, 113. Review/expansion of fundamental grammatical patterns: morphological and syntactic structures, development of conversational skills, reading some literary and cultural materials, writing compositions. Prerequisite: INDON 211. Offered: W.

**INDON 213 Intermediate Indonesian (5) VLPA** Continuation of 111, 112, 113. Review/expansion of fundamental grammatical patterns: morphological and syntactic structures, development of conversational skills, reading some literary and cultural materials, writing compositions. Prerequisite: INDON 212. Offered: Sp.

**INDON 311 Advanced Indonesian (5) VLPA** Continuation of 211, 212, 213. 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. Prerequisite: INDON 211. Offered: A.

**INDON 312 Advanced Indonesian (5) VLPA** Continuation of 211, 212, 213. 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. Prerequisite: INDON 311. Offered: W.

**INDON 313 Advanced Indonesian (5) VLPA** Continuation of 211, 212, 213. 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. Prerequisite: INDON 312. Offered: Sp.

**INDON 499 Undergraduate Research (3-5, max. 15)** Primarily for Southeast Asian studies majors.

## Japanese

**JAPAN 111 First-Year Japanese (5)** Elementary speaking, listening, reading, and writing skills in modern Japanese. 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. Prerequisite: either JAPAN 111 or score of 6-20 on JP 100A placement test. Offered: AW.

**JAPAN 113 First-Year Japanese (5)** Elementary speaking, listening, reading, and writing skills in modern Japanese. Prerequisite: either JAPAN 112 or score of 21-40 on JP 100A placement test. Offered: AWSp.

**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 111, 112, 113. Satisfies requirement for entry to 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. 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. 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. Prerequisite: JAPAN 212. Offered: Sp.

**JAPAN 234 Second-Year Intensive Japanese (15) VLPA** Equivalent of 211, 212, 213. Satisfies requirements for entry to 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. Prerequisite: a minimum grade of 2.0 in either JAPAN 213 or JAPAN 234. Offered: AS.

**JAPAN 312 Third-Year Japanese (5) VLPA** Intermediate-level skills in both spoken and written languages. Some introduction to unedited materials. Prerequisite: JAPAN 311. Offered: WS.

**JAPAN 313 Third-Year Japanese (5) VLPA** Intermediate-level skills in both spoken and written languages. Some introduction to unedited materials. Prerequisite: JAPAN 312. Offered: Sp.

**JAPAN 321 Japanese Literature I (5) VLPA** *Atkins* Introduction to the literature and culture of Japan before 1600. 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 major works of 19th-early 20th century Japan in English translation, with readings of representative fiction, poetry, and criticism, plus films of selected works. 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 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: JAPAN 311 which may be taken concurrently.

**JAPAN 343 Japanese Language in Society (5) I&S/VLPA** *A. Ohta* Survey of issues in Japanese language use. Areas covered include dialectal variation, language attitudes, gender differences, and pragmatics. Prerequisite: JAPAN 311 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 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) I&S/ VLPA** Reading, class discussion, oral presentations, and composition on topics related to the Japanese language and present-day Japan. Conducted in Japanese. Prerequisite: 2.5 in JAPAN 313, may not be repeated.

**JAPAN 422 Fourth-Year Japanese II (5) I&S/ VLPA** Reading, class discussion, oral presentations, and composition on topics related to the Japanese language and present-day Japan. Conducted in Japanese. Prerequisite: minimum grade of 2.5 in JAPAN 313, may not be repeated.

**JAPAN 423 Fourth-Year Japanese II (5) I&S/ VLPA** Reading, class discussion, oral presentations, and composition on topics related to the Japanese language and present-day Japan. Conducted in Japanese. Prerequisite: minimum grade of 2.5 in JAPAN 313, may not be repeated.

**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: JAPAN 313 with a grade of 2.5 or higher. Offered: AWSp.

**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: JAPAN 313 with a grade of 2.5 or higher. Offered: AWSp.

**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: 2.5 in JAPAN 313; 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.

**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.

**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: JAPAN 313 which may be taken concurrently; JAPAN 342; recommended: introductory linguistics course.

**JAPAN 443 Topics in Japanese Sociolinguistics (5) I&S/VLPA** *A. Ohta* Methodology and theory of sociolinguistic analysis. Reading of research literature and training in analysis of Japanese language data. Prerequisite: JAPAN 313 which may be taken concurrently; JAPAN 343.

**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 JAPAN 313.

**JAPAN 471 Introduction to Classical Japanese (5) VLPA** *Atkins* Introduction to classical Japanese writing system, grammar, and vocabulary. Prerequisite: 2.5 in JAPAN 313; 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 423; recommended: at least one semester of study abroad in Japan (one year desired), or advanced Japanese skills through heritage. Offered: Sp.

**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: JAPAN 472; or JAPAN 471 and graduate standing.

**JAPAN 531 Advanced Readings in Modern Japanese Literature (5, max. 15)** Rapid reading of modern literary and critical texts. Prerequisite: JAPAN 433 or equivalent.

**JAPAN 532 Advanced Readings in Modern Japanese Literature (5, max. 15)** Rapid reading of modern literary and critical texts. Prerequisite: JAPAN 433 or equivalent.

**JAPAN 533 Advanced Readings in Modern Japanese Literature (5, max. 15)** Rapid reading of modern literary and critical texts. Prerequisite: JAPAN 433 or equivalent.

**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: JAPAN 472 or equivalent and permission of instructor.

**JAPAN 571 Advanced Readings in Classical Japanese Literature (5)** Continued readings in classical literary texts. Prerequisite: JAPAN 473 or permission of instructor.

**JAPAN 572 Advanced Readings in Classical Japanese Literature (5)** Continued readings in classical literary texts. Prerequisite: JAPAN 473 or permission of instructor.

**JAPAN 573 Advanced Readings in Classical Japanese Literature (5)** Continued readings in classical literary texts. Prerequisite: JAPAN 473 or 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. Offered: A.

**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. Offered: Sp.

## Korean

**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 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 First-Year Korean for Novice Learners (5)** Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with no formal or informal background in the language. Offered: A.

**KOREAN 302 First-Year Korean for Novice Learners (5)** Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with no formal or informal background in the language. Prerequisite: KOREAN 301. Offered: W.

**KOREAN 303 First-Year Korean for Novice Learners (5)** Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with no formal or informal



background in the language. Prerequisite: KOREAN 302. Offered: Sp.

**KOREAN 304 Spoken Korean (10) VLP** 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 303. Offered: irregularly.

**KOREAN 305 First-Year Korean for Heritage Learners (5)** Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with formal or informal background in the language or to students with Korean heritage. Prerequisite: score of 30-60 on KR100A placement test. Offered: A.

**KOREAN 306 First-Year Korean for Heritage Learners (5)** Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with formal or informal background in the language or to students with Korean heritage. Prerequisite: KOREAN 305. Offered: W.

**KOREAN 307 First-Year Korean for Heritage Learners (5)** Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with formal or informal background in the language or to students with Korean heritage. Prerequisite: KOREAN 306. Offered: Sp.

**KOREAN 311 Second-Year Korean for Novice Learners (5) VLP** 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. Prerequisite: KOREAN 303 or placement test. Offered: A.

**KOREAN 312 Second-Year Korean for Novice Learners (5) VLP** 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. Prerequisite: KOREAN 311 or placement test. Offered: W.

**KOREAN 313 Second-Year Korean for Novice Learners (5) VLP** 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. Prerequisite: KOREAN 312 or placement test. Offered: Sp.

**KOREAN 315 Second-Year Korean for Heritage Learners (5) VLP** 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. Prerequisite: either score of 0-41 on KR200A placement test or KOREAN 307. Offered: A.

**KOREAN 316 Second-Year Korean for Heritage Learners (5) VLP** 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. Prerequisite: KOREAN 315. Offered: W.

**KOREAN 317 Second-Year Korean for Heritage Learners (5) VLP** 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. Prerequisite: KOREAN 316. Offered: Sp.

**KOREAN 345 Foreign Study: Advanced Korean (1-15, max. 20) VLP** For participants in study abroad programs who complete advanced language courses in approved programs in Korea. Evaluation by department/faculty required.

**KOREAN 411 Readings in Contemporary Korean (5) VLP** Completes the introduction to Korean writing in mixed script of 311, 312, 313. Prerequisite: either minimum score of 42 on KR200A placement test or KOREAN 313. Offered: A.

**KOREAN 412 Readings in Contemporary Korean (5) VLP** Provide 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) VLP** Provide 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 Social Science Literature in Korean (3) VLP** Readings in selections from contemporary Korean publications in social science topics. Prerequisite: KOREAN 413. Offered: A.

**KOREAN 416 Readings in Korean Literature (3) VLP** Reading of various literary texts which may include pre-modern Korean narrative and poetry as well as modern literature and drama. Prerequisite: KOREAN 413. Offered: W.

**KOREAN 417 Readings in Korean Journals (3) VLP** Selections from Korean newspapers, news magazines, and other journals. Prerequisite: KOREAN 413. Offered: Sp.

**KOREAN 445 Foreign Study: Korean Literature (1-15, max. 20) VLP** For participants in study abroad programs who complete course work Korean literature.

**KOREAN 499 Undergraduate Independent Study (3-5, max. 15)** For students who have completed 417 or equivalent. Offered: AWSpS.

**KOREAN 501 Seminar in Korean Linguistics (3-5)** Topics in Korean linguistics. Prerequisite: background in linguistics and permission of instructor.

**KOREAN 502 Seminar in Korean Linguistics (3-5)** Topics in Korean linguistics. Prerequisite: background in linguistics and permission of instructor.

**KOREAN 503 Seminar in Korean Linguistics (3-5)** Topics in Korean linguistics. Prerequisite: background in linguistics and permission of instructor.

**KOREAN 531 Advanced Readings in Modern Korean Literature (5)** Literature and literary criticism in Korean. Prerequisite: fourth-year Korean or equivalent. Offered: alternate years.

**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. Offered: alternate years.

## 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. 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. 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. Prerequisite: SNKRT 302. Offered: Sp.

**SNKRT 401 Intermediate Sanskrit (5) VLP Cox, Salomon** Further study of classical grammar; introduction to classical literature and Vedic language and texts. Prerequisite: SNKRT 303. Offered: A.

**SNKRT 402 Intermediate Sanskrit (5) VLP Cox, Salomon** Further study of classical grammar; introduction to classical literature and Vedic language and texts. Offered: W.

**SNKRT 403 Intermediate Sanskrit (5) VLP Cox, Salomon** Further study of classical grammar; introduction to classical literature and Vedic language and texts. Offered: Sp.

**SNKRT 411 Advanced Sanskrit (3, max. 9) VLP Cox, Salomon** Reading and analysis of classical texts, chosen according to students' interests. Prerequisite: SNKRT 403. Offered: A.

**SNKRT 412 Advanced Sanskrit (3, max. 9) VLP Cox, Salomon** Reading and analysis of classical texts, chosen according to students' interests. Offered: W.

**SNKRT 413 Advanced Sanskrit (3, max. 9) VLP Cox, Salomon** Reading and analysis of classical texts, chosen according to students' interests. Offered: Sp.

**SNKRT 491 Vedic Studies (3) VLP Salomon** Readings of selected Vedic texts, with linguistic, religious, and historical analyses. Includes background material on Vedic religion, literature, and culture. Prerequisite: SNKRT 303.

**SNKRT 492 Vedic Studies (3) VLP Salomon** Readings of selected Vedic texts, with linguistic, religious, and historical analyses. Includes background material on Vedic religion, literature, and culture.

**SNKRT 493 Vedic Studies (3) VLP Salomon** Readings of selected Vedic texts, with linguistic, religious, and historical analyses. Includes background material on Vedic religion, literature, and culture.

**SNKRT 494 Readings in Religious Classics of India (5) VLP** Reading and analysis of the older religious brahmanical texts. Prerequisite: SNKRT 402.

**SNKRT 495 Studies in Indian Thought (3, max. 9) VLP 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: AWSp.

**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, Potter, Salomon* Intensive reading and analysis of Hindu or Buddhist philosophical texts. Prerequisite: SNKRT 494 or permission of instructor. Offered: AWSp.

**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 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 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 301 Beginning 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. Offered: A.

**THAI 302 Beginning 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. Prerequisite: THAI 301. Offered: W.

**THAI 303 Beginning 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. Prerequisite: THAI 302. 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 401 Intermediate Thai (5) VLPA** *Kesavatana-Dohrs* Continuation of 303. Expands students' abilities in the four language skills of listening, speaking, reading, and writing. Prerequisite: THAI 303. Offered: A.

**THAI 402 Intermediate Thai (5) VLPA** *Kesavatana-Dohrs* Expands students' abilities in the four language skills of listening, speaking, reading, and writing. Prerequisite: THAI 401. Offered: W.

**THAI 403 Intermediate Thai (5) VLPA** *Kesavatana-Dohrs* Expands students' abilities in the four language skills of listening, speaking, reading, and writing. Prerequisite: THAI 402. Offered: Sp.

**THAI 410 Accelerated Reading and Writing (5) VLPA** *Kesavatana-Dohrs* Accelerated Thai for fluent speakers who do not read or write Thai. Emphasis on reading and writing through Intermediate Thai. Credit/no credit only.

**THAI 411 Readings in Thai (3-5, max. 15) VLPA** *Kesavatana-Dohrs* Advanced reading and translation of selections from various Thai authors, with occasional practice in conversation and composition. Prerequisite: THAI 403. Offered: A.

**THAI 412 Readings in Thai (3-5, max. 15) VLPA** *Kesavatana-Dohrs* Advanced reading and translation of selections from various Thai authors, with occasional practice in conversation and composition. Prerequisite: THAI 411. Offered: W.

**THAI 413 Readings in Thai (3-5, max. 15) VLPA** *Kesavatana-Dohrs* Advanced reading and translation of selections from various Thai authors, with occasional practice in conversation and composition. Prerequisite: THAI 412. Offered: Sp.

**THAI 499 Undergraduate Research (3-5, max. 25)** For Thai language and literature majors. Offered: AWSp.

## Urdu

**URDU 311 Elementary Urdu (5)** Modern literary Urdu. Reading, writing, conversation, and listening comprehension. Introduction to Perso-Arabic script.

**URDU 312 Elementary Urdu (5)** Modern literary Urdu. Reading, writing, conversation, and listening comprehension. Introduction to Perso-Arabic script. Prerequisite: URDU 311.

**URDU 313 Elementary Urdu (5)** Modern literary Urdu. Reading, writing, conversation, and listening comprehension. Introduction to Perso-Arabic script. Prerequisite: URDU 312.

**URDU 321 Intermediate Urdu (5)** Systematic expansion of vocabulary and grammar. Intermediate level prose and poetry readings. Expansion of skills in reading, writing, speaking, and listening comprehension. Prerequisite: URDU 313.

**URDU 322 Intermediate Urdu (5)** Systematic expansion of vocabulary and grammar.

Intermediate level prose and poetry readings. Expansion of skills in reading, writing, speaking, and listening comprehension. Prerequisite: URDU 321.

**URDU 323 Intermediate Urdu (5)** Systematic expansion of vocabulary and grammar. Intermediate level prose and poetry readings. Expansion of skills in reading, writing, speaking, and listening comprehension. Prerequisite: URDU 322.

**URDU 401 Advanced Urdu (5)** Rapid reading of contemporary Urdu prose and poetry. Advanced conversation and composition. Prerequisite: URDU 323.

**URDU 402 Advanced Urdu (5)** Rapid reading of contemporary Urdu prose and poetry. Advanced conversation and composition. Prerequisite: URDU 401.

**URDU 403 Advanced Urdu (5)** Rapid reading of contemporary Urdu prose and poetry. Advanced conversation and composition. Prerequisite: URDU 402.

**URDU 499 Independent Study (3-5, max. 15)** For Urdu language and literature majors. Offered: AWSpS.

## Vietnamese

**VIET 111 First-Year 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. Offered: A.

**VIET 112 First-Year 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. Prerequisite: VIET 111. Offered: W.

**VIET 113 First-Year 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. 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 Second-Year Vietnamese (5) VLPA** *Nguyen* Continuation of 113. Development of conversation skills, reading for comprehension, and writing short compositions. Prerequisite: VIET 113. Offered: A.

**VIET 212 Second-Year Vietnamese (5) VLPA** *Nguyen* Development of conversation skills, reading for comprehension, and writing short compositions. Prerequisite: VIET 211. Offered: W.

**VIET 213 Second-Year Vietnamese (5) VLPA** *Nguyen* Development of conversation skills, reading for comprehension, and writing short compositions. Prerequisite: VIET 212. Offered: Sp.

**VIET 214 Accelerated Vietnamese Reading and Writing (5) VLPA** *Nguyen* Accelerated

course for fluent speakers who do not read or write Vietnamese. Emphasis on reading and writing through second-year level. Cannot be taken for credit in combination with any formal Vietnamese course. Credit/no credit only. Offered: AWP.

**VIET 245 Foreign Study: Intermediate Vietnamese (1-15, max. 20) VLP** For participants in study abroad programs who complete intermediate language courses in approved programs in Vietnam. Evaluation by department faculty required.

**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: AWP.

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## Astrobiology

**ASTBIO 115 Astrobiology: Life in the Universe (5) NW** 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/BIOL/ESS/OCEAN 115.

**ASTBIO 501 Astrobiology Disciplines (4)** Review of research and subject matter relevant to astrobiology from within the disciplines of biology, astronomy, oceanography, atmospheric science, chemistry, planetary science, and geology.

**ASTBIO 502 Astrobiology Topics (4)** Investigation in detail of research topics of current interest.

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## Astronomy

**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 102 or 201; not open to upper-division students majoring in physical sciences or engineering.

**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 ASTRO 101 or ASTRO 301.

**ASTR 115 Astrobiology: Life in the Universe (5) NW** 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 ASTBIO/ESS/OCEAN 115/BIOL 114.

**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.

**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) NW** Introduction to astronomical computing and research methods for students interested in Astronomy and in the Pre-Major 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. Conceptual 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.

**ASTR 212 Life in the Universe (5) NW, QSR** Nature and origin of cosmic large numbers. Steps to the formation of life, formation of planets (stars, galaxies, a long-lived universe), the anthropic principle. Searches for other planetary systems and extraterrestrial life.

**ASTR 270 Public Outreach in Astronomy (3) NW/VLP** Emphasis is on giving effective scientific presentations, developing and giving educational programs to school-age groups, and communicating your 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.

**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: PHYS 121 which may be taken concurrently. Offered: W.

**ASTR 301 Astronomy for Scientists and Engineers (3) NW** Introduction to astronomy for students in the physical sciences or engineering. Topics similar to 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 HIST 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; PHYS 225 which may be taken concurrently. : 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. : Sp.

**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.

**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) NW, QSR** *Agol, 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. Offered: W.

**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 323, which may be taken concurrently; recommended: ASTR 300 if student does not have a strong UNIX background.. Offered: Sp.

**ASTR 481 Introduction to Astronomical Observation (5) NW** Theory and practice of obtaining optical data at a telescope. Prepara-

tion, 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 491, PHYS 492, or PHYS 493, 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 499 Undergraduate Research (\*, max. 15)** Special astronomical problems and observational projects, by arrangement with instructor.

**ASTR 500 Practical Methods for Teaching Astronomy (1-3)** 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 556 Planetary Surfaces (3)** Comparison of surface processes and conditions on Mercury, Venus, Earth, moon, Mars, asteroids, and satellites of the great planets. Emphasis on understanding how and why planetary surfaces differ from one another and the implied course of solar-system evolution. Analysis of data from Earth-based telescopes and manned and unmanned space missions.

**ASTR 557 Origin of the Solar System (3)** Nebular and nonnebular 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. Credit/no credit only. Prerequisite: permission of department.

**ASTR 576 Astronomy Colloquium (1, max. 20)** Current research topics in astronomy and astrophysics. Credit/no credit only. Prerequisite: permission of department.

**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 (\*)**

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## Atmospheric Sciences

**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: AWPp.

**ATM S 111 Global Warming: Understanding the Issues (5) 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: AWPp.

**ATM S 211 Climate and Climate Change (5) 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: AWPp.

**ATM S 212 Air Pollution: From Urban Smog to the Ozone Hole (5) 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. Offered: varies.

**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: 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 (5) NW** Thermodynamics and hydrostatics. Cloud and precipitation processes with emphasis on the microphysics. Prerequisite: either MATH 126, MATH 129, or MATH 136. Offered: W.

**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. Recommended: CHEM 142; MATH 126; PHYS 123. 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 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: AWPpS.

**ATM S 431 Atmospheric Physics (5) NW** Energy transfer processes: solar and atmospheric radiation, turbulence, and boundary layer structure. Applications. 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 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; ATM S 442; STAT 311. 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; STAT 311. Offered: Sp.

**ATM S 458 Global Atmospheric Chemistry (4) NW** Global atmosphere as a chemical system. Physical factors and chemical processes. Natural variability and anthropogenic change. Cycling of trace substances. Global issues such as climate change, acidic deposition, influences on biosphere. Prerequisite: either ATM S 358 or CHEM 456. Offered: jointly with CHEM 458; A.

**ATM S 460 Water in the Environment (3) NW** Baker, Raymond, Waddington, Warren 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 MATH 124, MATH 126, MATH 129, or MATH 136; PHYS 123. Offered: jointly with ESS 424/PHYS 460. Offered: A.

**ATM S 480 Air-Quality Modeling (3) NW** Evaluation of air-quality models relating air pollution emissions to environmental concentrations. Topics include meteorological dispersion models and various "receptor" models based on chemical "fingerprinting" of sources. Emphasizes current problems. Offered: jointly with CEE 480; W.

**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. Offered: AWPpS.

**ATM S 492 Readings in Meteorology or Climatology (\*)** Credit/no credit only. Offered: AWPpS.

**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: AMATH 403 or permission of instructor. Offered: jointly with AMATH 505/OCEAN 511; A.

**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 OCEAN 523/CHEM 523; Sp.

**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: ATM S/AMATH 505/OCEAN 511. 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; alternate years; W.

**ATM S 511 Formation of Snow and Ice Masses (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; alternate years; A.

**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; alternate years; Sp.

**ATM S 513 Structural Glaciology (3)** Physical and chemical processes in snow, stratigraphy, and metamorphism. Interpretation of ice sheet stratigraphy in terms of paleoenvironment. Dynamic metamorphism of ice from flow. Structures formed at freezing interfaces. Structure of river, lake, and sea ice. Relationship between structures and bulk physical properties. Prerequisite: permission of instructor. Offered: jointly with ESS 534; alternate years; W.

**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; alternate years.

**ATM S 520 Atmospheric Sciences Colloquium (1, max. 15)** 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. Credit/no credit only. Prerequisite: permission of department. Offered: AWP.

**ATM S 521 Seminar in Atmospheric Dynamics (\*)** Directed at current research in the subject. For advanced students. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWP.

**ATM S 523 Seminar in Clouds and Precipitation (\*)** Directed at current research in the subject. For advanced students. Credit/no credit only. Prerequisite: permission of instructor. Offered: AW.

**ATM S 524 Seminar in Climate Dynamics and Energy Transfer (\*)** Directed at current research in the subject. For advanced students. Credit/no credit only. Prerequisite: permission of instructor. Offered: A.

**ATM S 525 Seminar Topics in Atmospheric Chemistry (1-3, max. 6)** Seminar for atmospheric scientists, chemists, and engineers in problems associated with the chemical composition of the atmosphere. Topics range from the natural system to urban pollution and global atmospheric change. Faculty lectures and student participation. Prerequisite: CEE 301 or permission of instructor. Offered: jointly with CEE 553; W.

**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: jointly with ESS 571; 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: jointly with ESS 572; 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. Offered: jointly with ESS 521; alternate years.

**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. Offered: alternate years; Sp.

**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 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. Offered: alternate years; Sp.

**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. Offered: alternate years; A.

**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 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; alternate years.

**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. Offered: alternate years; Sp.

**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/OCEAN/ESS 587, ATM S 504 or ATM S 505. Offered: jointly with ESS 559/OCEAN 558; Sp; alternate years.

**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. Credit/no credit only. Prerequisite: ATM S 509/OCEAN 512. Offered: jointly with OCEAN 560; alternate years; Sp.

**ATM S 564 Atmospheric Aerosol and Multiphase Atmospheric Chemistry (3)** Physics and chemistry of particles and droplets in the atmosphere. Statistics of size distributions, mechanics, optics, and physical chemistry of atmospheric aerosols. Brownian motion, sedimentation, impaction, condensation, and hygroscopic growth. Prerequisite: permission of instructor. Offered: alternate years; W.

**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. Credit/no credit only. Prerequisite: ATM S 509/OCEAN 512, ATM S 542. Offered: alternate years; W.

**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: AMATH 581 or AMATH 584. Offered: jointly with AMATH 586/MATH 581; 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. Offered: alternate years.

**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 ESS/ENVIR/SMA 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. Offered: jointly with ESS 586/OCEAN 586.

**ATM S 587 Climate Dynamics (3)** *Hartman, Thompson* 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; A

**ATM S 588 The Global Carbon Cycle and Climate (3)** *Quay* Oceanic and terrestrial biogeochemical processes controlling atmospheric CO<sub>2</sub> 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 OCEAN 588/ESS 588; W.

**ATM S 589 Paleoclimatology: Data, Modeling and Theory (3)** *Battisti, Emerson, Steig* 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; Sp.

**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 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.

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## Biology

The courses in biology listed below are administered by several departments. Other courses in biology are listed under such headings as Biochemistry, Biological Structure, and Microbiology.

**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. Offered: AW.

**BIOL 103 Plants in the Human Environment (5) NW** *del Moral* Plant biology in human affairs: biodiversity, evolution, agricultural and conservation ecology, and climate change. Life cycles, plant growth and function, how plants interact with their environment and with other organisms, and how ecosystems recover from disturbance. Offered: W.

**BIOL 104 Biology for Elementary School Teachers (5) NW** *Buttner* Basic concepts of biology, with emphasis on background needed for confident use of the new science curriculum materials in the elementary school. Offered: AW.

**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 161-162 or BIOL 180/200/220 and major in one of the biological sciences. Intended for HHMI Fellows. 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 113 Introduction to Biosciences (1-3, max. 6) NW** Independent study/topics related to material taken in BIOL 180, BIOL 200, and BIOL 220. Credit/no credit only. Offered: AWSp

**BIOL 114 Astrobiology: Life in the Universe (5) NW** 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/ASTBio/ESS/OCEAN 115.

**BIOL 115 Evolution (2) NW** Evolutionary biology for nonmajors. Evolutionary history of the earth and various theories of evolution.

**BIOL 117 Plant Identification and Classification (5) NW** *Olmstead* Plant classification and diversity of seed plants; field study and laboratory identification of the common plant families and the conspicuous flora of western and central Washington. One full-day weekend field trip (optional). For non-majors. Offered: SpS.

**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: ASp.

**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 161 General Biology (5-) NW** Living systems viewed from the subcellular to the community level, emphasizing the diversity, functioning, and interaction of whole organisms. Topics covered include cell structure and function, energy, genetics, animal physiology and development. Emphasizes the position of humans in the biological world. For nonmajors and majors in biology-related fields who need a thorough two-quarter introduction to biology. Recommended: high school chemistry; high school biology. Offered: A.

**BIOL 162 General Biology (-5) NW** Living systems viewed from the subcellular to the

community level, emphasizing the diversity, functioning, and interaction of whole organisms. Topics covered include plant and animal diversity, plant structure and function, general ecology and evolution. Emphasizes the position of humans in the biological world. For nonmajors and majors in biology-related fields who need a thorough two-quarter introduction to biology. Prerequisite: either BIOL 101 or BIOL 161. Offered: W.

**BIOL 179 Learning to Learn in the Sciences (2)** Explores how to learn in the sciences. Develops various learning strategies, study skills, and personalized study plans to meet the new challenges of the BIOL 180 series through weekly in-class workshops and organized study sessions. Credit/no credit only. Corequisite: BIOL 180.

**BIOL 180 Introductory Biology (5) NW** For students intending to take advanced courses in the biological sciences or enroll in preprofessional programs. Mendelian genetics, evolution, biodiversity of life forms, ecology, conservation biology. First course in a three-quarter series (BIOL 180, BIOL 200, BIOL 220). Cannot be taken for credit if BIOL 203 has already been taken. Prerequisite: either CHEM 150, CHEM 152, CHEM 155, CHEM 220, CHEM 223, or CHEM 237. 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). Cannot be taken for credit if BIOL 201 has already been taken. Prerequisite: 1.5 in BIOL 180; either CHEM 150, 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). Cannot be taken for credit if BIOL 202 has already been taken. Prerequisite: 1.5 in BIOL 200; either CHEM 150, CHEM 152, CHEM 155, CHEM 220, CHEM 223, or CHEM 237. Offered: AWSpS.

**BIOL 250 Marine Biology (3/5, max. 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. Evening marine biology movies and weekend field trip. Honors section research project. Offered: jointly with FISH/OCEAN 250.

**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 302 Laboratory Techniques in Cell and Molecular Biology (4) NW** *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: BIOL 355. Offered: Sp.

**BIOL 311 Biology of Fishes (3/5) NW** Lecture and laboratory, of the morphological, physiological, behavioral, and ecological diversity of fishes of the world; designed to provide a basic foundation for advanced courses in all areas of finfish fisheries. 3-credit option does not include laboratory. Recommended: 10 credits biological science. Offered: jointly with FISH 311; W.

**BIOL 317 Plant Classification and Identification (5) NW** *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. Cannot be taken for credit if BIOL 117 or BOTANY 113 taken. One weekend field trip. Offered: concurrently with BIOL 117; SpS.

**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** 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: either BIOL 117 or BOTANY 113. 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. Offered: jointly with FISH 340. Prerequisite: either BIOL 102, BIOL 162, or BIOL 200.

**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: either BIOL 202 or BIOL 220; 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 102, BIOL 162, BIOL 180, or BIOL 203. Offered: WSp.

**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: either BIOL 200 or BIOL 201. 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 102, BIOL 162, BIOL 180, or BIOL 203. Offered: AW.

**BIOL 390 Undergraduate Internship Seminar (1) NW** *Crowe* Weekly workshop to prepare students for off-campus research internships. Required for students planning to take BIOL 399. Prerequisite: BIOL 220. Offered: AWSpS.

**BIOL 396 Peer Facilitation ? Teaching in Biology (1-2, max. 4) NW** *Martin-Morris* For students concurrently serving as peer facilitators in biology courses. Students received instruction in teaching as well as supplemental information on material they teach others. Credit no credit only. Prerequisite: either BIOL 100 or BIOL 180. Offered: AWSp.

**BIOL 399 Biology Internship Program (3-5, max. 15) NW** *Crowe* Coordinated internship in a biology-related field. Registration restricted to students already matched with an internship opportunity in BIOL 390 or by instructor approval. Students must complete at least a combined 10 credits in BIOL 399 over consecutive quarters. Credit/no credit only. Prerequisite: BIOL 390. Offered: AWSpS.

**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: either BIOL 355 or BIOC 442.

**BIOL 402 Cell Biology Laboratory (4) NW** Investigative projects using modern molecular methods (restriction enzyme digestion, blotting, hybridization, immunochemistry, density gradient centrifugation, electrophoresis) and other methods currently used to study plant and animal cells, nucleic acids, and proteins. Includes practice in scientific style writing. Prerequisite: BIOL 401, which may be taken concurrently. Offered: AWSp.

**BIOL 404 Animal Physiology: Cellular Aspects (3) NW** *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: BIOL 220; 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** Concepts of cellular and molecular biology as applied to human disease. Emphasis on current experimental approaches to investigate disease mechanisms and the contributions of model systems. Selected topics in cancer biology, viral induced disease, gene therapy. Prerequisite: either BIOL 202 or BIOL 220; either BIOC 405, BIOC 440, BIOL 355, BIOL 401, GENET 371, or GENET 372.

**BIOL 406 Insect Behavior (4) NW** *O'Donnell* Explores complexity and diversity of behavior in insects and related invertebrate animals. Overview of important lineages of insects and major behavioral traits. Examines how insect biology both constrains behavior and provides evolutionary opportunities. Prerequisite: either 2.0 in BIOL 180, 3.5 in PSYCH 200, or 2.0 in PSYCH 300. Offered: jointly with PSYCH 406.

**BIOL 408 Mechanisms of Animal Behavior (4) NW** *Beecher, Brenowitz* 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 2.0 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 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 3.5 in PSYCH 200, 2.0 in PSYCH 300, 2.0 in BIOL 162, or 2.0 in BIOL 180. 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: either BIOL 355, BIOL 401, or BIOC 442. Offered: AW.

**BIOL 413 Methods and Problems in Development (3) NW** *Schubiger* Special topics in development. Integrating classical and current approaches. Developmental genetics, experimental embryology, molecular mechanisms of developmental regulation, and gene function in cell determination and cell differentiation in animal systems. Prerequisite: BIOL 411. Offered: irregularly.

**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; alternate years.

**BIOL 415 Evolution and Development (3) NW** *Parichy, Swalla* 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 BIOL 354, BIOL 355, or BIOC 442.

**BIOL 416 Molecular Genetics of Plant Development (3) NW** *Torii* 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: BIOL 220, GENOME 371.

**BIOL 418 Biological Clocks and Rhythms (3) NW** *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 423 Marine Physiological Ecology (3) NW** *Carrington* Explores how physiology and local environment interact to influence distribution and abundance of marine organisms in a variety of habitats (rocky shore, salt marsh, coral reef), and how physiological adaptations develop. Emphasized benthic organisms that structure coastal communities (bivalves, corals, macroalgae, etc.). Prerequisite: BIOL 220; BIOL 356. Offered: alternate years.

**BIOL 424 Plant Eco-Physiology (5) NW** *Ford* 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 102, BIOL 162, or BIOL 220. Offered: jointly with ESRM 478; W.

**BIOL 425 Advanced Plant Physiology and Development (3) NW** Expanded coverage of plant growth, nutrition, metabolism, and development. Cannot be taken for credit if BIOL 325 already taken. Prerequisite: either BIOL 102, BIOL 162, BIOL 203, or BIOL 220. Offered: W.

**BIOL 426 Advanced Plant Physiology Laboratory (3) NW** Expanded laboratory experiments on the growth, nutrition, metabolism, and development of plants. Cannot be taken for credit if BIOL 326 already taken. Prerequisite: BIOL 325 or BIOL 425, which may be taken concurrently. Offered: Sp.

**BIOL 427 Biomechanics (4) NW** *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. Recommended: either BIOL 102, BIOL 162, BIOL 202, or BIOL 220; either MATH 125 or Q SCI 292; either PHYS 114 or PHYS 121.

**BIOL 429 Models in Biology (4) NW** Explores use of models in biology in a wide range of topics, including morphogenesis, nerve signals, ecological interactions, population biology, and evolutionary theory. Emphasis on the biological insights models can provide rather than mathematical techniques. Prerequisite: either MATH 146, MATH 390, MATH 395, STAT 342, or STAT 391.

**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. Permission of Director, Friday Harbor Laboratories required for registration. Recommended: 20 credits in biological sciences; corequisite: BIOL 445. Offered: at Friday Harbor Laboratories; Sp.

**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. Not open for credit to students who have taken 433 or 434. Recommended: 20 credits in biological sciences. Offered: at Friday Harbor Laboratories; S.

**BIOL 433 Marine Ecology (5) NW** *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 BIOL 180. 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 430 or 432. Prerequisite: either BIOL 102, BIOL 202, or BIOL 220.

**BIOL 440 General Mycology (5) NW** *Ammirati* General survey of the fungi with emphasis on life cycles, structure, physiology, economic importance. Prerequisite: either BIOL 102, BIOL 162, BIOL 180, or BIOL 203. Offered: W.

**BIOL 441 Morphology and Anatomy of Land Plants (5) NW** Comparative morphology and anatomy of land plants. Derivation of morphological structures and basis for current classification schemes examined using living and fossil organisms. Laboratories emphasize live plants native to the Pacific Northwest. Prerequisite: either BIOL 102, BIOL 162, BIOL 203, or BIOL 220; recommended BIOL 317. Offered: A.

**BIOL 442 Mushrooms and Related Fungi (5) NW** *Ammirati* General biology, ecology, and classification of mushrooms, polypores, puffballs, and other related basidiomycetes. Emphasis on Pacific Northwest species. Prerequisite: either BIOL 102, BIOL 162, BIOL 203, or BIOL 220; recommended BIOL 440. Offered: S.

**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: A.

**BIOL 444 Natural History of Birds (5) NW** Field, lecture, and laboratory study of birds framed in biological theory rather than taxonomy. Breeding systems, brood parasitism, appearance, molt, migration, orientation, social behavior, song, and flight are emphasized. Includes Saturday and weekend field trips for which students are required to share a portion of transportation costs. Prerequisite: BIOL 220; recommend BIOL 350 or BIOL 356. Offered: irregularly.

**BIOL 445 Marine Botany (5) NW** Survey of plants represented in marine environments; natural history; ecology, distribution, habitat, adaptation, and trophic interrelationships. Prerequisite: either BIOL 102, BIOL 162, BIOL 203, or BIOL 220; BIOL 430/ZOOL 430, which may be taken concurrently. Offered: at Friday Harbor Laboratories; Sp.

**BIOL 446 Biology of Algae (5) NW** *Cattolico, Waaland* Study of major algal groups emphasize-

ing form, function, reproduction, distribution, biodiversity, and ecological roles in coastal, oceanic, and global ecosystems. Topics include classification, cellular and organismal features, phylogeny, and evolution of major algal groups. Emphasizes economically useful and ecologically important algae. Prerequisite: either BIOL 102, BIOL 162, BIOL 180, or BIOL 203. Offered: Sp.

**BIOL 448 Marine Algal Ecology (3) NW** *Waaland* Marine environment in relation to requirements for algal life. Intertidal, subtidal, geographical, and seasonal distribution of marine algae. Functional aspects of algal form, structure, productivity, and energy economy of marine algal communities. Algal utilization and aquaculture. Offered: A.

**BIOL 450 Vertebrate Paleontology (4) NW** *Sidor* Examines vertebrate life as seen in the fossil record, focusing first on fish lineages, and then on amniote (reptile, bird, and early mammal relatives) systematics and morphology. Examines fossil and modern vertebrates from the Burke Museum collection in the lab. One required weekend field trip. Prerequisite: either BIOL 453 or ESS 100. Offered: jointly with ESS 452; alternate years.

**BIOL 451 Invertebrate Paleontology (5) NW** *Ward* Important larger invertebrate groups; morphology, classification, stratigraphic distribution, evolution, paleoecology. Offered: jointly with ESS 451; W.

**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 102, BIOL 162, BIOL 180, or both BIOL 202 and BIOL 203. 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: BIOL 350. Offered: W.

**BIOL 454 Entomology (3) NW** Biology of terrestrial arthropods, with emphasis on insects. Structure, classification, physiology, and ecology of insects. Interrelationships of insects and man. Prerequisite: either BIOL 102, BIOL 162, BIOL 180, or both BIOL 202 and BIOL 203.

**BIOL 455 Entomology Laboratory (3) NW** Structure and function of arthropods, with emphasis on insects. Field studies and taxonomy of important insect groups. Students may be required to share a portion of the transportation costs of field trips. Prerequisite: BIOL 454 which may be taken concurrently. Offered: Sp.

**BIOL 456 Vegetation of Western Washington (5) NW** *del Moral* Vegetation of western Washington, including mature, seral, and weedy vegetation. Recognition of landscape patterns, sight identification of common and indicator species, classification of major community types, and uses of native species in landscape design. Four weekend field trips required. Prerequisite: either BIOL 117 or BIOL 317.

**BIOL 458 Behavioral Genetics (4) NW**

*O'Donnell* 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 3.5 in PSYCH 200, 2.0 in PSYCH 300, or 2.0 in BIOL 161, or 2.0 in BIOL 180. Offered: jointly with PSYCH 458.

**BIOL 459 Developmental Neurobiology (3) NW**

*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: BIOL 220. 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: BIOL 350.

**BIOL 461 Neurobiology (3) NW**

*Bosma, Perkel* 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: BIOL 220; either PHYS 115 or PHYS 122. Offered: W.

**BIOL 462 Advanced Animal Physiology (3) NW**

*Huey, Wenderoth* 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: either BIOL 202 or BIOL 220; either BIOL 350 or BIOL 460; either CHEM 152, CHEM 155, CHEM 160, CHEM 162, CHEM 164, CHEM 165, or CHEM 220; either PHYS 114 or PHYS 121. Offered: A.

**BIOL 463 Advanced Animal Physiology Lab (3) NW**

*Huey, Wenderoth* 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 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. Not available for credit if credit has previously been given for ZOOL 475. Recommended: one year college biology; background in ecology and evolution. Offered: irregularly.

**BIOL 471 Plant Ecology (5) NW**

*del Moral* 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 102, BIOL 162, BIOL 180, or BIOL 203. Offered: alternative years; Sp.

**BIOL 472 Community Ecology (4) NW**

Explores the complexity of biological communities and interactions of plant, animal, and

microbes in marine, freshwater, and terrestrial ecosystems. Promotes synthetic and integrative thinking in the environmental sciences through the study of theoretical and empirical issues and original research data. Prerequisite: BIOL 356; recommended: solid foundation in math and physics.

**BIOL 473 Limnology (3) NW**

*Schindler* Ecology, conservation and management of inland aquatic ecosystems. Explores interactions among biological, chemical and physical features of lakes and other aquatic habitats. Prerequisite: either BIOL 102, BIOL 162, BIOL 180, or BIOL 203. Offered: jointly with FISH 473; A.

**BIOL 474 Limnology Laboratory (2) NW**

*Schindler* 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 FISH 474/CEE 463; A.

**BIOL 476 Conservation Biology (5) NW**

*Boersma, Tewksbury* 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 BIOL 102, BIOL 162, BIOL 180, or BIOL 203.

**BIOL 478 Topics in Sustainable Fisheries (3, max. 9) I&S/NW**

*Parrish* Seminar series featuring local, national and internationally known speakers in fisheries management and conservation. Case studies. Conservation/restoration in practice. Pre-seminar discussion section focusing on select readings. Final paper. 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/FISH 478; odd years; W.

**BIOL 480 Field Ecology (4) NW**

*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 BIOL 472. Offered: Sp.

**BIOL 481 Experimental Evolutionary Ecology (5) NW**

*Bradshaw, Kerr, Tewksbury* 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. Prerequisite: BIOL 180. Offered: A.

**BIOL 482 Advanced Experimental Evolutionary Ecology (2-5, max. 15) NW**

*Bradshaw, Kerr, Tewksbury* Working in pairs or independently, students pursue supervised original field or lab 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: AWSp.

**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: BIOL 355.

**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. Recommended: one upper division course in ecology or conservation biology.

**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. 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: BIOL 102, BIOL 162, BIOL 203, or BIOL 220.

**BIOL 491 Special Topics in Biological Science for Teachers (1-9, max. 9) NW**

Study of selected areas of biology. Designed to enhance the skills and background of K-12 teachers. Credit/no credit only. Recommended: teaching experience.

**BIOL 492 The Teaching of Biology (2)**

Basic course in the teaching of biology in the secondary school. Designed to help preservice 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 496 Peer Teaching Assistants in Biology (1-5, max. 10)**

Direct experience in the classroom, typically teaching a lab section of BIOL 100. Peer Teaching Assistants attend lectures and weekly preparation meetings and gain in-depth background on the subject material as well as training in teaching techniques and approaches. Credit/no credit only. Prerequisite: either BIOL 102, BIOL 162, BIOL 220, or both BIOL 202 and BIOL 203. Offered: AWSp.

**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)**

Offered: Sp.

**BIOL 505 Problems in Biological Instruction (1-3, max. 3)**

**BIOL 510 Seminar in Mathematical Biology (1-3, max. 15)** *Bergstrom, Daniel, Grunbaum, Kot, Odell, Thompson* Seminar on a topic of current

interest in mathematical biology. Graduate status required, or permission of instructor for undergraduates.

**BIOL 511 Topics in Mathematical Biology (1-3, max. 15)** Discussion of current topics in mathematical biology. Graduate status required, or permission of instructor for undergraduates.

**BIOL 520 Departmental Seminar (1, max. 18)** Credit/no credit only. Offered: AWSp.

**BIOL 533 Advanced Invertebrate Zoology (9)** Invertebrate fauna of the San Juan Archipelago. Topic changes from year to year. Individual research projects are emphasized. Prerequisite: course in invertebrate zoology and permission of Director of Friday Harbor Laboratories. Offered: at Friday Harbor Laboratories; SpS.

**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: at Friday Harbor Laboratories; 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. Graduate status required, or permission of instructor for undergraduates.

**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. Graduate status required, or permission of instructor for undergraduates.

**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*. Prerequisite: permission of instructor. Offered: AWSp.

**BIOL 546 Experimental Design in Cell Biology (1.5)** Focuses on experimental design in cell biology. A topic of current research interest is covered in depth in order to follow a line of investigation and critically evaluate the strengths and limitations of various experimental strategies. Offered: jointly with CONJ 536.

**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. Graduate status required, or permission of instructor of undergraduates.

**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. Graduate status required, or permission of instructor for undergraduates.

**BIOL 552 Advanced Evolution (3)** 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. Graduate standing required.

**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. Graduate status required, or permission of instructor for undergraduates.

**BIOL 561 Topics in Ecology (1-3, max. 15)** Focused discussion of on-going research in ecology occurring in the instructor's laboratory. Graduate status required, or permission of instructor for undergraduates.

**BIOL 562 Advanced Ecology (3)** Successful analytical approaches to understanding ecological patterns and the mechanisms that generate them, examined by using a wide array of empirical and theoretical tools. Applying theory, modeling, and statistics to empirically derived data to providing insight and solutions to key environmental problems. Graduate standing required.

**BIOL 563 Experimental Evolutionary Ecology (5)** NW *Bradshaw, Kerr, Tewksbury* 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. Offered: A; concurrent with BIOL 481.

**BIOL 564 Advanced Experimental Evolutionary Ecology (2-5, max. 15)** NW *Bradshaw, Kerr, Tewksbury* Working independently or paired with an undergraduate in BIOL 482, students pursue supervised original field or lab 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 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. Graduate status required, or permission of instructor for undergraduates.

**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 on the instructor for undergraduates.

**BIOL 572 Science and Environmental Policy (3-5, max. 5)** *Boersma*

**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. Graduate status required, or permission of instructor for undergraduates.

**BIOL 581 Topics in Physiology (1-3, max. 15)** Focused discussion of on-going research in physiology occurring in the instructor's laboratory. Graduate status required, or permission of instructor for undergraduates.

**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. Prerequisite: graduate standing, or permission of instructor for undergraduates.

**BIOL 591 Topics in Organismal Biology (1-3, max. 15)** Focused discussion of on-going research in organismal biology occurring in the instructor's laboratory. Prerequisite: graduate standing, or permission of instructor for undergraduates.

**BIOL 600 Independent Study or Research (1-10)** Credit/no credit only.

**BIOL 700 Master's Thesis (\*)** Credit/no credit only. Offered: AWSpS.

**BIOL 800 Doctoral Dissertation (\*)** Credit/no credit only. Offered: AWSpS.

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## Center for Statistics and Social Sciences

**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; A.

**CS&SS 321 Case-Based Social Statistics I (5)** I&S, QSR *Handcock* 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/STAT 321; W.

**CS&SS 322 Case-Based Social Statistics II (5)** I&S, QSR *Handcock* Continuation of CS&SS/

SOC/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/SOC/STAT 321, or permission of instructor. Offered: jointly with SOC/STAT 322; Sp.

**CS&SS 481 Introduction to Mathematical Statistics (5) NW** Probability, generating functions; the d-method, Jacobians, Bayes theorem; maximum likelihoods, Neyman-Pearson, efficiency, decision theory, regression, correlation, bivariate normal. (Credit allowed for only one of 390, 481, and ECON 580.) Prerequisite: STAT/ECON 311; either MATH 136 or MATH 126 with either MATH 308 or MATH 309. Recommended: MATH 324. Offered: jointly with ECON/STAT 481; A.

**CS&SS 501 Advanced Political Research Design and Analysis (5) I&S** Third methods course in political research. 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) Quinn, Ward** Theory and practice of likelihood inference. Topics covered include probability modeling, maximum likelihood estimation, models for binary responses, count models, sample selection, and basis time series analysis. Prerequisite: POL S 500; POL S 501. 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/MATH 390, STAT 421, STAT/ECON 481, or SOC 505; 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. Offered: 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, SAS, and SPLUS). Offered: W.

**CS&SS 507 Methodology: Quantitative Techniques in Sociology (3) I&S** Applied regression analysis with emphasis on interactive computer graphics techniques and interpretation.

Application to typical sociological problems. Offered: jointly with SOC 506; A.

**CS&SS 508 Introduction to R for Social Scientists (1) Handcock** 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. Offered: A.

**CS&SS 510 Maximum Likelihood Methods for the Social Sciences (5) Adolph, Wardy** 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/CS&SS 501; POL S/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: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with SOC 529.

**CS&SS 527 Survey Research Methods (4)** Provides students with skills in questionnaire development and survey methods. Develops a questionnaire and design a survey research proposal on a health-related or social topic. Prerequisite: either HSERV 511-513, BIOSTAT 517-518, EPI 512-513, which may be taken concurrently or permission of the instructor is required, and students should have a survey project in mind. Offered: jointly with 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) Raftery** 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 424, SOC 425, SOC 426, or equivalent; recommended: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with SOC 536/STAT 536; annually.

**CS&SS 544 Event History Analysis for the Social Sciences (5) Holman** 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 theoretical understanding and practical knowledge of models for clustered data and a set of tools to help make accurate inferences. Prerequisite: SOC 504-505-506 or equivalent; recommended: CS&SS 505-506 or equivalent. Offered: jointly with 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 504-505-506 or equivalent; recommended: CS&SS 505; CS&SS 506. Offered: jointly with STAT 564.

**CS&SS 565 Inequality: Current Trends and Explanations (3) Morris** Discussion of recent growth in economic inequality in the U.S. 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 504-505-506 or equivalent; recommended: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with SOC 565.

**CS&SS 566 Causal Modeling (4) Richardson** 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 underdetermination. Prerequisite: course in statistics, SOC 504-505-506 or equivalent; recommended: CS&SS 505-506 or equivalent. Offered: jointly with STAT 566.

**CS&SS 567 Statistical Analysis of Social Networks (4) Handcock** 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 504-505-506 or equivalent; recommended: CS&SS 505; CS&SS 506. Offered: jointly with STAT 567.

**CS&SS 568 Game Theory for Social Scientists (5) Sirakaya** 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/ECON 311 or equivalent. Offered: jointly with ECON 568; W.

**CS&SS 569 Visualizing Data (4) Adolph** 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 (3, max. 6)** *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: SOCWL 587, 588, or equivalent. Offered: jointly with SOC WL 589; A.

**CS&SS 590 CSSS Seminar (1, max. 20)** Presentations of ongoing social science research involving cutting edge statistical methods. Credit/no credit only. Offered: AWP.

**CS&SS 594 Special Topics in Social Science and Statistics (1-5, max. 30)** Topics vary. Prerequisite: permission of instructor. Offered: AWP.

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## Center for Studies in Demography and Ecology

**CSDE 501 Population Studies Seminar Series (1)** CSDE affiliates and visitors present current research projects. Credit/no credit only. Offered: AWP.

**CSDE 502 Population Studies Proseminar (1)** Professional training in demography and populations studies. Includes ethics in population research, human subjects review, proposal application and writing. DSDE faculty research specialization, and research preparation and presentation. Credit/no credit only. Offered: AWP.

**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 (3)** Examination of current substantive and methodological topics in demography. Content varies according to recent developments in the field and interest of the instructor.

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## Humanities

**HUM 200 Issues in the Humanities (1-5, max. 15) I&S/VLPA** Topics and issues of current interest in the humanities and the study of the arts. Features numerous guest lecturers from the U.W. faculty together with distinguished visiting teachers, scholars, and artists.

**HUM 204 Special Topics: Interdisciplinary Studies in the Humanities (5, max. 25) VLPA/I&S** Focuses on interdisciplinary study in the humanities through the study of human thought, values, beliefs, creativity, and culture. Team-taught faculty from diverse disciplines, topic change quarterly, discussion sections, open to undergraduates. Continuation of Danz series. Offered: AWP.

**HUM 205 Religion, Violence, and Peace: Patterns Across Time and Tradition (5) I&S** 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 RELIG/NEAR E 205; W.

**HUM 206 American Sabor/American Flavor: Latinos Shaping U.S. Popular Music (5) VLPA/I&S** Addresses problems of cultural representation that concern an increasingly visible and influential community in the United States. Highlights the roles of U.S. Latino musicians as interpreters of Latin American genres and their roles as innovators within genres normally considered indigenous to the United States.

**HUM 208 Violence, Myth, and Memory: Southeast Asia at the Crossroads of Modernity (5) VLPA/I&S** Built around films and readings. Explores ideas of violence, narrative, and global modernity in U.S. relations with Vietnam, the Philippines, and Indonesia. Examines the ways these films evoke founding myths of Southeast Asian societies.

**HUM 210 Texts in Context (5, max. 15) I&S/VLPA** Links a single, major work from any medium, or a narrowly bounded group of closely related, smaller works, to the cultural, intellectual, and historical circumstances of its creation and interpretation. Emphasizes close-reading and careful writing.

**HUM 220 Themes in Time and Culture (5, max. 15) I&S/VLPA** Traces the articulation and development of a single overarching idea in different idioms, cultures and eras. Asks how, and if, notions that are fundamental to one era or culture find expression in other times and places. Emphasizes comparative analysis and careful writing.

**HUM 411 Applications of Digital Technologies to Humanities Research (5) VLPA** Hands-on project-based approach to imaging, new media, text, databases, metadata and accessibility, rights management, and other issues central to contemporary humanities research. Offered: jointly with DXARTS 411.

**HUM 498 Special Topics in the Humanities (1-6, max. 15) I&S/VLPA** 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 520 Seminar in Textual Theory (5)** Introduction to the theoretical perspectives that have shaped the emerging interdisciplinary field of Textual Studies. Included in curriculum of Textual Studies Program.

**HUM 521 Seminar in Scribal Texts (5)** Relationship between oral and written texts and of the social and cultural systems which enable their production, transmission, and preservation. Included in curriculum of Textual Studies Program.

**HUM 522 Seminar in Printed Texts (5)** Study of printing as a means of textual transmission in the ages of the hand press, machine press, and electronic press; of current theories of editing; and of preparing critical editions of printed texts.

**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, hand-written, and printed texts. Included in curriculum of Textual Studies Program.

**HUM 596 Humanities Research Seminar (1-5, max. 15)** Exploration of current research in the Humanities and the study of the arts. Offered by specially selected U.W. faculty and visiting scholars in the arts and humanities.

**HUM 597 Special Topics in the Humanities (1-2, max. 10)** Offered by short-term visiting scholars at the leading edge of their fields, invited at the nomination of Humanities and Social Science faculty. Topics vary based on field of expertise. Credit no credit only.

**HUM 598 Teachers as Scholars (1, max. 10)** Small-scale seminars on selected topics in the liberal arts, designed to renew and enhance the subject matter/field knowledge of practicing K-12 educators. Offered: AWP.

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## Chemistry

No more than the number of credits indicated can be counted toward graduation from the following course groups: 120, 142, 145 (5 credits); 152, 155 (5 credits); 145, 155, 160, 162 (11 credits); 162, 165 (6 credits); 165, 312 (5 credits); 220, 223, 237, 335 (5 credits); 238, 336 (4 credits); 221, 224, 239, 337 (5 credits); 241, 346 (3 credits); 242, 347 (3 credits); 355, 452 (3 credits); 452, 456 (3 credits). If a course is completed before a prerequisite is taken, credit will not later be allowed for the prerequisite course.

**CHEM 110 Introduction to General Chemistry (3) 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 chemistry. 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, 142, 145. Offered: AS.

**CHEM 142 General Chemistry (5) NW, QSR** For science and engineering majors. Atomic nature of matter, stoichiometry, acids and bases, chemical equilibrium, and gas laws. Includes laboratory. Recommended: high school chemistry and placement into MATH 120 or higher. No more than the number of credits indicated can be counted toward graduation from the following course groups: 142, 145 (5 credits). Cannot be taken for credit if CHEM 120 already taken. Offered: AWSpS.

**CHEM 145 Honors General Chemistry (5) NW, QSR** 145 and 155 cover material in 142, 152, and 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 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: 142, 145 (5 credits); 145, 155, 162 (10 credits). Offered: A.

**CHEM 152 General Chemistry (5) NW** Energy, enthalpy and thermochemistry, spontaneity, entropy and free energy, electrochemistry, quantum mechanics and atomic theory, general concepts of bonding. Includes laboratory. Prerequisite: either 1.7 in CHEM 142 or 1.7 in CHEM 145. No more than the number of credits indicated can be counted toward graduation from the following course groups: 152, 155 (5 credits). Offered: AWSpS.

**CHEM 155 Honors General Chemistry (5) NW** Continuation of 145. Includes laboratory. Together 145 and 155 cover material in 142, 152, and 162. No more than the number of credits indicated can be counted toward graduation from the following course groups: 152, 155 (5 credits); 145, 155, 162 (10 credits). Prerequisite: 2.2 in CHEM 145. Offered: W.

**CHEM 162 General Chemistry (5) NW** Covalent bonding, 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: 1.7 in CHEM 152. Offered: AWSpS.

**CHEM 165 Honors General Chemistry (5) NW** 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: 162, 165 (5 credits); 165, 312 (5 credits). Prerequisite: 2.2 in CHEM 155. Offered: Sp.

**CHEM 197 Science Outreach Training (1-2, max. 2)** Training for participation in science-related outreach activities to the community. Emphasis on support for K-12 education and environmental community efforts. Not applicable toward chemistry degree requirements. Credit/no credit only. Offered: AWSp.

**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, QSR** Second course in a three-quarter overview of chemistry. Not for students majoring in biochemistry, chemistry, or engineering. Includes gases/liquids/solids, solutions, acids and bases, equilibrium, oxidation-reduction, electrochemistry, organic compounds, hydrocarbons, aromaticity, stereochemistry. Prerequisite: either 1.7 in CHEM 120 or 1.7 in CHEM 142. Offered: W.

**CHEM 221 Principles of Chemistry III (5) NW, QSR** Third course in a three-quarter overview of chemistry. Not for students majoring in biochemistry, chemistry, or engineering. Includes alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, amines, and structural determination. 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: either 1.7 in CHEM 155 or 1.7 in CHEM 152; 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: either 1.7 in CHEM 155 or 1.7 in CHEM 162. Offered: AWS.

**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: 238, 336 (4 credits). Prerequisite: either 1.7 in CHEM 237 or 1.7 in CHEM 335. Offered: WSp.

**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: ASpS.

**CHEM 241 Organic Chemistry Laboratory (3) NW** Introduction to organic laboratory techniques. Preparation of representative compounds. Designed to be taken with 224 or 238. No more than the number of credits indicated can be counted toward graduation from the following course groups: 241, 346 (3 credits). Prerequisite: either 1.7 in CHEM 223, 1.7 in CHEM 237, or 1.7 in CHEM 335; either CHEM 224, CHEM 238 or CHEM 336, any of which may be taken concurrently. Offered: WSpS.

**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 groups: 242, 347 (3 credits). Prerequisite: either 1.7 in CHEM 224 or CHEM 239 which may be taken concurrently or CHEM 337 which may be taken concurrently; either 1.7 in CHEM 241 or 1.7 in CHEM 346. Offered: ASpS.

**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 297 Science Outreach Participation (1-2, max. 6)** Continuation of 197. Work with K-12 schools or community organizations. May include scientific presentations, K-12 curriculum support, or involvement in a community project. Not applicable toward chemistry degree requirements. Credit/no credit only. Prerequisite: CHEM 197. Offered: AWSp.

**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 165. No more than the number of credits indicated can be counted toward graduation from the following course groups: 165, 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 or CHEM 162. Offered: AWS.

**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 groups: 221, 223, 237, 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: 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: 2.2 in CHEM 336. Offered: Sp.

**CHEM 346 Organic Chemistry Honors Laboratory (3) NW** To accompany 336. No more than the number of credits indicated can be counted toward graduation from the following course groups: 241, 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 346. To accompany 337. No more than the number of credits indicated can be counted toward graduation from the following course groups: 242, 347 (3 credits). Prerequisite: CHEM 337 which may be taken concurrently; 2.2 in CHEM 346. Offered: Sp.

**CHEM 397 Science Outreach Mentors (1-2, max. 6)** Mentoring of beginning outreach participants. Includes presentations for 197, training of outreach students, and evaluation of outreach activities. Not applicable toward chemistry degree requirements. Credit/no credit only. Prerequisite: CHEM 197. Offered: AWSp.

**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: either 1.7 in CHEM 155 or 1.7 in CHEM 162; recommended: CHEM 418. Offered: alternate years.

**CHEM 415 The Chemical Bond (3) NW** Nature of the chemical bond. Simple bonding theories, molecular orbital methods, symmetry, and group theory. Includes weekly computer exercises in which students perform ab initio calculations. Prerequisite: either CHEM 453, CHEM 455, or CHEM 475. Offered: alternate years.

**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. Offered: alternate years.

**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: CHEM 239; either CHEM 317, CHEM 321, CHEM 461 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 433 Theoretical Organic Chemistry — Predictions and Experimental Tests (3) NW** Molecular orbital theory in organic chemistry. Woodward-Hoffmann rules, aromaticity, concerted reactions, photochemical transformations, and reactions of electron-deficient species. Prerequisite: either CHEM 239 or CHEM 337. Offered: alternate years.

**CHEM 436 Molecular Enzymology (3) NW** Enzyme structure, function, chemistry and inhibition, including modes of biological catalysis, stereochemistry, enzyme characterization and kinetics, and design and principles of enzyme inhibitors. Also major classes of natural

products, their chemistry, biological activity, biosynthesis, physiological role, and ecological significance. Prerequisite: either CHEM 224, CHEM 239, or CHEM 337; recommended: either BIOC 405 or BIOC 440. Offered: alternate years; Sp.

**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 course groups: 355, 452 (4 credits); 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 452. Includes transport properties, enzyme kinetics, introduction to quantum mechanics, spectroscopy, and classical statistical mechanics. Prerequisite: 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 groups: 452, 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 E 326 which may be taken concurrently, CHEM 456 or CHEM 476. Offered: Sp.

**CHEM 458 Global Atmospheric Chemistry (4) NW** Global atmosphere as chemical system. Physical factors and chemical processes. Natural variabilities and anthropogenic change. Cycling of trace substances. Global issues such as climate change, acidic deposition, influences on biosphere. Prerequisite: either ATM S 358 or CHEM 456. Offered: jointly with ATM S 458.

**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: W.

**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; A.

**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 498 Teaching Chemistry (3) NW** Training in teaching chemistry laboratory and quiz sections. For chemistry and biochemistry majors, especially those planning graduate work or secondary education. Covers teaching strategies, student diversity, learning styles, grading, and interaction with students and faculty. Credit/no credit only. Offered: A.

**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 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 502 Practical NMR Methods for Biological and Organic Structure Elucidation (4)** Theory of NMR (rotating frame formalism, multi-pulse experiments, relaxation phenomena, 2D experiments) as applied to structural and dynamic problems in organic and biological chemistry. Provides basis for experiment selection and spectrum interpretation. A more advanced treatment of NMR than 460. Prerequisite: CHEM 224, CHEM 239, or CHEM 337; recommended: CHEM 460 or equivalent, CHEM 435 or CHEM 455. Offered: W.

**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: AWSp.

**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. Offered: alternate years.

**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)** Primarily for doctoral candidates in organic chemistry. Discussions of topics of current interest and importance. See department for instructor and topic during any particular quarter.

**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.

**CHEM 575 Molecular Modeling Methods (4)** Introduction to theory and practice of computer simulation studies of molecules with emphasis on applications to biological molecules and complexes. Discussion of background theory, implementation details, capabilities and practical limitations of these methods. Prerequisite: previous coursework in biochemistry and physical chemistry and/or permission of instructor. Offered: jointly with BIOEN 575; A.

**CHEM 581 Preparation for Second-Year Exam (3, max. 9)** Preparation for examination. Open only to students accepted 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: AWPSp.

**CHEM 591 Seminar in Inorganic Chemistry (1, max. 18)** For chemistry graduate students only. Credit/no credit only. Offered: AWPSp.

**CHEM 592 Seminar in Analytical Chemistry (1, max. 18)** For chemistry graduate students only. Credit/no credit only. Offered: AWPSp.

**CHEM 593 Seminar in Organic Chemistry (1, max. 18)** For chemistry graduate students only. Credit/no credit only. Offered: AWPSp.

**CHEM 595 Seminar in Physical Chemistry (1, max. 18)** For chemistry graduate students only. Credit/no credit only. Offered: AWPSp.

**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; AWPSp.

**CHEM 600 Independent Study or Research (\*)** Prerequisite: permission of coordinator. Offered: AWPSp.

**CHEM 700 Master's Thesis (\*)** Prerequisite: permission of coordinator. Offered: AWPSp.

**CHEM 800 Doctoral Dissertation (\*)** Prerequisite: permission of coordinator. Offered: AWPSp.

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## Classics

### Classical Archaeology

**CL AR 340 Pre-Classical Art and Archaeology (3) VLPA** 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** *Bliquez* 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** *Harmon* 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** 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** 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** 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** 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** Detailed study of Greek architecture from its beginnings, with special emphasis on the Periclean building program in fifth-century Athens. Offered: jointly with ARCH 454/ART H 446.

**CL AR 447 The Archaeology of Early Italy (3) VLPA** *Harmon* 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** *Harmon* 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)** 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 (3)** 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)** *Harmon, Levaniouk* 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)** *Levaniouk* 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)** *Harmon, Levaniouk* Morphological and syntactical

development of the Latin language; the development of Latin as a literary language.

**CL LI 506 Italic Dialects (5)** *Harmon, Levaniouk* Principal remains of the non-Latin languages and dialects of ancient Italy.

**CL LI 508 Greek Dialects (5)** *Levaniouk* The non-Attic dialects of ancient Greek, based on a study of inscriptions and the literary remains.

## Classics

Upper-division classics courses in English (300 and 400 level) in the Department of Classics do not generally have prerequisites. Most 400-level courses deal with a single genre of literature or with a limited area of classical studies. The 300-level courses deal with broader subjects at a relatively advanced level. Both are primarily for juniors and seniors, but they are open to freshmen and sophomores with an interest or background in the subject of the course.

**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: AWPSp.

**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** Introduces students to aspects of Ancient Greek and/or Roman literature and culture. Develop 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: AWPSp.

**CLAS 210 Greek and Roman Classics in English (5) VLPA** *Bliquez, Blondell, Clauss, Connors, Gowing, Harmon, Hinds, Kamen, Levaniouk, Power, Stroup* Introduction to classical literature through a study of the major Greek and Latin authors in modern translation. Offered: AWPSp.

**CLAS 320 Greek and Roman Private and Public Life (5) I&S/VLPA** *Bliquez* 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 322 Intellectual History of Classical Greece (5) I&S/VLPA** *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, male attitudes toward women, and the nature of the soul. Besides the *Republic* and other works of Plato,

readings are taken from Homer, tragedy, comedy, Aristotle, and others. Offered: Sp.

**CLAS 324 Greek and Roman Athletics (3) I&S**  
Greek and Roman athletic festivals and events, and the place of athletes and sport in ancient society.

**CLAS 326 Women in Antiquity (3) I&S/VLPA**  
*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) I&S/VLPA**  
*Hinds, 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) I&S/VLPA**  
*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 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 401 Undergraduate Seminar in Classics (3-5) VLPA** 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 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 (3) 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 (3) I&S/VLPA** *Harmon, Hollmann, 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 priesthods, personal piety, rituals of purification and healing, and the conflict of religions in the early Roman Empire. Many lectures illustrated by slides. Recommended: RELIG 201. Offered: jointly with RELIG 445.

**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 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. Offered: A.

**GREEK 102 Elementary Greek (5)** An intensive study of grammar, with reading and writing of simple Attic prose. Prerequisite: GREEK 101. Offered: W.

**GREEK 103 Elementary Greek (5)** Reading of selections from classical Greek literature. 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: W.

**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: Sp.

**GREEK 305 Attic Prose (5) VLPA** Translation of selections from Attic prose; elementary exercises in Attic prose composition. Recommended: 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 413 The Pre-Socratic Philosophers (3) VLPA** *Blondell* Recommended: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 414 Plato (3) VLPA** *Blondell* Recommended: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 415 Aristotle (3) VLPA** *Blondell* Recommended: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 422 Herodotus and the Persian Wars (3) VLPA** *Bliquez, Hollmann, Kamen, Levaniouk* Recommended: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 424 Thucydides and the Peloponnesian War (3) VLPA** *Bliquez, Kamen* Recommended: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 426 Attic Orators (3) VLPA** *Bliquez, Kamen* Recommended: minimum of 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: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 442 Greek Drama (3) VLPA** *Blondell, Levaniouk* Recommended: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 443 Greek Drama (3) VLPA** *Blondell, Levaniouk* Recommended: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 444 Greek Drama (3) VLPA** *Blondell, Levaniouk* Recommended: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 449 Greek Epic (3) VLPA** *Levaniouk* Recommended: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 451 Lyric Poetry (3) VLPA** *Blondell, Levaniouk* Recommended: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 453 Pindar: The Epinician Odes (3)**  
**VLPA** *Levaniouk* Recommended: minimum of 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: minimum of 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: minimum of 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: minimum of 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: minimum of two years of ancient Greek language study at college level (or equivalent).

**GREEK 500 Grammar and Composition (5)**  
*Bliquez, Blondell* 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)** *Bliquez* Select comedies.

**GREEK 504 Plato (5)** *Blondell* The Republic or other dialogues.

**GREEK 506 Aristotle (5)** *Blondell*.

**GREEK 508 Lysias and Demosthenes (5)**  
*Bliquez, Kamen* Select speeches, oratorical theory, historical questions.

**GREEK 510 Greek Historians (5, max. 10)**  
*Bliquez, Hollmann*.

**GREEK 512 Greek Tragedy (5, max. 10)**  
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. Offered: A.

**LATIN 102 Elementary Latin (5)** An intensive study of grammar, with reading and writing of simple Latin prose. Prerequisite: LATIN 101. Offered: W.

**LATIN 103 Elementary Latin (5)** Reading of selections from classical Latin literature. 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: W.

**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: Sp.

**LATIN 305 Introduction to Latin Literature (5)**  
**VLPA** Readings in prose and poetry from various Latin authors; elementary exercises in Latin prose composition. Recommended: 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.

Recommended background for the following 400-level Latin courses is four years of high-school Latin, LATIN 307, or permission of instructor.

**LATIN 412 Lucretius (3)** **VLPA** *Blondell, Clauss* Recommended: minimum of two years of Latin language study at college level (or equivalent).

**LATIN 414 Seneca (3)** **VLPA** *Blondell, Stroup* Recommended: minimum of two years of Latin language study at college level (or equivalent).

**LATIN 422 Livy (3)** **VLPA** *Clauss, Gowing* Recommended: minimum of two years of Latin language study at college level (or equivalent).

**LATIN 423 Cicero and Sallust (3)** **VLPA** *Clauss, Gowing, Stroup* Recommended: minimum of two years of Latin language study at college level (or equivalent).

**LATIN 424 Tacitus (3)** **VLPA** *Clauss, Gowing* Recommended: minimum of two years of Latin language study at college level (or equivalent).

**LATIN 447 Roman Lyric (3)** **VLPA** *Clauss, Harmon* Recommended: minimum of two years of Latin language study at college level (or equivalent).

**LATIN 449 Roman Elegy (3)** **VLPA** *Harmon, Hinds* Recommended: minimum of two years of Latin language study at college level (or equivalent).

**LATIN 451 Roman Satire (3)** **VLPA** *Connors, Stroup* Recommended: minimum of two years of Latin language study at college level (or equivalent).

**LATIN 457 Roman Drama (3)** **VLPA** *Connors* Recommended: minimum of two years of Latin language study at college level (or equivalent).

**LATIN 458 Roman Epic (3)** **VLPA** *Clauss, Connors, Harmon, Hinds* Recommended: minimum of 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: minimum of 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: minimum of 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: minimum of two years of Latin language study at college level (or equivalent).

**LATIN 465 Roman Topography and Monuments (5, max. 10)** **VLPA** *Clauss, Gowing, Harmon, Stroup* 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: minimum of two years of Latin language study at college level (or equivalent). Offered: Sp.

**LATIN 490 Supervised Study (\*, max. 18)**  
Special work in literary and philosophical texts for graduates and undergraduates. Recommended: minimum of 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, Harmon, Hinds*

**LATIN 502 Horace (5)** *Clauss, Harmon*

**LATIN 503 Plautus and Terence: Early Republican Literature (5)** *Blondell, Connors, Stroup*

**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* .

**LATIN 510 Roman Historians (5, max. 10)** *Clauss, Gowing* .

**LATIN 512 Augustan Poetry (5, max. 15)** .

**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: AWWSpS.

**LATIN 565 Seminar in Rome (5, max. 10)** *Clauss, Gowing, Harmon, Stroup* 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 (\*)**

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## Communication

**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) I&S/VLPA** 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) I&S/VLPA** 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 222 Speech Communication in a Free Society (3) I&S/VLPA** Problems and arguments related to freedom of speech; early English writers on freedom of expression; background of freedom of speech in the United States; contemporary freedom of speech issues.

**COM 234 Public Debate (5) I&S/VLPA** 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 270 Interpersonal Communication (5) I&S/VLPA** Emphasizes analyzing and understanding communication variables affecting human relationships, such as person perception, feedback, idea development, nonverbal cues. Focus on informal communication settings.

**COM 273 Parliamentary Procedure (3) I&S/VLPA** Principles and practice: a study of the historical bases and contemporary uses of parliamentary procedure; methods and practice in organizing and conducting public meetings.

**COM 300 Basic Concepts of New Media (5) I&S/VLPA** 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) I&S/VLPA** 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** Journalist's 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. 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 (5) I&S** 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 320 Public Speaking (5) I&S/VLPA** 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) I&S/VLPA** Inquiry into the rhetoric of social and political movements; emphasis on investigation of persuasive discourse; examination of the nonverbal symbols of persuasion.

**COM 331 The Rhetorical Tradition in Western Thought (5) I&S/VLPA** 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 334 Essentials of Argument (5) I&S/VLPA** Argument as a technique in the investigation of social problems; evidence, proof, refutation, persuasion; training in argumentative speaking.

**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) I&S/VLPA** 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 Beginning Newswriting and Reporting (4) I&S** Introduction to newswriting and reporting for print media. Focus on defining news, general writing skills, constructing leads, preparing a variety of basic journalism news stories, interviewing techniques, covering beats, and journalistic style.

**COM 361 Advanced Reporting and Newswriting (4) I&S** In-depth training in the development of advanced-level reporting and newswriting skills. Practice in information gathering, interviewing, use of sources, database analysis, and investigative reporting techniques. Recommended: COM 360.

**COM 362 Community Journalism: News Lab (5) I&S** Newswriting-skills course. Students gain real-world experience by producing news and feature stories for client papers in the Puget Sound Region. Involves considerable one-on-one work with the lecturer/editor. Requires writing and reporting skills. Recommended: COM 361.

**COM 373 Communication in Small Groups (5) I&S/VLPA** 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) I&S/VLPA** 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) I&S/VLPA** 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) I&S/VLPA** 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 378 Social Approaches to Interpersonal Communication (5) I&S/VLPA** Exploration of several social approaches to interpersonal communication, emphasizing the theorists' philosophical orientations and practical applications.

**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** Introduction to media representations of gender, race, and sexuality. Offered: jointly with AES 389/WOMEN 389.

**COM 395 Communication Internship (2-5, max. 5)** Faculty-supervised study of communi-

cation 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 402 New Media as Virtual Communities (5) I&S** Technologically-mediated virtual communities considered through analysis of historical precedents and influences and through an exploration of the concept of community. Issues include a focus on social interactions; the social, political, economic, and technological contexts of virtual communities and the limits for their sustenance.

**COM 405 New Media Criticism (5) I&S/VLPA** Examines critically the content of new media forms, contrasting them with traditional media. Stresses influences of social, economic, political, and technological forces on content and developing strategies for critical analysis.

**COM 406 Public Discourse on the Internet (5) I&S/VLPA** Study of public advocacy and persuasion in internet environments, including public interest advocacy sites, political campaigns, advertisements, editorials, and essays. Various critical models applied to analyze narratives, style, argument structure, and credibility of internet discourse. Recommended: COM 331, COM 435, or COM 436.

**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 SIS 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 EURO 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 427 International Communications Law and Policy (5) I&S** Examines the international and comparative aspects of traditional press law, broadcast regulation, and telecommunications policy. Also examines freedom of the press in international reporting and the efforts of countries to limit foreign media influences within their borders.

**COM 428 Asian Media Systems (5) I&S** Examines the media systems and communication policies in selected Asian countries. Identifies and analyzes the cultural, economic, historical, and political parameters that influence these media.

**COM 429 Chinese Communications Systems (5) I&S** Analyzes the economic, historical, intellectual, social, and political foundations of communications systems in the region of Chinese Asia: China, Hong Kong, Singapore, and Taiwan. Focus primarily on print and broadcast journalism.

**COM 430 Canadian Documentary Film Traditions (5) I&S/VLPA** History and development of non-fiction film documentary traditions, especially in Canada, the first institutionally defined area in which documentaries became prominent through the National Film Board and the Canadian Broadcasting Corporation. Discussion of Flaherty, Greirson, and independent network producers who developed present-day style of documentaries. Offered: jointly with SISCA 430.

**COM 431 Rhetorical Criticism (5) I&S/VLPA** 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 433 Speech Composition (5) I&S/VLPA** Preparation and delivery of public speeches with emphasis on style, thought organization, and proof. Analysis of model speeches. Recommended: SP COM 220.

**COM 434 Argumentation Theory (5) I&S/VLPA** Theory and research on the structure and properties of argument, argument fields, argument modeling, the influence of audience, argument criticism, and related topics. Prerequisite: either COM 220 or COM 334.

**COM 435 Historic American Public Discourse (5) I&S/VLPA** 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 20th century.

**COM 436 Contemporary American Public Discourse (5) I&S/VLPA** 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-20th century to the present.

**COM 437 Rhetorical Perspectives in Intellectual Revolutions (5) I&S/VLPA** Rhetorical investigation of selected major writings. Examines the rhetorical dimension in the progress of ideas through analysis of documents of major intellectual revolutions as persuasive works. Relates principal revolutions in Western thought to contemporary controversy. Examines Rights of Man, Communist Manifesto, The Origin of Species.

**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 Film, Sovereign Visions (5) VLPA/I&S** *Cote\*, Hart, Ross* Explores fiction, documentary, experimental film, and digital media from 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) I&S/VLPA** 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 451 Mass Media and Culture (5) I&S/VLPA** 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 459 Narrative Journalism (5) VLPA/I&S** *Kaplan* Introduces the rigorous reporting and literary writing techniques involved in narrative journalism. Concentrates on producing three narrative articles for publication in the online, reader-interactive magazine, *Narrative Journalist*. Offered: jointly with CHID 459.

**COM 460 Special Reporting Topics (4, max. 8) I&S** Topics vary. x

**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.

**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.

**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 361.

**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 300.

**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.

**COM 468 Journalism Ethics (5) I&S** *Simpson* Provides a method and substantive context based on ethical theory, media history, and value systems analysis for analyzing and resolving dilemmas raised by journalistic practices.

**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) I&S/VLPA** 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 mediatized 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) I&S/VLPA** 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 Problems of Discussion Leadership (3) I&S/VLPA** 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) I&S/VLPA** 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) I&S/VLPA** 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 476 Models and Theories in Communication (5) I&S** Examination of selected theories and models of speech communication as well as of criteria applicable to them. Emphasis on the nature and function of theories and models, especially as these relate to basic principles underlying the scientific, interpretive, and critical study of speech communication phenomena.

**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 479 Communication in Children's Environments (5) I&S/VLPA** Study of the communication capacity of children with emphasis on the analysis of the communication process in formal and informal learning environments. Includes examination of communication-based educational approaches and instructional strategies.

**COM 480 Communication in Adolescent Environments (5) I&S/VLPA** 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 Computer-Mediated Interpersonal Communication (5) I&S** Examination of relationships and groups formed through computer-mediated interpersonal communication. Focus on how people manage interactions and identities, develop interpersonal relationships, engage in collaboration and conflict, and develop communities in virtual environments. Involves both the study and use of network-based computer-mediated systems.

**COM 484 Cultural Codes in Communication (5) I&S/VLPA** 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) I&S/VLPA** Theory and practice of participant observation, intensive interviewing, and discourse analysis in the study of communicative practices. Prerequisite: COM 484.

**COM 488 Race, Gender, and Power in Asian American Media (5) I&S** 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 490 Representing Beyond the Binaries: Mixing Race, Gender, and Sexuality in the Media (5) I&S** *Joeseeph* Cultural studies approach to examining the mixed formations that race, sexuality, and gender take in the contemporary United States media. Draws upon multidisciplinary scholarship in examination of the media. Offered: jointly with AES 490/WOMEN 486.

**COM 495 Special Topics in Communication (2-5, max. 15)** Lecture, seminar, and/or team study. Topics vary.

**COM 496 Honors Seminar (5) I&S/VLPA** Preparation for researching and writing senior honors thesis.

**COM 497 Honors Thesis (5, max. 15) I&S/VLPA** 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)** 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 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 International 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 Strategies and Methodologies in Digital Media (5)** Introduces and compares methods of inquiry into digital media industries, practitioners, and consumers. Develops theories and skills applicable in business decision-making processes, as well as in scholarly research.

**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 538 Theories and Criticism of Communication Technologies (5)** Potential of the computer for use in behavioral science. Prerequisite: elementary programming, elementary statistics.

**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 Evolution and Trends in Digital Media (5)** Examines the past, present, and future of digital communication from diverse disciplinary and theoretical perspectives. 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 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 aspect 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 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) VLPA I&S** *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 U. S. Digital Media Law and Policy (5)** Examines the conceptual framework and social application of existing regulations and policies on digital media, with the aim of helping professionals address the changing legal and policy environments.

**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 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 Sexuality (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 WOMEN 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 WOMEN 589.

**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 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 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 Digital Media Message Design and Content Creation (5)** Applies communication theory to the identification, creation, and evaluation of digital media message design to meet needs of the target audience. Introduces the theory and practice of hypertext and project management techniques needed to organize digital assets, allocate resources, and meet deadlines.

**COM 586 Writing and Presentation for Digital Media (5)** Applies communication theory and research tools to rhetorical and design choices in web page creation. Examines the emergence of digital media story-telling techniques, as well as ethical and technical challenges these tools present to media and society.

**COM 587 Digital Media Economics and Management (5)** Emphasizes communication theory to analyze effective management of digital media enterprises, with practical application of economic theory to entrepreneurial strategies. Topics include analysis of the total business process, patterns of ownership, merger and acquisitions, finance and accounting, human resources development, sales and marketing, and ethics.

**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 (5, max. 10)**

**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 (\*)**

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## Comparative History of Ideas

**CHID 110 The Question of Human Nature (5) I&S/VLPA Merrell** 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 Searle** 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 Toews** Ideas in historical context. Comparative and developmental analysis of Western conceptions of "community," from Plato to Freud. Offered: jointly with HIST 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 250 Special Topics: Introduction to the History of Ideas (5, max. 15) I&S Thurtle** Examines a different subject or problem from a comparative framework. Satisfies the Group A major/minor requirement. Offered: AWSp.

**CHID 260 Re-Thinking Diversity (5) I&S Bushnell** Considers the notion of diversity from many scholarly perspectives and from personal engagements. Critically visits historical thinking about diversity and examines contemporary issues such as racism and other oppressions.

**CHID 270 Special Topics (5, max. 15) I&S** Each special topics course examines a different subject or problem from a comparative framework.

**CHID 298 Pre-Departure Seminars (2) I&S Barrett, Pitchford, Warren** Prepares students to participate in CHID International Programs. Prerequisite: students must be accepted to an International Program prior to registration. Offered: AWSpS.

**CHID 300 Ideas in Art (5) VLPA Opperman** Selected monuments of art and architecture in the Western tradition, from the Greeks to the twentieth century, studied in relation to the intellectual background of the ages and civilizations that produced them. Slide lectures accompanied by discussion of assigned readings in philosophical, religious, scientific, political, literary, and artistic texts. Offered: jointly with ART H 300.

**CHID 309 Marx and Nietzsche: The Assault on Bourgeois-Christian Civilization (5) I&S** Major dilemmas and conflicts of modern Western consciousness through historical analysis of Marx, Nietzsche, and the movements they spawned. Emphasis on the relationship between sociocultural change, biography, and ideological innovation. Offered: jointly with HIST 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 HIST 314.

**CHID 332 Disability and Society: Introduction to Disability Studies (5) I&S** Introduction to the field of disability studies. Focuses on theoretical questions of how society predominantly understands disability and the social justice consequences. Examines biological, social, cultural, political, and economic determinants in social creation/construction (framing) of disability and effects on those claiming and/or labeled as disabled. Offered: jointly with LSJ 332.

**CHID 350 Women in Law and Literature (5) I&S/VLPA** 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 WOMEN 350.

**CHID 370 The Cultural Impact of Information Technology (5) I&S/VLPA Thurtle** 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 The Nature of Religion and its Study (5) I&S Jaffee, Webb** Study of religion as a general human phenomenon. Manner in which different methods of inquiry (phenomenology, anthropology, sociology, psychology, literary

criticism, archaeology, philosophy, theology) illuminate different aspects of religion and shape our conceptions of its nature. Recommended: RELIG 201 or RELIG 202. Offered: jointly with RELIG 380.

**CHID 390 Colloquium in the History of Ideas (5) I&S** *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 433 Disability Law, Policy, and the Community (5) I&S** Seminar addressing legal rights of disabled people, history of disability policy in the United States, and the role of community activism and other forces in policy development and systems change. Introduction to the existing social service systems that affect disabled people. Recommended: LSJ 332. Offered: jointly with LSJ 433.

**CHID 434 Civil and Human Rights Law for Disabled People (5) I&S** Designed for students interested in expanding their 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 332. Offered: jointly with LSJ 434; A.

**CHID 444 Eye and Mind (5) VLPA/I&S/NW** *Thurtle* 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** *Kaplan* Introduces the rigorous reporting and literary writing techniques involved in narrative journalism. Concentrates on producing three narrative articles for publication in the online, reader-interactive magazine, *Narrative Journalist*. Offered: jointly with COM 459.

**CHID 470 CHID Study Abroad (5, max. 15) I&S** For participants in study-abroad program. Specific course content varies.

**CHID 471 Europe Study Abroad (5, max. 15) 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** *Thurtle* Examines a different subject or problem from a comparative framework with an interdisciplinary perspective. Offered: AWP.

**CHID 484 Colonial Encounters (5) I&S** History of European colonialism, focusing on British, French, and Dutch colonial encounters from 1750s to 1950s. Units on colonial law, medicine, religion, sexuality, and commodity culture. Offered: jointly with HSTEU 484.

**CHID 490 Research Seminar (5) VLPA/I&S** *Thurtle, Toews* Intensive readings in specific topic. Students complete individual research projects. Satisfies the CHID senior thesis requirement. 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 (5) 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)**

**CHID 498 Special Colloquia (1-5, max. 20) I&S** Each colloquium examines a different subject or problem from a comparative framework. A list of topics is available from the CHID office.

**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.

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## Comparative Literature

**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 211 Literature and Culture (5, max. 15) I&S/VLPA** 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 230 Introduction to Folklore Studies (5) I&S/VLPA** 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: AWP.

**C LIT 270 Perspectives on Film: Introduction (5) VLPA** Introduction to film form, style, and techniques. Examples from silent film and from contemporary film. 270, 271, 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. 270, 271, 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. 270, 271, 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** An introduction to comparative literary study designed for departmental majors. 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** 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 milieu. Theory and history of folk narrative study, taxonomy, genre classification, and interpretative approaches. Recommended: SCAND 230 or C LIT 230. Offered: jointly with SCAND 331.

**C LIT 334 Immigrant and Ethnic Folklore (5) I&S/VLPA** 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: 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 351 Themes in World Literature: Love, Sex, and Murder (5) VLPA** World literature, from the Renaissance to modern times, based upon the theme of "love, sex, and murder." Selections drawn from European, English, and American literature, not limited to period and genre. Focus upon the human potential for both great violence and extraordinary compassion.

**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 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 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 SISSE 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) I&S/VLPA** 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 424 The Epic Tradition (5) VLPA** 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. Literary background recommended. 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: 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.

**C LIT 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 20<sup>th</sup> century, focusing on how empire's materials, 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 SISSE 432.

**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 Frey. 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 517 Colloquium in Folklore (5)** Recent trends in folklore studies, taught by representatives from various literature departments and disciplines in the social sciences.

**C LIT 518 Colloquium in Medieval Studies (5)** Salient literary aspects of the European Middle Ages, taught by representatives from various literature departments as well as from related disciplines, such as philosophy, art history, history, and comparative religion.

**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.

**C LIT 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.

**C LIT 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.

**C LIT 572 The Epic: Theory and Practice (3-5, max. 15)** Examination of epic literature as exemplified by selected works chosen from various cultures and periods (e.g., French and German medieval courtly epic, the epic in Renaissance and baroque Europe, traditions of the mock epic). Course content varies.

**C LIT 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.

**C LIT 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.

**C LIT 590 Master of Arts Essay (5/10, max. 10)** Research and writing project under the supervision of a faculty member.

**C LIT 596 Special Studies in Comparative Literature (3-5, max. 15)** Offered occasionally by visiting or resident faculty. Course content varies.

**C LIT 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.

**C LIT 600 Independent Study or Research (\*)**

**C LIT 700 Master's Thesis (\*)**

**C LIT 800 Doctoral Dissertation (\*)**

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## Dance

**DANCE 101 Introduction to Dance (5) VLPA** Introduction to dance as an art form. Lectures in dance appreciation. Studio experience in ballet and modern dance techniques and composition. Attendance required at outside events.

**DANCE 102 Introduction to Dance (5, max. 10) VLPA** Introduction to dance as an art form. Lectures in dance appreciation. Studio experience in ballet or modern dance techniques, may include experience in both techniques. Attendance required at outside events. Prerequisite: DANCE 101.

**DANCE 103 Introduction to Dance (5, max. 10) VLPA** Introduction to dance as an art form. Lectures in dance appreciation. Studio experience in ballet or modern dance techniques, may include experience in both techniques. Attendance required at outside events. Prerequisite: DANCE 102.

**DANCE 104 Modern Technique (1-8, max. 8) VLPA** Beginning-level technique. Development of basic modern dance movement and terminology. Prerequisite: either DANCE 101 or DANCE 102.

**DANCE 105 Modern Technique (1-8, max. 8) VLPA** Beginning-level technique. Development of basic modern dance movement and terminology. Prerequisite: DANCE 104.

**DANCE 106 Modern Technique (1-8, max. 8) VLPA** Beginning-level technique. Development of basic modern dance movement and terminology. Prerequisite: DANCE 105.

**DANCE 107 Ballet Technique (1-8, max. 8) VLPA** Beginning-level technique. Development of basic ballet technique and terminology. Prerequisite: either DANCE 101 or DANCE 102.

**DANCE 108 Modern Technique (1-8, max. 8) VLPA** Beginning-level technique. Development of basic ballet technique and terminology. Prerequisite: DANCE 107.

**DANCE 109 Ballet Technique I (1-8, max. 8) VLPA** Beginning-level technique. Development of basic ballet technique and terminology. Prerequisite: DANCE 108.

**DANCE 110 Jazz Technique I (1-4, max. 4) VLPA** Introduction to jazz technique. Dance performance attendance required.

**DANCE 111 Jazz Technique I (1-4, max. 4) VLPA** Introduction to jazz technique. Dance performance attendance required.

**DANCE 112 Jazz Technique I (1-4, max. 4)**  
**VLPA** Introduction to jazz technique. Dance performance attendance required.

**DANCE 166 Dance Composition I (5) VLPA**  
Introduction to the principles of dance composition through improvisation.

**DANCE 201 Ballet Technique II (1-8, max. 8)**  
**VLPA** Advanced-beginning level. Continued development of all beginning areas. Expansion of ballet vocabulary. Prerequisite: DANCE 109.

**DANCE 202 Ballet Technique II (1-8, max. 8)**  
**VLPA** Advanced-beginning level. Continued development of all beginning areas. Expansion of ballet vocabulary. Prerequisite: DANCE 201.

**DANCE 203 Ballet Technique II (1-8, max. 8)**  
**VLPA** Advanced-beginning level. Continued development of all beginning areas. Expansion of ballet vocabulary. Prerequisite: DANCE 202.

**DANCE 204 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: DANCE 106.

**DANCE 205 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: DANCE 204.

**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: DANCE 205.

**DANCE 210 Jazz Technique II (1-4, max. 4)**  
**VLPA** Intermediate-level jazz technique. Continued development of beginning areas. Expansion of movement vocabulary. Dance performance attendance required.

**DANCE 211 Jazz Technique II (1-4, max. 4)**  
**VLPA** Intermediate-level jazz technique. Continued development of beginning areas. Expansion of movement vocabulary. Dance performance attendance required.

**DANCE 212 Jazz Technique II (1-4, max. 4)**  
**VLPA** Intermediate-level jazz technique. Continued development of beginning areas. Expansion of movement vocabulary. Dance performance attendance required.

**DANCE 230 Alternative Movement Studies (1-3, max. 9) VLPA** Introduction to an alternative approach to movement study. Topics vary.

**DANCE 231 Folk-Social Dance Forms (1-2, max. 6) VLPA** Studio course in folk dance and social dance forms. Topics vary, and may include salsa 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.

**DANCE 233 Advanced Alternative Movement Studies (3) VLPA** Study of an alternative approach to movement at the advanced level. Topics vary. Prerequisite: DANCE 232.

**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 235 Integrated Dance: Training and Composition (3, max. 9) VLPA/I&S Koch** 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. Culminates in performance in Faculty Dance Concert. Offered: W.

**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) I&S/VLPA Cooper** 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: A.

**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. 9) VLPA Bracilano** May include performance, choreography, production crew, or stage management in Dance program produced concerts under faculty supervision. Credit/no credit only.

**DANCE 301 Ballet Technique III (1-8, max. 8) VLPA** Intermediate level. Expansion of ballet vocabulary. Prerequisites: DANCE 203.

**DANCE 302 Ballet Technique III (1-8, max. 8) VLPA** Intermediate level. Expansion of ballet vocabulary. Prerequisites: DANCE 301.

**DANCE 303 Ballet Technique III (1-8, max. 8) VLPA** Intermediate-level. Expansion of ballet vocabulary. Prerequisite: DANCE 302.

**DANCE 304 Modern Dance Technique III (1-8, max. 8) VLPA** Intermediate-level technique. Expansion of movement vocabulary. Prerequisite: DANCE 206.

**DANCE 305 Modern Dance Technique III (1-8, max. 8) VLPA** Intermediate-level technique. Expansion of movement vocabulary. Prerequisite: DANCE 304.

**DANCE 306 Modern Dance Technique III (1-8, max. 8) VLPA** Intermediate-level technique. Expansion of movement vocabulary. Prerequisite: DANCE 305.

**DANCE 336 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. Offered: WSp.

**DANCE 344 Early Dance History (3-5, max. 5) I&S/VLPA Cooper** Explores Western theatre dance history from Renaissance court dance to development in ballet history through the mid-20th century. Examines dance practices in cultural/historical context. Assigned readings, in-depth analyses of dances on video guide a discussion of form, content, interpretation, and critical reception. Offered: A; alternative years.

**DANCE 345 Late Dance History (3-5, max. 5) I&S/VLPA Salk** Examines the development of social and performance-based dance from the beginning of the 20<sup>th</sup> century to the present with particular emphasis on major international stylistic trends, cultural influences, and principal artists and their work. Offered: A; alternative years.

**DANCE 350 Dance/Performance Ethnography (5) VLPA/I&S** 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.

**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 420 Dance Aesthetics (3) I&S/VLPA Woody** Philosophical investigation of the expressive elements of dance. Reading and discussion of the concepts of beauty, style, and aesthetic theory.

**DANCE 480 Senior Seminar (3) VLPA** Culminating project emphasizing a synthesis of experiences in the Dance Program with a focus on individual interests.

**DANCE 490 Special Studies in Dance (1-3, max. 10) VLPA** Special studies designed to address contemporary and historical concerns in the field of dance.

**DANCE 493 Anatomy for Dance (3-5) NW/VLPA Wiley** Anatomy of the musculoskeletal system and its applications in dance movement.

**DANCE 494 Dance Teaching Methodologies (3-5) VLPA 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.

**DANCE 499 Undergraduate Independent Study (\*, max. 10)**

**DANCE 510 Chamber Dance Production (3, max. 12) Wiley** Rehearsal and performance of significant choreography from the modern dance canon. 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)** 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)** Readings and discussion relating to dance administration in college and professional settings. Topics include: curricular development, academic advising, budgetary procedures, personnel issues, and problems related to dance as a performing art within the university structure.

**DANCE 530 Choreographer/Composer Collaboration (2, max. 6)** Addresses creative process, pedagogy, performance, directing, and critical analysis in dance composition. Alternate years offer models and creative workshop projects toward a concert of collaborative work with students from DXARTS. Offered: A.

**DANCE 531 MFA Concert Production (3, max. 9)** Public performance of MFA choreography. On alternative years this is a collaborative concert between MFA choreographers and artists working in experimental media and digital arts. Offered: Sp.

**DANCE 536 Integrated Dance: History, Methodology, and Praxis (3, max. 9)** *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. Offered: Sp.

**DANCE 544 Early Dance History (3-5, max. 5)** *Cooper* Explores Western theatre dance history from Renaissance court dance to development in ballet history through the mid-20th century. Examines dance practices in cultural/historical context. Assigned readings, in-depth analyses of dances on video guide a discussion of form, content, interpretation, and critical reception. Offered: A; alternative years.

**DANCE 545 Late Dance History (3-5, max. 5)** *Salik* Examines the development of social and performance-based dance from the beginning of the 20th century to the present with particular emphasis on major international stylistic trends, cultural influences, and principal artists and their work. Offered: A; alternative years.

**DANCE 550 Dance Performance Ethnography (3) VLPA/I&S** *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 discussed also applicable to other physical practices such as music, theatre, sports and performance art. Offered: W.

**DANCE 570 Dance Production Seminar (3)** *Bracilano* 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)** *Salik* 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 advisor 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

**DXARTS 198 Digital Arts Seminar (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 (3) 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 201 Fundamentals of Digital and Experimental Art I (5) VLPA** Principles of digital media creation through a combination of lectures, practical assignments, and studio seminars. All resources, assignments, and reviews are web-based. Requires access to a fast, networked computer outside of class. Prerequisite: DXARTS 200.

**DXARTS 202 Fundamentals of Digital and Experimental Art II (5) VLPA** Server-based art course. Introduces principles of digital media creation. All resources, assignments, and reviews are web-based. Requires access to a fast, networked computer outside of class. Prerequisite: DXARTS 201.

**DXARTS 400 Undergraduate Research Studio (2, max. 6) VLPA** Covers recent advances and current trends in digital arts and experimental media research. Topics may include in-depth examination of new artwork and research by pioneering figures in the field.

**DXARTS 411 Applications of Digital Technologies to Humanities Research (5) VLPA** Hands-on project-based approach to imaging, new media, text, databases, metadata and accessibility, rights management, and other issues central to contemporary humanities research. Offered: jointly with HUM 411.

**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 440 Fundamentals of Interactive 3D Art (5) VLPA** *Andrews* Introduction to fundamental techniques for the creation of interactive graphics-based three-dimensional digital art. Concepts and techniques include the use of scripting and modeling as methods for designing

spaces. Strong emphasis on interactivity, aesthetics, and the exploration of time-based art. Contextualizes navigable digital environments within the history of the visual arts.

**DXARTS 441 3D Space I: Computer Modeling and Environments (5) VLPA** *Andrews* Introduction to 3D graphics for experimental artists. Utilizes sophisticated software tools to explore object modeling, environment construction, surface texturing, and image rendering. Through lectures, viewings, tutorials, and projects, students develop a multi-purpose skill set that can be used for innovative content creation, visualization, project planning, documentation, and cross-media integration. Offered: A.

**DXARTS 442 3D Space II: Computer Motion and Advanced Techniques (5) VLPA** *Andrews* Further investigation into 3D visualization for experimental artists. Building on foundations established DXARTS 441, introduces methods for orchestrating movement, including deformation, dynamics, and rigging. Also covers techniques such as particle systems, simulation, and scripting, giving students experience using advanced tools for envisioning and creating original artwork. Prerequisite: DXARTS 441. Offered: W.

**DXARTS 443 3D Space III: Special Topics in 3D Computer Arts (5) VLPA** *Andrews* In-depth exploration of topics in advanced 3D arts research, specific subjects vary. Students integrate skill developed in DXARTS 441 and DXARTS 442 to realize ambitious art projects related to particular class focus. Sample topics include virtual reality, interactive 3D, networked environments, and rapid prototyping. Prerequisite: DXARTS 442. Offered: Sp.

**DXARTS 450 Digital Video Foundations (5) VLPA** *Brixey* Digital video studio designed towards the individual creation of experimental short films and video art. Emphasis on art-making, conceptual thinking, and experimentation. Focuses on core generative processes of digital film, including preproduction, production, and presentation. Students work individually and in small teams.

**DXARTS 451 Introduction to Experiments in Digital Video: The Architecture of Time I (5) VLPA** Introduction to the skills and concepts used in digital video production. Includes exposure to industry standard equipment, terminology, and digital video production skills in experimental arts context. Basic research areas include field production and electronic image gathering, field and studio lighting, basic non-linear editing. Offered: A.

**DXARTS 452 Experiments in Digital Video: The Architecture of Time II (5) VLPA** Nonlinear and nondestructive editing methods used in digital video are defining new architectures of time for cinematic creation. Continues previous digital video research with intermediate nonlinear editing, digital audio, compositing, and digital effects. Focuses specifically on student research with alternative cinematic strategies in an experimental arts context. Prerequisite: DXARTS 451. Offered: W.

**DXARTS 453 Experiments in Digital Video: The Architecture of Time III (5) VLPA** Further skills and concepts taught in DXARTS 450 and 451. Emphasizes development of advanced research interests. Research topics include interactive video installation, web-based e-

cinema projects, anamorphic image research, video and electronics as support systems for installation, CCTV research, basic D D authoring, and live keying techniques. Prerequisite: DXARTS 452. Offered: Sp.

#### **DXARTS 460 Digital Sound (5) VLPA**

Foundations of digital sound for digital arts applications. Digital sound theory; transducers; audio signals; mixer architectures; field recording strategies. Multi-track editing for recording, analysis, editing, montage, mixing, synchronization, and mastering. Problem-solving for innovative applications in video, multi-media, and installation art.

#### **DXARTS 461 Digital Sound Synthesis (5) VLPA**

Introduction to software sound synthesis techniques. Includes acoustics and psychoacoustics; virtual synthesizers and unit generators; table-lookup oscillators and wavetable synthesis; additive synthesis; modulation synthesis; ring amplitude, phase and frequency; granular synthesis; noise; subtractive synthesis and filters. Offered: jointly with MUSIC 401; A.

#### **DXARTS 462 Digital Sound Processing (5) VLPA**

Introduction to digital sound processing techniques. Includes sampling techniques and time-domain transformation of samples sound; sample-rate conversion; sound granulation and time stretching; delay lines; introduction to digital filtering; FIR and IIR filters; digital effects; reverberation; virtual-room acoustics and dynamic sound location. 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** Software- and hardware-based tools and approaches to real-time I/O and electromechanical control in performance, art installations, and other digital arts applications. Focus on prepackaged but flexible tools. Real-time systems programming and design.

**DXARTS 471 Mechatronic Art, Design, and Fabrication I (5) VLPA** A systems based approach to design and fabrication of functional experimental art devices. Combines principles of mechanical, electronic, electrical, software engineering, robotics, motion control, sensors, actuators, and other control devices. Integrated review of new hardware and software components. Offered: A.

**DXARTS 472 Mechatronic Art, Design, and Fabrication II (5) VLPA** Continues the systems based approach to the design and fabrication of functional experimental art devices. Combines principles of mechanical, electronic and electrical engineering, software engineering, robotics and motion control, application of sensors, actuators, and other control devices. Prerequisite: DXARTS 471. Offered: W.

**DXARTS 473 Mechatronic Art, Design, and Fabrication (5) VLPA** Continues systems based approach to the design and fabrication of

functional experimental art devices. Combines principles of mechanical, electronic and electrical engineering, software engineering, robotics and motion control, application of sensors, actuators, and other control devices. Prerequisite: DXARTS 472. : Sp.

**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 advisor. 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 493 Senior Thesis III (5) VLPA** Third course of the senior thesis sequence. Completion and presentation of final project. Majors and senior standing only Prerequisite: DXARTS 492. Offered: Sp.

**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. Offered: A.

**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 511 Applications of Digital Technologies to Humanities Research (5)** Hand-on project based approach to imaging, new media, electronic text, metadata and accessibility, rights management, and other issues central to contemporary humanities research.

**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. Prerequisite: DXARTS 450; DXARTS 531.

**DXARTS 545 Digital Stereoscopic Cinema (5) Andrews** Exploration of stereoscopic cinema focusing on depth perception as an element in artistic practice. Introduces history, theory, and methods of production for 3D time-based imagery. Students have access to equipment and opportunities to produce work in this format. Prerequisite: DXARTS 442, DXARTS 452, or permission of instructor.

**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 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 software tools for spectral analysis, transformation, and synthesis. Prerequisite: DXARTS 463.

**DXARTS 567 Sound in Space (5)** Theory and practice of spatial sound. Custom-designed software for spatial location of sound. Soundfield microphones used for team-based location recording sessions. 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 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 research. Various topics may include in-depth examination of new art work and research by faculty, students, and visiting professions.

**DXARTS 600 Independent Study or Research (1-9) .**

**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.

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## **Drama**

**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 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.

**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 214 Design for Performance (5, max. 10) VLPA**

Introduction to basic concepts of designing for the performing arts. Emphasis on text analysis, collaboration, and on how the visual and aural development of character and environment relate to a written or musical source. Requires tools and materials used in the creation of collages, models, and mini-performances.

**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: A.

**DRAMA 252 Acting (4) 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. Recommended: DRAMA 251. Offered: W.

**DRAMA 255 UWOnCue (1-4, max. 12) VLPA**

Improvisational, physical, and vocal training. Approach based on Viola Spolin Improvisation, Michael Chekhov acting method. Suzuki physical training, Anne Bogart's Viewpoints training, and Kristin Linklater's vocal training. Enrollment by audition.

**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** *Bryant-Bertail*, 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. Offered: AWSp.

**DRAMA 305 Computers in the Theatre (5)**

**VLPA** Computing and information systems as problem solving tools for the theatre. Analysis of problems in theatre production and scholarship, with approaches to solutions through computing. Database, spreadsheet, and CAD system applications in the practice and study of lighting and scenic design, theatre management, and research in theatre history and criticism.

**DRAMA 313 Scenery Construction (3) VLPA**

Survey of materials, processes, and equipment in the fabrication, assembly, painting, rigging, and installation of stage scenery and properties. Recommended: DRAMA 210.

**DRAMA 314 Introduction to Design for the Performing Arts (3) VLPA**

*Forrester* 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. Open to nonmajors.

**DRAMA 350 Introduction to Acting Methods (4) VLPA**

Advanced scene study from three actor-training viewpoints. Approach based in the American "method" through such proponents as Adler, Strasberg, Hagen, Meisner. Exposure to more physically-based systems such as Alexander and Suzuki included. Recommended: DRAMA 252 or equivalent.

**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. Recommended: one of DRAMA 210, DRAMA 211, DRAMA 212; two of DRAMA 290, DRAMA 291, DRAMA 292; DRAMA 253; audition; and 2 credits of DRAMA 466 within two quarters. Offered: A

**DRAMA 352 Intermediate Acting-Verse (4)**

**VLPA** *Parker* 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. Recommended: one of DRAMA 210, DRAMA 211, DRAMA 212; two of DRAMA 290, DRAMA 291, DRAMA 292; DRAMA 253; audition; and 2 credits of 466 within two quarters. Offered: A

**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. Recommended: one of DRAMA 210, DRAMA 211, DRAMA 212; two of DRAMA

290, DRAMA 291, DRAMA 292; audition; and 2 credits of 466 within two quarters. Offered: Sp.

**DRAMA 365 Ethnic Studies in Drama (3-5, max. 15) I&S/VLPA**

*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.

**DRAMA 371 Theatre and Society (5) I&S/VLPA**

Introduction to the history of the theatre from the Greeks to the present day. Development of the theatre as a social institution. Reading of major texts from each period.

**DRAMA 373 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 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 commedia 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 Senior Seminar (1, max. 2) VLPA**

*Gates* A professional seminar featuring guest artists and career development specialists. Credit/no credit only. Offered: A.

**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 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 413 Advanced Scene Construction (3)**

**VLPA** Special problems in scene construction materials and rigging. Recommended: DRAMA



210; DRAMA 212; DRAMA 290; DRAMA 292; DRAMA 410; DRAMA 420.

**DRAMA 414 Scene Design (3, max. 6) VLPA** Theory, practice, and rendering of scene designs. Repeat of course involves intermediate designs and models. Recommended: ART H 203; 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.

**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, worksheets, study of color. Students read plays and develop analytical skills. Recommended: DRAMA 212.

**DRAMA 420 Design and Technical Drafting (2, max. 4) VLPA** *Forrester* 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. Recommended: DRAMA 253 or DRAMA 353; DRAMA 210; DRAMA 211; DRAMA 212.

**DRAMA 450 Rehearsal Laboratory (2, max. 6) VLPA** Acting in projects directed by graduate directing students. Recommended: DRAMA 253.

**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 two public showings of the five-minute one-person works. Offered: A.

**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. Offered: W.

**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. Offered: Sp.

**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 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; DRAMA 253 or DRAMA 353; DRAMA 302. Offered: A.

**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 18th 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 19th century to the artistic revolution that paved the way for modern theatre. Prerequisite: DRAMA 302.

**DRAMA 473 Modern European Theatre and Drama (5) VLPA** *Witham* 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** *Witham* 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** *Witham* 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 490 Special Studies in Acting-Directing (1-6, max. 12) VLPA** .

**DRAMA 491 Special Studies in Design-Technical (1-6, max. 6) 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** *Bryant-Bertail, Johnson, Witham* 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. Recommended: DRAMA 211, DRAMA 212, DRAMA 313.

**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. Prerequisite: graduate standing in drama.

**DRAMA 510 Design Studio (3, max. 18) Korf, Lynch, Trout** Investigation of space, form, light, texture, and color in total theatre design, stressing mastery of the media, methods of presentation and execution, and intelligent and appropriate visual reaction to a dramatic text. Prerequisite: graduate standing in drama.

**DRAMA 512 Lighting Design Seminar (1/4, max. 18)** Forum for graduate lighting students to further explore the art of lighting design. Assignments include paper projects, School of Drama production, and field trips to local theatres. Prerequisite: graduate standing.

**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)** *Dahlstrom* Investigation of artistic principles and modes that influenced the art, architecture, furniture, and decor of selected historic periods.

**DRAMA 519 Studies in Historic Design (3)** *Dahlstrom* Investigation of artistic principles and modes that influenced the art, architecture, furniture, and decor of selected historic periods. Prerequisite: DRAMA 518, or permission of instructor.

**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 551 Teaching of Acting (1-3, max. 3)** Seminar discussion on problems in teaching acting to undergraduate students in 251, 252, and 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 251, 252, and 253. Prerequisite: permission of instructor and being a teaching assistant in acting.

**DRAMA 553 Teaching of Acting (1-3, max. 3)** Seminar discussion on problems in teaching acting to undergraduate students in 251, 252, and 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)** *Jenkins, Jory, Madden, Shahn* 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)** *Jenkins, Jory, Madden, Shahn* Continuation of 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)** *Jenkins, Jory, Madden, Shahn* 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: graduate standing in drama and 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 the Camera (3)** Story-boarding, setting up camera shots, improvisation, and rehearsal techniques for directing actors on camera (both in studio and on location). Students direct one- and two-camera scenes; and write, direct, and edit a short screenplay.

**DRAMA 567 Acting Process (1-3, max. 12)** 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)** 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)** *Johnson, Postlewait, Witham* 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)** *Johnson, Postlewait, Witham* 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)** *Johnson, Postlewait, Witham* 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)** *Johnson, Witham* 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)** *Johnson, Witham* 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)** *Johnson, Witham* 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)** *Bryant-Bertail, Mezur* Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

**DRAMA 582 Analysis of Dramatic Texts (5)** *Bryant-Bertail, Mezur* Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

**DRAMA 583 Analysis of Dramatic Texts (5)** *Bryant-Bertail, Mezur* Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

**DRAMA 585 Seminar in Dramatic Theory (5)** *Bryant-Bertail* Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

**DRAMA 586 Seminar in Dramatic Theory (5)** *Bryant-Bertail* Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

**DRAMA 587 Seminar in Dramatic Theory (5)** *Bryant-Bertail* Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

**DRAMA 599 Advanced Studies in Theatre Arts (1-5, max. 10)** 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 (\*)**

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## Earth and Space Sciences

**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) NW**

Explores powering the sun, making of space weather conditions, observations from space and from Earth, Earth's space environment, radiation belts and hazards, plasma storms and auroras, electron beams, spacecraft requirements, tooling up for manned exploration. Open to non-science majors.

### **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 107 Environments of Washington Through Geologic Time (5) NW** Introduces students to the geologic and paleontologic history of our region. Students collect data from field studies and museum collections of fossils and rock to reconstruct ancient environments, creating paleogeographic and paleoclimatic maps through geologic sequences of time. Includes three, one-day field trips on weekdays.

**ESS 115 Astrobiology: Life in the Universe (5) NW** 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 ASTBIO/ASTR/OCEAN 115/BIOL 114.

**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) 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) NW** Glaciers in Washington and the world. The ancient atmosphere inside of glaciers. Changes in glaciers now and ice-age cycles. Glaciers, global sea level and climate in the future. Open to non-science majors.

**ESS 204 Geology of the National Parks (5) NW** Review of fundamental geological processes, using North American parks and monuments as examples of natural laboratories. Includes volcanism, glaciation, water and wind erosion, plate-tectonic forces as preserved in geologic exposures of National Parks. Specific topics explored in laboratory sessions and field trips. Prerequisite: either ESS 101, ESS 105, ESS 210, or ESS 211.

**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 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: either MATH 124 or Q SCI 291, either of which may be taken concurrently; 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: 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: ESS 211. 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 303 Geologic Hazards (5) NW** Geological forces dramatically alter the earth's surface, devastating communities, taking human lives. Uses lectures and field work to examine geological hazards affecting civilizations around the world. Northwest examples illustrate causes and effects of many catastrophic geological processes, including: earthquakes, volcanoes, floods, glaciers, landslides. 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 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 114/117 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 114/117 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: MATH 126; either PHYS 115/118 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. Offered: W.

**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 101, ESS 105, ESS 210, 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 314.

**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 Plate Tectonics (4) NW** Introduction to the principles and methods of plate tectonics, including motions on a sphere, polar-wander paths, plate-boundary seismicity, and focal mechanisms. Also includes modern observations and theories of plate deformation and continental dynamics. 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. Recommended: HIST 311; HIST 312. Offered: alternate years.

**ESS 410 Marine Geology and Geophysics (4) NW** Sedimentological and petrologic processes that determine the geologic record. Prerequisite: either ESS 101 or ESS 210. Offered: jointly listed with OCEAN 410.

**ESS 411 Geophysical Continuum Mechanics (3) 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 Seismology (3) NW** Introduction to theoretical and observational seismology. Elastic plane wave propagation through stratified media. Surface waves, eigenvibrations, ray theory. Structure of the Earth's mantle and core. Seismicity distributions, earthquake focal mechanisms and relationship to tectonics. Prerequisite: either ESS 411; recommended: concurrent registration in ESS 466.

**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; 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 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). Recommended: introductory courses in physics, chemistry, calculus, geology, and field geology. 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 MATH 124, MATH 126, MATH 129, or MATH 136; PHYS 123. Offered: jointly with ATM S 460/PHYS 460.

**ESS 426 Fluvial Geomorphology (5) NW** 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** 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 (3) 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. Offered: jointly with QUAT 417.

**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 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 (4) NW** *Sidor* Examines vertebrate life as seen in the fossil record, focusing first on fish lineages, and then on amniote (reptile, bird, and early mammal relatives) systematics and morphology. Examines fossil and modern vertebrates from the Burke Museum collection in the lab. One required weekend field trip. Prerequisite: either BIOL 453 or ESS 100. Offered: jointly with BIOL 450; Sp.

**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 BIOL 101, ESS 100, or ESS 452.

**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 reworking of deposits. Prerequisite: either 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** Overview of earthquake processes and details of the characteristics of destructive ground motion; effects of such motion on engineering structures; current practice in estimating earthquake hazards for important structures such as nuclear power plants. Prerequisite: either MATH 126 or both MATH 307 and MATH 308. Offered: jointly with CEE 431.

**ESS 467 Seismic Exploration (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: ESS 311; either MATH 126, MATH 129, or MATH 136; PHYS 123.

**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 High Altitude Research Projects (5) McCarthy** Students launches of science payloads to high altitude, providing design, fabrication, test, integration, and management experience; covers science motivation, instrumentation, payloads, and delivery systems. One field excursion required for launch. Project may vary from year to year. Prerequisite: PHYS 122; either PHYS 334 or ESS 205. Offered: S.

**ESS 489 Honors Seminar (3) Bourgeois** 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 (2-10, max. 20) NW**

**ESS 492 Undergraduate Teaching Experience and Outreach (1-2, max. 2) 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 instructor permission. Offered: W.

**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. 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 511 Geophysical Continuum Mechanics (3)** 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)** Theoretical and observational seismology. Elastic plane wave propagation through stratified media. Surface waves, eigenvibrations, ray theory. Structure of Earth's mantle and core. Seismicity distributions, earthquake focal mechanisms and relationship to tectonics. Advanced, research-oriented problems. Prerequisite: ESS 511; recommended: concurrent registration in ESS 466.

**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 521 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 for research. Prerequisite: ESS 571; ESS 572. Offered: jointly with ATM S 534.

**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 526 Sediment Dynamics and Boundary-Layer Physics (4)** Theoretical descriptions of sediment transport processes constrained by laboratory demonstrations. The physics of boundary layers, initiation of motion, suspended load, bedload, bedforms, and continua transport (turbidity currents, debris flows, and suspensions) and its application to the geological record. Offered: jointly with OCEAN 542.

**ESS 527 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 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. Prerequisite: permission of instructor. Offered: jointly with ATM S 510.

**ESS 532 Formation of Snow and Ice Masses (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; alternate years.

**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.

**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. Nucleation, crystal growth, and diffusion in melts. Prerequisite: ESS 312; ESS 439.

**ESS 545 Economic Geology of Sedimentary Rocks (5)** Description and origin of metallic and nonmetallic ore deposits indigenous to regoliths, sediments, and sedimentary rocks. Prerequisite: ESS 445, or equivalent or permission of instructor.

**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: either ESS 413, or ESS 513, ESS 522, PHYS 323; 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. Offered: alternate years.

**ESS 552 Solution Geochemistry (4)** Solution chemistry and thermodynamics as applied to solid and liquid silicates and aqueous fluids. Modeling configurational entropies in solids, activity coefficients and complexes in aqueous solution, and modeling chemical mass transfer in geologic systems. Prerequisite: ESS 312, or equivalent.

**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 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 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/OCEAN/ESS 587, ATM S 504 or ATM S 505. Offered: jointly with ATM S 559/OCEAN 558; Sp; alternate years.

**ESS 560 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. 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. Prerequisite: either ESS 412, ESS 512, or permission of instructor.

**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 Physics of the 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 571 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: jointly with ATM S 532.

**ESS 572 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: jointly with ATM S 533.

**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.

**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.

**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 maser 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 583 Origin of the Solar System (3)** Nebular and nonnebular theories of the origin of the solar system; 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; examination of the 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)** 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/ENVIR/SMA 585.

**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. Offered: jointly with ATM S 586/OCEAN 586.

**ESS 587 Climate Dynamics (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)** Oceanic and terrestrial biogeochemical processes controlling atmospheric CO<sub>2</sub> 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.

**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 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. 12)** 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.

**ESS 599 Seminar (1, max. 15)** 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 700 Master's Thesis (\*)**

**ESS 800 Doctoral Dissertation (\*)**

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## Economics

**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 235 Introduction to Environmental Economics (5) I&S/NW** Introduces non-economics majors to environmental and natural resource economics. Discussion of fundamental economic concepts, including markets and

private property. Students learn basic tools used in the economic assessment of environmental problems and apply these methods to key environmental issues. Offered: jointly with ENVIR 235

**ECON 299 Study Abroad: Economics (5, max. 10) I&S** For participants in the Study Abroad program. Specific course content determined by assigned faculty member and announced in Study Abroad bulletins.

**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: 2.0 in ECON 201; 2.0 in ECON 300. Offered: AWSpS.

**ECON 396 Honors Research Seminar (2) I&S** Different members of the Economics faculty present and discuss their research work. Exposes students to ideas about potential topics for their thesis. For Honors students only. Does not satisfy graduation requirement for the major. Credit/no credit only. Offered: Sp.

**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.

**ECON 400 Advanced Microeconomics (5) NW** Application of calculus to microeconomics. Development of comparative statics used in production and consumption theory, including derivation of the Slutsky equation and duality results. Prerequisite: 2.0 in ECON 300; MATH 126; recommended: 2.5 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: 2.0 in ECON 301; either MATH 126, MATH 129, or MATH 136; recommended: 2.5 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 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: 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: 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: 2.0 in ECON 300; recommended: ECON 485.

**ECON 406 Undergraduate Seminar in Economics (5, max. 10) I&S** Provides 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** 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 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: 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: 2.0 in ECON 300; either ECON 311, STAT 311, MATH 390, STAT 390, or QMETH 201

**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: 2.0 in ECON 301; ACCTG 215. Offered: AWSpS.

**ECON 424 Computational Finance and Financial Econometrics (5) NW** Covers probability models, data analysis, quantitative, and statistical methods using applications in finance. Prerequisite: 2.0 in ECON 300; either ECON/STAT 311, STAT 341, MATH/STAT 390, or QMETH 300; either MATH 112, MATH 124, MATH 127, MATH 134, or MATH 145. Offered: AWSpS.

**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: 2.0 in ECON 301.

**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: 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: 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: 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: 2.0 in ECON 300.

**ECON 442 Economics of Human Resource Management (5) I&S** 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: 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: 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: 2.0 in ECON 300. Offered: AWSpS.

**ECON 447 Economics of Gender (5) I&S** 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: 2.0 in ECON 300. Offered: jointly with WOMEN 447.

**ECON 448 Population and Development (5) I&S** Survey of topics in population economics, including history of thought, demographic experience of currently developing countries, household production models, fertility demand, quantity-quality models of fertility, mortality, health and nutrition, migration, macroeconomic-demographic linkages. Prerequisite: 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: 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: 2.0 in ECON 300.

**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: 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: 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: 2.0 in ECON 301. Offered: AWSpS.

**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: 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: 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: 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, commercial, fiscal, and monetary-and the economic linkages between the European Union and the rest of the world. Prerequisite: 2.0 in ECON 301.

**ECON 481 Introduction to Mathematical Statistics (5) NW** Probability, generating functions; the d-method, Jacobians, Bayes theorem; maximum likelihoods, Neyman-Pearson, efficiency, decision theory, regression, correlation, bivariate normal. (Credit allowed for

only one of 390, 481, and ECON 580.) Prerequisite: STAT/ECON 311; either MATH 136 or MATH 126 with either MATH 308 or MATH 309. Recommended: MATH 324. Offered: jointly with CS&SS/STAT 481; A.

**ECON 482 Economic Theory and Practice (5) NW Ellis, Startz** 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: 2.0 in ECON 300; either ECON 311/STAT 311 or MATH 390/STAT 390; recommended: MATH 124

**ECON 483 Econometric Applications (5) NW Kim** 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: 2.0 in ECON 301; either ECON/STAT 311, STAT 341, MATH/STAT 390, or QMETH 300.

**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: either MATH 112, MATH 124, MATH 127, MATH 134, or MATH 145; 2.0 in ECON 300.

**ECON 486 Economics of Information (5) I&S, QSR Khalil, Lawarree** 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. Recommended: ECON 404 or ECON 485. Prerequisite: 2.0 in ECON 300.

**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: 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: 2.0 in ECON 301.

**ECON 492 Economic Issues of Contemporary Latin America (5) I&S** Covers economic issues of current interest to policymakers in Latin America. Topic areas include trade policy, external capital flows to the region, macroeconomic instability, fiscal and monetary institutions, income inequality, and globalization. Prerequisite: minimum grade of 2.0 in ECON 301.

**ECON 495 Economic Transformation of Russia and Eastern Europe (5) I&S** Analytical survey of the economic institutions and economic structures of the transforming socialist economies. Socialist resource allocation. Market institutions. Structural change and the sequencing of economic reform. Primary focus on Russia and Eastern Europe. Prerequisite: 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. For seniors only.

**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 an economics 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 Introduction to 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 the 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)** *Sirakaya* 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)** *Startz* 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 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)** *Huppert* 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: SMA 500 or permission of instructor. Offered: jointly with SMA 537; W.

**ECON 538 Economics of Living Marine Resources (3)** *Huppert* 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 SMA 538; Sp.

**ECON 539 Economics of Natural Resources Seminar III (3)** Selected advanced topics in the economics of natural resources and environmental regulation. Topics may include environmental regulation as a problem in optimal mechanism design, enforcement of regulations, regulatory regimes for common property resources, and the measurement of market power in nonrenewable resource industries. Prerequisite: ECON 536.

**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 households 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 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)** *Quinn* 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/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 580 Econometrics I (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. Students may receive credit for only one of MATH/STAT 390, ECON/STAT 481, and ECON 580.

**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: ECON 580.

**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 583. Analysis of stationary and

nonstationary, univariate, and multivariate time series models. Emphasis on empirical applications. Prerequisite: ECON 583.

**ECON 585 Applied Microeconometrics (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 591 Microeconomics of Development (3)**

Portner 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 594 Economic Growth (3)**

*Turnovsky* 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 Analysis of the Transforming Socialist Economies (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 market. Prerequisite: micro- and macroeconomic theory and permission of instructor.

**ECON 599 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.

**ECON 600 Independent Study or Research (\*)**

Credit/no credit only.

**ECON 601 Internship (1-9, max. 9)**

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

**ENGL 100 Language Structure I (5)**

The first course in an academic writing sequence for non-native speakers of English, focusing on improving accuracy at the word, phrase and clause levels. Instruction provides repeated exposure to and engagement with practical formal vocabulary in academic contexts. ENGL 100, 101, and 102 must be taken consecutively. Offered: AWSpS.

**ENGL 101 Language Structure II (5)**

The second course in an academic writing sequence for non-native speakers of English, focusing on improving accuracy at the word, phrase, and sentence level, and across phrase and clause boundaries. Instruction provides repeated exposure to and engagement with practical formal vocabulary in academic contexts. ENGL 100, 101, and 102 must be taken consecutively. Offered: AWSpS.

**ENGL 102 Language Structure III (5)**

The third course in an academic writing sequence for non-native speakers of English, focusing on improving accuracy and style in complex sentences and paragraphs. Students continue to expand their ability to effectively express, combine and link ideas using sentence structure and vocabulary appropriate to different academic writing tasks. Course must be taken consecutively. Offered: AWSpS.

**ENGL 103 Writing About Sources (5)**

Students learn to comprehend, analyze, synthesize, and evaluate authentic academic readings, and to use the basic rhetorical structures commonly found in academic writing: summary, definition, comparison/contrast, cause/effect, and problem solution. Emphasis placed on producing well-formed, accurate, and comprehensible written responses that meet the standards and conventions of academic style. Offered: AWSpS.

**ENGL 104 Listening to Academic Lectures (5)**

Students learn to actively listen to and comprehend academic lectures and to take, use and access notes on those lectures. This entails the ability to recognize spoken rhetorical cues and organizational patterns, and to analyze and synthesize content, viewpoint and inferences critically. Offered: AWSpS.

**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 106 Practical Forms of Writing (5)**

C Instruction in writing essay examinations, reports, reviews, and research papers. For Educational Opportunity Program students only, upon recommendation by the Office of Minority Affairs.

**ENGL 109 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 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.

**ENGL 121 Composition: Social Issues (5)**

C Study and practice of good writing; topics derived from reading and discussing essays and fiction about current social and moral issues.

**ENGL 131 Composition: Exposition (5)**

C Study and practice of good writing; topics derived from a variety of personal, academic, and public subjects.

**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 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 Literature (5)**

VLPA Techniques and practice in reading and enjoying literature. Examines some of the best works in English and American literature and considers such features of literary meaning as imagery, characterization, narration, and patterning in sound and sense. Emphasis on literature as a source of pleasure and knowledge about human experience.

**ENGL 202 Introduction to the Study of**

**English Language and Literature (5)** 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 197 required.

**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** Asks three questions: What is Cultural Studies? How does one read from a Cultural Studies perspective? What is the value of reading this way? Provides historical understanding of Cultural Studies, its terms and its specific way of interpreting a variety of texts, i.e. literature, visual images, music, video, and performance.

**ENGL 210 Literature and the Ancient World (5) VLPA** Introduction to literature from a broadly cultural point of view, focusing on major works that have shaped the development of literary and intellectual traditions to the Middle Ages.

**ENGL 211 Medieval and Renaissance Literature (5) VLPA** Introduction to literature from a broadly cultural point of view, focusing on major works that have shaped the development of literary and intellectual traditions from the Middle Ages to the eighteenth century.

**ENGL 212 Literature of Enlightenment and Revolution (5) VLPA** Introduction to eighteenth- and nineteenth-century literature from a broadly cultural point of view, focusing on representative works that illustrate literary and intellectual developments of the period.

**ENGL 213 Modern and Postmodern Literature (5) VLPA** Introduction to twentieth-century literature from a broadly cultural point of view, focusing on representative works that illustrate literary and intellectual developments since 1900.

**ENGL 225 Shakespeare (5) VLPA** Survey of Shakespeare's career as dramatist. Study of representative comedies, tragedies, romances, and history plays.

**ENGL 228 English Literary Culture: To 1600 (5) VLPA** British literature from Middle Ages to end of sixteenth century. Study of literature in its cultural context, with attention to changes in language, form, content, and style.

**ENGL 229 English Literary Culture: 1600-1800 (5) VLPA** British literature in seventeenth and eighteenth centuries. Study of literature in its cultural context, with attention to changes in form, content, and style.

**ENGL 230 English Literary Culture: After 1800 (5) VLPA** British literature in the nineteenth and twentieth centuries. Study of literature in its cultural context, with attention to changes in form, content, and style.

**ENGL 242 Reading Fiction (5) VLPA** Critical interpretation and meaning in fiction. Different examples of fiction representing a variety of types from the medieval to modern periods.

**ENGL 243 Reading Poetry (5) VLPA** Critical interpretation and meaning in poems. Different examples of poetry representing a variety of types from the medieval to modern periods.

**ENGL 244 Reading Drama (5) VLPA** Critical interpretation and meaning in plays. Different examples of drama representing a variety of types from the medieval to modern periods.

**ENGL 250 Introduction to American Literature (5) VLPA** Survey of the major writers, modes, and themes in American literature, from the beginnings to the present. Specific readings vary, but often included are: Taylor, Edwards, Franklin, Poe, Hawthorne, Melville, Emerson, Thoreau, Whitman, Dickinson, Twain, James, Eliot, Stevens, O'Neill, Faulkner, Hemingway, Ellison, and Bellow.

**ENGL 251 Introduction to American Political Culture (5) I&S/VLPA** 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 Introduction to 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 African-American Literature: 1745 to Present (5) VLPA** 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 264 Literature and Science (5) VLPA** Explores the relationships between literature and science as ways of comprehending humanity's interaction with the world we inhabit. As a course in criticism, explores how literature and science structure and are structured by social, religious, political, and economic factors in culture.

**ENGL 270 Cultural Issues in English (5) VLPA** Survey of the assumptions, methodologies, and major issues of English in its cultural settings. Designed to connect 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)** 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) 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 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 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.

**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) I&S/VLPA** Survey of theories of imagination since the seventeenth century. Focuses on the uses of the concept in literature, criticism, science, and society.

**ENGL 307 Cultural Studies: Literature and the Age (5) VLPA** Problems of literary periodization. Works by major and minor authors in the context of cultural history; critical and theoretical approaches that have led to the idea of periodization. Emphasis varies. Recommended: one 300-level ENGL course in the literary period being studied.

**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) I&S/VLPA** 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 SISJE 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 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: ENGL 230 or one 300-level course in 19th or 20th century literature.

**ENGL 316 Postcolonial Literature and Culture (5, max. 10) VLPA** Readings of major texts and writers in postcolonial literature and culture. Surveys some of the most important questions and debates in postcolonial literature, including issues of identity, globalization, language, and nationalism. The cultural focus may vary, so students should check with the professor for specific details.

**ENGL 317 Literature of the Americas (5) VLPA** Examines writings by and about people of the Americas, with a focus on intersections of gender, colonialism, race, sexuality, and ethnicity.

**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 Age of Queen Elizabeth (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 Brontes, 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: The Early Modern Period (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, Caryl Phillips, Drabble.

**ENGL 340 Modern 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 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 Twentieth-Century Dramatic Literature (5) VLPA** Modern and contemporary plays by such writers as Shaw, Synge, O'Casey, O'Neill, Yeats, Eliot, Beckett, Pinter, and Albee.

**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 The Art of Prose (5) VLPA** Techniques and varieties of prose — autobiography, biography, personal essay, reflective and meditative writing, social and scientific inquiry, and persuasive writing. Special attention to use of poetic, fictional, and dramatic devices. Recommended: one introductory literature course.

**ENGL 348 Studies in Drama (5) VLPA** Investigation of one of the major types of drama: tragedy or comedy. Emphasis on drama prior to the twentieth century.

**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: The Early Modern Period (5) VLPA** Literary responses to the disillusionment after World War I, experiments in form and in new ideas of a new period. Works by such writers as Anderson, Toomer, Cather, O'Neill, Frost, Pound, Eliot, Cummings, Hemingway, Fitzgerald, Faulkner, Stein, Hart Crane, Stevens, and Porter.

**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 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** Creative writings — novels, short stories, poems — of contemporary Indian authors; traditions out of which they evolved. Differences between Indian writers and writers of the dominant European/American mainstream. Offered: jointly with AIS 377.

**ENGL 360 American Political Culture: To 1865 (5) I&S/VLPA** American literature in its political and cultural context from the Puritan origins to the Civil War. Emphasizes an interdisciplinary approach to American literature, including history, politics, anthropology, and mass media.

**ENGL 361 American Political Culture: After 1865 (5) I&S/VLPA** 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 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) I&S/VLPA** 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 367 Gender Studies in Literature (5, max. 15) VLPA** 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 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 Language Variation in Current English (5) VLPA** Examination of geographical, social, and occupational varieties of American English. Relationship between societal attitudes and language use.

**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 381 Advanced Expository Writing (5) VLPA** Concentration on the development of prose style for experienced writers.

**ENGL 382 Writing for the Web (5) 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 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) I&S/VLPA** 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 Literature, Literary Study, and Society (5) I&S/VLPA** Relationship of literature to society with particular emphasis on literary education. What social values determine the educational importance of literature, what segments of society are trained to read and to write literature, and how literature is institutionalized as part of pedagogical methodology. Emphasis varies.

**ENGL 471 The Composition Process (5) VLPA** Consideration of psychological and formal elements basic to writing and related forms of nonverbal expression and the critical principles that apply to evaluation.

**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) I&S/VLPA** 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) I&S/VLPA** 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. 15) 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 490 Study Abroad Program (5, max. 15) VLPA** This course, for students in the Study Abroad program, relates major works of literature to the landscape and activities of their settings.

**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 500 Reading Medieval Literature (5)** Special problems involved in the study and interpretation of medieval texts, selected examples drawn from the beginnings of English literature to 1500.

**ENGL 501 The Renaissance and Literary Tradition (5)** Examination of selected texts from 1500 to 1660, concentrating on specific problems of interpretation and scholarship characteristic of the study of works written during the Renaissance.

**ENGL 502 English Literary Culture: 1660-1800 (5)** Examination of selected texts of the Restoration and eighteenth century, concentrating on specific problems of interpretation and scholarship characteristic of the study of works written during the period.

**ENGL 503 English Literary Culture: 1800-1900 (5)** Examination of selected texts from the nineteenth century, concentrating on specific problems of interpretation and scholarship characteristic of the study of works written during the period.

**ENGL 504 Backgrounds of Modern Literature (5)** Examination of selected texts from the twentieth century, concentrating on specific problems of interpretation and scholarship characteristic of the study of works written during the period.

**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, disciplinarity, 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 521 Milton (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 525 Topics in Restoration and Eighteenth-Century Studies (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 Comparative Grammars (5)**

**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 569 Topics in Language and Rhetoric (5, max. 15)**

**ENGL 570 Practicum in Teaching English as a Second Language (3, max. 6)** Discussion and practice of second-language teaching techniques. Three hours per week teaching required in addition to regular class meetings. Credit/no credit only. Prerequisite: ENGL 571 or permission of instructor.

**ENGL 571 Theory and Practice on Teaching English to Speakers of Other Languages (5)** 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) VLP** The theory and practice of teaching fiction, poetry, and creative nonfiction writing.

**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 593 Textual Criticism (5)** Introduction to paleography, codicology, analytical and descriptive bibliography; examination of the major contributions to textual theory in the nineteenth and twentieth centuries; practice in applying textual theory in editing literary works.

**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 (\*)**

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 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 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

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## General Studies

**GEN ST 101 University Learning Skills (1-3)** Introduction to university culture. Practice in



a field represented in the College of Arts and Sciences. Faculty supervisor required. Credit/no credit only. Offered: AWPSP.

**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: AWPSP.

**GEN ST 493 Senior Study (5)** For General Studies majors only. Faculty supervisor required. Offered: AWPSP.

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## Geography

**GEOG 100 Introduction to Geography (5) I&S** Introduction to the study of human geography and the major themes of the discipline. Topics include: human-environment interactions, migration and human mobility, patterns of health and nutrition, industrialization and urbanization, and the geography of culture and politics. Offered: AWPSP.

**GEOG 102 World Regions (5) I&S** Spatial study of world regions, based on historical, cultural, political, economic, and other factors. An attempt to understand the underlying forces that have led to the formation of regions and regional patterns.

**GEOG 123 Introduction to Globalization (5) I&S 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 SIS 123.

**GEOG 195 Special Topics in Geography (1-5, max. 10) I&S**

**GEOG 200 Introduction to Human Geography (5) I&S Withers** Patterns and systems of human occupancy of the world. Emphasis on cultural processes, dynamic change, functional relations, networks, and diffusion models.

**GEOG 205 Introduction to Physical Sciences and the Environment (5) NW ZumBrunnen** Major atmospheric, hydrologic, and geomorphic processes used to interpret the character, distribution, and human significance of different natural and human-altered environments. Includes laboratory exercises for science and non-science majors, geography majors and nonmajors.

**GEOG 207 Economic Geography (5) I&S Beyers, Harrington** 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: AWS.

**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 Urbanization and Development: Geographies of Global Inequality (5) I&S Lawson** Examines global to local interactions of economic, political, and social forces shaping urbanization and development processes across the globe. Provides an introduction to critical development studies, focusing on Latin America, Africa, and Asia. Also examines debates over the causes and geographic patterns of social inequality worldwide.

**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 SISEA 236.

**GEOG 245 Geographic Perspectives on U.S. Population Diversity (5) I&S 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. Offered: W.

**GEOG 258 Maps and GIS (5) I&S** Explores how people represent the world with maps and geographic information systems (GIS). Trains students in map use for basic navigation, urban management, and environmental analysis. Considers role of spatial databases in commerce, decision-making, and analysis. Helps map readers better determine quality, usefulness, and representation of information.

**GEOG 270 Geographies of International Development and Environmental Change (5) I&S Jeffrey** Considers the meaning of development and how debates over international development link to environmental concerns. Examines how the globalization of agricultural production and debates over genetically modified food alter ideas about development, nature, and the environment. Addresses fair trade policies and practices and the obligations of multinational corporations. Offered: A.

**GEOG 271 Geography of Food and Eating (5) I&S Jarosz** Examines food production, distribution, and consumption issues across geographic scales. Focus ranges from the microcosm of the individual body to food and eating at the national and global scales. Explores the political, social, cultural, and economic dimensions of food and eating in particular spaces, places, environments, contexts, and regions. Offered: Sp.

**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 England, Withers** Study of (1) systems of cities—their location, distribution, functions, and competition; and (2) their internal structure—the location of activities within urban areas. Particular emphasis on current urban problems—sprawl, housing, segregation, economic growth, and metropolitan transportation.

**GEOG 280 Introduction to the Geography of Health and Health Care (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 the role of culture in the formation of landscape patterns; components of culture that contribute not only to a "sense of place," but also to the mosaic of settlement patterns and occupancy that can be traced to culture.

**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 308 Canada: A Geographic Interpretation (5) I&S Sparke** Examines the overlapping economic, cultural, and political geographies shaping life in contemporary Canada. Topics include: free trade, constitutional crisis, feminism in Canada, aboriginal politics, and border region phenomena. Attention paid to how specific geographic interpretations of Canada by Canadians actually play a part in national life. Offered: jointly with SISCAS 308; Sp.

**GEOG 310 Immigrant America: Trends and Policies from a Geographic Perspective (5) I&S 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, immigrant employment enclaves, the effects of U.S. immigration policy on immigrant settlement and employment patterns, illegal immigration, citizenship, and barriers to immigrant success in the United States.

**GEOG 313 East Asia (5) I&S Chan** Introduction to the contemporary geography of East Asia, including China, Hong Kong, Taiwan, Japan, and Korea. Topics include: physical geography, historical settings, general development patterns, agriculture, population, industry, and trade. Focuses on major geographic issues in development. Case studies from different countries used to illustrate various themes.

**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 316 Urban Economics (5) I&S**

Application of economic analysis to urban trends, problems, and prescriptions, such as changing urban form and function, urban public finance, housing and renewal, poverty and race, transportation, and environmental problems. Prerequisite: ECON 200. Offered: jointly with ECON 316.

**GEOG 326 Quantitative Methods in Geography (5) I&S**

*Chan* 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. Offered: A.

**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. Offered: W.

**GEOG 333 Russia's Changing Landscape (5) I&S**

*ZumBrunnen* The Russian landscape as it has been affected by Soviet planning, migration and settlement, urbanization, industrialization, the results of collectivization in agriculture, and the growth of a transport network.

**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: GEOG 100 or GEOG 230. Offered: jointly with SIS 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. Offered: W.

**GEOG 342 Geography of Inequality (5) I&S**

*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 343 Comparative Geographies of Youth (5) I&S**

*Jeffrey* Examines how three key global processes - rising levels of formal education, changing health regimes, and environmental transformation - are shaping youth in the US and South Asia. Examines ways young people rework broader structures, paying particular attention to their economic livelihoods, cultural practices, and political engagements. Offered: jointly with SISSA 343; A.

**GEOG 344 Migration in the Global Economy (5) I&S**

*Mitchell* Analyzes the relationship between human mobility in the late 20th century and changes in the global economy. Allows the students to gain familiarity with scholarly research on international migration from a diversity of approaches and methods. Offered: jointly with SIS 344; W.

**GEOG 349 Geography of International Trade (5) I&S**

*Harrington* 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. Offered: W.

**GEOG 350 Local Economies and Market Areas (5) I&S**

Intermediate economic geography. Methods and concepts for analysis of economic and business patterns, processes, and problems at regional and local levels. Tools for collecting, organizing, and analyzing data for investigating local economic issues. Recommended: GEOG 207. Offered: Sp.

**GEOG 360 Principles of GIS Mapping (5) I&S,**

*QSR 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. Offered: ASp.

**GEOG 366 Introduction to Regional Economic Development (3/5) I&S**

*Harrington* The process of regional economic development. Theories and conceptualizations of economic growth and structural change, technological change and industrial development, spatial variation in economic activities and government policies. Recommended: GEOG 207; ECON 201.

**GEOG 367 Economic Uses of Geographic Information (5) I&S**

*Harrington* Uses of area data and the geographic information systems (GISs) that handle them in routing, marketing, service-area assessment, and site location. Considers key economic-geography concepts, marketing approaches, questions of data availability and suitability, and GIS. Prerequisite: GEOG 360.

**GEOG 370 Problems in Resource Management (5) I&S**

*ZumBrunnen* 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. Recommended: GEOG 100. Offered: Sp.

**GEOG 371 World Hunger and Resource Development (5) I&S**

*Jaros* Addresses issues of hunger and poverty in their relationship to resource development at the local, national, and global levels. Examines various approaches to the problem of world hunger rooted in critical development studies. Recommended: GEOG 230, GEOG 330, or GEOG 335.

**GEOG 372 Asian Sustainable Development (5) I&S**

Examines the contemporary relationship between environmental protection and development paths in Asia. Inquires into the forces driving both environmental change and societal responses (state and local regulations, social movements, etc.) to that change, at

many geographical scales. Asian concepts of nature-society relations also explored. Offered: jointly with SISA 372; W.

**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 SIS 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 take place within local contexts across state, civil society, home, and the body. Offered: Sp.

**GEOG 378 Policing the City (5) I&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 (4) 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. Offered: W.

**GEOG 395 Special Topics in Geography (1-5, max. 10) I&S****GEOG 401 Culture, Capital, and the City (5) I&S**

Examines current themes in social theory as they apply to the urban landscape. Includes the interconnections of cultural and economic processes and the spatial patternings of race, class, and gender in the modern urban context. Offered: A.

**GEOG 403 Modern European-Islamic Migration, Integration, and Citizenship (5) I&S**

*Mitchell* Offers a theoretical and empirical understanding of migration processes and patterns in Europe, with a focus on Muslim immigration in the post WWII period. Analyzes the impact of European Union mandates, globalization processes, and international, national, and urban policies on Muslim immigrant rights and identity formation. Offered: A; jointly with EURO 403.

**GEOG 425 Qualitative Methodology in Geography (5) I&S**

*Jaros* Historical and philosophical overview of qualitative methodology in design of geography research strategies. Techniques of interviewing, participant observation, and archival research. Forms of analyses such as textual interpretation, discourse analysis and computer-aided analyses of interview transcriptions and ethnography. Questions of ethics, field notes and write-up. Offered: W.

**GEOG 426 Advanced Quantitative Methods (5) I&S, QSR**

*Withers* Quantitative methods for empirical research in geography. Emphasis on

statistical analysis; use of geographic data bases like the United States Census; understanding special issues and problems associated with geographically ordered data; verbal and graphic presentation in a computer environment. Recommended: GEOG 326. Offered: A.

**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. Offered: A.

**GEOG 431 Geography and Gender (5) I&S Brown, Jarosz** 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. Offered: Sp.

**GEOG 432 Population and Urbanization Problems of Russia and the Newly Independent States (5) I&S ZumBrunnen** Historical background and evolution of Soviet/Russian population and urbanization processes and problems. Distinguishing demographic characteristics and recent trends in the growth and migration of rural and urban populations. Analysis of problems associated with ethnicity and nationality, regional-temporal labor demand and supply issues, and spatial-temporal well-being. Offered: odd years; Sp.

**GEOG 433 Resource Use and Management in Russia and the Newly Independent States (5) I&S ZumBrunnen** Geographic and historical background of the natural resource base of Russia and the Newly Independent States. Geographic and historical perspectives on Soviet natural resource use and management in theory and practice. Implications of the breakup of the USSR for natural resource use and management. Offered: odd years; W.

**GEOG 435 Industrialization and Urbanization in China (5) I&S Chan** Examines the impacts of industrialization strategies adopted by the Peoples 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 Jeffrey** 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 SISSA 436, Sp.

**GEOG 438 Cities of East Asia: Geography and Development (5) I&S Chan** Examines urban development in East Asia from a geographic and comparative perspective focusing on issues in development, and the interaction of geography, history, politics, and economics. Major topics include economic development and urbanization; regions and urban systems; migration; urban social and spatial structures; globalization and governance. Offered: Sp.

**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 440 Regional Analysis (5) I&S Beyers** Regional industrial structures and economic change. Application of shift-share, cohort, multiplier, input/output, and programming models to the analysis and projection of regional population and employment patterns, regional growth differentials, and regional impact analysis. Recommended: GEOG 207. Offered: Sp.

**GEOG 443 Location and Movement Models (5) I&S Morrill** Application of models of optimum location and allocation; assignment, transportation, and spatial equilibrium; spatial interaction; geographic simulation; and spatial diffusion.

**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. Offered: Sp.

**GEOG 447 The Geography of Air Transportation (5) I&S** Geographic analysis of world air routes, passenger and cargo flows, and airport activities; consideration of physical, economic, political, and institutional determinants of routes and flows.

**GEOG 448 Geography of Transportation (5) I&S** Circulation geography, principles of spatial interaction emphasizing commodity flow, the nature and distribution of rail and water transport, the role of transport in area development.

**GEOG 449 Geography of Ocean Transportation (5) I&S** Geographic analysis of ocean trade routes, cargo and passenger flows, and port activities. Evaluation of the role of the transportation carrier in international trade.

**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 SISLA 451.

**GEOG 458 Map Sources and Errors (5) I&S** Analysis and appraisal of source materials for maps, production constraints of mapping agencies, coverage and quality. Focus on errors inherent in maps and geographic information; metadata resources; judgment of fitness for specific applications. Prerequisite: 2.0 in GEOG 360. Offered: odd years; W.

**GEOG 460 Geographic Information Systems Analysis (5) I&S Nyerges** Methods of Analysis provided by geographic information systems (GIS). Operations on map information including map overlay, aggregation/disaggregation, and other spatial and attribute procedures. Exposure

to raster and vector software. Review of capabilities of current available GIS software. Prerequisite: 2.0 in GEOG 360. Offered: A.

**GEOG 461 Urban Geographic Information Systems (5) I&S Nyerges** 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: 2.0 in GEOG 360; recommended: GEOG 277. Offered: W.

**GEOG 462 Coastal Geographic Information Systems (5) QSR Nyerges** Combines lectures about fundamental concepts in geographic information systems with hands-on computer lab assignments about coastal environment-society issues. Coastal feature data measurement, characterization, and movement related to the land-water and environment society dynamic. Prerequisite: GEOG 360; may not be taken if credit received in GEOG 460. Offered: A.

**GEOG 463 Geographic Information Systems Workshop (5) I&S Nyerges** Practical experience applying geographic information system (GIS) tools to analyze spatial data. Workshop format requires student-motivated projects; diverse backgrounds encouraged. Prerequisite: either 2.0 in GEOG 460 or 2.0 in GEOG 461. Offered: Sp.

**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: GEOG 360; recommended: either GEOG 461, GEOG 462, or GEOG 464. Offered: odd years; W.

**GEOG 466 Regional Economic Development (5) I&S Harrington** Provides a theoretical overview of sub-national, regional economic growth and structural change, including the roles of interregional interaction and international trade, technological change, social, and legal institutions. Emphasizes inter-regional disparities in the context of relatively wealthy countries. Explores the constraints and effectiveness of government (and other organizations') policy. Offered: W.

**GEOG 471 Methods of Resource Analysis (5) I&S ZumBrunnen** 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 472 Ecosystems: Nature, Culture, and Place (5) I&S** Relationship between nature, culture, and place as the heart of geographic inquiry. Examines how perceptions of nature are influenced by changing political-economic, cultural, and scientific practices. Uses cultural studies of ecological science as a primary method of analysis. Offered: Sp.

**GEOG 474 Geography and the Law (5) I&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**  
*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 WOMEN 476.

**GEOG 477 Advanced Urban Geography (5)**  
*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. Offered: Sp.

**GEOG 478 Intraurban Spatial Patterns (5) I&S**  
*Mitchell* Geographic patterns and processes within metropolitan areas. Economic land-use patterns (commercial and industrial location), social land-use patterns (segregation, housing, and neighborhood change), urban political geography, analysis of urban infrastructure, and assessment of contemporary and future trends in urban development. Recommended: GEOG 277. Offered: Sp.

**GEOG 479 Race, Ethnicity, and the American City (5) I&S**  
*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. Offered: W.

**GEOG 486 Problem Analysis in Urban Ecology (5) I&S/NW**  
*Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Investigates pressing local and regional issues in urban ecology and develops each into a researchable project proposal. Examines and evaluates how different disciplines study environmental issues, explores criteria for conducting and evaluating quality research, develops skills in problem formulation, and sharpens proposal writing skills. Offered: jointly with ENVIR 474/ESRM 486/URBDP 443; A.

**GEOG 487 Applied Theory and Methods in Urban Ecology (5) I&S/NW**  
*Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Discusses broad perspectives in urban ecology and how to analyze data relevant to urban ecology problems. Students write objectives and methods for a selected urban ecology problem that critiques different methodological approaches and reviews/synthesizes literature.

Prerequisite: either GEOG 486, CFR 474, or ENVIR 486. Offered: jointly with CFR 475/ENVIR 487; W.

**GEOG 488 Research in Urban Ecology (5) I&S/NW**  
*Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Teams analyze, present, and begin to interpret data that is relevant to addressing issues in urban ecology. Write and orally present revised objectives and methods sections of interdisciplinary project and present results section. Prerequisite: either GEOG 487, CFR 475, or ENVIR 487. Offered jointly with CFR 476/ENVIR 488; Sp.

**GEOG 490 Field Research: The Seattle Region (6) I&S**  
*Morrill* 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 492 Library Research in Geography (3) I&S**  
Introduction to library research methods in geography. Review and assessment of geographical bibliographies and abstract services for monographs, periodicals, gazetteers, dictionaries, encyclopedias, government publications, and statistical sources. Credit/no credit only.

**GEOG 493 Assessing Geographic Learning (2)**  
*Withers* Enables graduating geography majors to articulate and assess their academic development and professional readiness by examining ways of representing geographic skills and capabilities. Offered: Sp.

**GEOG 494 Senior Essay (3) I&S**  
Supervised individual research and writing of major paper during senior year. Offered: AWSp.

**GEOG 495 Special Topics (\*, max. 15) I&S**  
Topics vary and are announced in the preceding quarter. Offered: AWSpS.

**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: AWSpS.

**GEOG 497 Tutorial in Geography (1-5, max. 15) I&S**  
*Withers* 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: AWSp.

**GEOG 498 Seminar in Economic Geography (5) I&S**  
*Harrington* Themes and debates within and between economic geography and regional science. . Offered: Sp.

**GEOG 499 Special Studies (\*, max. 15)**  
Supervised reading programs, undergraduate and graduate library and field research; special projects for undergraduate honors students. Offered: AWSpS.

**GEOG 500 Contemporary Geographic Thought (4, max. 8)**

**GEOG 502 Professional Writing in Geography (\*, max. 6)**

**GEOG 505 Research Seminar: China (5, max. 10)**  
*Chan* Offered: A.

**GEOG 507 Research Seminar: Canadian Problems (5, max. 10)**  
Consideration of the spatial dimensions of Canadian socioeconomic, cultural, and political development, with emphasis on resource potentials and relations with the United States, Japan, and other important trading partners. Prerequisite: GEOG 308 or permission of instructor. Offered: jointly with SISCA 507.

**GEOG 512 History of Geographic Thought (5)**  
Historical development of modern geography. Emphasis on various philosophical and methodological debates in geography and the contexts from which they emerged. Investigates geography's foundational concepts and institutions; how they have responded to — and influenced — the world around them. Offered: A.

**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 515 Evidence and Explanation in Geography (5)**  
*Sparke* Introduces the main strands of philosophical debate shaping the discipline of human geography, including description, prediction, explanation, abstraction, structuration, representation, and institutionalization. Focuses on ways "theories" from outside the discipline have shaped the questions and concerns of geographers, and the ways geography reworks such theories. Offered: Sp.

**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 526 Advanced Quantitative Methods in Geography (5)**  
*Morrill, Withers*

**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 Rural Development Seminar (5, max. 10)**  
*Jarosz* Contemporary issues in international development theory related to regional and agrarian change, with emphasis on Africa.

**GEOG 533 Research Seminar: Russia and the Newly Independent States (5, max. 10)**  
*ZumBrunnen*

**GEOG 536 Advanced Research Seminar on South Asian Geographies (5)**  
*Jeffrey* Examines geographies of social inequality in South Asia through reference to how space, place, and the environment are shaping practices of political struggle in the region. Considers how liberalization, democratization and religious communalization are changing the political geography of South Asia. Offered jointly with SISSA 536, Sp.

**GEOG 540 Research Seminar: Industrial Geography (5, max. 10)**  
*Beyers* Offered: W.

**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 WOMEN 541; W.

**GEOG 542 Research Seminar: Social and Population Geography (5, max. 10)** *Withers*

**GEOG 543 Research Seminar: Topics in Immigration, Ethnicity, and Race (5)** *Ellis* Employment patterns and outcomes for immigrants and ethnic minorities. Emphasis is on the U.S. experience and topics covered include labor market segmentation, theories of discrimination, job/labor queues, networks, ethnic niches and enclaves, skills and spatial mismatches. Specific focus changes annually.

**GEOG 544 Event History Analysis of Social and Spatial Change (5)** *Withers* 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.

**GEOG 553 Advanced Topics in Cultural Geography (5, max. 10)** *Mitchell* Focuses on important contemporary topics in cultural geography. Examines current theoretical debates in anthropology, sociology, geography, feminist criticism, and cultural studies as they relate to the landscape. Include critical questions surrounding issues of representation and ethnography. Designed to help student prepare for advanced fieldwork. 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 566 Research Seminar on Regional Economic Geography (5)** *Harrington* Provides the opportunity to read and discuss key articles on the theory and study of subnational, regional economic development in industrial and "post-industrial" settings, to develop a research program, and to get feedback on research and writing.

**GEOG 567 Research Seminar: Geography and Economic Development (5, max. 10)** *Harrington* 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 570 Research Seminar: Natural Resources Analysis (3, max. 6)** *ZumBrunnen*

**GEOG 571 Research Seminar: Critical and Normative Ecologies (5)** Engages in an

ecocritique of mainstream managerial environmentalisms by unearthing their ideological bases, and delves into the ethical underpinnings of ecological resistance struggles or green utopias such as ecofeminist, deep and social ecology, and environmental justice movements.

**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)** *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 SIS 575.

**GEOG 577 Research Seminar: Internal Spatial Structure of Cities (4, max. 8)** *Brown* Offered: A.

**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. Offered: W.

**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; W.

**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; A.

**GEOG 588 Advanced Urban Ecology (5)** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Discussion of current and important theoretical and empirical papers in urban ecology. Students continue to research interdisciplinary urban ecology projects while developing publishable manuscripts and oral presentations. Offered: jointly with CFR 588; AWSp.

**GEOG 597 Tutorial for Graduate Students (2)** Introduces beginning geography students to the main research agendas of the faculty; identifies

the range of current discourse communities formed by current faculty and graduate students; establishes a process of mentoring and long-term planning for each new graduate student. Credit/no credit only. Offered: A.

**GEOG 598 Geography Colloquium (1, max. 3)** Participation in, and critique of, student thesis and dissertation research, faculty research, and visitor contributions. Offered: AWSp.

**GEOG 599 Effective Teaching of Geography (1)** Designed for the ongoing development of effective teaching and professional skills. Topics/activities include micro-teaching, communications and presentation skills; course organization, time management, personal and small group dynamics; design of geography curricula using simulations and computer-assisted instruction in the classroom, and fostering of creative thinking. Credit/no credit only. Offered: A.

**GEOG 600 Independent Study or Research (\*)** Offered: AWSpS.

**GEOG 700 Master's Thesis (\*)** Offered: AWSpS.

**GEOG 800 Doctoral Dissertation (\*)** Offered: AWSpS.

## Germanics

Detailed descriptions of courses are published by the Department of Germanics prior to registration each quarter.

**Credit Restrictions:** Students may receive credit for only one course in each of the following: 101, 111, and the first 5 credits of 104; 102, 111, and the second 5 credits of 104; 103 and the last 5 credits of 104. They may, however, receive credit for courses in different first-year sequences if the courses are taken in progressively more advanced order (e.g., the first 5 credits of 104 followed by 102 and 103). 100 is the equivalent of 101, 102, 103, or 15 credits of 104.

**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. (Can not be taken for credit if German is language of admission) Prerequisite: score of 0-11 on GER TL placement test if German is language of admission. Offered: AWS.

**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. Prerequisite: either GERMAN 101 or score of 12-35 on German placement test. Offered: AWSp.

**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. Prerequisite: either GERMAN 102, GERMAN 111, or score of 36-56 on German placement test. Offered: AWSpS.

**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. Awards credits for GERMAN 102. Cannot be taken for credit if student has already taken GERMAN 102, 103, or more advanced courses. Offered: A.

**GERMAN 121 First-Year Reading German (5)**

Special beginning course devoted exclusively to the reading objective. Offered: AS.

**GERMAN 122 First-Year Reading German (5)**

Special beginning course devoted exclusively to the reading objective; 122 continuation of 121. Offered: WSp.

**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 250 previously taken. Offered: AWSp.

**GERMAN 190 Crime Scenes: Investigating the Cinema and Its Cultures (5) VLPA**

*Ames, Nestingen* 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 190.

**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. Offered: S.

**GERMAN 201 Second-Year German (5) VLPA**

Systematic review of German grammar. Intensive practice in conversation, reading, and writing. Recommended: GERMAN 103. Offered: AWSp.

**GERMAN 202 Second-Year German (5) VLPA**

Systematic review of German grammar. Intensive practice in conversation, reading, and writing. Recommended: GERMAN 201. Offered: AWSp.

**GERMAN 203 Second-Year German (5) VLPA**

Systematic review of German grammar. Intensive practice in conversation, reading, and writing. 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; AWSpS.

**GERMAN 221 The German Express: Second**

**Year (10) VLPA** Combines in one quarter the contents of 201 and 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 230 Conversational German (5)**

**VLPA** Recommended: GERMAN 103. Offered: S.

**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 and GERMAN 150. Offered: WSp.

**GERMAN 293 Introduction to Contemporary**

**German Culture (5) I&S/VLPA** 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) I&S/VLPA** 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."

**GERMAN 299 Supervised Study (1-5, max. 10)**

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**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.

**GERMAN 311 Critical Approaches to German**

**Literature (5) VLPA** Introduction to literary terminology. Diverse interpretive strategies, ranging from close reading to biographical and sociological approaches. Characteristics of different genres (poetry, prose, drama). Readings from eighteenth- to twentieth-century literature. Recommended: GERMAN 203. Offered: A.

**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. Offered: W.

**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. Offered: Sp.

**GERMAN 322 Introduction to German Studies**

**(5) VLPA** What is "German culture"? How has it been defined and contested? How and why do we study it? Interdisciplinary methods and readings. Recommended: GERMAN 203; either GERMAN 311 or GERMAN 312. Offered: W.

**GERMAN 323 Institutions and Their Ideas (5)**

**I&S/VLPA** Analysis of central institutions of contemporary Germany in their historical development. Recommended: GERMAN 203; either GERMAN 311 or GERMAN 312; GERMAN 322. Offered: Sp.

**GERMAN 330 Conversational German (3-5)**

**VLPA** For participants in special summer programs only.

**GERMAN 333 Business German 1 (5) VLPA**

Introduction to the language and practices of German business. Recommended: GERMAN 203. Offered: A.

**GERMAN 334 Business German 2 (5) VLPA**

Introduction to the language and practices of German business. Recommended: GERMAN 203. Offered: W.

**GERMAN 340 Friedrich Nietzsche in English**

**(5) I&S/VLPA** 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) I&S/ VLPA** 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) I&S/VLPA** 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) I&S/VLPA** 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 356 Pagan Germany: Myth, Religion, Folklore in English (5) I&S/VLPA** History and culture of the German peoples before and during the conversion to Christianity. Readings include Tacitus's *Germania* and other historical sources, *Beowulf*, *Nibelungenlied*, *Grimm's Fairy Tales*, and German legends. Treatment of archaeological finds and a variety of materials that bear on religion, prophecy, magic, folk customs, and festivals.

**GERMAN 360 Women in German Literature in English (5) I&S/VLPA** 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) I&S/VLPA** 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 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. Credit/no

credit only. Recommended: GERMAN 203. 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 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. Credit/no credit only. Recommended: GERMAN 303; either GERMAN 322 or GERMAN 323. 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) I&S/VLPA**

**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. Recommended: GERMAN 303. Offered: AWSp.

**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. Recommended: GERMAN 303. Offered: AWSp.

**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. Recommended: GERMAN 303. Offered: AWSp.

**GERMAN 406 Intensive Elementary Yiddish (5-15, max. 15)** Intensive study of Yiddish grammar, with oral and written drills and reading of selected texts. Offered: S.

**GERMAN 411 Studies in Medieval Literature and Culture (5) VLPA** Rotating special topics in literature and culture of the Middle Ages, such as particular movements, authors, genres, themes, or problems. Recommended: GERMAN 303; either GERMAN 311, GERMAN 312, GERMAN 322, or GERMAN 323.

**GERMAN 412 Studies in Renaissance and Baroque Literature and Culture (5) VLPA** Rotating special topics in literature and culture of the Renaissance and Baroque, such as particular movements, authors, genres, themes, or problems. Recommended: GERMAN 303; either GERMAN 311, GERMAN 312, GERMAN 322, or GERMAN 323.

**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.

**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.

**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. Recommended: GERMAN 303; either GERMAN 311, GERMAN 312, GERMAN 322, or GERMAN 323.

**GERMAN 430 Advanced Conversational German (3-5, max. 10) VLPA** For participants in special summer programs only. Cannot be taken for credit to those who have already taken 401, 402, or 403.

**GERMAN 444 Undergraduate Thesis in Germanics (5) VLPA** Supervised research leading to the writing of a research thesis.

**GERMAN 446 Internship in German (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)** Supervised research with faculty member. Offered: AWSpS.

**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 and GERMAN 203 Offered: jointly with LING 415.

**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) I&S/VLPA** 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 the 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.

**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.

**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 (\*)**

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# History

## History

**HIST 111 The Ancient World (5) I&S** Origins of Western civilization to the fall of Rome.

**HIST 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 HISTAM 331 or 332 or 333 previously taken.

**HIST 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 HISTE 302 or 303 previously taken.

**HIST 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 EURO 140.

**HIST 151 Introduction to African History, c. 1000-1880 (5) I&S** Examines Africa's past from approximately 1000 to 1880. Through the theme of the politics of wealth, explores the history of precolonial states and societies, religious movements that combined local beliefs with Islam and Christianity, the Atlantic and Indian Ocean slave trades, and the origins of American and European colonialism.

**HIST 152 Introduction to African History, c. 1880 - Present (5) I&S** 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 postcolonial present.

**HIST 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.

**HIST 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.

**HIST 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.)

**HIST 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.

**HIST 205 Filipino Histories (5) I&S** Explores the histories, cultures, and politics of Filipinos in the Philippines and in the Diaspora, including Filipino Americans. Examines pre-colonial societies, Spanish and American colonial rule, nationalism, decolonization, and post-war political movements. Includes the histories of Filipino peoples in Europe and the United States. Offered: jointly with SISSE 205.

**HIST 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.

**HIST 209 History of Christianity (5) I&S** Twenty centuries of the history, thought, and culture of Christianity.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 221 Information Research Strategies in History (3) I&S** Information research and problem solving in the context of history. Focuses on identifying information, need, information seeking, evaluation and presentation, and selection of the appropriate sources. Offered: jointly with INFO 221.

**HIST 222 Understanding Photographs as Historic Documents (3) I&S** Introduction to understanding how to view and interpret information contained in photographs. Examines the photograph as artifact, intent of the photographer, photographic codes and meanings; how such information is used, misused, and manipulated for various purposes and how to navigate archival institutions in search of photographs. Offered: jointly with INFO 222.

**HIST 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. Offered: jointly with SIS 225.

**HIST 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 postcolonial world.

**HIST 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.

**HIST 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 SISJE 250.

**HIST 258 Slavery and Slave Trading in the 21st Century (5) I&S** Examines the forms that slavery and slave trading have taken in contemporary times.

**HIST 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.

**HIST 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 Acre (1291). Explores how Muslims understood, reacted, and adapted to the crusades and how the close encounter with the "Franks" transformed medieval Middle Eastern societies.

**HIST 263 The Modern Middle East (5) I&S** *Lopez* Explores the social, political, and cultural changes that have occurred in the Middle East during the past two centuries. Covers the main social, economic, and intellectual currents that have transformed this region, starting with Napoleon's conquest of Egypt in 1798 and ending with the present moment in history. Offered: Sp.

**HIST 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.

**HIST 269 The Holocaust: History and Memory (5) I&S** 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 SISJE 269.

**HIST 283 Introduction to Women's History (5) I&S** Includes units on American, European, and Third World women that examine centers of women's activities (convents, women's clubs), women's place in male-dominated spheres (politics), women's impact on culture (health, arts), and the effect of larger changes on women's lives (technology, colonization). Offered: jointly with WOMEN 283.

**HIST 290 Topics in History (5, max. 10) I&S** Examines special topics in history.

**HIST 309 Marx and Nietzsche: The Assault on Bourgeois-Christian Civilization (5) I&S** Major dilemmas and conflicts of modern Western consciousness through historical analysis of Marx, Nietzsche, and the movements they spawned. Emphasis on the relationship between sociocultural change, biography, and ideological innovation. Offered: jointly with CHID 309.

**HIST 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.

**HIST 311 Science in Civilization: Antiquity to 1600 (5) I&S** From preclassical 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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 EURO 320.

**HIST 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.

**HIST 346 Images of War in History, Literature, and Media (5) I&S/VLPA** 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.

**HIST 358 Slavery in the Atlantic World (5) I&S** 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.

**HIST 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. Offered: A.

**HIST 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 SISSE 367; Sp.

**HIST 369 The Jewish Twentieth Century in Film (5) 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 SISJE 369.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 403 Scandinavian Immigration in History and Literature (5) VLPA/I&S** History and literature of Scandinavian immigration to North America, including immigrant life and culture, community structures and traditions, and the literature about and by immigrants from Denmark, Finland, Iceland, Norway, and Sweden. Offered: jointly with SCAND 403.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 452 Southern Africa Since 1500 (5) I&S** 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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 SIS 467.

**HIST 468 Theatre as a Site of History and Memory (5) VLP/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 SISSE 468; Sp.

**HIST 481 Economic History of Europe (5) I&S** Origins of the modern European economy; historical analysis of economic change and growth from medieval times that stresses the preconditions and consequences of industrialization. Recommended: ECON 201. Offered: jointly with ECON 460.

**HIST 483 Technology and Culture in the Making of Contemporary Empires (5) I&S** *Benitez, Rodriguez-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 SISLA 483; W.

**HIST 485 Comparative Colonialism (5) I&S** *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. Offered: S.

**HIST 490 Topics in History (5, max. 10) I&S** Examines special topics in history.

**HIST 491 Honors Historical Method (5-) I&S** The purposes, materials, and techniques of historical scholarship. Theory, practice, and criticism. For honors students.

**HIST 492 Honors Historical Method (-5) I&S** The purposes, materials, and techniques of historical scholarship. Theory, practice, and criticism. For honors students.

**HIST 493 Senior Thesis in the History of Science (5, max. 10) I&S** Preparation of the senior thesis for the History and Science emphasis.

**HIST 494 Colloquium in Historiography (5, max. 15) I&S** Advanced seminar examining central issues in historiography. Emphasizes reading, discussion, and writing.

**HIST 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.

**HIST 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.

**HIST 499 Undergraduate Research (1-5, max. 15)**

**HIST 501 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.

**HIST 502 Medieval Europe: Writings and Interpretations (3-6, max. 6)** Study of historians, schools of history, and interpretations of medieval European history.

**HIST 503 Modern Europe: Writings and Interpretations (3-6, max. 6)** Study of historians, schools of history, and interpretations of modern European history.

**HIST 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.

**HIST 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.

**HIST 511 History of Science (3-6, max. 6)**

**HIST 512 Seminar in the History of Science ([3-6, max. 12]-)**

**HIST 513 Seminar in the History of Science (-[3-6, max. 12]-)**

**HIST 514 Seminar in the History of Science (-[3-6, max. 12])**

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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).

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 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.

**HIST 595 Historical Practices (5)** Emphasizes the interrelatedness 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.

**HIST 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.

**HIST 600 Independent Study or Research (\*)**

**HIST 700 Master's Thesis (\*)**

**HIST 800 Doctoral Dissertation (\*)**

## Ancient and Medieval History

**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 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 beginnings 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 330 The Age of Augustus (5) I&S/VLPA**

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 Virgil, 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 SISJE 367.

**HSTAM 370 The Vikings (5) I&S/VLPA**

The 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 Kievan and Muscovite Russia:**

**850-1700 (5) I&S** Development of Russia from

earliest times to the reign of Peter the Great. Offered: jointly with SISRE 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 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)**

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)**

## 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. : jointly with SISSA 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 SISEA 212.

**HSTAS 221 History of Southeast Asia (5) I&S** 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 SISSE 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 SISEA 241.

**HSTAS 244 Imperialism and Anti-Colonialism in Asia (5) I&S** 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 SISA 244.

**HSTAS 245 Human Rights in Asia (5) I&S** *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 SISA 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-cultural changes and wars' legacies. Offered: jointly with SISSE 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) I&S** 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 SISSA 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 contexts of European history and of development theory. Primary sources and techniques for posing theoretical questions of historical data. Offered: jointly with SIS 348.

**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 SISSE 346; 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 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. Offered: jointly with SISEA 423.

**HSTAS 424 The Emergence of Postwar Japan (5) I&S** The making of modern Japan; World War II and surrender; American occupation; postoccupation rebuilding; emergence as an industrial power. Recommended: HSTAS 423 or SISEA 423. Offered: jointly with SISEA 440.

**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. Prerequisite: either SISEA 241/HSTAS 241 or SISEA 341/HSTAS 341. Offered: jointly with SISEA 441.

**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: AD 906 to 1840 (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 SISEA 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: HSTAS 211, HSTAS 452, HSTAS 453, or HSTAS/ SISEA 454. Offered: jointly with SISEA 456.

**HSTAS 457 Women in China to 1800 (5) I&S** 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 WOMEN 457.

**HSTAS 459 Gender Histories of Modern China, 18th to 20th 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 WOMEN 459.

**HSTAS 460 Cities in China: Past and Present (5) I&S** 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 SISEA 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) VLP/ 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 SISSE 446.

**HSTAS 481 History of Traditional Korea: Earliest Times to the Nineteenth Century (5) I&S** Korean history from earliest times to the modern period.

**HSTAS 482 History of Modern Korea: 1860 to the Present (5) I&S** Traditional institutions and society, Japanese colonial rule, liberation and the Korean War, early Korean communist movement, and North Korea and South Korea since 1945.

**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)** Introduction to major English-language works on Southeast Asian history and to the major historiographical issues of the era.

**HSTAS 532 Seminar in Southeast Asian History (5)** Selected topics in Southeast Asian history and historiography. Preparation for theses and doctoral dissertations on Southeast Asian History.

**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 SISSE 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. Offered: jointly with SISEA 541.

**HSTAS 546 Gender and Colonialism in Eastern Asia (5)** Economic-political colonialization, post colonialism, and statist-gendered citizenship; intra-Asian subimperialism structuring domestic production, family, and gendered subjectivities; humanism and the New Woman; modern contests over new masculinity and new femininity; and the effect of war, imperialist occupation and colonial modernity on interregional flows of ideas, labor, capital, and jurisprudence. Offered: jointly with WOMEN 546; AWSpS.

**HSTAS 547 Gender and the New International Division of Labor in Asia Pacific (5)** Shift of the dynamic relation of gender, state, and citizens from modernization (national development) to globalization (intraregional development) strategies in Pacific Asia, 1945 to present. Consumption, service provision, migratory labor, intra-Asian investment, localization. Offered: jointly with WOMEN 547.

**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: 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: HSTAS 452, HSTAS 550, or 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: HSTAS 452, HSTAS 550, or 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: HSTAS 452, HSTAS 550, or HSTAS 551, or equivalent.

**HISTAS 555 Core Research Seminar in Chinese History (5-)** An introduction to research practices in Chinese history and exemplary recent works.

**HISTAS 556 Core Research Seminar in Chinese History (-5)** 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: 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: 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: 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: 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: HSTAS 453, HSTAS 560, HSTAS 561, or equivalent.

**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: 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 SISEA 579.

**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 the Americas

**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** 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 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. Provides some general knowledge and serves as a basic introductory course for a sequence of lecture courses and seminars in Afro-American history. Offered: jointly with AFRAM 150.

**HSTAA 185 Introduction to Latin American History: From Columbus to Castro (5) I&S** Survey of political, economic, and social history of Latin America from the Iberian conquest to the present. Lectures, discussions, and films focus on developing understanding of Latin America's current problems through study of their historical roots. Designed for the beginning student and the nonspecialist.

**HSTAA 202 Makers of American Foreign Policy, 1776 to the Present (5) I&S** Survey of the history of American foreign relations. Focus on the individuals responsible for initiating new foreign policies or for realigning old ones.

**HSTAA 205 Asian American History (5) I&S** 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 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 215 American South from the Revolution through the Civil War (5) I&S Kleit** Explores the history of the American South from the American Revolution through the Civil War, from a successful revolution to one that met defeat. Attention given to the diversity of people and changes over space and time. Offered: Sp.

**HSTAA 221 Environmental History of the U.S. (5) I&S** Survey of 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.

**HSTAA 225 American Slavery (5) I&S** Explores the making of American slavery from beginnings on the African coast to the plantations of the southern United States. Includes slave life, proslavery thought, slave management, representa-

tions of slavery then and now, abolitionism, and debates about slavery.

**HSTAA 230 Race and Power in America, 1861-1940 (5) I&S** 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** 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 282 Social History of Mexico (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.

**HSTAA 285 Latin American History Through Film (5) I&S/VLPA** 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.

**HSTAA 290 Topics in American History (5, max. 10) I&S** Examines special topics in American history.

**HSTAA 301 Foundations of American Civilization (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 American Civilization: The First Century of Independence (5) I&S** Establishment of the constitutional system; national expansion; intellectual and cultural development; internal conflicts, the Civil War, and Reconstruction.

**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** 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** 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** 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** 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: European Discovery to 1840 (5) I&S 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: 1840 to Present (5) I&S 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 The Sixties in America: Conflict, Confrontation, and Concession (5) I&S** Politico-cultural movements that collided in the

sixties. Includes politics of confrontation and civil disobedience, economics of "guns and butter," literature of conflict and angst, polarization of arts, transformation of race relations, role of Rock, and influence of domestic politics on foreign relations. 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 SISJE 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 353 Class and Labor in American History (5) I&S** 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 The History of the American Film (5) I&S/VLPA** Explores relationship between film and American social and cultural history. Considers films as products of specific periods, individual filmmakers, and developments within film industry. Examines representations of political and social issues on the screen, impact of movies on our understanding of the past, and significance of genres and visual styles.

**HSTAA 370 Consumer Culture in Twentieth Century America (5) I&S** Studies the American attempt in this century to create, sustain, and organize the world's first consumer-oriented industrial society. Topics to be considered include: the economy of mass consumption, how a culture of consumption was created, and the ideas of social critics who have rejected consumerism.

**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** A multi-racial, multicultural study of women in the United States from the 17th century to 1890 emphasizing women's unpaid work, participation in the paid labor force, charitable and reform activities, and 19th century social movements. Uses primary materials such as diaries, letters, speeches, and artifacts. Offered: jointly with WOMEN 383.

**HSTAA 374 Social History of American Women in the 20th 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 20th century. Offered: jointly with WOMEN 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 SISCA 377.

**HSTAA 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).

**HSTAA 385 Colonial Society and the Negotiation of Rule in Latin America and the Caribbean (5) I&S** 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.

**HSTAA 386 The Challenges of Post-Coloniality in Latin America and the Caribbean (5) I&S** 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.

**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 military 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** 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** 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. Topics 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** 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) I&S/VLPA** Lectures and discussions devoted to the development of the American mind, from historical beginnings to the present.

**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 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 480 Labor and Popular Movements in Latin America (5) I&S** Interdisciplinary approach to origins and trajectory of labor movement from late nineteenth century to present. Emphasis in contemporary period on popular movements, including neighborhood associations, religious base communities, women's movement, and ethnic mobilization for democratic social and political reform. Recommended: two non-English-language Latin American studies courses. Offered: jointly with SISLA 480.

**HSTAA 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.

**HSTAA 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.

**HSTAA 487 History of Mexico: 1822 to the Present (5) I&S** Political, social, and economic history of Mexico from its independence from Spain to the present.

**HSTAA 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.

**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-) 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 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 581 Latin American History: Colonial Period (3-6, max. 6)**

**HSTAA 582 Latin American History: National Period (3-6, max. 6)**

**HSTAA 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.

**HSTAA 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.

**HSTAA 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.

**HSTAA 586 Seminar in Comparative Colonial History ([3-6, max. 12]-)**

**HSTAA 587 Seminar in Comparative Colonial History (-[3-6, max. 12])**

**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.

## Modern European History

**HSTEU 210 Paris (5) VLP/IA&S** Provides an introduction to the history, art, architecture, politics, and literature of the City of Light.

**HSTEU 211 France: A Portrait (5) IA&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 220 Introduction to East European Studies (5) IA&S** 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 EURO 220.

**HSTEU 250 Rome (5) IA&S/VLP/IA** 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) IA&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 Twentieth Century Europe (5) IA&S** Introduction to themes in 20th-century European history (1890s-1900s), including the histories of fascism, world war, communism, decolonization, and the fate of Europe under the European Union.

**HSTEU 275 Life in England (5) IA&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 290 Topics in European History (5, max. 10) IA&S** Examines special topics in European history.

**HSTEU 301 Early Modern European History: 1450-1648 (5) IA&S** Political, social, economic, and cultural history from the late Renaissance to the Peace of Westphalia.

**HSTEU 302 Modern European History: 1648-1815 (5) IA&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) IA&S** Political, social, economic, and cultural history from the fall of Napoleon to the present.

**HSTEU 304 Cultural History of Renaissance Europe (5) IA&S/VLP/IA** 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) IA&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) IA&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) IA&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 Offered: by different "schools" of historians.

**HSTEU 361 Spain and Its Golden Age, 1469-1700 (5) IA&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) IA&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 EURO 364.

**HSTEU 368 Modern European Jewish History (5) IA&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 SISJE 368.

**HSTEU 370 J.R.R. Tolkien: A Mythology for England (5) VLP/IA&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) IA&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 Féin periods; the Irish Free State and Northern Ireland since 1921; current problems in Northern Ireland.

**HSTEU 378 The Making of Contemporary France (5) IA&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) IA&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) IA&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) IA&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) IA&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) IA&S/VLP/IA** 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) IA&S/VLP/IA** 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) IA&S/VLP/IA** 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 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 440 History of Communism (5) I&S** Communism from its origins in the Bolshevik faction of Russian social democracy to the present, treating the development of the ideology, the various communist parties, and the communist states. Recommended: two history or politics of Europe courses. Offered: jointly with SIS 440.

**HSTEU 444 Imperial Russia: 1700-1900 (5) I&S** Development of Russia from Peter the Great to Nicholas II. Offered: jointly with SISRE 444.

**HSTEU 445 Twentieth-Century Russia (5) I&S** Russia and the USSR from Nicholas II to the present. Offered: jointly with SISRE 448.

**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** Poland, Czechoslovakia, Hungary, Romania, Yugoslavia, Bulgaria, and Albania, 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 SISJE 464.

**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 SISJE 465.

**HSTEU 466 The Sephardic Diaspora: 1492-Present (5) I&S** 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 SISJE 466.

**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 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 470.

**HSTEU 474 England 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 England in the Twentieth Century (5) I&S** From the Boer War to the present; conservatism, liberalism, and socialism; England 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 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.

**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 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 (5)** Provides an acquaintance with some of the themes, problems, and events in the history of modern Europe, 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 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 and Philosophy of Science

**HPS 210 Issues in the History and Philosophy of Science (5) I&S** Examination of selected topics in the history and philosophy of science at the introductory level. Taught by UW faculty and visiting scholars.

**HPS 400 Colloquium in the History and Philosophy of Science (5) I&S/NW** Examines issues from the perspectives of both history and philosophy. Prerequisite: either HIST 311, HIST 312, HIST 313, HIST 314, HIST 315, HIST 317, HIST 318, or HIST 412; either PHIL 350, PHIL 360, PHIL 450, PHIL 460, PHIL 464, PHIL 466, PHIL 473, PHIL 481, PHIL 482, or PHIL 483.

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## Honors — Arts and Sciences

**H A&S 100 Honors at the UW ? Knowledge Across the Disciplines (1)** Showcases a wide range of interdisciplinary disciplines, research, faculty, and experimental opportunities at the UW. Topics and approaches vary.

**H A&S 220 Science for Honors Students I (5, max. 10)** Evolution of an idea or concept central to the natural sciences. Intended for non-science majors. Content varies from year to year. For university honors students only. Offered: A.

**H A&S 221 Science for Honors Students II (5, max. 10)** Evolution of an idea or concept central to the natural sciences. Intended for non-science majors. Content varies from year to year. For university honors students only. Offered: W.

**H A&S 222 Science for Honors Students III (5, max. 10)** Evolution of an idea or concept central to the natural sciences. Intended for non-science majors. Content varies from year to year. For university honors students only. Offered: Sp.

**H A&S 251 Western Civilization I (5, max. 10) I&S/VLPA** Introduction to ideas and society in Western Civilization. For university honors students only. Offered: A.

**H A&S 252 Western Civilization II (5, max. 10) I&S/VLPA** Introduction to ideas and society in Western Civilization. For university honors students only. Offered: W.

**H A&S 253 Western Civilization III (5, max. 10) I&S/VLPA** Introduction to ideas and society in Western Civilization. For university honors students only. Offered: Sp.

**H A&S 261 World Civilization I (5, max. 10) I&S/VLPA** Introduction to ideas and society of civilization other than the Western. Specific civilization (Chinese, Japanese, Middle Eastern, South Asian) differs from year to year and section to section. For university honors students only. Offered: A.

**H A&S 262 World Civilization II (5, max. 10) I&S/VLPA** Introduction to ideas and society of civilization other than the Western. Specific civilization (Chinese, Japanese, Middle Eastern, South Asian) differs from year to year and section to section. For university honors students only. Offered: W.

**H A&S 263 World Civilization III (5, max. 10) I&S/VLPA** Introduction to ideas and society of civilization other than the Western. Specific civilization (Chinese, Japanese, Middle Eastern, South Asian) differs from year to year and section to section. For university honors students only. Offered: Sp.

**H A&S 300 Introduction to the Professions (2-5, max. 15)** Studies oriented toward professional work (law, medicine, public affairs). For university honors students only.

**H A&S 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 students only. Credit/no credit only.

**H A&S 396 Interdisciplinary Special Topics—Natural Science (1-5, max. 10) NW** Special courses drawn from interdisciplinary groups in the natural sciences. Content varies.

**H A&S 397 Interdisciplinary Special Topics—Social Science (1-5, max. 10) I&S** Special courses drawn from interdisciplinary groups in the social sciences. Content varies.

**H A&S 398 Interdisciplinary Special Topics—Humanities (1-5, max. 10) VLPA** Special courses drawn from interdisciplinary groups in the humanities. Content varies.

**H A&S 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. Honors students only.

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## International Studies

### International Studies

**SIS 103 Society and the Oceans (5) I&S/NW** Explores the social and policy dimensions of the ocean environment and ocean management policy. 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 SMA 103

**SIS 123 Introduction to Globalization (5) I&S 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.

**SIS 150 Israel: Dynamic Society and Global Flashpoint (5) I&S Barzilai, Migdal, Pianko, Sokoloff** 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 NEAR E 150.

**SIS 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. : A.

**SIS 201 The Making of the 21<sup>st</sup> 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: SIS 200. Offered: WSp.

**SIS 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.

**SIS 216 Science and Society (5) I&S/NW** *Chaloupka* of the relationship between science, technology and society. Nuclear physics and molecular biology serves as concrete examples of fields with significant impact on society. Offered jointly with PHYS 216, Sp.

**SIS 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.

**SIS 302 Intercultural Relations (5) I&S** *Warren* Perspectives on foreign cultures through literary example. Interdisciplinary approaches to the study of culture as such and problems of intercultural relations. Prerequisite: either one 200-level ANTH course, LING 203 or SIS 202.

**SIS 325 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.

**SIS 330 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 SIS 120 any of which may be taken concurrently.

**SIS 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.

**SIS 333 Gender and Globalization: Theory and Process (5) I&S** *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 WOMEN 333.

**SIS 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. Offered: jointly with GEOG 335.

**SIS 337 Collective Violence and the State (5) I&S** Comparative study of collective violence in modern states with emphasis on riots and pogroms. Readings include case materials drawn from Russian pogroms of the nineteenth and twentieth centuries, Hindu-Muslim riots in modern India, and race riots in the United States and Great Britain. Offered: jointly with POL S 337.

**SIS 342 Social Theory in International Context (5) I&S** Comparative, historical introduction to the foundations of modern social theory in the work of Max Weber, Sigmund Freud, and Claude Levi-Strauss. Focus on tensions between universalist claims, European origins, and non-European applications of models of cultural formation and development.

**SIS 344 Migration in the Global Economy (5) I&S** *Mitchell* Analyzes the relationship between human mobility in the late 20th century and changes in the global economy. Allows the student to gain familiarity with scholarly research on international migration from a diversity of approaches and methods. Offered: jointly with GEOG 344; W.

**SIS 345 Women and International Economic Development (5) I&S** *Ramamurthy* Questions how women are affected by economic development in Third World and celebrates redefinitions of what development means. Theoretical perspectives and methods to interrogate gender and development policies introduced. Current processes of globalization and potential for changing gender and economic inequalities assessed. Offered: jointly with ANTH 345/WOMEN 345.

**SIS 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 HSTAS 348.

**SIS 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.

**SIS 362 Law and Justice: An Introduction to Social Theory (5) I&S** *Godoy* Provides conceptual tools for understanding law and its role in society by acquainting students with major currents of social theory. Topics include liberalism, Marxism, critical feminist theory, and critical race theory. Offered: jointly with LSJ 362.

**SIS 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.

**SIS 375 Geopolitics (5) I&S** 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.

**SIS 377 Turkic Peoples of Central Asia (3) I&S** *Cirtautas* 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.

**SIS 390 Political Economy of Industrialized Nations (5) I&S** *Ingebritsen* 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 SIS 120 any of which may be taken concurrently.

**SIS 397 Junior Honors Seminar (5) I&S** Designed to facilitate writing of honors thesis through methodological and bibliographical research. Required of honors candidates.

**SIS 399 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.

**SIS 401 International Political Economy (5) I&S** *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: SIS 201 which may be taken concurrently; either ECON 201, GEOG 123 or SIS 120 any of which may be taken concurrently.

**SIS 405 Political Economy of Religious Institutions (5) I&S** Comparative study of Buddhist, Taoist, Christian, and Islamic religious institutions as political and economic phenomena. Impact of wealth and power on religious institutions or religious ideas. Temporal coverage from the formative period to the present. Recommended: one China, Japan, Middle East, or Europe course.

**SIS 406 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 POL S 432.

**SIS 410 Introduction to Global Internet Political Economy (5) I&S** *Hellmann* Impact of the Internet revolution on structure and operating procedures of the international system. Effects of Internet-driven forces on aspects of the global political economy: cultural and political identities; interactions between states and markets; meaning of the boundaries of sovereignty and civil society.

**SIS 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.

**SIS 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: one SIS or international relations course.

**SIS 422 The United States in the Contemporary International System (5) I&S** *United States* in the world: ways in which international circumstances shape the political-strategic, economic, and cultural dimensions of America's policy. Case studies from post-1945 period. Recommended: one international relations or foreign policy course.

**SIS 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: SIS 201.

**SIS 425 International Law and Arms Control (5) I&S** 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. Offered: Sp.

**SIS 426 World Politics (5) I&S** *Caporaso, Modelski* Nation-state system and its alternatives; world distributions of preferences and power; structures of international authority; historical world societies and their politics. Offered: jointly with POL S 426.

**SIS 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.

**SIS 430 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.

**SIS 432 Population and Modernization (3) I&S** *Hirschman, Lavelly* Examines role of demographic factors in process of social modernization and economic growth. Approach is historical, focusing on populations of developed countries since 1700, and analytic, stressing attempts made by different disciplines to model demographic relationships, with attention to less developed regions. Offered: jointly with SOC 432.

**SIS 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/SMA 433.

**SIS 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.

**SIS 438 Forced Migrations (5) I&S** *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: SIS 325 or SIS 344.

**SIS 440 History of Communism (5) I&S** *Ellison* Communism from its origins in Bolshevik faction of Russian social democracy to the present, treating the development of the ideology, the various communist parties, and the communist states. Recommended: two history or politics of Europe courses. Offered: jointly with HSTEU 440.

**SIS 444 Peasants in Politics (5) I&S** *Young* Interdisciplinary study of peasants, with special attention to questions of rural transformation. Peasant involvement in an increasingly independent world. Rebellion and revolution, impact of the international market, agricultural development. Offered: jointly with POL S 446.

**SIS 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. Offered.

**SIS 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 ANTH 449.

**SIS 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.

**SIS 452 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.

**SIS 455 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: SIS 200; SIS 201.

**SIS 456 State-Society Relations in Third World Countries (5) I&S** *Bachman, Callahan, Kasaba* 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 450.

**SIS 460 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.

**SIS 465 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: SIS 201 or POL S 204.

**SIS 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 the new nationalism and its spread into East Central Europe, Russia, Ibero-America, Asia, and Africa. Offered: jointly with HIST 467.

**SIS 470 Human Rights in Latin America (5) I&S** *Godoy* Human rights in Latin America, focusing on twentieth century dictatorships and current regional events and their implications for human rights. Cannot be taken for credit if GIS 174 or SISLA 120 previously taken. Offered: jointly with LSJ 410. Prerequisite: either ANTH 323, LSJ 320, LSJ 321, POL S 368, PHIL 338, SIS 200, or SIS 201.

**SIS 476 Comparative International Political Economy (5) I&S** *Ingebritsen, Pozanaski*  
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.

**SIS 490 Special Topics (1-5, max. 15) I&S**  
Content varies from quarter to quarter.

**SIS 491 Senior Honors Seminar (5-) I&S**  
Study of issues related to students' thesis topics. Develops thesis-writing skills. Open only to Jackson School honors students.

**SIS 492 Senior Honors Seminar (-5) I&S**  
Students write a senior thesis working with their individual writing advisers.

**SIS 494 Senior Research (2)** Independent research and writing under supervision of a faculty member. Open only to International Studies majors.

**SIS 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: SIS 200; SIS 201; SIS 202; SIS 401.

**SIS 497 Internship (1-5, max. 15)** Credit for the completion of an approved internship in international studies. Credit/no credit only.

**SIS 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.

**SIS 499 Undergraduate Research (1-5, max. 15)** .

**SIS 500 Seminar: Origins of the Modern Global System (3)** *Kasaba, Migdal* Development of global interdependence from the fifteenth century to World War II. Interrelationship of politics and economics. International political economy from contextual, institutional, and historical perspectives.

**SIS 501 Seminar: Comparative International Studies (3)** *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.

**SIS 502 Seminar: Globalization and International Relations (3)** *Jones* Focuses on globalism, including international relations and transnational studies. Provides an understanding of the interplay of area studies with processes that transcend geographical areas and intersect political boundaries, an overview of transnationalism or international relations, and skills in undertaking a major research and writing project.

**SIS 511 Practicum: Methods in International Studies (3)** *Chiro, Curran* Assumptions underlying leading methodologies for comparative study of societies and other large-scale social entities. Quantitative and nonquantitative methods illustrated by recent research. Prerequisite: SIS 502.

**SIS 512 Task Force in International Affairs (3)** *Chiro, Curran* Seminar addressing a current problem in international affairs and resulting in a joint task-force report. Results presented to, and critiqued by, a distinguished outside evaluator at end of term. Prerequisite: SIS 511.

**SIS 520 Introduction to Theories and Quantitative Methods for Social Science Research (5)** Selected social scientific theories and quantitative methods for students in international and area-studies programs. Introduction to methodological neoclassicism, neo-institutional analysis, "developmentalism," rational choice and dynamic institutionalist approaches, and selected theories from political science. Essentials of statistical analysis.

**SIS 522 Special Topics in Ethnicity and Nationalism (3, max. 6)** Topics vary, but always focus on ethnic group relations and nationalism viewed from a broad, comparative, interdisciplinary perspective. Emphasis is heavily cross-cultural, and the geographical coverage world-wide.

**SIS 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.

**SIS 524 International Security (5)** *Kier, Mercer* 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. Offered jointly with POL S 524.

**SIS 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.

**SIS 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.

**SIS 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.

**SIS 552 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.

**SIS 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.

**SIS 562 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.

**SIS 575 Advanced Political Geography (5)** *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.

**SIS 580 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.

**SIS 590 Special Topics (2-5, max. 10)** Seminar. Course content varies. Offered occasionally by visiting or resident faculty.

**SIS 600 Independent Study or Research (\*)**

## European Studies

**EURO 110 Introduction to Russian Culture and Civilization (5) I&S/VLPA** 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.

**EURO 111 Elementary Modern Greek (5)** Fundamentals of oral and written modern Greek. Offered: A.

**EURO 112 Elementary Modern Greek (5)** Fundamentals of oral and written modern Greek. Recommended: EURO 111 or GREEK 401. Offered: W.

**EURO 113 Elementary Modern Greek (5)** Fundamentals of oral and written modern Greek.

Recommended: EURO 112 or GREEK 402.  
Offered: Sp.

**EURO 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 HIST 140.

**EURO 211 Second-Year Modern Greek (5) VLPA** Continuation of EURO 111, 112, 113. Intensive practice in speaking, reading, and writing. Recommended: EURO 113 or GREEK 403. Offered: A.

**EURO 212 Second-Year Modern Greek (5) VLPA** Continuation of EURO 111, 112, 113. Intensive practice in speaking, reading, and writing. Recommended: EURO 211. Offered: W.

**EURO 213 Second-Year Modern Greek (5) VLPA** Continuation of EURO 111, 112, 113. Intensive practice in speaking, reading, and writing. Recommended: EURO 212. Offered: Sp.

**EURO 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.

**EURO 243 Russian Civilization (5) I&S** Russia's civilization, including fine arts, literature, religion, and history; political, social, and legal institutions and thought in relation to the general development of Russian society from early times to 1917.

**EURO 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 ITAL 260; W.

**EURO 301 Europe Today (5) I&S** *Ingebritsen, Lang* A multi-disciplinary 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.

**EURO 302 The Politics and Cultures of Europe (5) I&S** *Lang* Builds upon themes and topics introduced in EURO 301. Provides rigorous and specialized investigation of European political institutions, societies, and cultures in the modern era. Prerequisite: EURO 301.

**EURO 320 Greek History: 7000 BC to Present (5) I&S** *Thomas* 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 HIST 320, A.

**EURO 344 The Baltic States and Scandinavia (5) I&S** *Smidchens* 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.

**EURO 345 Baltic Cultures (5) I&S/VLPA** 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.

**EURO 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.

**EURO 360 Contemporary Spain (5) I&S/VLPA** Social, political, and cultural developments in Spain since the end of the Franco dictatorship in 1975. Extensive use of Spanish Web sites. Prerequisite: SPAN 302 which may be taken concurrently. Offered: jointly with SPAN 360.

**EURO 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.

**EURO 378 Russia and Asia (3) I&S** Russian expansion into Central Asia. Russian and Soviet policies toward nationalities and relations with adjacent Asian countries.

**EURO 395 Supervised Internship (1-5, max. 5) .**

**EURO 399 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.

**EURO 403 Modern European Migration, Integration, and Citizenship (5) I&S** *Mitchell* Offers a theoretical and empirical understanding of migration processes and patterns in Europe, with a focus on Muslim immigration in the post WWII period. Analyzes the impact of European Union mandates, globalization processes, and international, national, and urban policies on Muslim immigrant rights and identity formation. Offered: A; jointly with GEOG 403.

**EURO 420 The Olympics: The Merging of Old and New in Modern Greece (5) I&S** Explores the role of the Olympic games in the history and culture of Greece, from Bronze Age pre-Olympiads to the 2004 Athens Games. Topics include mythical and historical origins of the Olympics, moral principles and practices in Greek sports, and modern Olympics, 1896 to 2004. Offered: jointly with HIST 420.

**EURO 445 War and Occupation in Northern Europe: History, Fiction, and Memoir (5) 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.

**EURO 480 Kierkegaard and Decadence in European Literature (5) VLPA** Reading and discussion of core texts by Soren 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.

**EURO 481 August Strindberg and European Cultural History (5) I&S/VLPA** 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 20th-century drama and film. Offered: jointly with SCAND 481.

**EURO 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.

**EURO 490 Special Topics (1-5, max. 15) I&S**

**EURO 494 Senior Seminar I (5) I&S** Introduction to research into European topics and to the analysis of problems.

**EURO 495 Senior Seminar II (5) I&S** Writing and discussion of senior thesis. Prerequisite: EURO 494. Offered: Sp.

**EURO 496 Paris: Architecture and Urbanism (3-5, max. 5) I&S/VLPA** Spans the architectural history of Paris, from its Gallic, pre-roman origins in the 2nd century BCE through the work of 21st 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.

**EURO 499 Undergraduate Research (1-5, max. 15)**

## African Studies

**SISAF 399 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.

**SISAF 444 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.

**SISAF 490 Special Topics (1-5, max. 15) I&S**

**SISAF 499 Undergraduate Research (1-5, max. 15)**

## Asian Studies

**SISA 209 Asian Civilizations: Traditions (5) VLPA** *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.

**SISA 210 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.

**SISA 244 Imperialism and Anti-Colonialism in Asia (5) I&S** *Giebel* 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.

**SISA 245 Human Rights in Asia (5) I&S** *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.

**SISA 265 Globalization and the Transformation Economy and Society in Asia (5) I&S** *Hamilton* Examines the rapid and extensive social and economic development throughout Asia since the mid-20th century; the corresponding retail revolution in the American economy; the evolution of characteristic Asian product categories; and the impact of these developments on the social and economic organization of Asian economies. Offered: jointly with SOC 265.

**SISA 372 Asian Sustainable Development (5) I&S** Examines the contemporary relationship between environmental protection and development paths in Asia. Inquires into the forces driving both environmental change and societal responses (state and local regulations, social movements, etc.) to that change, at many geographical scales. Asian concepts of nature-society relations also explored. Offered: jointly with GEOG 372.

**SISA 399 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.

**SISA 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. : SIS 201, SISA 210.

**SISA 442 GLOBAL ASIA (5) I&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/WOMEN 446; W.

**SISA 490 Special Topics (1-5, max. 15) I&S** Content varies.

**SISA 499 Undergraduate Research (1-5, max. 15)**

**SISA 590 Special Topics (1-5, max. 10) I&S** Special topics in Asian Studies. Course content varies by instructor.

## Canadian Studies

**SISCA 308 Canada: A Geographic Interpretation (5) I&S** Examines the overlapping economic, cultural, and political geographies shaping life in contemporary Canada. Topics include: free trade, constitutional crisis, feminism in Canada, aboriginal politics, and border region phenomena. Attention paid to how specific geographic interpretations of Canada by Canadians actually play a part in national life. Offered: jointly with GEOG 308.

**SISCA 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 POL S 341.

**SISCA 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.

**SISCA 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 HSTAA 377.

**SISCA 399 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.

**SISCA 400 Canadian Values and Symbols (5) I&S** Overview of the ideas, events, and activities which help define Canadians as a people. Examines the "national" expression of these values and symbols, as evidenced in historical experience, a physical environment often harsh and unyielding, a diverse people and cultures, and a pride in achievement that is frequently slow to surface.

**SISCA 430 Canadian Documentary Film Traditions (5) I&S/VLPA** History and development of non-fiction film documentary traditions, especially in Canada, the first institutionally defined area in which documentaries became prominent through the National Film Board and the Canadian Broadcasting Corporation. Discussion of Flaherty, Greirson, and independent network producers who developed present-day style of documentaries. Offered: jointly with COM 430.

**SISCA 441 Quebecois Literature (5) VLPA** *Delcourt* 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.

**SISCA 490 Special Topics (1-5, max. 15)** Content varies.

**SISCA 495 Multiculturalism in Canada (5) I&S** History of the multi-racial and multi-ethnic character of Canadian society. Impact of federal

policy of bilingualism and multiculturalism. Current issues of language rights, retention of cultural heritage, self-government for aboriginal peoples, and improving race and ethnic relations.

**SISCA 498 Seminar: Canadian Problems (5) I&S** Major issues pertaining to Canadian society, government, and economic development.

**SISCA 499 Undergraduate Research (1-5, max. 15) .**

**SISCA 507 Research Seminar: Canadian Problems (5, max. 10)** Consideration of the spatial dimensions of Canadian socioeconomic, cultural, and political development, with emphasis on resource potentials and relations with the United States, Japan, and other important trading partners. Prerequisite: GEOG 308 or permission of instructor. Offered: jointly with GEOG 507.

**SISCA 590 Special Topics (2-5, max. 10)** Offered occasionally by visitors or resident faculty. Course content varies.

**SISCA 600 Independent Study (\*)**

## Comparative Religion

**RELIG 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.

**RELIG 202 Introduction to World Religions: Eastern Traditions (5) I&S** *Tokuno* 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.

**RELIG 205 Religion, Violence, and Peace: Patterns Across Time and Tradition (5) I&S** *Noegel, Wellman* 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/NEAR E 205; W.

**RELIG 210 Introduction to Judaism (5) I&S** *Jaffee, Pianko* 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.

**RELIG 211 Islam (5) I&S/VLPA** 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.

**RELIG 212 Introduction to the Quran (5) I&S/VLPA** 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.

**RELIG 220 Introduction to the New Testament (5) I&S/VLPA** *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.

**RELIG 240 Introduction to the Hebrew Bible: Old Testament (5) I&S/VLPA** *Noegel* Examines the Hebrew Bible (Old Testament) in translation and its relationship with literatures of ancient Near East. Comparisons drawn between the biblical text and the literary works of Canaan, Egypt, Greece, and Mesopotamia. Emphasis on the sophisticated literary techniques employed by the biblical writers. Offered: jointly with NEAR E 240.

**RELIG 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.

**RELIG 264 Sacred Music in the European Tradition (5) VLPA** Surveys European and American sacred music from the 12th to 20th 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.

**RELIG 301 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: RELIG 201

**RELIG 307 Religion and World Politics (5) Gill** Explores the intersection of religion and politics in various regions of the world, including the U.S., Europe, Middle East, Latin America, and other regions. Presents a historical perspective on religion alongside contemporary issues in religion, politics, and church-state relations. Offered: jointly with POL S 307.

**RELIG 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.

**RELIG 321 Comparative Religion (3) I&S** Anthropological approaches to religious experience and belief with emphasis on conceptual issues such as ritual, symbolism, identify, 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.

**RELIG 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: ENGL 310 or RELIG 220.

**RELIG 324 The Emergence of Christianity (5) I&S** *Williams* Studies stages in the development of Christianity as a new religion, during the first to fifth centuries CE, as the classical forms and institutions of Christian "orthodoxy" gradually achieved definition, and as this emerging Christian tradition became a dominant cultural and socio-political force. Recommended: HIST 307, RELIG 201, or RELIG 220.

**RELIG 327 Eastern Christian Traditions (5) I&S** Eastern Christian traditions, with principal focus on Eastern Orthodox tradition in Byzantium and Russia from time of the Council of Nicea to the twentieth century. Considers significant differences between eastern and western Christianity and their doctrinal and cultural origins; explores distinctive features of eastern tradition. Recommended: HIST 307 or RELIG 201.

**RELIG 330 Religion, Identity, and Cultural Pluralism (5) I&S** 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.

**RELIG 350 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: RELIG 202 or one eastern religions course. Offered: jointly with ANTH 352.

**RELIG 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: RELIG 202 or one South Asian culture course.

**RELIG 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: RELIG 202 or one Asian cultures course.

**RELIG 380 The Nature of Religion and Its Study (5) I&S** *Jaffee, Wellman* Study of religion as a general human phenomenon. Manner in which different methods of inquiry (phenomenology, anthropology, sociology, psychology, literary criticism, archaeology, philosophy, theology) illuminate different aspects of religion and help to shape our conceptions of its nature. Recommended: RELIG 201 or RELIG 202. Offered: jointly with CHID 380.

**RELIG 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.

**RELIG 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: RELIG 201 or RELIG 210.

**RELIG 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: HIST/SISJE 250, RELIG 201, or RELIG 210.

**RELIG 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: RELIG 201; RELIG 210; RELIG 400 or RELIG 405.

**RELIG 415 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: HIST/SISJE 250, HSTEU/SISJE 469, RELIG 201, or RELIG 210.

**RELIG 420 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: HIST 307, RELIG 220, or RELIG 324.

**RELIG 421 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: HIST 307, RELIG 320, or RELIG 324.

**RELIG 426 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.

**RELIG 428 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: RELIG 301.

**RELIG 430 Scripture and Law in Islam (5) I&S/VLPA** 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.

**RELIG 432 Ritual and Territory in Islam (5) I&S/VLPA** Comparative study of Islamic ritual practices and related development of jurisprudence and law. Focus on sacrifice, political and social legal theory, pilgrimage, regulation of the body, and the diversity of contemporary practices. In English. Offered: jointly with NEAR E 432.

**RELIG 433 Life of Prophet Muhammad (5) I&S/VLPA** Examines historical and religious traditions associated with the life of the Prophet Muhammad with particular attention to the biography in classical Islam. Focuses on Muhammad as prophet, holy man, law-giver, mystic, and statesman. Comparison with other religious figures such as Jesus and the Buddha. In English. Offered: jointly with NEAR E 433.

**RELIG 442 Art, Religion, and Politics in the Early Christian Period, 300-700 AD (3) I&S/VLPA** *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.

**RELIG 443 Art, Religion, and Politics in Byzantium, 700-1453 AD (3) I&S/VLPA** *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.

**RELIG 445 Greek and Roman Religion (3) I&S/VLPA** *Harmon* Religion in social life of Greeks and Romans; emphasis on their public rituals and festivals. Priesthoods, personal piety, rituals of purification and healing, and the conflict of religions in the early Roman Empire. Recommended: RELIG 201. Offered: jointly with CLAS 445.

**RELIG 452 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: ANTH 352, RELIG 202, RELIG 350, or RELIG 354.

**RELIG 454 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.

**RELIG 457 The History of Biblical Interpretation (3) I&S/VLPA** *Noegel* 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.

**RELIG 460 Anti-Semitism As a Cultural System (5) I&S** *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.

**RELIG 490 Special Topics (1-5, max. 15) I&S** Topics vary with each offering.

**RELIG 491 Seminar: Topics and Issues in Judaism (5) I&S** *Jaffee* Topics vary. Recommended: RELIG 210; RELIG 400, RELIG 405, or RELIG 410.

**RELIG 492 Seminar: Topics in Early Christianity (5) I&S** *Williams* Topics vary. Recommended: one early Christian history or literature course.

**RELIG 497 Field Archaeology (1-10, max. 20)** Professionally-guided archaeological fieldwork at a recognized archeological dig in the United States or abroad. Offered: S.

**RELIG 498 Honors Thesis (5) I&S** Required course for Comparative Religion honors students.

**RELIG 499 Undergraduate Research (1-5, max. 15)** Primarily for comparative religion majors and majors in the School of International Studies.

**RELIG 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.

**RELIG 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.

**RELIG 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.

**RELIG 510 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.

**RELIG 520 Seminar On Early Christianity (5)** *Williams* Problems in the history and literature of early Christianity.

**RELIG 528 Christian Theology (5)** Study of exemplary figures in the history of Christian religious thought. Prerequisite: RELIG 428.

**RELIG 570 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.

**RELIG 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.

**RELIG 590 Special Topics (2-5, max. 10)** Offered occasionally by visitors or resident faculty. Course content varies.

**RELIG 600 Independent Study or Research (\*)**

## East Asian Studies

**SISEA 212 History of Korean Civilization (5) I&S** From earliest times to present. Development of Korean society and culture in terms of government organization, social and economic change, literature, art. Offered: jointly with HSTAS 212.

**SISEA 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.

**SISEA 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.

**SISEA 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.

**SISEA 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.

**SISEA 370 Han Chinese Society and Culture (5) I&S** *Anagnost, 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.

**SISEA 399 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.

**SISEA 406 China's Environment (5) I&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, SIS 200, SIS 201, or SIS 202. Offered: jointly with ANTH 406.

**SISEA 407 Global Futures in East Asia (5) I&S** *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.

**SISEA 423 History of Modern Japan (5) I&S** *Pyle* 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. Offered: jointly with HSTAS 423.

**SISEA 424 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.

**SISEA 434 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.

**SISEA 435 Japanese Government and Politics (5) I&S** *Hellmann* Government and politics of Japan with emphasis on the period since 1945. Offered: jointly with POL S 435.

**SISEA 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 SISEA 242, SISEA 423, SISEA 440, or SISEA 442. Offered: jointly with POL S 429.

**SISEA 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. Offered: jointly with POL S 424.

**SISEA 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.

**SISEA 440 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: HSTAS 423 or SISEA 423. Offered: jointly with HSTAS 424.

**SISEA 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. Prerequisite: either SISEA 241/HSTAS 241 or SISEA 341/HSTAS 341. Offered: jointly with HSTAS 441.

**SISEA 442 Political Economy of Postwar Japan (5) I&S** *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. Some knowledge of postwar Japan desirable. Recommended: SISEA 440/HSTAS 424.

**SISEA 443 Class and Culture in East Asia (5) I&S** 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.

**SISEA 444 Politics of Representation in Modern China (5) I&S** *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.

**SISEA 445 Religion in China (5) I&S** *Tokuno* Religion in Chinese society, doctrines, practices, and social consequences of the eclectic folk religion, the elite Confucian, Taoist, and Buddhist traditions, syncretistic sects, and imported Christianity. Prerequisite: either one 200-level ANTH course, ANTH 370, ANTH 403, LING 203, HSTAS 211, HSTAS 454, RELIG 202, SISEA 370, or SISEA 443.

**SISEA 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/ SISEA 212. Offered: jointly with ANTH 448.

**SISEA 449 Government and Politics of China (5) I&S** *Bachman, Whiting* Post-1949 government and politics, with emphasis on problems of political change in modern China. Offered: jointly with POL S 442.

**SISEA 454 History of Modern China (5) I&S** *Dong* 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

**SISEA 456 Topics in Chinese Social History (5) I&S** *Ebrey, Guy* 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: HSTAS 211, HSTAS

452, HSTAS 453, or HSTAS/SISEA 454. Offered: jointly with HSTAS 456.

**SISEA 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.

**SISEA 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.

**SISEA 462 China and Globalization (5) I&S** *Bachman* Examines the dynamics of the rise of China, its growing interactions with the international system and how it is in turn affected by the processes associated with globalization. Specific areas of examination include flows of resources, people, and information, and conceptions of Chinese identity. Prerequisite: SISA 210.

**SISEA 468 China's Economic Reforms: Integration Into World Economy (5) I&S** A systematic survey of China's economic reforms since 1978, including China's increasing integration into world economy. Prerequisite: ECON 201. Offered: jointly with ECON 468.

**SISEA 469 Law, Development, and Transition in East Asia (5) I&S** *Whiting* Examines the role of law and the courts in economic and political change in the developing world. Topics include variations in legal traditions and institutions, economic development, property rights, dispute resolution, democratization, and human rights. Empirical materials focus on East Asia. Offered: jointly with LSJ 469/POL S 469.

**SISEA 470 Minority Peoples of China (5) I&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: either ANTH/ SISEA 370, HSTAS 454, LING 203, or one 200-level ANTH course. Offered: jointly with ANTH 470.

**SISEA 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.

**SISEA 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: either SISEA 242

**SISEA 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.

**SISEA 479 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.

**SISEA 480 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.

**SISEA 481 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: SISEA or SISA course. Offered: jointly with I BUS 461.

**SISEA 482 Japanese Business and Technology (5) I&S** *Anchordoguy* 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.

**SISEA 486 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. Offered: jointly with POL S 418.

**SISEA 490 Special Topics (1-5, max. 15) I&S** Course content varies.

**SISEA 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. Offered: jointly with ECON 494.

**SISEA 499 Undergraduate Research (1-5, max. 15)**

**SISEA 517 Foreign Trade and Investment Law of the People's Republic of China (1-4, max. 4)** Introduction to the regulatory regime governing foreign trade and investment in China and in-depth coverage of key aspects of the regime, with focus on issues faced by U.S. businesses. Covers specific regulations, their implementation in practice, as well as the political and economic background. Offered: jointly with LAW E 517.

**SISEA 521 Seminar: Introduction to the Interdisciplinary Study of China (5-)** *Bachman, Dong, Guy*

**SISEA 522 Seminar: Introduction to the Interdisciplinary Study of China (-5)** *Bachman, Dong, Guy*

**SISEA 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.

**SISEA 531 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.

**SISEA 532 The Chinese Political System (5)** *Bachman, Whiting* Examination of key approaches, interpretations, and secondary literature in the study of contemporary Chinese politics. Prerequisite: permission of instructor. Offered: jointly with POL S 532.

**SISEA 533 Seminar on Contemporary Chinese Politics (5)** Research on selected problems in contemporary Chinese politics. Prerequisite: SISEA 532 or permission of instructor. Offered: jointly with POL S 533.

**SISEA 535 International Relations of Modern China (5)** *Bachman* 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.

**SISEA 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 SISEA 242, SISEA 423, SISEA 440, or SISEA 442.

**SISEA 537 International Relations in Japan (5)** *R. 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 SISEA 437.

**SISEA 538 Selected Topics on the Chinese Economy (5)** Introduction to key issues of China's growth; the transition from planned economy; the changing role of the state; central-local relations; macro-management of the economy; income distribution; resources and agriculture; the external sector and the WTO.

**SISEA 540 Japanese Law (4)** *Taylor* 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.

**SISEA 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 441. Offered: jointly with HSTAS 541.

**SISEA 542 Political Economy of Post War Japan (5)** *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. Recommended: some knowledge of postwar Japan.

**SISEA 543 Law in East Asia: China (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.

**SISEA 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.

**SISEA 549 Government Regulation of Business in Japan (3)** Offered: jointly with LAW B 549.

**SISEA 550 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.

**SISEA 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.

**SISEA 553 Chinese Legal Tradition (3)** Concepts and principles of the legal tradition in China. Draws on primary and secondary sources in English and, for students with Chinese language competence, traces the concept and development of Chinese law as well as legal institutions in Chinese society. Offered: jointly with LAW B 553.

**SISEA 555 Introduction to Japanese Studies (3-6, max. 6)** *Anchordoguy* Interdisciplinary introduction to the study of Japan, with emphasis on historical development. Required seminar for first-year graduate students.

**SISEA 558 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.

**SISEA 559 Interdisciplinary Seminar on Japan (5)** Advanced readings in history and the social sciences. Prerequisite: permission of instructor.

**SISEA 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 SISEA 474.

**SISEA 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 SISEA 475.

**SISEA 577 Readings on Political Economy of Japan and Northeast Asia (5)** *Anchordoguy* 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.

**SISEA 579 Modern Chinese History (5)** *Dong* 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.

**SISEA 581 Science, Technology, and Innovation Policies in East Asia (5)** *Anchordoguy* 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. Not open to undergraduates. Recommended: SISEA/SSIA course. Offered: jointly with I BUS 561.

**SISEA 582 Japanese Business and Technology (5)** *Anchordoguy* 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.

**SISEA 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.

**SISEA 585 Research Seminar: Modern Korea (6)** *Nam, Sorensen* Advanced instruction in

problems and methods of research in Korean history. Foreign language not required. Prerequisite: permission of instructor.

**SISEA 586 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 SISEA 486.

**SISEA 590 Special Topics (2-5, max. 10)** Seminar. Course content varies. Offered occasionally by visiting or resident faculty.

**SISEA 600 Independent Study or Research (\*)**

**SISEA 700 Master's Thesis (\*)**

## Jewish Studies

**SISJE 177 The Jewish Community in the United States: Success, Influence, and Prospects (5)** *I&S Burstein* Examines relationship between American society and its ethnic/religious groups through study of the American Jewish community. Focuses on economic success; challenges to religious traditions; relationships between American and Jewish cultures; and impact of Jewish ideas and organizations on American politics. Offered: jointly with SOC 177; S.

**SISJE 250 Introduction to Jewish Cultural History (5)** *I&S Jaffee* 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 HIST 250.

**SISJE 269 The Holocaust: History and Memory (5)** *I&S Pioger, Stein* 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 HIST 269.

**SISJE 312 Jewish Literature: Biblical to Modern (5)** *I&S/VLPA* 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.

**SISJE 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.

**SISJE 367 Medieval Jewish History (5)** *I&S Stacey* Social and intellectual history of the Jews in Western Europe to 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.

**SISJE 368 Modern European Jewish History (5)** *I&S Stein* 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.

**SISJE 369 The Jewish Twentieth Century in Film (5)** *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 HIST 369.

**SISJE 377 The American Jewish Community (5)** *I&S 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.

**SISJE 378 Contemporary Jewish American Identities (5)** *I&S 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.

**SISJE 399 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.

**SISJE 418 Jewish Philosophy (5)** *I&S 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.

**SISJE 438 Jewish Women in Contemporary America (5)** *I&S 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 WOMEN 438.

**SISJE 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 is required. Offered: jointly with NEAR E 452.

**SISJE 453 The Biblical Prophets (3) VLPA I&S** *Noegel* Explores the biblical prophets (in translation) within their Near Eastern contexts. Studies them for their historicity, literary and rhetorical sophistication, and ideological agendas. This course seeks to uncover the meaning and distinctiveness of Israelite prophecy within the context of the larger Near East. No knowledge of the Bible is required. Offered: jointly with NEAR E 453.

**SISJE 454 Israel: The First Six Centuries BCE (3) VLPA I&S** *Noegel* Traces the Israelites, from the Babylonian destruction of the Jerusalemite Temple (586 BCE) to events following the destruction of the second Temple (1st century CE). Focuses on primary historical and literary sources as well as archaeological and artistic evidence. No knowledge of Hebrew or the Bible is required. Offered: jointly with NEAR E 454.

**SISJE 455 The Kings of Monarchic Israel (3) VLPA I&S** *Noegel* Examines the biblical accounts (in translation) concerning the formation and collapse of the united Israelite monarchy. Investigates the archaeological and textual evidence for their historicity, the literary sophistication of these accounts, and Israelite kingship within the wider context of the ancient Near East. No knowledge of the Bible is required. Offered: jointly with NEAR E 455.

**SISJE 465 The Jews of Eastern Europe (5) I&S** Jewish society in Poland, Russia, the Habsburg Lands, and Romania from the late Middle Ages to the Holocaust. Offered: jointly with HSTEU 465.

**SISJE 466 The Sephardic Diaspora: 1492-Present (5) I&S** *Stein* 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 HSTEU 466.

**SISJE 469 Enlightenment, Emancipation, Antisemitism: History of the Jews, 1770-1914 (5) I&S** *Stein* 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. Offered: jointly with HSTEU 469.

**SISJE 490 Special Topics (1-5, max. 15) I&S** Content varies.

**SISJE 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.

**SISJE 497 Field Archaeology (1-10, max. 20)** Professionally-guided archaeological fieldwork at a recognized archeological dig in the United States or abroad. Offered: S.

**SISJE 499 Undergraduate Research (1-5, max. 15)**

## Latin American Studies

**SISLA 120 Introduction to Human Rights in Latin America (5) I&S** *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. Credit not allowed if LSJ 470/SIS 410 already taken.

**SISLA 322 International Political Economy of Latin America (5) I&S** 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.

**SISLA 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.

**SISLA 355 Social Change in Latin America (5) I&S** *Warren* 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.

**SISLA 399 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.

**SISLA 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.

**SISLA 470 Latin American Studies Internship (1-5, max. 10)** Off-campus fieldwork with a community national, or international organization, in an apprenticeship or internship situation. Supervised by on-site field supervisor and Latin American Studies faculty member.

**SISLA 480 Labor and Popular Movements in Latin America (5) I&S** *Bergquist* Interdisciplinary approach to origins and trajectory of labor movement from late nineteenth century to present. Emphasis in contemporary period on popular movements, including neighborhood associations, religious base communities, women's movement, and ethnic mobilization for democratic social and political reform. Recommended: two non-language Latin American studies courses. Offered: jointly with HSTAA 480.

**SISLA 483 Technology and Culture in the Making of Contemporary Empires (5) I&S** *Benitez, Rodriguez-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 HIST 483; W.

**SISLA 486 Photography and Cultural Studies in Latin America (5) I&S/VLPA** *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; one additional 300-level course beyond 303. Offered: jointly with SPAN 486.

**SISLA 489 The Mexico-U.S. Border in Literature and Film (5) I&S/VLPA** *Doremus, 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; either SPAN 321 or SPAN 322; one additional 300-level course above SPAN 303. Offered: jointly with SPAN 489.

**SISLA 490 Special Topics (1-5, max. 15) I&S** Content varies.

**SISLA 492 Latin American Studies Seminar (5, max. 15) I&S**

**SISLA 499 Undergraduate Research (1-5, max. 15)**

## International Studies (Middle Eastern Studies)

**SISME 210 Introduction to Islamic Civilization (5) I&S/VLPA** *DeYoung* 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.

**SISME 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 NEAR E 213.

**SISME 399 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.

**SISME 400 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.

**SISME 420 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.

**SISME 430 Economic Development of the Middle East (5) I&S *Kasaba*** Comparative examination of economic development in the Middle East. Includes population growth, agrarian change, industrialization, foreign trade, capital flows, and fiscal and monetary policies.

**SISME 432 The Middle East and the World Economy (5) I&S *Kasaba*** Early nineteenth century to the 1980s. Production and export of agricultural and raw materials, extension of loans and investments by Europeans, commercial exploitation and export of oil as major phases of economic interaction. These phases and their political repercussions; their significance and consequences.

**SISME 458 Israel: Politics and Society (5) I&S *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.

**SISME 490 Special Topics (1-5, max. 15) I&S** Content varies.

**SISME 495 Trends in the Contemporary Middle East (3) I&S** Perspectives on cultural, political, and other aspects of Middle Eastern societies. Focuses on background complexities rather than immediate political-military confrontations. Topics vary. Offered: jointly with NEAR E 495.

**SISME 499 Undergraduate Research (1-5, max. 15)**

**SISME 530 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.

**SISME 531 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.

**SISME 532 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.

**SISME 560 Seminar in Turkish Studies (2, max. 12)** Recent research and writings focused on the Ottoman Empire and modern Turkey. Credit /no credit only.

**SISME 590 Special Topics (3-5, max. 10)** Content varies.

**SISME 600 Independent Study or Research (\*)**

**SISME 700 Master's Thesis (\*)**

## Russian, East European, and Central Asian Studies

**SISRE 405 Peoples of Russia (5) I&S** Traditional cultural and social organizations of the various nationalities in Russia. Particular emphasis on peoples of Siberia. Role of traditional culture in shaping contemporary lifestyles in a multiethnic, diversified setting. Prerequisite: one 200-level ANTH course or LING 203. Offered: jointly with ANTH 405.

**SISRE 410 Writers and Intellectuals of Central Asia (3) I&S/VLPA** Covers modern native writers and intellectuals of Central Asia and compares them with writers educated before the revolution of 1917. Prerequisite: NEAR E/ SISRE 375.

**SISRE 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.

**SISRE 424 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.

**SISRE 425 Anthropology of the Post-Soviet States (5) I&S *Bilaniuk*** Analysis of Soviet and post-Soviet culture and identity. Historical transformations in Soviet approaches to ethnicity and nationality; contemporary processes of nationbuilding and interethnic conflict. Examination of culture through the intersection of social ritual, government policies, language, economic practices, and daily life. Regional focus will vary. Offered: jointly with ANTH 425.

**SISRE 443 Kievan and Muscovite Russia: 850-1700 (5) I&S** Development of Russia from earliest times to the reign of Peter the Great. Offered: jointly with HSTAM 443.

**SISRE 444 Imperial Russia: 1700-1900 (5) I&S *Young*** Development of Russia from Peter the Great to Nicholas II. Offered: jointly with HSTEU 444.

**SISRE 445 Politics and Society 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.

**SISRE 448 Twentieth-Century Russia (5) I&S *Young*** Russia and the USSR from Nicholas II to the present. Offered: jointly with HSTEU 445.

**SISRE 450 Survey of the Cultures of the Turkic Peoples of Central Asia (3) I&S/VLPA** Nomadic and sedentary cultures of the Turkic peoples of Central Asia. Emphasis on languages, literature, and adherence to traditional modes of life. Offered: jointly with NEAR E 450.

**SISRE 455 Marine Business Environment in Russia and Eastern Europe (3) I&S *Kaczynski*** International marine business environment of Russia and the maritime nations of East Europe;

their transition process from communist to free market economic systems. Covers aspects of doing business in marine-related fields such as shipping, fisheries, shipbuilding, ports, and land infrastructures, marine tourism, and water sports. Offered: jointly with SMA 455.

**SISRE 465 Baltic States Since 1991 (5) I&S *Smidchens*** Intensive interdisciplinary survey of social, political and economic developments in Estonia, Latvia, and Lithuania since 1991. Offered: jointly with SCAND 455.

**SISRE 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.

**SISRE 490 Special Topics (1-5, max. 15) I&S** Topics vary.

**SISRE 501 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.

**SISRE 502 Thesis Seminar I (2-) *Mikkelsen*** Review of research techniques: preparation for drafting master's thesis. Required of all second-year MAIS students. Credit/no credit only. Offered: A.

**SISRE 503 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.

**SISRE 504 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.

**SISRE 505 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.

**SISRE 555 Comparative Marine Business in the North Pacific (3) *Kaczynski*** Strategies of Russian, Canadian, Japanese, and American enterprises and governments in promotion of marine business in the North Pacific. Socio-economic characteristics of the four powers; role of public and private sectors in foreign trade and investment; Russia's transition to free-market economic system; and business practices in the region. Offered: jointly with SMA 555.

**SISRE 579 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 579.



**SISRE 590 Special Topics (2-5, max. 10)**  
Course content varies. Offered occasionally by visitors or resident faculty.

**SISRE 600 Independent Study or Research (\*)**

**SISRE 700 Master's Thesis (\*)**

## South Asian Studies

**SISSA 200 South Asia Today (5) I&S** *Dhavan* 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.

**SISSA 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. : jointly with HSTAS 202.

**SISSA 303 Divided Lands/Divided Lives: An Environmental History of South Asia (5) I&S** 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.

**SISSA 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.

**SISSA 339 Social Movements in Contemporary India (5) 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 WOMEN 339/ANTH 339.

**SISSA 340 Government and Politics of South Asia (5) I&S** *Kale* Comparison of problems of national integration and political development in India, Pakistan, and Ceylon. Offered: jointly with POL S 340.

**SISSA 341 Political Violence and the Post-Colonial State in South Asia (5) I&S** 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.

**SISSA 343 Comparative Geographies of Youth (5) I&S** *Jeffrey* Examines how three key global processes - rising levels of formal education, changing health regimes, and environmental transformation - are shaping youth in the US and South Asia. Examines ways young people rework broader structures, paying particular attention to their economic livelihoods, cultural practices, and political engagements. Offered: jointly with GEOG 343; A.

**SISSA 399 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.

**SISSA 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.

**SISSA 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.

**SISSA 436 Social and Political Geographies of South Asia (5) I&S** *Jeffrey* 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, Sp.

**SISSA 490 Special Topics (1-5, max. 15) I&S** Topics vary.

**SISSA 494 Ramayana in Comparative Perspective (5) VLP** *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.

**SISSA 498 Undergraduate Colloquium on South Asia (5) I&S** Interrelationship of the various social science disciplines in the study of South Asian history and culture.

**SISSA 499 Undergraduate Research (1-5, max. 15)**

**SISSA 510 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 humanities, have approved and analyzed the past in South Asia.

**SISSA 511 Interdisciplinary Study of South Asia II (5) Jeffrey, 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.

**SISSA 512 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: SISSA

510; SISSA 511 or permission of graduate program coordinator.

**SISSA 536 Advanced Research Seminar on South Asian Geographies (5) Jeffrey** Examines geographies of social inequality in South Asia through reference to how space, place, and the environment are shaping practices of political struggle in the region. Considers how liberalization, democratization and religious communalization are changing the political geography of South Asia. Offered jointly with GEOG 536, Sp.

**SISSA 539 Social Movements in Contemporary India (5) 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 WOMEN 539/ANTH 539.

**SISSE 590 Special Topics (2-5, max. 10)** Seminar. Course content varies. Offered occasionally by visitors or resident faculty.

**SISSE 600 Independent Study or Research (\*)**

**SISSE 700 Master's Thesis (\*)**

## Southeast Asian Studies

**SISSE 221 History of Southeast Asia (5) I&S** *Giebel, Sears* 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.

**SISSE 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.

**SISSE 314 Culture, Environment, and Identity in Island Southeast Asia (5) I&S** *Lowe* Anthropological study of colonial and post-colonial contexts of Island Southeast Asia. Emphasis on historical legacies, influence of world religions, formation of national and collective identities, revolution and national politics, and modernities. Prerequisite: either one 200-level ANTH course, LING 203, or one SIS course. Offered: jointly with ANTH 314.

**SISSE 315 Southeast Asian Civilization: Buddhist and Vietnamese (5) I&S** 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.

**SISSE 343 Politics and Change in Southeast Asia (5) I&S** *Callahan* 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.

**SISSE 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 346; Sp.

**SISSE 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 HIST 367; Sp.

**SISSE 376 Violence, Myth, and Memory (5) VLPA/I&S** *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.

**SISSE 399 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.

**SISSE 420 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.

**SISSE 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 20<sup>th</sup> century, focusing on how empire's materials, 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.

**SISSE 445 Literature and Society in Southeast Asia (5, max. 10) I&S/VLPA** 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: one 200-level ANTH course or LING 203. Offered: jointly with ANTH 445.

**SISSE 465 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 465.

**SISSE 466 Islam, Mysticism, Politics and Performance in Indonesian Culture (5) I&S/VLPA** *Sears* Shows 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 446.

**SISSE 468 Theatre as a Site of History and Memory (5) GE** *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 HIST 468; Sp.

**SISSE 469 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.

**SISSE 490 Special Topics in Southeast Asian Studies (1-5, max. 15) I&S** Content varies.

**SISSE 499 Undergraduate Research (1-5, max. 15)**

**SISSE 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.

**SISSE 590 Special Topics (1-5, max. 10) Sears**

**SISSE 600 Independent Study or Research (\*)**

## Linguistics

### Linguistics

**LING 100 Fundamentals of Grammar (5) VLPA** 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) I&S/VLPA, QSR** Language as the fundamental characteristic of the human species;

diversity and complexity of human languages; phonological and grammatical analysis; dimensions of language use; language and writing; impact of historical linguistics on contemporary theory. Not open for credit to students who have completed LING 201.

**LING 201 Introduction to Linguistic Theory and Analysis (5) I&S/VLPA, 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) I&S/VLPA** *Hargus, Hunn, Palmer* Linguistic methods, 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 U.S. and elsewhere. Offered: jointly with ANTH 203.

**LING 220 Origins of the Germanic Languages (5) VLPA** *Barrack, Voyles* 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; AWSpS.

**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) I&S/VLPA** 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 347 Psychology of Language I (5) I&S/VLPA** *Corina, 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: 2.0 in either PSYCH 209 or either LING 200 or LING 201. Offered: jointly with PSYCH 347.

**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 (3-5, max. 10) 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) I&S/VLPA, QSR** 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) I&S/VLPA** Relation of current work in Chomskyan linguistics to philosophical, psychological, political, and educational thought.

**LING 402 Survey of the History of Linguistics (3) I&S/VLPA** *Newmeyer* 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** *Brame, Klausenburger* 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 and GERMAN 203. Offered: jointly with GERMAN 452.

**LING 419 The Development of the Italian Language (5) VLPA** Historical survey of Italian phonology, morphology, and syntax. Evolution of the language is illustrated with study of pertinent documents from various periods. Prerequisite: ITAL 303; either LING 400 or ROLING 401. Offered: jointly with ITAL 400.

**LING 432 Sociolinguistics I (5) I&S/VLPA** *Wassink* Social variation in the phonology, morphology, syntax, lexicon of languages and dialects. Nonstandard language, diglossia, pidgins and 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) I&S/VLPA** *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 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 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) NW/VLPA** *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, Syntax 1.

**LING 443 Philosophy and Linguistics (3) I&S/VLPA** Philosophical problems that arise in the attempt to understand current linguistic theories and the implications of linguistics for philosophy. Offered: jointly with PHIL 443.

**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, Kaisse* Descriptively oriented approach to of English phonology and morphology; dialect differences. Prerequisite: LING 450.

**LING 447 Psychology of Language II (4) I&S/VLPA** *Corina, Osterhout* Psychological principles applied to linguistic development and organization; language in both its stimulus and response aspects. Prerequisite: 2.0 in either PSYCH 347, PSYCH 355, or LING 400. Offered: jointly with PSYCH 447.

**LING 449 Second-Language Learning (5) VLPA** *Herschensohn, Tarlinskaja* 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) NW/VLPA** *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) I&S/VLPA** *Hargus, Kaisse* Speech sounds, mechanism of their production, and structuring of sounds in languages; generative view of phonology; autosegmental and metrical phonology. Prerequisite: LING 450.

**LING 452 Phonology II (5) I&S/VLPA** *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) I&S/NW/VLPA** *Hargus, Kaisse* 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 (3) VLPA** *Klausenburger, Shapiro, Voyles* 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) I&S/VLPA** 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) I&S/VLPA** First-language acquisition and use by children. Emphasis on theoretical issues and research techniques. Prerequisite: 2.0 in either

PSYCH 206, PSYCH 306, LING 200, or LING 400. Offered: jointly with PSYCH 457.

**LING 458 Language and Gender (5) I&S, VLPA** *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/WOMEN 450.

**LING 461 Syntax I (5) I&S/VLPA** *Brame, Contreras, Kim, Newmeyer, Zagana* Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: either LING 200 or LING 400.

**LING 462 Syntax II (5) I&S/VLPA** *Brame, Contreras, Kim, Newmeyer, Zagana* Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: LING 461.

**LING 463 Syntax III (4) I&S/VLPA** *Brame, Contreras, Kim, Newmeyer* Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: LING 462.

**LING 464 Language Politics and Cultural Identity (3) I&S/VLPA** *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) I&S/VLPA** 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) NW/VLPA** *Hoard* Introduction to computer applications of linguistic theory, including syntactic processing, semantic and pragmatic interpretation, and natural language generation. Prerequisite: either LING 200 or LING 400; either LING 461 or CSE 321. 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 CLMA core courses. Includes concepts from 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) I&S/VLPA** Current theories of meaning, reference, predication, and related concepts. Offered: jointly with PHIL 453.

**LING 479 Semantics II (3) I&S/ NW/VLPA** *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** *Brame, Hargus, Kaisse, Newmeyer* Structure of words and the processes by which they are formed. Morphological processes in a wide variety of languages. Prerequisite: either LING 200 or LING 400.

**LING 484 Lexical Semantics and the Lexicon (3) VLPA** *Kim* 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: A/W/SpS.

**LING 499 Undergraduate Research (1-5, max. 10)** Credit/no credit only.

**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 (4)** 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 (4)** 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 (4)** 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)** *Brame, 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)** *Newmeyer* 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. Offered: jointly with ROLING 531.

**LING 533 Topics and Methods in Sociolinguistic Theory (5)** *Wassink* Study of urban dialects and contact-induced change. Language attitudes and syntactic variation. Field methods used in socially oriented studies of language variation and change. 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)** *Stoel-Gammon* 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 550 Advanced Phonology (2-3)** *Hargus, Kaisse* Problems in phonological theory, generative phonology, phonological change. Theories of prosody. Prerequisite: LING 452.

**LING 551 Phonology I: Introduction to Phonological Analysis (5)** *Hargus* Patterns of sounds and signs in human languages; morpheme alterations in generative phonology; autosegmental approach to tone; syllable structure. Prerequisite: LING 550. Offered: WSpS.

**LING 552 Phonology II: Advanced Phonology (5)** *Hargus* Optimality theory; phonetics-phonology interface. Prerequisite: LING 551.

**LING 553 Analysis of Linguistic Structures (3, max. 6)** Syntactic, semantic, and/or phonological analysis. Languages to be analyzed vary. Prerequisite: permission of instructor. Offered: jointly with ANTH 553.

**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)** 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). Offered: A.

**LING 571 Deep Processing Techniques for Natural Language Processing (4)** Algorithms for associating deep or elaborated linguistic structures with naturally occurring linguistic data (parsing/semantics/discourse), and to produce natural language strings from input semantic representations (generation). Covers various techniques for disambiguation and machine translation. Offered: A.

**LING 572 Advanced Statistical Methods in Natural Language Processing (4)** Statistical approaches to applications such as machine translation, automated lexical acquisition (monolingual and bilingual), information retrieval, and question answering, with components including language modeling, alignment, and document clustering. Prerequisite: LING 570. Offered: W.

**LING 573 Natural Language Processing Systems and Applications (4)** 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. 15)** 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 Comparative Altaic Linguistics (3)** Comparative phonology and morphology of Mongolian, Turkic, and other Altaic languages. Prerequisite: permission of instructor. Offered: jointly with ALTAI 579.

**LING 580 Problems in Linguistics (2-4)** Advanced study in current theories of syntax, semantics, phonology, or morphology. Can be repeated for credit.

**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 (\*)**  
**American Sign Language**

**ASL 101 American Sign Language I (5)** Introduction to American Sign Language using conversational methods. Covers vocabulary, grammatical usage, and culturally appropriate behavior within the deaf community. Offered: A.

**ASL 102 American Sign Language II (5)** Focuses on building mastery of American Sign Language grammar skills, increasing vocabulary, and gaining a deeper knowledge and appreciation of deaf culture. Prerequisite: ASL 101. Offered: W.

**ASL 103 American Sign Language III (5)** Focuses on grammatical features such as spatialization, directionality, and non-manual components. Intensive work in vocabulary development and continued study of deaf culture. Prerequisite: AL 102. Offered: Sp.

**ASL 134 Intensive First Year ASL (15)** *Forshav* 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 305 Deaf Studies (3)** *I&S* Introduces the language, culture, and community of Deaf people. Covers topics in Deaf history, education, sociology, language, legal issues, art and literature, organizations and services for the Deaf, technological devices, and the nature of Deafhood. Analyzes issues such as methods of Deaf education, biomedical ethics, and the social movements in Deaf community.

## French Linguistics

**FRLING 400 The Syntactic Structure of French (5)** *VLPA* Scientific study of the syntax of French: phrase structure and movement, with emphasis on passives, relatives, and interrogatives. Prerequisite: either FRENCH 203, FRENCH 223, or FRENCH 234; either LING 200 or LING 400.

**FRLING 401 The Morphological Structure of French (5)** *VLPA Klausenburger* Linguistic study of French morphology. Prerequisite: either FRENCH 203, FRENCH 223, or FRENCH 234; either LING 200 or LING 400.

**FRLING 402 The Phonological Structure of French (5)** *VLPA Klausenburger* The phonological component of the generative grammar of French: representations of syllabic and segmental units, phonological rules, distinctive features and their articulatory correlates. Prerequisite: either FRENCH 203, FRENCH 223, or FRENCH 234; either LING 200 or LING 400.

**FRLING 403 Background of Modern French (5)** *VLPA Klausenburger* Linguistic analysis of the important developments in the history of the French language from its Latin origin to contemporary speech. Prerequisite: either FRENCH 203, FRENCH 223, or FRENCH 234; either LING 200 or LING 400.

**FRLING 405 Linguistics and the Teaching of French (5) VLPA Herschensohn** Areas of linguistics that can be particularly helpful to the French teacher. Prerequisite: either FRENCH 203, FRENCH 223, or FRENCH 234; either LING 200 or LING 400.

**FRLING 406 Advanced French Grammar (5) VLPA Herschensohn** Problems of French grammar. Differences between forms and structures of French and English. Problems of effective teaching of French. Prerequisite: FRENCH 303.

**FRLING 409 The Phonetics of French (5) VLPA Klausenburger** Scientific study of the French sound system with special emphasis on "lower level" phonetic rules. Focus on data from standard French as well as socioeconomic and geographic variations. Prerequisite: either FRENCH 203, FRENCH 223, or FRENCH 234; either LING 200 or LING 400.

## Romance Linguistics

**ROLING 402 Historical Romance Linguistics (5) VLPA Klausenburger** Comparative historical survey of the development of the principal Romance tongues. Prerequisite: LING 400.

**ROLING 490 Senior Essay (2) VLPA** Essay on linguistic problem of student's choice written with faculty consultant.

**ROLING 505 Advanced Romance Linguistics (5) Klausenburger, Zagana** Advanced problems in the phonological, morphological, and syntactical analysis of the Romance languages. Descriptive, comparative, and historical considerations. Prerequisite: permission of instructor.

**ROLING 506 Advanced Romance Linguistics (5) Klausenburger, Zagana** Advanced problems in the phonological, morphological, and syntactical analysis of the Romance languages. Descriptive, comparative, and historical considerations. Prerequisite: permission of instructor.

**ROLING 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.

**ROLING 521 Seminar in Romance Linguistics (5) Contreras, Klausenburger, Zagana** Specific problems in linguistic analysis of the Romance languages. Prerequisite: permission of instructor.

**ROLING 522 Seminar in Romance Linguistics (5) Contreras, Klausenburger, Zagana** Specific problems in linguistic analysis of the Romance languages. Prerequisite: permission of instructor.

**ROLING 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. Offered: jointly with LING 531.

**ROLING 551 Romance Linguistics: History, Methodology, and Bibliography (5)** For new graduate students in the Romance linguistics program. History of Romance linguistics and linguistic science in the nineteenth and twentieth centuries as it relates to Romance studies.

Comparative and descriptive methods used in contemporary scholarship. Prerequisite: LING 200, LING 400, or equivalent.

**ROLING 600 Independent Study or Research (\*)**

## Spanish Linguistics

**SPLING 400 The Syntactic Structure of Spanish (5) VLPA Strozer, Zagana** Scientific study of the syntax of Spanish: structure of phrases, transformationally derived structures, grammatical relations, principles of interpretation. Prerequisite: either SPAN 301 or SPAN 314; either ANTH 203, LING 200, LING 201, LING 203, LING 400, or SPAN 323. Offered: jointly with SPAN 400.

**SPLING 401 The Morphological Structure of Spanish (5) VLPA Strozer, Zagana** Principles of word formation, including derivational and inflectional morphology. Relationship between inflectional morphology and other components of grammar. Prerequisite: either SPAN 301 or SPAN 314; either ANTH 203, LING 200, LING 201, LING 203, LING 400, or SPAN 323. Offered: jointly with SPAN 401.

**SPLING 402 The Phonological Structure of Spanish (5) VLPA Strozer, Zagana** 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 301 or SPAN 314; either ANTH 203, LING 200, LING 201, LING 203, LING 400, or SPAN 323. Offered: jointly with SPAN 402.

**SPLING 403 The Evolution of the Spanish Language (5) VLPA Zagana** Historical survey of Spanish phonology, morphology, and syntax, from Latin origins to the modern language. Prerequisite: either SPAN 301 or SPAN 314; either ANTH 203, LING 200, LING 201, LING 203, LING 400, or SPAN 323. Offered: jointly with SPAN 403.

**SPLING 404 Dialects of World Spanish (5)** 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 301 or SPAN 314; either SPAN 323, LING 200, or LING 400. 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 301 or SPAN 314; either ANTH 203, LING 200, LING 201, LING 203, LING 400, or SPAN 323. Offered: jointly with SPAN 405.

**SPLING 406 Advanced Spanish Grammar (5) VLPA Basdeo, Diaz** Problems of Spanish grammar. Differences from English grammar. Techniques for the effective teaching of Spanish. Prerequisite: either SPAN 303, SPAN 316 or 330; SPAN 323. Offered: jointly with SPAN 406; AWSp.

## Mathematics

**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. Offered: AWSp.

**MATH 103 Introduction to Elementary Functions (5)** Continues the study of algebra begun in 100 and 102 with emphasis on functions (polynomial, rational, logarithmic, exponential, and trigonometric). Open only to students who have completed 102. Prerequisite: either score of 26-56% on MATHEA placement test or MATH 102. Offered: AWSp.

**MATH 107 Mathematics: A Practical Art (5) NW, QSR** For students who have at least 1.5 years of high school algebra and do not plan to take additional mathematics. The exponential function; how it applies to a wide variety of phenomena. Elementary probability and statistics; their use in a variety of applications. Offered: WSp.

**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: either 2.0 in MATH 098, 2.0 in MATH 102, 2.0 in MATH 103, score of 49% on MATHIA placement test, score of 35% on MATHPC placement test, or score of 56% on MATHEA 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: 2.0 in MATH 111. Offered: WSpS.

**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 2.5 in MATH 098, 3.0 in MATH 103, score of 60% on MATHIA test, score of 40% on MATHPC test, or score of 77% on MATHEA 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: 2.5 in MATH 120, score of 68% on MATHPC placement test, score of 75% on MATHEC 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 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 2.0 in MATH 125, 2.0 in MATH 145, 2.0 in MATH 146, score of 5 on AB advanced placement test, or score of 4 on BC advanced placement test. Offered: AWSpS.

**MATH 134 Accelerated [Honors] Calculus (5) NW, QSR** Covers the material of 124, 125, 126; 307, 308, 318. First year of a two-year accelerated sequence. May receive advanced placement (AP) credit for 124 after taking 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 124, 125, 126; 307, 308, 318. First year of a two-year accelerated sequence. May receive advanced placement (AP) credit for 125 after taking 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 124, 125, 126; 307, 308, 318. First year of a two-year accelerated sequence. May not receive credit for both 126 and 136. For students with above average preparation, interest, and ability in mathematics. Offered: Sp.

**MATH 144 Calculus for Life Sciences (5) NW, QSR** *Curtis, Smith, Tuncel* Introduction discrete probability, with examples from the life sciences. Exponential and logarithmic functions: exponential growth and decay. Prerequisite: either 2.5 in MATH 120, score of 68% on MATHPC placement test, score of 75% on MATHEC placement test, or score of 2 on advanced placement test.

**MATH 145 Calculus for Life Sciences (5) NW, QSR** *Curtis, Smith, Tuncel* Differential and integral calculus, with examples from the life sciences. Applications of the derivative to curve sketching; min/max problems. Antiderivatives and the fundamental theorem of calculus with applications. Continuous probability distributions; Normal and Poisson distribution Prerequisite: either 2.0 in MATH 124, 2.0 in MATH 144, 3.2 in MATH 120, score of 75% on MATH PC placement test, or score of 3 on advanced placement test.

**MATH 146 Calculus for Life Sciences (5) NW** *Curtis, Smith, Tuncel* Further applications of integration; elementary differential equations, with examples from the life sciences. Growth

models; Leslie matrices; compartment models. Prerequisite: either 2.0 in MATH 125 or 2.0 in MATH 145.

**MATH 170 Mathematics for Elementary School Teachers (3) NW** Basic concepts of numbers and operations. Emphasizes problem solving, communication of mathematical ideas, and analysis of sources of difficulty in learning/teaching these concepts. Credit may not apply toward a mathematics major. Required for elementary education students. Credit/no credit only. Offered: AWS.

**MATH 171 Mathematics for Elementary School Teachers (3) NW** Basic concepts of geometry. Emphasizes problem solving, communication of mathematical ideas, and analysis of sources of difficulty in learning/teaching these concepts. Credit may not apply toward a mathematics major. Credit/no credit only. Offered: Sp.

**MATH 187 Elementary Mathematics Computer Laboratory (1, max. 3) NW** Laboratory activities designed to introduce computing as a tool for doing mathematics, to be taken jointly with a designated section of a 100-level mathematics course. Credit/no credit only. Offered: AWSp.

**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 301 Elementary Number Theory (3) NW** Brief introduction to some of the fundamental ideas of elementary number theory. Prerequisite: either 2.0 in MATH 126 or 2.0 in 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: either 2.0 in MATH 125 or 2.0 in MATH 145. 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. Credit allowed for only one of MATH 308 or MATH 318. Prerequisite: either 2.0 in MATH 126 or 2.0 in MATH 146. 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 2.0 in MATH 307 and 2.0 in MATH 308, or 2.0 in MATH 307 and MATH 318, or 2.0 in MATH 136. Offered: AWSpS.

**MATH 318 Linear Algebra (3) NW** Introduction to the mathematical concepts, arguments, and proofs that occur in linear algebra. Vectors and matrices, systems of linear equations, determinants, subspaces, dimension, bases, linear transformations, eigenvalues and eigenvectors. Credit allowed for only one of MATH 308 or MATH 318. Prerequisite: either 2.0 in MATH 126 or 2.0 in MATH 146; 2.0 in MATH 310.

**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: either 2.0 in MATH 126 or 2.0 in MATH 136. Offered: AWSpS.

**MATH 326 Advanced Multivariable Calculus II (3) NW** Elementary topology, general theorems on partial differentiation, maxima and minima, differentials, Lagrange multipliers, implicit function theorem, inverse function theorem and transformations, change of variables formula. Prerequisite: either 2.0 in MATH 136, 2.0 in MATH 308, or 2.0 in MATH 318; 2.0 in MATH 324. Offered: AWSp.

**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 both 2.0 in MATH 126 and 2.0 in MATH 300, or 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: 2.0 in MATH 327. Offered: AWSp.

**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 309, 310, 324, 326, 327, 328, and 427. Second year of an accelerated two-year sequence; prepares students for senior-level mathematics courses. Prerequisite: either 2.0 in MATH 136, or 2.0 in MATH 126; 2.0 in MATH 307; either 2.0 in MATH 205, 2.0 in MATH 308, or 2.0 in MATH 318. 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 309, 324, 326, 327, 328, and 427. Second year of an accelerated two-year sequence; prepares students for senior-level mathematics courses. Prerequisite: 2.0 in MATH 334. Offered: AWSp.

**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 309, 324, 326, 327, 328, and 427. Second year of an accelerated two-year sequence; prepares students for senior-level mathematics courses. Prerequisite: 2.0 in MATH 335. Offered: Sp.

**MATH 354 Math Enrichment for the Schools (5) NW** Map and graph coloring, spanning trees, dominating sets, cryptography, interpretation of graphs, circular motion, statistics that mislead, other topics. Focus on middle school level, with sixth or seventh grade classroom visits every week. Discussion of readings on math education reform. Prerequisite: MATH 126. Offered: A.

**MATH 355 Math Enrichment for the Schools (5) NW** Map and graph coloring, spanning trees, dominating sets, cryptography, interpretation of graphs, circular motion, statistics that mislead, other topics. Focus on middle school level, with sixth or seventh grade classroom visits lasting all Tuesday morning in alternate weeks. Discussion of readings on math education reform. Prerequisite: MATH 354. Offered: W.

**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: either 2.0 in MATH 136, 2.0 in MATH 308, or 2.0 in MATH 318.

**MATH 387 Intermediate Mathematics Computer Laboratory (1-2, max. 6) NW** Laboratory activities in the use of computing as tool for doing mathematics, to be taken jointly with a designated section of a 300-level mathematics course. Credit/no credit only.

**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 390, STAT/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: either 2.0 in MATH 126 or 2.0 in MATH 136; recommended: 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: 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: 2.0 in MATH 395 or 2.0 in STAT 511. 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: either 2.0 in MATH 136, 2.0 in MATH 327, 2.0 in MATH 336, or 2.0 in 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 degrees of extensions. Adjoining roots of polynomials. Finite fields. Straight edge and compass constructions. Prerequisite: 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: 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: either 2.0 in MATH 136, 2.0 in MATH 308, 2.0 in MATH 318, or 2.0 in AMATH 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: either 2.0 in MATH 308 or 2.0 in MATH 318; either 2.0 in MATH 327 or 2.0 in 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: 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 402, 403. Cannot be used as elective credit for either BS program in mathematics. Prerequisite: either 2.0 in MATH 205, 2.0 in MATH 308, 2.0 in MATH 318, or 2.0 in MATH 136. 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 402, 403. Cannot be used as elective credit for either BS program in mathematics. Prerequisite: 2.0 in MATH 411. Offered: WS.

**MATH 414 Number Theory (3) NW** Congruences, arithmetic of quadratic fields, binary quadratic forms, Dirichlet's theorem on primes in an arithmetic progression, Chebyshev's theorem on distribution of primes, the partition function, equations over finite fields. Prerequisite: either 2.0 in MATH 301 or 2.0 in MATH 402.

**MATH 415 Number Theory (3) NW** Congruences, arithmetic of quadratic fields, binary quadratic forms, Dirichlet's theorem on primes in an arithmetic progression, Chebyshev's theorem on distribution of primes, the partition function, equations over finite fields. Prerequisite: 2.0 in MATH 414.

**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: 2.0 in MATH 126. Offered: S.

**MATH 421 Conceptual Calculus for Teachers (4) NW** In-depth conceptual study of calculus, approached from many points of view, including the study of patterns of physical change, discrete approximation to continuous phenomena, and the historical development of calculus. Intended for future teachers. Cannot be used as elective credit for either BS program in mathematics.

**MATH 422 Conceptual Calculus for Teachers (3) NW** In-depth conceptual study of calculus, approached from many points of view, including the study of patterns of physical change, discrete approximation to continuous phenomena, and the historical development of calculus. Intended for future teachers. Cannot be used as elective credit for either BS program in mathematics.

**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: either 2.0 in MATH 328 or 2.0 in 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: either 2.0 in MATH 326 or 2.0 in MATH 335; 2.0 in MATH 424. 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: 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: either 2.0 in MATH 327 or 2.0 in MATH 335; recommended: MATH 328. Offered: AS.

**MATH 428 Complex Analysis (3) NW** Continuation of MATH 427. Prerequisite: 2.0 in MATH 427. Offered: W.

**MATH 435 Introduction to Dynamical Systems (3) NW** Examples of dynamical systems in mathematics and in natural phenomena. Iterated functions, phase portraits, fixed and periodic points. Hyperbolicity, bifurcations. *Chaos*. Interval maps; quadratic families. Fractals; iterated function systems. Elements of higher dimensional dynamics. Julia sets, the Mandelbrot set. Prerequisite: 2.0 in MATH 335 or



2.0 in MATH 327; either 2.0 in MATH 309 or 2.0 in AMATH 352 and 2.0 in AMATH 353.

**MATH 436 Introduction to Dynamical Systems**

**(3) NW** Examples of dynamical systems in mathematics and in natural phenomena. Iterated functions, phase portraits, fixed and periodic points. Hyperbolicity, bifurcations. *Chaos*. Interval maps; quadratic families. Fractals; iterated function systems. Elements of higher dimensional dynamics. Julia sets, the Mandelbrot set. Prerequisite: 2.0 in MATH 435.

**MATH 441 Topology (3) NW** Metric and topological spaces, convergence, continuity, finite products, connectedness, and compactness. Prerequisite: either 2.0 in MATH 328 or 2.0 in MATH 335. Offered: A.

**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: either 2.0 in MATH 335 or 2.0 in both MATH 326 and 2.0 in MATH 328; 2.0 in either MATH 308 or 2.0 in 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. 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: 2.0 in MATH 126; either 2.0 in MATH 136, 2.0 in MATH 205, 2.0 in MATH 308, or 2.0 in MATH 318; 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: 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: either 2.0 in MATH 308 or 2.0 in MATH 318.

**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: 2.0 in MATH 461.

**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: either 2.0 in MATH 136, 2.0 in MATH 308, or 2.0 in 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: either 2.0 in MATH 136, 2.0 in MATH 308, or 2.0 in 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: either 2.0 in MATH 136, 2.0 in both MATH 307 and MATH 308, or 2.0 in MATH 335.

**MATH 480 Special Topics in Undergraduate Mathematics (3, max. 12)** Advanced topics in various areas of undergraduate mathematics.

**MATH 487 Advanced Mathematics Computer Laboratory (1-2, max. 6) NW** Laboratory activities in the use of computing as a tool for doing mathematics, to be taken jointly with a designated section of a 400-level mathematics course. Credit/no credit only.

**MATH 491 Introduction to Stochastic Processes (3) NW** Random walks, Markov chains, branching processes, Poisson process, point processes, birth and death processes, queueing theory, stationary processes. Prerequisite: either 2.0 in 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: MATH STAT 394-5. 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 497 Special Topics in Mathematics for Teachers (2-9, max. 9) NW** Study of selected areas of mathematics. Designed for the improvement of teachers of mathematics. Offered: jointly with EDC&I 478.

**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)** Summer research opportunity for undergraduates. Credit/no credit only. Offered: S.

**MATH 501 Special Topics in Teaching and Learning Mathematics (2-3, max. 15)** Selected Topics dealing with issues in the teaching and learning of mathematics.

**MATH 502 Special Topics in Teaching and Learning Mathematics (2-3, max. 15)** Selected Topics dealing with issues in the teaching and learning of mathematics.

**MATH 503 Special Topics in Teaching and Learning Mathematics (2-3, max. 15)** Selected Topics dealing with issues in the teaching and learning of mathematics.

**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; even years.

**MATH 510 Seminar in Algebra (2-5, max. 5)** Credit/no credit only. Prerequisite: permission of graduate program coordinator.

**MATH 514 Networks and Combinatorial Optimization (3)** Networks and directed graphs. Paths and trees. Feasible and optimal flows and potentials. Transportation problems, matching and assignment problems. Algorithms and applications. Prerequisite: MATH 308 or AMATH 352 and MATH 324. 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 IND E 515/AMATH 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 517 Optimization Under Uncertainty (3)** Sequential optimization problems involving random variables. Dynamic programming, stochastic programming. Control of uncertain dynamic systems in finite, discrete time. Risk, feedback, adaptivity. Problems with imperfect state information. Applications such as to optimal stopping, inventory control, resource management. Prerequisite: MATH 308, MATH 324 and an introduction to basic concepts of probability, such as MATH 390 or MATH 394, MATH 395. Offered: jointly with AMATH 517.

**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.

**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.

**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.

**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. 5)** Credit/no credit only. Prerequisite: permission of graduate program coordinator.

**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 537 Several Complex Variables (3)** First quarter of a three-quarter sequence covering Weierstrass preparation theorem and its immediate consequences, analytic continuation, domains of holomorphy, pseudoconvexity, Cartan-Oka theory of coherence, embedding theorems; the CR equations, CR manifolds, connections with algebraic geometry. Prerequisite: MATH 536.

**MATH 538 Several Complex Variables (3)** Continuation of MATH 537. Prerequisite: MATH 537.

**MATH 539 Several Complex Variables (3)** Continuation of MATH 538. Prerequisite: MATH 538.

**MATH 541 Special Topics in Applied Mathematics (2-3, max. 15)** Such topics as mathematical quantum theory, fluid mechanics, optimization and operations research, and control theory.

**MATH 542 Special Topics in Applied Mathematics (2-3, max. 15)** Such topics as mathematical quantum theory, fluid mechanics, optimization and operations research, and control theory.

**MATH 543 Special Topics in Applied Mathematics (2-3, max. 15)** Such topics as mathematical quantum theory, fluid mechanics, optimization and operations research, and control theory.

**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. 5)** Credit/no credit only. Prerequisite: permission of graduate program coordinator.

**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 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. Review of the theory of distributions and the Fourier transform. Detailed study of main linear equations: wave equation, Laplace's equation, and the heat equation. Sobolev spaces and regularity of solutions of elliptic equations. Theory of pseudodifferential operators. Initial value problem for hyperbolic equations and methods of geometrical optics. Fourier integral operators. The Dirichlet problem and eigenfunction expansions for elliptic equations. Prerequisite: MATH 556.

**MATH 558 Introduction to Partial Differential Equations (3)** Continuation of MATH 557. Prerequisite: MATH 557.

**MATH 559 Introduction to Partial Differential Equations (3)** Continuation of MATH 558. 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 Poincaré 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. 5)** Credit/no credit only. Prerequisite: permission of graduate program coordinator.

**MATH 574 Fundamental Concepts of Analysis (3)** *Hoffman*, *Toro* 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)** *Hoffman, Toro* 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)** *Hoffman, Toro* 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: AWP. Sp.

**MATH 581 Special Topics in Mathematics (\*, max. 36)**

Advanced topics in various areas of mathematics. Offered: AWP. Sp.

**MATH 582 Special Topics in Mathematics (\*, max. 36)**

Advanced topics in various areas of mathematics. Offered: AWP. Sp.

**MATH 583 Special Topics in Mathematics (\*, max. 36)**

Advanced topics in various areas of mathematics. Offered: AWP. 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. 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: AMATH 584/MATH 584 which may be taken concurrently. 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: AMATH 581 or AMATH 584. Offered: jointly with AMATH 586/ATM S 581; Sp.

**MATH 590 Seminar in Probability (2-5, max. 5)**

Credit/no credit only. Prerequisite: permission of instructor.

**MATH 594 Special Topics in Numerical**

**Analysis (2-3, max. 15)** Various advanced topics in numerical analysis and scientific computing, such as iterative methods, eigenvalue computations, approximation theory, finite element methods, inverse problems, nonlinear conservation laws, computational fluid dynamics. Prerequisite: AMATH 584, AMATH 585, AMATH 586, or equivalent. Offered: jointly with AMATH 594.

**MATH 595 Special Topics in Numerical**

**Analysis (2-3, max. 15)** Various advanced topics in numerical analysis and scientific computing. See the description for 594 for sample topics. Prerequisite: AMATH 584, AMATH 585, AMATH 586, or equivalent. Offered: jointly with AMATH 595.

**MATH 596 Special Topics in Numerical**

**Analysis (2-3, max. 15)** Various advanced topics in numerical analysis and scientific computing. See the description for 594 for sample topics. Prerequisite: AMATH 584, 585, 586, or equivalent. Offered: jointly with AMATH 596.

**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 598 Seminar on Technology (1, max. 3)**

Explores the use of computer technology in teaching and research in mathematics. Develops the basic skills required for using computer mathematics software.

**MATH 600 Independent Study or Research (\*)****MATH 700 Master's Thesis (\*)****MATH 800 Doctoral Dissertation (\*)**


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## Music

### Music

**MUSIC 113 Pre-Core Ear Training (0/1, max. 1)**

**VLPA** Pre-core course in musicianship. Offered: AWP.

**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 composition in various styles. Prerequisite: MUSIC 117.

**MUSIC 119 Introduction to Music Theory and**

**Musicianship (3) VLPA** 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 Anglo-American Folk Music (5)**

**VLPA** Genres and styles from earliest roots to the present; Anglo-American ballads, dance music, French and other European immigrant groups.

**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**

Introduction to tonal harmony and counterpoint; triadic progressions in root position; first and second species counterpoint; analysis of simple works. Prerequisite: 2.0 in MUSIC 119; recommended: concurrent registration in MUSIC 204. Offered: W.

**MUSIC 202 First-Year Theory II (3) VLPA**

Continued instruction in tonal harmony and counterpoint; triadic progressions with inversions; third and fourth species counterpoint; further analysis of basic forms. Prerequisite: 2.0 in MUSIC 201; recommended: concurrent registration in MUSIC 205. Offered: Sp.

**MUSIC 203 First-Year Theory III (3) VLPA**

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 18th century style. Prerequisite: 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**

Core ear-training sequence for majors. Prerequisite: 2.0 in MUSIC 113; corequisite: MUSIC 201. Offered: W.

**MUSIC 205 First-Year Ear Training II (0/1, max. 1) VLPA**

Core ear-training sequence for majors. Prerequisite: 2.0 in MUSIC 204; corequisite: MUSIC 202. Offered: Sp.

**MUSIC 206 First-Year Ear Training III (0/1, max. 1) VLPA**

Core ear-training sequence for majors. Prerequisite: 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) I&S/VLPA**

Introduction to world musical traditions, including both sound and socio-cultural 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 270 World Popular Music (5) I&S/VLPA**

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**

Further study of modulation and chromatic harmony; analysis of 18th- and 19th-century short forms; technical exercises; model composition. Prerequisite: 2.0 in MUSIC 203; 2.0 in MUSIC 206; corequisite: MUSIC 304; recommended: concurrent registration in MUSIC 304. Offered: W.

**MUSIC 302 Second-Year Theory (3) VLPA**

More advanced study in mid- to late 19th-century chromaticism and compositional style; analysis of representative works; technical exercises; model composition. Prerequisite: 2.0 in MUSIC 301; 2.0 in MUSIC 304; corequisite: MUSIC 305. Offered: Sp.

**MUSIC 303 Second-Year Theory (3) VLPA**

Core theory sequence for majors. Introduction to the theory and analysis of 20th-century music. Prerequisite: 2.0 in MUSIC 302; 2.0 in MUSIC 305; corequisite: MUSIC 306. Offered: A.

**MUSIC 304 Second-Year Ear-Training I (0/1, max. 1) VLPA**

Core ear-training sequence for majors. Prerequisite: 2.0 in MUSIC 203; 2.0 in MUSIC 206; corequisite: MUSIC 301. Offered: W.

**MUSIC 305 Second-Year Ear-Training II (0/1, max. 1) VLPA**

Core ear-training sequence for majors. Prerequisite: 2.0 in MUSIC 301; 2.0 in MUSIC 304; corequisite: MUSIC 302. Offered: Sp.

**MUSIC 306 Second-Year Ear-Training III (0/1, max. 1) VLPA**

Core ear-training sequence for majors. Prerequisite: 2.0 in MUSIC 302; 2.0 in 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 the 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 the 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 the voice majors at freshman and sophomore levels; nonmajors on a space-available basis.

**MUSIC 316 Music Cultures of the World (5) I&S/VLPA**

Near East, Central Asia, Far East, South and southeast Asia, Indonesia, and the Philippines. Content varies.

**MUSIC 317 Music Cultures of the World (5) I&S/VLPA**

Music of Africa, Americas, and Oceania. Content varies.

**MUSIC 318 Music Cultures of the World (5) I&S/VLPA**

Folk and popular music in western and eastern Europe and the Americas. Content varies.

**MUSIC 319 Afro-American Music (5) I&S/VLPA**

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 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 20th century through post-modern bebop era of the 1990s.

**MUSIC 332 Music in European Society:**

**Antiquity to 1700 (5) I&S/VLPA** 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) I&S/VLPA**

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. To be able to arrange for modern jazz orchestra. Prerequisite: MUSIC 303.

**MUSIC 344 Psychology of Music: Cognition**

**(5) I&S/VLPA** 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, 350 or 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, 350 or 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, 350 or 351.

**MUSIC 366 Cylinders to Platters—A Survey of Recorded Music Since 1888 (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 Beginning Jazz Improvisation I (1) VLPA** Beginning jazz improvisation techniques used in the performance of basic jazz styles such as the blues. Primarily for music majors. Prerequisite: MUSIC 302.

**MUSIC 368 Beginning Jazz Improvisation II (1) VLPA** Beginning jazz improvisation techniques used in the performance of basic jazz styles such as the blues. Primarily for music majors. Prerequisite: MUSIC 367.

**MUSIC 369 Beginning Jazz Improvisation III (1) VLPA** Beginning jazz improvisation techniques used in the performance of basic jazz styles such as the blues. Primarily for music majors. 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) I&S/VLPA** *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 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. Includes acoustics and psychoacoustics; virtual synthesizers and unit generators; table-lookup oscillators and wavetable synthesis; additive synthesis; modulation synthesis; ring amplitude, phase and frequency; granular synthesis; noise; subtractive synthesis and filters. Offered: jointly with DXARTS 461; A.

**MUSIC 402 Digital Sound Processing (5) VLPA** Introduction to digital sound processing techniques. Includes sampling techniques and time-domain transformation of samples sound; sample-rate conversion; sound granulation and time stretching; delay lines; introduction to digital filtering; FIR and IIR filters; digital effects; reverberation; virtual-room acoustics and dynamic sound location. 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; S.

**MUSIC 405 Liturgics and Hymnology: Practical Applications I (2) VLPA** *Butler* Prepares organ majors and other advanced organ students to play hymns in a manner that inspires congregational singing. Includes a study of hymnology as well as instruction on the realization of anthem accompaniments and piano scores at the organ. Prerequisite: MUSIC 302; MUSIC 305; MUHST 212. Offered: A.

**MUSIC 406 Liturgics and Hymnology: Practical Applications II (2) VLPA** *Butler* Survey of church choir repertoire with emphasis on the smaller choir, choir organization and rehearsal techniques, choral conductor's preparation, a brief study of choral styles and editions, and choral arranging for the church choir. Prerequisite: either MUSIC 303, MUSIC 306, MUHST 210, or MUSIC 405. Offered: W.

**MUSIC 407 Liturgics and Hymnology: Practical Applications III (2) VLPA** *Butler* History of Psalm singing, traditional and contemporary liturgics, plainchant, liturgical use of handbells, "contemporary" repertoire for the church, orchestral instruments and their use in worship (arranging for amateur players, basics of string bowing and editing, organizing instrumental ensembles), youth choir organization. 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 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 prelude and fantasias, canons, toccatas, duos, trios, and simple fugues. Prerequisite: MUSIC 421. Offered: Sp.

**MUSIC 426 Advanced Jazz Arranging (2) VLPA** *Brockman* 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) I&S/VLPA** 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) I&S/VLPA** 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** *Lieberman Patterson, Saks, Watras* Intended for undergraduate BA/BM and BM music majors. Offered: biannually; 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) I&S/VLPA** 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 438 Problems in Contemporary Music Performance (3, max. 9) VLP** *Kappy* 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 and the Philippines (3) I&S/VLP** 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) I&S/VLP** 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) I&S/VLP** Deals with areas not covered by other courses in ethnomusicology. Content varies with different instructors.

**MUSIC 446 Music in American Cultures (3) I&S/VLP** 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) I&S/VLP** 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) I&S/VLP** 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: background in either ethnomusicology or East Asian Studies. Recommended: ethnomusicology or East Asian studies background.

**MUSIC 449 Advanced Piano Repertoire (2, max. 6) VLP** *McCabe, Michaelian, Sheppard* For piano majors who wish an in-depth survey of major areas of the piano repertoire. Prerequisite: MUSIC 328. Offered: AWP.

**MUSIC 450 Percussion Education Institute (2) VLP** *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) VLP** *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) VLP** *Terry* Pedagogical approaches to organ techniques and performance practice, provides opportunity for

practical application by means of student teaching.

**MUSIC 455 Choral Arranging (3) VLP** 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) VLP** *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.

**MUSIC 459 Organ Repertoire: Bach to Present (3) VLP** *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.

**MUSIC 460 Advanced Vocal Repertoire: Pre-Nineteenth-Century Art Songs (2, max. 6) VLP** 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) VLP** 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) VLP** 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) VLP** *Seales* 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) VLP** Workshop designed specifically for the singing actor, focusing on character analysis, movement, and audition deportment skills.

**MUSIC 467 Advanced Jazz Improvisation I (1) VLP** *Collier, Seales* Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 369.

**MUSIC 468 Advanced Jazz Improvisation II (1) VLP** *Collier, Seales* Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 467.

**MUSIC 469 Advanced Jazz Improvisation III (1) VLP** *Collier, Seales* Performance techniques

in jazz improvisation for the advanced student. Prerequisite: MUSIC 468.

**MUSIC 470 Analysis of Tonal Music: Introduction to Schenker (3) VLP** *Bernard, Kopp, Rahn* 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) VLP** *Bernard, Rahn* 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) VLP** *Bernard, Durand, Karpen, Rahn, Thome* 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) VLP** *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: alternate years.

**MUSIC 474 Keyboard Harmony and Transposition (3) VLP** *Terry* Keyboard harmonization from the baroque period to present; transposition of vocal and instrumental pieces to different pitch levels. Prerequisite: MUSIC 473. Offered: alternate years.

**MUSIC 475 Figured Bass Realization (3) VLP** *Terry* Various styles of continuo realization for keyboardists, emphasizing Bach cantatas, Haydn symphonies, and Mozart operas. Prerequisite: MUSIC 474. Offered: alternate years.

**MUSIC 476 Advanced Vocal Repertoire: Seventeenth and Eighteenth Centuries (2) VLP** 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) VLP** 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) VLP** 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) VLP**

**MUSIC 480 The Anthropology of Music (3) I&S/VLP** 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** 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** 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** 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** Choral literature of the twentieth century, covering America, England, and mainland Europe. Various genres and styles, including score study and teaching strategies.

**MUSIC 487 Tonal Counterpoint (3) VLPA** *Bernard, Durand, Rahn* Introduction to tonal counterpoint through exercises in analysis and composition, focusing on 18th-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** Prerequisite: either both MUSIC 303 and MUHST 210 or both MUSIC 312 and MUHST 314.

**MUSIC 490 Orchestration (3) VLPA** Study of the instruments of the orchestra and practical experience in combining them; to enable the student to score for various instrumental combinations. Ideally to be taken before band arranging or jazz arranging, but is not a prerequisite.

**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) I&S/VLPA** 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 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. 35)** Deals with advanced theoretical and methodological problems in ethnomusicology, and with the relationship of ethnomusicology to allied disciplines. Prerequisite: graduate

**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)** *Lundquist* The socialization process and music, including the interaction whereby music culture is learned. Prerequisite: MUSIC 345 or MUSIC 545 or permission of instructor.

**MUSIC 526 History of Theory (3)** Ancient, medieval, early Renaissance.

**MUSIC 527 History of Theory (3)** Renaissance, baroque, early classic.

**MUSIC 528 History of Theory (3)** 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)** 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, Rahn* Advanced work in Schenkerian analysis. Prerequisite: MUSIC 470.

**MUSIC 571 Seminar in Serialism (3, max. 9)** *Bernard, Kopp, Rahn* 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, Rahn* Topics vary. Offered: AWPSP.

**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, Karpen, Rahn, Thome* 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, Rahn* 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, Karpen, Rahn, Thome* 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)**  
*Eros, Salzman*

**MUSIC 581 Advanced Conducting (3, max. 9)**  
*Eros, Salzman*

**MUSIC 582 Advanced Conducting (3, max. 9)**  
*Eros, Salzman*

**MUSIC 583 Advanced Choral Conducting (2, max. 18)** *Boers*

**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, Rahn*

**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 (\*)**

## Music Applied

**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 139.

**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 300 Private instruction: Voice (2-3, max. 45) VLPA** *Eaglen, Guyer, Harper* Intended for undergraduate non-majors. Audition required.

**MUSAP 301 Private Instruction: Piano (2-3, max. 45) VLPA** *McCabe, Michaelian, Seales, Sheppard* Intended for undergraduate non-majors. Audition required.

**MUSAP 302 Private Instruction: Organ (2-3, max. 45) VLPA** *Terry* Intended for undergraduate non-majors. Audition required.

**MUSAP 303 Private Instruction: Harpsichord (2-3, max. 45) VLPA** *Terry* Intended for undergraduate non-majors. Audition required.

**MUSAP 304 Private Instruction: Violin (2-3, max. 45) VLPA** Intended for undergraduate non-majors. Audition required.

**MUSAP 305 Private Instruction: Violoncello (2-3, max. 45) VLPA** *Saks* Intended for undergraduate non-majors. Audition required.

**MUSAP 306 Private Instruction: Double Bass (2-3, max. 45) VLPA** *Lieberman* Intended for undergraduate non-majors. Audition required.

**MUSAP 307 Private Instruction: Flute (2-3, max. 45) VLPA** *Shin* Intended for undergraduate non-majors. Audition required.

**MUSAP 308 Private Instruction: Oboe (2-3, max. 45) VLPA** Intended for undergraduate non-majors. Audition required.

**MUSAP 309 Private Instruction: Clarinet (2-3, max. 45) VLPA** Intended for undergraduate non-majors. Audition required.

**MUSAP 310 Private Instruction: Bassoon (2-3, max. 45) VLPA** Intended for undergraduate non-majors. Audition required.

**MUSAP 311 Private Instruction: Saxophone (2-3, max. 45) VLPA** *Brockman* Intended for undergraduate non-majors. Audition required.

**MUSAP 312 Private Instruction: Horn (2-3, max. 45) VLPA** *Kappy* Intended for undergraduate non-majors. Audition required.

**MUSAP 313 Private Instruction: Trumpet (2-3, max. 45) VLPA** *Vizzutti* Intended for undergraduate non-majors. Audition required.

**MUSAP 314 Private Instruction: Trombone (2-3, max. 45) VLPA** Intended for undergraduate non-majors. Audition required.

**MUSAP 315 Private Instruction: Tuba (2-3, max. 45) VLPA** Intended for undergraduate non-majors. Audition required.

**MUSAP 316 Private Instruction: Harp (2-3, max. 45) VLPA** *Lehwalder* Intended for undergraduate non-majors. Audition required.

**MUSAP 317 Private Instruction: Percussion (2-3, max. 45) VLPA** *Collier, Crusoe* Intended for undergraduate non-majors. Audition required.

**MUSAP 318 Private Instruction: Guitar (2-3, max. 45) VLPA** *Partington* Intended for undergraduate non-majors. Audition required.

**MUSAP 319 Private Instruction: Viola da Gamba (2-3, max. 45) VLPA** Intended for undergraduate non-majors. Audition required.

**MUSAP 320 Private Instruction: Voice (2-3, max. 27) VLPA** *Eaglen, Guyer, Harper* Intended for undergraduate majors. Audition required.

**MUSAP 321 Private Instruction: Piano (2-3, max. 27) VLPA** *McCabe, Michaelian, Seales, Sheppard* Intended for undergraduate majors. Audition required.

**MUSAP 322 Private Instruction: Organ (2-3, max. 27) VLPA** *Terry* Intended for undergraduate majors. Audition required.

**MUSAP 323 Private Instruction: Harpsichord (2-3, max. 27) VLPA** *Terry* Intended for undergraduate majors. Audition required.

**MUSAP 324 Private Instruction: Violin (2-3, max. 27) VLPA** *Patterson* Intended for undergraduate majors. Audition required.

**MUSAP 325 Private Instruction: Violoncello (2-3, max. 27) VLPA** *Saks* Intended for undergraduate majors. Audition required.

**MUSAP 326 Private Instruction: Double Bass (2-3, max. 27) VLPA** *Lieberman* Intended for undergraduate majors. Audition required.

**MUSAP 327 Private Instruction: Flute (2-3, max. 27) VLPA** *Shin* Intended for undergraduate majors. Audition required.



**MUSAP 328 Private Instruction: Oboe (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 329 Private Instruction: Clarinet (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 330 Private Instruction: Bassoon (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 331 Private Instruction: Saxophone (2-3, max. 27) VLPA** *Brockman* Intended for undergraduate majors. Audition required.

**MUSAP 332 Private Instruction: Horn (2-3, max. 27) VLPA** *Kappy* Intended for undergraduate majors. Audition required.

**MUSAP 333 Private Instruction: Trumpet (2-3, max. 27) VLPA** *Vizzutti* Intended for undergraduate majors. Audition required.

**MUSAP 334 Private Instruction: Trombone (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 335 Private Instruction: Tuba (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 336 Private Instruction: Harp (2-3, max. 27) VLPA** *Vokolek* Intended for undergraduate majors. Audition required.

**MUSAP 337 Private Instruction: Percussion (2-3, max. 27) VLPA** *Lehwalder* Intended for undergraduate majors. Audition required.

**MUSAP 338 Private Instruction: Guitar (2-3, max. 27) VLPA** *Partington* Intended for undergraduate majors. Audition required.

**MUSAP 339 Private Instruction: Viola da Gamba (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 340 Timpani (2-3, max. 27) VLPA** *Crusoe* Intended for undergraduate majors. Audition required.

**MUSAP 341 Mallet Percussion (2-3, max. 27) VLPA** *Collier* Intended for undergraduate majors. Audition required.

**MUSAP 342 Jazz Drum Set (2-3)** Primarily for jazz studies and percussion majors. Audition required for non-majors.

**MUSAP 343 Private Instruction: Viola (2-3, max. 45) VLPA** *Watras* Intended for undergraduate non-majors. Audition required.

**MUSAP 363 Private Instruction: Viola (2-3, max. 27) VLPA** *Watras* Intended for undergraduate majors. Audition required.

**MUSAP 389 World Music (2-3, max. 18) I&S/ VLPA** 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 420 Private Instruction: Voice (2-3, max. 27) VLPA** *Eaglen, Guyer, Harper* Intended for undergraduate majors. Audition required.

**MUSAP 421 Private Instruction: Piano (2-3, max. 27) VLPA** *McCabe, Michaelian, Seales, Sheppard* Intended for undergraduate majors. Audition required.

**MUSAP 422 Private Instruction: Organ (2-3, max. 27) VLPA** *Terry* Intended for undergraduate majors. Audition required.

**MUSAP 423 Private Instruction: Harpsichord (2-3, max. 27) VLPA** *Terry* Intended for undergraduate majors. Audition required.

**MUSAP 424 Private Instruction: Violin (2-3, max. 27) VLPA** *Patterson* Intended for undergraduate majors. Audition required.

**MUSAP 425 Private Instruction: Violoncello (2-3, max. 27) VLPA** *Saks* Intended for undergraduate majors. Audition required.

**MUSAP 426 Private Instruction: Double Bass (2-3, max. 27) VLPA** *Lieberman* Intended for undergraduate majors. Audition required.

**MUSAP 427 Private Instruction: Flute (2-3, max. 27) VLPA** *Shin* Intended for undergraduate majors. Audition required.

**MUSAP 428 Private Instruction: Oboe (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 429 Private Instruction: Clarinet (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 430 Private Instruction: Bassoon (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 431 Private Instruction: Saxophone (2-3, max. 27) VLPA** *Brockman* Intended for undergraduate majors. Audition required.

**MUSAP 432 Private Instruction: Horn (2-3, max. 27) VLPA** *Kappy* Intended for undergraduate majors. Audition required.

**MUSAP 433 Private Instruction: Trumpet (2-3, max. 27) VLPA** *Vizzutti* Intended for undergraduate majors. Audition required.

**MUSAP 434 Private Instruction: Trombone (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 435 Private Instruction: Tuba (2-3, max. 27) VLPA** Intended for undergraduate majors. Audition required.

**MUSAP 436 Private Instruction: Harp (2-3, max. 27) VLPA** *Lehwalder* Intended for undergraduate majors. Audition required.

**MUSAP 437 Private Instruction: Percussion (2-3, max. 27) VLPA** *Collier, Crusoe* Intended for undergraduate majors. Audition required.

**MUSAP 438 Private Instruction: Guitar (2-3, max. 27) VLPA** *Partington* Intended for undergraduate majors. Audition required.

**MUSAP 439 Private Instruction: Viola da Gamba (2-3, max. 27) VLPA** *Tindemans* Intended for undergraduate majors. Audition required.

**MUSAP 440 Timpani (2-3, max. 27) VLPA** *Crusoe* Intended for undergraduate majors. Audition required.

**MUSAP 441 Mallet Percussion (2-3, max. 27) VLPA** *Collier* Intended for undergraduate majors. Audition required.

**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 463 Private Instruction: Viola (2-3, max. 27) VLPA** *Watras* Intended for undergraduate majors. Audition required.

**MUSAP 500 Private instruction: Voice (2-3, max. 45)** *Eaglen, Guyer, Harper* Intended for graduate non-majors. Audition required.

**MUSAP 501 Private Instruction: Piano (2-3, max. 45)** *McCabe, Michaelian, Seales, Sheppard* Intended for graduate non-majors. Audition required.

**MUSAP 502 Private Instruction: Organ (2-3, max. 45)** *Terry* Intended for graduate non-majors. Audition required.

**MUSAP 503 Private Instruction: Harpsichord (2-3, max. 45)** *Terry* Intended for graduate non-majors. Audition required.

**MUSAP 504 Private Instruction: Violin (2-3, max. 45)** *Patterson* Intended for graduate non-majors. Audition required.

**MUSAP 505 Private Instruction: Violoncello (2-3, max. 45)** *Saks* Intended for graduate non-majors. Audition required.

**MUSAP 506 Private Instruction: Double Bass (2-3, max. 45)** *Lieberman* Intended for graduate non-majors. Audition required.

**MUSAP 507 Private Instruction: Flute (2-3, max. 45)** *Shin* Intended for graduate non-majors. Audition required.

**MUSAP 508 Private Instruction: Oboe (2-3, max. 45)** Intended for graduate non-majors. Audition required.

**MUSAP 509 Private Instruction: Clarinet (2-3, max. 45)** Intended for graduate non-majors. Audition required.

**MUSAP 510 Private Instruction: Bassoon (2-3, max. 45)** Intended for graduate non-majors. Audition required.

**MUSAP 511 Private Instruction: Saxophone (2-3, max. 45)** *Brockman* Intended for graduate non-majors. Audition required.

**MUSAP 512 Private Instruction: Horn (2-3, max. 45)** *Kappy* Intended for graduate non-majors. Audition required.

**MUSAP 513 Private Instruction: Trumpet (2-3, max. 45)** *Vizzutti* Intended for graduate non-majors. Audition required.

**MUSAP 514 Private Instruction: Trombone (2-3, max. 45)** Intended for graduate non-majors. Audition required.

**MUSAP 515 Private Instruction: Tuba (2-3, max. 45)** Intended for graduate non-majors. Audition required.

**MUSAP 516 Private Instruction: Harp (2-3, max. 45)** *Lehwalder* Intended for graduate non-majors. Audition required.

**MUSAP 517 Private Instruction: Percussion (2-3, max. 45)** *Collier, Crusoe* Intended for graduate non-majors. Audition required.

**MUSAP 518 Private Instruction: Guitar (2-3, max. 45)** *Partington* Intended for graduate non-majors. Audition required.

**MUSAP 519 Private Instruction: Viola da Gamba (2-3, max. 45)** Audition required.

**MUSAP 520 Private Instruction: Voice (3, max. 18)** *Eaglen, Guyer, Harper* Intended for graduate majors. Audition required.

**MUSAP 521 Private Instruction: Piano (3, max. 18)** *McCabe, Michaelian, Sheppard* Intended for graduate majors. Audition required.

**MUSAP 522 Private Instruction: Organ (3, max. 18)** *Terry* Intended for graduate majors. Audition required.

**MUSAP 523 Private Instruction: Harpsichord (3, max. 18)** *Terry* Intended for graduate majors. Audition required.

**MUSAP 524 Private Instruction: Violin (3, max. 18)** *Patterson* Intended for graduate majors. Audition required.

**MUSAP 525 Private Instruction: Violoncello (3, max. 18)** *Saks* Intended for graduate majors. Audition required.

**MUSAP 526 Private Instruction: Double Bass (3, max. 18)** *Lieberman* Intended for graduate majors. Audition required.

**MUSAP 527 Private Instruction: Flute (3, max. 18)** *Shin* Intended for graduate majors. Audition required.

**MUSAP 528 Private Instruction: Oboe (3, max. 18)** Intended for graduate majors. Audition required.

**MUSAP 529 Private Instruction: Clarinet (3, max. 18)** Intended for graduate majors. Audition required.

**MUSAP 530 Private Instruction: Bassoon (3, max. 18)** Intended for graduate majors. Audition required.

**MUSAP 531 Private Instruction: Saxophone (3, max. 18)** *Brockman* Intended for graduate majors. Audition required.

**MUSAP 532 Private Instruction: Horn (3, max. 18)** *Kappy* Intended for graduate majors. Audition required.

**MUSAP 533 Private Instruction: Trumpet (3, max. 18)** *Vizzuti* Intended for graduate majors. Audition required.

**MUSAP 534 Private Instruction: Trombone (3, max. 18)** Intended for graduate majors. Audition required.

**MUSAP 535 Private Instruction: Tuba (3, max. 18)** Intended for graduate majors. Audition required.

**MUSAP 536 Private Instruction: Harp (3, max. 18)** *Lehwalder* Intended for graduate majors. Audition required.

**MUSAP 537 Private Instruction: Percussion (3, max. 18)** *Collier, Crusoe* Intended for graduate majors. Audition required.

**MUSAP 538 Private Instruction: Guitar (3, max. 18)** *Partington* Intended for graduate majors. Audition required.

**MUSAP 540 Timpani (3, max. 18)** *Crusoe* Intended for graduate majors. Audition required.

**MUSAP 541 Mallet Percussion (3, max. 18)** *Collier* Intended for graduate majors. Audition required.

**MUSAP 542 Private Instruction: Viola da Gamba (3, max. 18)** Intended for graduate majors. Audition required.

**MUSAP 543 Private Instruction: Viola (2-3, max. 45)** *Watras* Intended for graduate non-majors. Audition required. Offered: AWPSP.

**MUSAP 563 Private Instruction: Viola (2-3, max. 45)** *Watras* Intended for Master's degree candidates. Audition required. Offered: AWPSP.

**MUSAP 570 Private Instruction: Voice (3, max. 27)** *Eaglen, Guyer, Harper* Intended for graduate majors. Audition required.

**MUSAP 571 Private Instruction: Piano (3, max. 27)** *McCabe, Michaelian, Sheppard* Intended for graduate majors. Audition required.

**MUSAP 572 Private Instruction: Organ (3, max. 27)** *Terry* Intended for graduate majors. Audition required.

**MUSAP 573 Private Instruction: Harpsichord (3, max. 27)** *Terry* Intended for graduate majors. Audition required.

**MUSAP 574 Private Instruction: Violin (3, max. 27)** *Patterson* Intended for graduate majors. Audition required.

**MUSAP 575 Private Instruction: Violoncello (3, max. 27)** *Saks* Intended for graduate majors. Audition required.

**MUSAP 576 Private Instruction: Double Bass (3, max. 27)** *Lieberman* Intended for graduate majors. Audition required.

**MUSAP 577 Private Instruction: Flute (3, max. 27)** *Shin* Intended for graduate majors. Audition required.

**MUSAP 578 Private Instruction: Oboe (3, max. 27)** Intended for graduate majors. Audition required.

**MUSAP 579 Private Instruction: Clarinet (3, max. 27)** Intended for graduate majors. Audition required.

**MUSAP 580 Private Instruction: Bassoon (3, max. 27)** Intended for graduate majors. Audition required.

**MUSAP 581 Private Instruction: Saxophone (3, max. 27)** *Brockman* Intended for graduate majors. Audition required.

**MUSAP 582 Private Instruction: Horn (3, max. 27)** *Kappy* Intended for graduate majors. Audition required.

**MUSAP 583 Private Instruction: Trumpet (3, max. 27)** *Vizzuti* Intended for graduate majors. Audition required.

**MUSAP 584 Private Instruction: Trombone (3, max. 27)** Intended for graduate majors. Audition required.

**MUSAP 585 Private Instruction: Tuba (3, max. 27)** Intended for graduate majors. Audition required.

**MUSAP 586 Private Instruction: Harp (3, max. 27)** *Lehwalder* Intended for graduate majors. Audition required.

**MUSAP 587 Private Instruction: Percussion (3, max. 27)** *Collier, Crusoe* Intended for graduate majors. Audition required.

**MUSAP 588 Private Instruction: Guitar (3, max. 27)** *Partington* Audition required.

**MUSAP 589 World Music Laboratory (2-3, max. 18)** 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. Credit/no credit only. Audition required.

**MUSAP 590 Timpani (3, max. 27)** *Crusoe* Intended for graduate majors. Audition required.

**MUSAP 591 Mallet Percussion (3, max. 27)** *Collier* Intended for graduate majors. Audition required.

**MUSAP 592 Private Instruction: Viola da Gamba (3, max. 27)** Intended for graduate majors. Audition required.

**MUSAP 593 Private Instruction: Viola (2-3, max. 45)** *Watras* Intended for Doctoral degree candidates. Audition required. Offered: AWPSP.

## 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 (2, max. 4) VLPA Demorest, 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 Demorest 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 Demorest, 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: Sp.

**MUSED 340 Music in Education (3) VLPA**  
*Demorest* 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, Demorest, 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, Demorest, Morrison* Supervised teaching internship. Directed observations of distinguished teachers in an elementary or secondary music setting. Weekly seminars. Credit/no credit only. Prerequisite: MUSED 403. 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, Demorest, 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** *Demorest* 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** *Demorest* 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, Demorest, 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, Demorest, 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 503 Qualitative Research in Music Education (3) Campbell, Demorest, Morrison** Examination of qualitative modes of inquiry (including ethnographic, case study, phenomenological, and historical) to music instruction in classroom, studio, and community settings. Prerequisite: MUSED 502.

**MUSED 522 Psychology of Music Learning and Teaching (3) Campbell, Demorest, 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, Demorest, 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, Demorest, 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, Demorest, 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, Demorest, 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, Demorest, 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, Demorest, 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, Demorest, Morrison** A transcultural examination of philosophy and practice of music instruction.

**MUSED 550 Proseminar in Music Education (3) Campbell, Demorest, 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, Demorest, 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, Demorest, 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, Demorest, 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 300 University Symphony Orchestra (1, max. 15)** VLPA

**MUSEN 301 Wind Ensemble (1, max. 15)** VLPA *Salzman*

**MUSEN 302 Symphonic Band (1, max. 10)** VLPA *Salzman*

**MUSEN 303 Marching Band (2, max. 10)** VLPA *McDavid*

**MUSEN 304 Percussion Ensemble (1, max. 12)** VLPA *Collier*

**MUSEN 305 Brass Ensemble (1, max. 12)** VLPA *Kappy*

**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: AWP.

**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. This ensemble is also an outstanding forum for music majors to refine skills on primary or secondary instruments. Offered: AWP.

**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 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 *Lehwald*

**MUSEN 369 Baroque Chamber Ensemble (1, max. 18)** VLPA *Terry*

**MUSEN 375 Opera Workshop (1, max. 6)** VLPA *Zahn* 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 *Zahn* Public performance of roles in opera.

**MUSEN 383 Collegium Musicum (1, max. 6)** VLPA

**MUSEN 384 Contemporary Group (1, max. 6)** VLPA *Durand* Exploration of notation and performance problems in today's music; preparation for public performance. Credit/no credit only.

**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 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 Symphony Orchestra (1, max. 9)**

**MUSEN 501 Wind Ensemble (1, max. 9)** *Salzman*

**MUSEN 503 Marching Band (2, max. 6)** *McDavid*

**MUSEN 504 Percussion Ensemble (1, max. 9)** *Collier*

**MUSEN 505 Brass Ensemble (1, max. 9)** *Kappy*

**MUSEN 506 Woodwind Ensemble (1, max. 9)** *Shin*

**MUSEN 507 Recital Choir (1, max. 9)** VLPA 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)** 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 instrumental-

ists may register with instructor's permission. Offered: AWP.

**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)**

**MUSEN 547 Opera Chorus (1, max. 9)**

**MUSEN 550 University Chorale (1, max. 9)** 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)** *Lehwald*

**MUSEN 569 Baroque Chamber Ensemble (1)** *Terry*

**MUSEN 575 Opera Workshop (1, max. 9)** *Zahn* 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 Contemporary Group (1, max. 9)** *Durand* Exploration of notation and performance problems in today's 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: 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 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 Western music history including representative composers, works, and genres as well as significant concepts and issues. Nineteenth and Twentieth Centuries. Prerequisite: 2.0 in MUHST 211. Offered: Sp.

**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 12th to 20th 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 RELIG 264.

**MUHST 301 Music and the American Experience (3) I&S/VLPA 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) I&S/VLPA** 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) I&S/VLPA** 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 330 Music in the United States (5) VLPA Starr** Contribution of music to the development of American culture.

**MUHST 400 Medieval Music: To 1400 (3) VLPA Taricani** Critical readings on issues in medieval music. Works to be studied included 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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in MUSIC 306.

**MUHST 406 Baroque Choral Music (3) VLPA Bozarth** Monteverdi through Handel. Prerequisite: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in MUSIC 306.

**MUHST 407 Baroque Opera (3) VLPA** Monteverdi through Handel.

**MUHST 408 Keyboard Music: 1760-1830 (3) VLPA Bozarth** Haydn through Schubert. Prerequisite: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in MUSIC 306.

**MUHST 409 Chamber Music: 1760-1830 (3) VLPA** Haydn through Schubert. Prerequisite: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in 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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in 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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in MUSIC 306.

**MUHST 415 Chamber Music: 1830-1915 (3) VLPA** Schumann through Ravel. Prerequisite: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in MUSIC 306.

**MUHST 416 Orchestral Music: 1830-1915 (3) VLPA** Schumann and Mendelssohn through early Schoenberg and Stravinsky. Prerequisite: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in MUSIC 306.

**MUHST 417 Art Song: 1830-1915 (3) VLPA Bozarth** The Lieder of Schumann, Brahms, Wolf, Strauss, Mahler, and Schoenberg. Prerequisite: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in 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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in 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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in 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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in MUSIC 306.

**MUHST 422 Gender and Music (3) VLPA 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. Offered: W. Prerequisite: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in MUSIC 306.

**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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in 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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in 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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in 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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in 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: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in MUSIC 306.

**MUHST 497 Special Topics in Music History (1-3, max. 6) VLPA Bozarth, Rumph, Taricani, Tsou** Topics vary each quarter. Prerequisite: 2.0 in MUHST 210; 2.0 in MUSIC 303; 2.0 in 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 between ca. 1000 and 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.

## Near Eastern Languages and Civilization

### Near Eastern Languages and Civilization

**NEAR E 150 Israel: Dynamic Society and Global Flashpoint (5)** *I&S Barzilai, Migdal, Pianko, Sokoloff* 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 SIS 150.

**NEAR E 199 Study Abroad (1-12, max. 15)** Credit for 200-level 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: AWPSP.

**NEAR E 205 Religion, Violence, and Peace: Patterns Across Time and Tradition (5)** *I&S Noegel, Wellman* 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/RELIG 205; W.

**NEAR E 210 Introduction to Islamic Civilization (5)** *I&S/VLPA* 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 SISME 210.

**NEAR E 211 Islam (5)** *I&S/VLPA* 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 RELIG 211.

**NEAR E 212 Introduction to the Quran (5)** *I&S/VLPA* Emphasis on the historical context of the Quran, the history of the text, its collection, organization, and interpretation. In English. Offered: jointly with RELIG 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 SISME 213.

**NEAR E 220 Introduction to the Ancient Near East (5)** *I&S/VLPA Noegel* 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 221 Digital Egypt (3)** *I&S/VLPA* Uses technology to explore themes surrounding the study of Egypt, from ancient times through the early Islamic period. Intended as a broad interdisciplinary introduction to Egypt's history and cultural legacy.

**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)** *I&S/VLPA* 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 RELIG 240.

**NEAR E 242 Cultural History of Turkey: From Empire to Nation (5)** *I&S/VLPA* 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)** *I&S/VLPA* Explores the culture and civilization of this Middle Eastern society through a multidisciplinary 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)** *I&S/VLPA* 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 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 325 Modern Hebrew Literature in English (3)** *VLPA Sokoloff* Major developments in Hebrew literature from the Enlightenment to the current Israeli literature.

**NEAR E 326 Israeli Identities (5)** *VLPA Sokoloff* 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 350 The City of Cairo (3)** *I&S/VLPA* Development of Fustat and Cairo, 600-1800, with special emphasis on art and architecture. Consideration of the economic, social, and geographical influences on the creation of the distinctive Egyptian styles of Islamic art. Offered: jointly with ART H 350.

**NEAR E 363 Oral Literature of the Turkic Peoples of Central Asia I: the Heroic Epos (3)** *VLPA Cirtautas* 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 375 Turkic Peoples of Central Asia (3)** *I&S Cirtautas* 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 SIS 377.

**NEAR E 399 Study Abroad (1-12, 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** *DeYoung* 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. Prerequisite: either NEAR E 211 or NEAR E 212.

**NEAR E 403 Colonialism, Nationalism, and the Modern Arabic Novel (3) I&S/VLPA** *DeYoung* 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 411 Digital Media: The Middle East and Central Asia (5) VLPA** *Waters* 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 420 Islamic Theological Literature in English (3) VLPA** Readings from Mu'tazilite and Ash'arite works and from traditionalist works opposed to theology.

**NEAR E 421 Islamic Mystical Literature in English (3) VLPA** Readings from the works of principal Sufi writers and poets.

**NEAR E 422 Islamic Philosophical and Scientific Literature in English (3) VLPA** Readings in philosophy, the physical sciences, and medicine.

**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 425 Current Trends in Modern Near Eastern Literature and Criticism (3) VLPA** Modern literary tradition of the Near East with emphasis on major literary movements and/or genres and literary criticism in the modern period. The literatures of the Arab world, Persia, Turkey, and Israel are considered in alternate quarters.

**NEAR E 430 Scripture and Law in Islam (5) I&S/VLPA** 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 RELIG 430.

**NEAR E 432 Ritual and Territory in Islam (5) I&S/VLPA** Comparative study of Islamic ritual practices and related development of jurisprudence and law. Focus on sacrifice, political and social legal theory, pilgrimage, regulation of the body, and the diversity of contemporary practices. In English. Offered: jointly with RELIG 432.

**NEAR E 433 Life of Prophet Muhammad (5) I&S/VLPA** Examines historical and religious traditions associated with the life of the Prophet Muhammad with particular attention to the biography in classical Islam. Focuses on Muhammad as prophet, holy man, law-giver, mystic, and statesman. Comparison with other religious figures such as Jesus and the Buddha. In English. Offered: jointly with RELIG 433.

**NEAR E 435 Major Trends in Modern Arabic Fiction (3) VLPA** *DeYoung* Development of Arabic prose fiction from the end of the nineteenth century to the present. Prerequisite: either NEAR E 211 or NEAR E 212.

**NEAR E 436 Arab American Writers (3) I&S/VLPA** *DeYoung* 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** *DeYoung* An examination of the major story cycles of the Thousand and One Nights collection, in its social and historical context. Prerequisite: either NEAR E 211 or NEAR E 212.

**NEAR E 440 Calligraphy in Islamic Culture (3) VLPA** Survey of the esthetics, uses, interpretations of artistic writing in Islamic culture with a "hands on" approach to recognizing, appreciating, and creating Arabic script calligraphy. Students need not know Arabic script nor have calligraphic talents, although some familiarity with Islamic civilization is helpful.

**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) I&S/VLPA** *Kuru* 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 450 Survey of the Cultures of the Turkic Peoples of Central Asia (3) I&S/VLPA** *Cirtautas* Nomadic and sedentary cultures of the Turkic peoples of Central Asia. Emphasis on language, literature, and adherence to traditional modes of life. Offered: jointly with SISRE 450.

**NEAR E 451 Pharaonic Egypt in the Context of the Ancient Near East (3) I&S/VLPA** *Noegel* Surveys the history, literature, and archaeology of ancient Egypt from the first pharaohs to the conquest of Alexander the Great. Introduces the field of Egyptology, and focuses on the continuity of Egyptian history and culture in context. Slide presentations supplement the readings and in-class lectures.

**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 is required. Offered: jointly with SISJE 452.

**NEAR E 453 The Biblical Prophets (3) I&S/VLPA** *Noegel* Explores the biblical prophets (in translation) within their Near Eastern contexts. Studies them for their historicity, literary and rhetorical sophistication, and ideological agendas. This course seeks to uncover the meaning and distinctiveness of Israelite prophecy within the context of the larger Near East. No knowledge of the Bible is required. Offered: jointly with SISJE 453.

**NEAR E 454 Israel: The First Six Centuries BCE (3) I&S/VLPA** *Noegel* Traces the Israelites, from the Babylonian destruction of the Jerusalem Temple (586 BCE) to events following the destruction of the second Temple (1st century CE). Focuses on primary historical and literary sources as well as archaeological and artistic evidence. No knowledge of Hebrew or the Bible is required. Offered: jointly with SISJE 454.

**NEAR E 455 The Kings of Monarchic Israel (3) I&S/VLPA** *Noegel* Examines the biblical accounts (in translation) concerning the formation and collapse of the united Israelite monarchy. Investigates the archaeological and textual evidence for their historicity, the literary sophistication of these accounts, and Israelite kingship within the wider context of the ancient Near East. No knowledge of the Bible is required. Offered: jointly with SISJE 455.

**NEAR E 457 The History of Biblical Interpretation (3) I&S/VLPA** *Noegel* 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 RELIG 457.

**NEAR E 490 Supervised Study (1-6, max. 18)** Special work in Near Eastern studies for graduates and undergraduates.

**NEAR E 495 Trends in the Contemporary Middle East (3) I&S** *Bacharach, De Young* Perspectives on cultural, political, and other aspects of Middle Eastern societies. Focuses on background complexities rather than immediate political-military confrontations. Topics vary. Offered: jointly with SISME 495.

**NEAR E 496 Special Studies in Near Eastern Languages and Civilization (3-5, max. 15) VLPA** Offered occasionally by visitors or resident faculty. Content varies.

**NEAR E 498 Senior Essay (5) I&S/VLPA** 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 511 Digital Media: The Middle East and Central Asia (5) Waters** 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 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 ASIAN 518/GERMAN 518/SCAND 518/SLAV 518.

**NEAR E 520 Seminar on Near Eastern Civilization and Thought (3, max. 27)** Content varies.

**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 522 Islamic Theology (3)** Various schools of Islamic theology.

**NEAR E 523 Islamic Philosophy (3)** Various topics and problems dealt with by the Islamic philosophers.

**NEAR E 524 Islamic Law (3)** Selected topics in Islamic law that highlight major aspects of Islamic civilization. Offered: jointly with LAW B 556.

**NEAR E 525 Islamic Institutions (3)** Islamic institutions of the caliphate, the sultanate, the bureaucracy, taxation, mosques, and madrasahs, as well as theories of government.

**NEAR E 530 Seminar on Near Eastern Literature (3, max. 27)** Prerequisite: reading knowledge of at least one Near Eastern language. Content varies.

**NEAR E 531 Proseminar in Literary Analysis (3, max. 9)** Introduction to the theory and techniques of the study of literature in general and Near Eastern literatures in particular. Content varies. Prerequisite: reading knowledge of at least one Near Eastern language.

**NEAR E 532 Theory and Practice in Modern Near Eastern Literature (3)** Application of literary theory to works of modern Near Eastern literature. Concentrates on one major theory each year. Content varies.

**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; some knowledge of the other recommended.

**NEAR E 595 Modern Methods and Materials in Teaching Near Eastern Languages (3)** *Elkhafai* Theory and practice of communicative language teaching; current developments in foreign-language teaching; evaluation of teaching materials; includes participation at the departmental and university-wide fall orientation; required for beginning teaching assistants of Near Eastern languages; requires enrollment in Near E 518. Credit/no credit only. Offered: A.

**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 (\*)**

## Arabic

**ARAB 199 Study Abroad (1-12, 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: AWSpS.

**ARAB 399 Study Abroad (1-12, 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: AWSpS.

**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 411, 412, 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 401 taken.)

**ARAB 412 Elementary Arabic (5)** Study of grammar, with oral and written drill and reading of simple texts. (Cannot be taken for credit if 401 taken.) 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 401 taken.) Prerequisite: ARAB 412.

**ARAB 414 Spoken Arabic (3)** Study of grammar with emphasis on oral drill in modern spoken Arabic (Western or Eastern).

**ARAB 415 Spoken Arabic (3)** Study of grammar with emphasis on oral drill in modern spoken Arabic (Western or Eastern).

**ARAB 416 Spoken Arabic (3)** Study of grammar with emphasis on oral drill in modern spoken Arabic (Western or Eastern).

**ARAB 421 Intermediate Arabic (5) VLPA** Reading of selected texts in standard Arabic, with continuing emphasis on grammar and syntax. 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. Prerequisite: ARAB 421.

**ARAB 423 Intermediate Arabic (5) VLPA** Reading of selected texts in standard Arabic, with continuing emphasis on grammar and syntax. 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, 422, 423 previously taken for credit. Prerequisite: either ARAB 401 or ARAB 413. Offered: S.

**ARAB 431 Advanced Arabic (5) VLPA** Focus on Arabic at the advanced level through in-depth examination of grammar, reading of selected texts, and brief surveys of some major

reference materials. Prerequisite: either ARAB 423 or ARAB 424.

**ARAB 432 Advanced Arabic (5) VLPA** Focus on Arabic at the advanced level through in-depth examination of grammar, reading of selected texts, and brief surveys of some major reference materials. Prerequisite: ARAB 431.

**ARAB 433 Advanced Arabic (5) VLPA** Focus on Arabic at the advanced level through in-depth examination of grammar, reading of selected texts, and brief surveys of some major reference materials. Prerequisite: ARAB 432.

**ARAB 451 Adab Prose: Jahiz (3) VLPA** Readings in early Arabic prose. Prerequisite: ARAB 433.

**ARAB 452 Maqamat: Hamadhani, Hariri (3) VLPA** *MacKay* Reading of several maqamat (essays in rhymed prose) of al-Hamadhani and al-Hariri. Examination of the maqamat genre as a whole. Prerequisite: ARAB 433.

**ARAB 453 Historical Texts (3) I&S/VLPA** Readings in Arab historians with particular reference to scholars such as Tabari, Ibn al-Jawzi, and Ibn al-Athir. Prerequisite: ARAB 433.

**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 433.

**ARAB 455 Ritual and Legal Texts (3) VLPA** Selected readings from well-known Islamic legal texts (furu al-fiqh) with attention to the sources of the law and methods of exegesis (usul al-fiqh). Prerequisite: ARAB 433.

**ARAB 456 Islamic Political Theorists (3) I&S/VLPA** Readings from the main political theorists: al-Baghdadi, al-Mawardi, and Ibn Khaldun. Prerequisite: ARAB 433.

**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 433.

**ARAB 458 Modern Poetry (3) VLPA** *DeYoung* Neoclassical poetry of the nineteenth and twentieth centuries, and the development of modern verse. Prerequisite: ARAB 433.

**ARAB 459 Islamic Philosophical Literature (3) I&S/VLPA** Reading of selected texts by representative Islamic philosophers. Prerequisite: ARAB 433.

**ARAB 460 Islamic Theological and Mystical Literature (3) VLPA** Reading of selected texts representative of Islamic theological and mystical schools. Prerequisite: ARAB 433.

**ARAB 461 Modern Prose (3) VLPA** *DeYoung* Modern essays, fiction, and ideological writings. Prerequisite: ARAB 433.

**ARAB 462 Sirah and Maghazi Texts (3) I&S/VLPA** Reading and discussion of selected historical texts devoted to the life of the Prophet Muhammad, such as Ibn Ishaq, Ibn Hisham, al-Waqidi, Ibn Sa'd, and al-Bayhaqi. Some attention to related genres and contemporary scholarship. Prerequisite: ARAB 433.



**ARAB 470 Stories of the Prophets (3) I&S/ VLPA** Reading and discussion of Jewish and Islamic exegesis of selected Biblical and Quranic narratives dealing with such figures as Moses, Abraham, Jacob, or Adam and Eve. Prerequisite: either ARAB 432 or HEBR 423. Offered: jointly with HEBR 470.

**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) Walker** 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. Offered: A.

**ARAMIC 412 Syriac (3) Walker** 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. Offered: W.

**ARAMIC 421 Biblical Aramaic (5) VLPA Noegel** 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 333 or HEBR 426.

**ARAMIC 423 Readings in Syriac (3) VLPA Walker** 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: ARAM 412. Offered: Sp.

## Egyptian

**EGYPT 411 Introduction to Coptic (5) Williams** Elements of grammar of the Sahidic dialect of the Coptic language.

**EGYPT 422 Readings in Coptic (3) VLPA Williams** Readings from ancient Coptic Christian literature, with emphasis on the *Nag Hammadi* texts. Prerequisite: COPTC 411 or EGYPT 411.

**EGYPT 423 Readings in Coptic (3) VLPA Williams** Readings from ancient Coptic Christian literature, with emphasis on the *Nag Hammadi* texts. Prerequisite: COPTC 411 or EGYPT 411.

## Hebrew

**HEBR 199 Study Abroad (1-12, 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: AWSpS.

**HEBR 399 Study Abroad (1-12, 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: AWSpS.

**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 411, 412, 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 has been taken previously. Offered: S.

**HEBR 411 Elementary Modern Hebrew (5) Sokoloff** 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 401 taken.)

**HEBR 412 Elementary Modern Hebrew (5) Sokoloff** 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 401 taken.) Prerequisite: HEBR 411.

**HEBR 413 Elementary Modern Hebrew (5) Sokoloff** 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 401 taken.) Prerequisite: HEBR 412.

**HEBR 414 Elementary Biblical Hebrew (5) Noegel** 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) Noegel** 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 421 Intermediate Modern Hebrew (5) VLPA Sokoloff** Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. Prerequisite: either HEBR 401 or HEBR 413.

**HEBR 422 Intermediate Modern Hebrew (5) VLPA Sokoloff** Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. Prerequisite: HEBR 421.

**HEBR 423 Intermediate Modern Hebrew (5) VLPA Sokoloff** Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. Prerequisite: HEBR 422.

**HEBR 426 Biblical Hebrew Prose (5) VLPA Noegel** 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 Noegel** 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 Noegel** 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 Sokoloff** 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 Sokoloff** 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 Sokoloff** 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 Sokoloff** 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 Sokoloff** 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 Sokoloff** 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 Sokoloff** 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.

**HEBR 470 Stories of the Prophets (3) I&S/ VLPA** Reading and discussion of Jewish and Islamic exegesis of selected Biblical and Quranic narratives dealing with such figures as Moses, Abraham, Jacob, or Adam and Eve. Prerequisite: either ARAB 432 or HEBR 423. Offered: jointly with ARAB 470.

**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)** 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 (\*)**

## Persian

**PRSAN 199 Study Abroad (1-12, 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 (1-12, 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) VLPA** *Papan-Matin* Intensive study of grammar with oral and written drills and reading of simple texts. Cannot be taken for credit if PRSAN 411-413 has been taken previously. 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.

**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. 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. 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. Prerequisite: 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. 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. Prerequisite: PRSAN 422.

**PRSAN 431 Advanced Persian (3) VLPA** Designed to improve reading and writing skills. Graded reading and writing and exposure to the writing system, textual history, newspaper reading, and translation. Cultural materials presented as appropriate. The art of calligraphy introduced. For students with a degree of proficiency in spoken Persian. Prerequisite: PRSAN 423.

**PRSAN 432 Advanced Persian (3) VLPA** Designed to improve reading and writing skills. Graded reading and writing and exposure to the writing system, textual history, newspaper reading, and translation. Cultural materials presented as appropriate. The art of calligraphy introduced. For students with a degree of proficiency in spoken Persian. Prerequisite: PRSAN 431.

**PRSAN 433 Advanced Persian (3) VLPA** Designed to improve reading and writing skills. Graded reading and writing and exposure to the writing system, textual history, newspaper reading, and translation. Cultural materials presented as appropriate. The art of calligraphy introduced. For students with a degree of proficiency in spoken Persian. Prerequisite: PRSAN 432.

**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 Firdaws: explores the ancient legends that gave rise to it and follows the fortunes of epic poetry after Firdaws, 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) I&S/VLPA** 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)** 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 (1-12, 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 (1-12, 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 411, 412, 413 taken. Offered: S.

**TKIC 402 Intensive Elementary Kazakh (15)** Intensive study of grammar, with oral and written drill and reading of simple texts in Kazakh. Covers first-year Kazakh. Cannot be taken for credit if 414, 415, 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 421, 422,

423 taken. Prerequisite: either TKIC 401 or TKIC 413. Offered: S.

**TKIC 405 Intensive Intermediate Kazakh (15) VLP** Allows students to complete second-year Kazakh in one quarter. Reading of selected texts in modern literary Kazakh, with emphasis on grammar, syntax, and oral practice. Prerequisite: either TKIC 402 or TKIC 416. Offered: S.

**TKIC 406 Intensive Advanced Uzbek (15) VLP** 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 Uighur (15) VLP** Covers all four linguistic skills: reading, writing, speaking, and listening. Offered: S.

**TKIC 411 Elementary Uzbek (5) Cirtautas** Introduction to the modern written and spoken language. Cannot be taken for credit if 401 taken.

**TKIC 412 Elementary Uzbek (5) Cirtautas** Introduction to the modern written and spoken language. Cannot be taken for credit if 401 taken.

**TKIC 413 Elementary Uzbek (5) Cirtautas** Introduction to the modern written and spoken language. Cannot be taken for credit if 401 taken.

**TKIC 414 Introduction to Kazakh (3) Cirtautas** Position of Kazakh within the community of other Turkic languages; alphabets used for Kazakh; reading of texts from Kazakhstan and China (Xinjiang); oral and written exercises. Cannot be taken for credit if 402 taken.

**TKIC 415 Introduction to Kazakh (3) Cirtautas** Position of Kazakh within the community of other Turkic languages; alphabets used for Kazakh; reading of texts from Kazakhstan and China (Xinjiang); oral and written exercises. Cannot be taken for credit if 402 taken.

**TKIC 416 Introduction to Kazakh (3) Cirtautas** Position of Kazakh within the community of other Turkic languages; alphabets used for Kazakh; reading of texts from Kazakhstan and China (Xinjiang); oral and written exercises. Cannot be taken for credit if 402 taken.

**TKIC 417 Introduction to Uighur (5) Cirtautas** Designed for students with no prior knowledge of Uighur. Includes acquisition of Uighur Arabic alphabet, general phonological rules, and basic grammar. Basic reading, listening, and oral comprehension practice all offered throughout the course. Offered: A.

**TKIC 418 Introduction to Uighur (5) Cirtautas** Continuation of basic modern Uighur: phonological rules, grammar, and vocabulary. Practice in reading, listening, and oral comprehension. Prerequisite: TKIC 417. Offered: W.

**TKIC 419 Introduction to Uighur (5) Cirtautas** Continuation of basic modern Uighur: phonological rules, grammar, and vocabulary. Practice in reading, listening, and oral comprehension. Prerequisite: TKIC 418. Offered: Sp.

**TKIC 421 Intermediate Uzbek (3) VLP** *Cirtautas* Continuation of elementary Uzbek.

Oral work, grammar, and readings in Uzbek literature. Prerequisite: either TKIC 401 or TKIC 413.

**TKIC 422 Intermediate Uzbek (3) VLP** *Cirtautas* Continuation of elementary Uzbek. Oral work, grammar, and readings in Uzbek literature. Prerequisite: TKIC 421.

**TKIC 423 Intermediate Uzbek (3) VLP** *Cirtautas* Continuation of elementary Uzbek. Oral work, grammar, and readings in Uzbek literature. Prerequisite: TKIC 422.

**TKIC 427 Intermediate Uighur (5) VLP** Second-year Uighur. Includes reading, translation, oral comprehension, and composition. Prerequisite: TKIC 419. Offered: A.

**TKIC 428 Intermediate Uighur (5) VLP** Second-year Uighur. Includes reading, translation, oral comprehension, and composition. Prerequisite: TKIC 427. Offered: W.

**TKIC 429 Intermediate Uighur (5) VLP** Second-year Uighur. Includes reading, translation, oral comprehension, and composition. Prerequisite: TKIC 428. Offered: Sp.

**TKIC 437 Advanced Uighur (5) VLP** 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 Uighur language is used.. Prerequisite: TKIC 429. Offered: A.

**TKIC 438 Advanced Uighur (5) VLP** 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 Uighur language is used.. Prerequisite: TKIC 437. Offered: W.

**TKIC 439 Advanced Uighur (5) VLP** 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 Uighur language is used.. Prerequisite: TKIC 438. Offered: Sp.

**TKIC 451 Introduction to Turkic Studies (3) VLP** *Cirtautas* 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) VLP** *Cirtautas* Readings from selected Uzbek writers. Content varies.

**TKIC 455 Introduction to Uzbek Literature (3) VLP** *Cirtautas* Readings from selected Uzbek writers. Content varies.

**TKIC 456 Introduction to Uzbek Literature (3) VLP** *Cirtautas* 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)** 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) Cirtautas** 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) Cirtautas** Classification of the Turkic languages; alphabets used; phonology, morphology, and syntax; lexical composition; structure changing developments. Prerequisite: TKIC 404.

**TKIC 546 Old Turkic (3) Cirtautas** 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 Uighur (3) Cirtautas** Introduction to script systems; phonology, morphology, and syntax. Reading and translation of mainly Buddhist texts in Uighur script, eighth through eleventh centuries. Prerequisite: background in a Turkic language or permission of instructor.

**TKIC 561 Middle Turkic (3) Cirtautas** 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) Cirtautas** 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) Cirtautas** 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 (1-12, 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 (1-12, 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 411 Elementary Turkish (5)** Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded reading. Latin characters used throughout. (Cannot be taken for credit if TKISH 401 is taken.)

**TKISH 412 Elementary Turkish (5)** Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded reading. Latin characters used throughout. (Cannot be

taken for credit if TKISH 401 is taken.)  
Prerequisite: TKISH 411.

**TKISH 413 Elementary Turkish (5)** Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded reading. Latin characters used throughout. (Cannot be taken for credit if TKISH 401 is taken.)  
Prerequisite: TKISH 412.

**TKISH 421 Intermediate Turkish (5) VLPA** Introduction to modern Turkish literature.  
Prerequisite: TKISH 413.

**TKISH 422 Intermediate Turkish (5) VLPA** Introduction to modern Turkish literature.  
Prerequisite: TKISH 421.

**TKISH 423 Intermediate Turkish (5) VLPA** Introduction to modern Turkish literature.  
Prerequisite: TKISH 422.

**TKISH 451 Readings in Turkish Literary History I: Modern (3) VLPA** *Kuru* 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** *Kuru* 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** *MacKay* 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** *Kuru* 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.

**TRKISH 496 Special Studies in Turkish (3-5, max. 15)** Topics vary.

**TKISH 499 Undergraduate Research (1-6, max. 18)** .

**TRKISH 596 Special Studies in Turkish (3-5, max. 15)** Topics vary.

**TKISH 600 Independent Study or Research (\*)**

## Neurobiology

**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: either BIOL 202 or BIOL 220. Offered: W.

**NBIO 302 Introduction to Systems and Behavioral Neurobiology (5) NW** *Kennedy, Perkel, Solis* Introduces neuroethology, i.e., the mechanisms by which neurons and the synaptic connections among them produce sensory perceptions and complex behavioral outputs. Includes weekly laboratory sessions. Prerequisite: NBIO 301. Offered: Sp.

**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: A.

**NBIO 402 Neuropathophysiology (3) NW** *Crill* Studies the molecular mechanisms of disease affecting excitable cells, focusing on mechanisms that alter electrical properties. Emphasizes skills in reading current literature. Prerequisite: NBIO 401. Offered: W.

**NBIO 403 Systems and Behavioral Neurobiology (3) NW** 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 independently work 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** Credit/no credit only. Prerequisite: NBIO 302.

**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. Credit/no credit only. Prerequisite: either BIOL 202 or BIOL 220.

**NBIO 496 Peer Teaching Assistant in Neurobiology (5)** Direct classroom experience teaching in NBIO 301 or 302. Credit/no credit only. Prerequisite: NBIO 302. Offered: WSp.

**NBIO 499 Individual Research in Neurobiology (3-6, max. 18)** Students carry out projects in laboratories of program faculty. Prerequisite: NBIO 302.

## Philosophy

**PHIL 100 Introduction to Philosophy (5) I&S** *Baker, Rosenthal* 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) I&S/VLPA** *Blake, A. Moore* Philosophical consideration of some of the main moral problems of modern society and civilization, such as abortion, euthanasia, war, and capital punishment. Topics vary.

**PHIL 110 Introduction to Social and Political Philosophy (5) I&S** *Clatterbaugh* 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** 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** *Cohen, Fine, 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.

**PHIL 160 Why Do We Believe in Quarks, Evolution, and Other Crazy Things? Perspectives on Science, Reason, and Reality (5) I&S** *Hankinson Nelson* Study of how scientific theories are justified and why they are accepted, using selected examples from the history of science.

**PHIL 199 New Majors Seminar (2) I&S/VLPA** Introduces undergraduates to the field and to the interests of various faculty. Credit/no credit only. Prerequisite: one previous PHIL course.

**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** 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** *Wylie* 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 POL S 212/WOMEN 206.

**PHIL 230 Philosophic Issues in World Affairs (3) I&S** Moral problems that arise in connection with such topics as affluence, hunger, and overpopulation; global environmental degradation; war and weaponry; restructuring the international order.

**PHIL 240 Introduction to Ethics (5) I&S/VLPA** *Gardiner, Roberts, Smith, 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) I&S/VLPA** 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) I&S/VLPA** *Goering, Schellenberg* 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) I&S** *Light* Focuses on some of the philosophical questions that arise in connection with environmental issues. 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** *Clatterbaugh* 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 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** *Cohen, Roberts, 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** *Baker, BonJour, Clatterbaugh, Rosenthal, 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** Examination of post-Kantian thinkers through the end of the nineteenth century considering such major themes as idealism, romanticism, positivism, historicism, naturalism, existentialism, and pragmatism.

**PHIL 327 American Philosophy (5) I&S** Study of some of the major American philosophers such as Peirce, Royce, Dewey, William James, C. I. Lewis, Goodman, Quine.

**PHIL 330 History of Ancient Political Philosophy (5) I&S** *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** *Blake, BonJour, Clatterbaugh, Talbott* Examination of major political philosophies from the sixteenth century to the nineteenth century, with attention to the underlying philosophical methods and foundations.

**PHIL 334 Philosophy of Marxism (3) I&S** *Clatterbaugh* Philosophy of Marx and the Marxist tradition with attention to key Marxist concepts such as exploitation, alienation, and historical materialism.

**PHIL 335 Plato's Republic (5) I&S/VLPA** *Keyt* 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** *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) I&S/VLPA** *Roberts, 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) I&S/VLPA** *Smith, Weller* Development of moral thought from Hobbes through Nietzsche, with particular emphasis on the ethical writings of Hume, Kant, and John Stuart Mill.

**PHIL 344 History of Recent Ethics (5) I&S/VLPA** 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) I&S/VLPA** *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 (3) I&S** *Baker, Goering, Smith* 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) I&S/VLPA** Study of philosophical ideas expressed in works of literature.

**PHIL 350 Introduction to Epistemology (5) I&S** *Baker, BonJour, Talbott* Nature, definition, and possibility of knowledge.

**PHIL 353 Introduction to the Philosophy of Language (5) I&S** Philosophical theories about the nature of language. Topics include meaning, reference, truth, propositions, relations between language and thought.

**PHIL 356 Introduction to Metaphysics (5) I&S** *Baker* 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** *Fine, Hankinson Nelson, 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** Various theories of the nature of mind, the relationship between mind and body, the self, introspection, and knowledge of other minds.

**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** *Baker* A study of philosophical topics at the advanced level. Topics vary.

**PHIL 406 Philosophical Topics in Feminism (5) I&S** *Roberts, Hankinson Nelson, 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) I&S** *Blake, 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** *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** *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/CHID 332, LSJ/CHID 433, or LSJ/CHID or 434.

**PHIL 410 Social Philosophy (5) I&S** *Clatterbaugh, 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) I&S/VLPA**  
*Jecker* Examination of the ethical problem of allocating scarce medical resources. Emphasis on fundamental principles of justice that support alternative health policies. Recommended: prior courses in philosophy or medical ethics. Offered: jointly with MHE 474.

**PHIL 412 Ethical Theory (5) I&S** *Jecker*  
 Reviews the principal theories for normative ethical discourse, such as utilitarianism and deontology, and major metaethical commentary on those theories. Illustrated by classical and modern authors. Recommended: one basic course in ethics. Offered: jointly with MHE 402.

**PHIL 413 Metaethical Theory (5) I&S** *Jecker*  
 Study of major ethical writings in the twentieth century, with principal emphasis on the Anglo-American tradition. Recommended: one introductory philosophy course. Offered: jointly with MHE 404.

**PHIL 414 Philosophy of Law (3) I&S** *BonJour, A. Moore, 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** *Light* 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** *Gardiner* 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** *Gardiner, Light* 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** *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 SISJE 418.

**PHIL 422 Studies in Continental Rationalism (3, max. 9) I&S** *Clatterbaugh* Study of one or more of the major continental Rationalists: Descartes, Spinoza, Leibniz.

**PHIL 425 Studies in Nineteenth-Century Philosophy (3) I&S** *Baker* Study of post-Kantian metaphysical theories, with special emphasis on idealism, realism, and/or pragmatism. Typical authors include F. H. Bradley, J. McTaggart, Royce, and Green.

**PHIL 426 Twentieth-Century Philosophy (5) I&S** *Baker, 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** *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** *Cohen, Keyt, Roberts, Weller* Study of selected middle and late dialogues.

**PHIL 433 Philosophy of Aristotle (3, max. 6) I&S** *Cohen, Keyt, Roberts, Weller* Study of several major Aristotelian treatises.

**PHIL 434 Philosophy of Thomas Aquinas (3) I&S** Examination of the major philosophical positions of Thomas Aquinas in the theory of knowledge, metaphysics, and ethics.

**PHIL 436 British Empiricism (3) I&S** *Baker, BonJour* 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** *Weller*  
 Study Hume's analyses of knowledge, the passions, and morals.

**PHIL 438 Philosophy of Kant (5) I&S** *BonJour, Weller* Systematic study of *The Critique of Pure Reason*.

**PHIL 439 The Later Philosophy of Wittgenstein (3) I&S** Detailed study of topics in the later philosophy of Wittgenstein, with particular attention to the *Philosophical Investigations*.

**PHIL 440 Ethics (5) I&S** *Roberts, Smith, 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 443 Philosophy and Linguistics (3) I&S/VLPA** Study of philosophical problems that arise in the attempt to understand current linguistic theories and of the implications of linguistics for philosophy. Offered: jointly with LING 443.

**PHIL 445 Philosophy of Art (5) I&S/VLPA** *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) I&S/VLPA** *R. Moore*, Historical development of aesthetics, emphasizing such major figures as Plato, Aristotle, Hume, Kant, Hegel, and Goodman.

**PHIL 447 Philosophy of Literature (3) I&S/VLPA** Investigation of philosophical questions about literature: What is literature? Must literature be interpreted? What is interpretation? Literature and ideology.

**PHIL 449 Philosophy of Film (5) VLPA/I&S** *Light* Critical examination of topics in the philosophy of film including the nature of film, the distinction between fiction and non-fiction films, whether films have "authors," how films engage our emotions, and whether and how films can present effective arguments on important moral, political, or social questions. Prerequisite: one philosophy course.

**PHIL 450 Epistemology (5) I&S** *Baker, BonJour, 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) I&S/VLPA** Current theories of meaning, reference,

predication, and related concepts. Offered: jointly with LING 476.

**PHIL 456 Metaphysics (5) I&S** *Baker* Examination of such topics as freedom of the will, the nature of persons and personal identity, the existence of God, time, necessary truth, and universals. The emphases vary from year to year.

**PHIL 459 Philosophy of Medicine (5) I&S** *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 MHE 440.

**PHIL 460 Philosophy of Science (5) I&S/NW** *Hankinson Nelson, 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. Recommended: PHIL 120 or PHIL 160; prerequisite: one PHIL course.

**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** *BonJour*  
 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** 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** *Baker*  
 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** *Hankinson Nelson, Talbott* 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** *Clatterbaugh, 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** *Fine, Keyt* An introduction to the concepts and

methods of metatheory and their application to the sentential calculus.

**PHIL 471 Advanced Logic (5) I&S/NW** *Keyt* 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** *Keyt, Townsend* 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** *Fine* 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) I&S/NW/VLPA** *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** *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. Recommended: college-level course in biological science; prerequisite: one PHIL course.

**PHIL 482 Philosophy of Physical Science (5, max. 10) I&S/NW** *Fine, 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) I&S/NW** 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** *BonJour, Talbott* Intensive study of a particular topic or area in epistemology. Prerequisite: either PHIL 350 or PHIL 450.

**PHIL 498 Undergraduate Internship (1-5, max. 10)** *Baker, Clatterbaugh* 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. 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)** *Baker* 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. Offered: AW.

**PHIL 510 Seminar in Social Philosophy (5, max. 20)** *Talbott*.

**PHIL 514 Seminar in Legal Philosophy (5, max. 20)** *R. Moore*

**PHIL 520 Seminar in Ancient Philosophy (5, max. 20)** *Cohen, Keyt, Roberts, Weller*

**PHIL 522 Seminar in Modern Philosophy (5, max. 20)** *Clatterbaugh, Weller*

**PHIL 525 Seminar in Nineteenth-Century Philosophy (5, max. 20)** *Baker*

**PHIL 526 Seminar in Recent Philosophy (5, max. 20)** *Keyt*

**PHIL 538 Philosophy of Human Rights (5, max. 20)** *Talbott*

**PHIL 540 Seminar in Ethics (5, max. 20)** *Roberts, Smith, Talbott*

**PHIL 545 Seminar in the Philosophy of Art (5, max. 20)** *Moore*

**PHIL 550 Seminar in Epistemology (5, max. 20)** *BonJour, Talbott*

**PHIL 553 Seminar in Philosophy of Language (5, max. 20)**

**PHIL 556 Seminar in Metaphysics (5, max. 20)** *Baker, BonJour*

**PHIL 560 Seminar in the Philosophy of Science (5, max. 20)** *Fine, Woody*

**PHIL 563 Seminar in the Philosophy of Mind (5, max. 20)** *BonJour*

**PHIL 565 Seminar in the Philosophy of History (5, max. 20)**

**PHIL 566 Seminar in Philosophy of the Social Sciences (5, max. 20)**

**PHIL 567 Seminar in the Philosophy of Religion (5, max. 20)**

**PHIL 570 Seminar in Logic (5, max. 20)** *Keyt* Prerequisite: PHIL 470.

**PHIL 574 Meta-archaeology: Philosophy and Archaeology (4)** *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 Text 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)** *Baker*

**PHIL 600 Independent Study or Research (\*)** Prerequisite: permission of graduate program coordinator.

**PHIL 800 Doctoral Dissertation (\*)**

## Values

**VALUES 495 Ethics in Practice (2)** *Blake, Gardiner, Goering, Light, Roberts* Culmination of the Values in Society minor. Synthesizes training in the 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.

**VALUES 511 Ethics Matters: An Exploration of Some Moral Qualities (5)** *Goering, Roberts* 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)** *Gardiner, Roberts* 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)** *Gardiner, Goering, Roberts* Collaborative research workshop. Capstone course for the Values in Society graduate certificate program. Prerequisite: VALUES 511 and VALUES 512. Offered: Sp.

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## Physics

**PHYS 101 Physical Science by Inquiry I (5-)** **NW, QSR** Laboratory-based development of concepts and reasoning skills. Helps prepare preservice teachers to teach science by inquiry. Liberal arts students gain experience in the scientific process. Useful for students with weak science preparation before taking standard science courses. Forms foundation for scientific literacy. Offered: AW.

**PHYS 102 Physical Science by Inquiry I (5-)** **NW, QSR** Laboratory-based development of concepts and reasoning skills. Helps prepare preservice teachers to teach science by inquiry. Liberal arts students gain experience in the scientific process. Useful for students with weak science preparation before taking standard science courses. Forms foundation for scientific literacy. Prerequisite: PHYS 101. Offered: Sp.

**PHYS 103 Physical Science by Inquiry I (5)** **NW, QSR** See PHYS 101-102. Prerequisite: PHYS 102.

**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: AS.

Credit is not given for both 114 and 121.

**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 114 and 121. Recommended: working knowledge of algebra and trigonometry; one year high school physics; concurrent registration in PHYS 117. Offered: AWSpS.

Credit is not given for both 115 and 122.

**PHYS 115 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. Heat and electromagnetism. Credit is not given for both 115 and 122. Prerequisite: PHYS 114 or 121; recommended: concurrent registration in PHYS 118. Offered: AWSpS.

Credit is not given for both 116 and 123.

**PHYS 116 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. Sound, light, and modern physics. Credit is not given for both 116 and 123. Prerequisite: PHYS 115 or 122; recommended: concurrent registration in PHYS 119. Offered: AWSpS.

**PHYS 117 General Physics Laboratory (1) NW** Mechanics laboratory. Credit/no credit only. Credit is not given for both 117 and the 121 lab. Prerequisite: PHYS 114 which may be taken concurrently. Offered: AWSpS.

**PHYS 118 General Physics Laboratory (1) NW** Heat and electromagnetism laboratory. Credit/no credit only. Credit is not given for both 118 and the 122 lab. Prerequisite: PHYS 115 which may be taken concurrently. Offered: AWSpS.

**PHYS 119 General Physics Laboratory (1) NW** Sound, light, and modern physics laboratory. Credit/no credit only. Credit is not given for both 119 and the 123 lab. Prerequisite: PHYS 116 which may be taken concurrently. Offered: AWSpS.

The courses 121, 122, 123, 224, 225 plus appropriate laboratory together make up the general physics sequence for science and engineering students.

**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: MATH 124, MATH 127, MATH 134, or MATH 145, any of which may be taken concurrently; recommended: one year high school physics. Offered: AWSpS.

**PHYS 122 Electromagnetism and Oscillatory Motion (5) NW** Basic principles of electromagnetism, the mechanics of oscillatory motion, 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: MATH 125, MATH 128, MATH 134, or MATH 146, any of which may be taken concurrently; PHYS 121. Offered: AWSpS.

**PHYS 123 Waves (5) NW** Electromagnetic waves, 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: MATH 126, MATH 129, or MATH 134, any of which may be taken concurrently; PHYS 122. Offered: AWSpS.

**PHYS 204 Radiation: Nature, Technology, and Society (3) NW** Introduction to the science and implications of nuclear physics and radiation for non-science students. Emphasis on qualitative rather than quantitative understanding. Physics of the nucleus, types of radiation, technological uses, and human exposure. Critical evaluation of current issues, including food irradiation, depleted uranium, nuclear power, and nuclear weapons.

**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. Background for teaching physics and physical science as a process of inquiry. Prerequisite: either PHYS 103, 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. Background for teaching physics and physical 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. Background for teaching physics and physical 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 215 A Way of Knowing (5) NW, QSR** *Boynnton* Insight to the character and culture of scientific inquiry through a historical examination of how we have interpreted our experience of the phenomena of gravitation. Specifically for non-science majors. Quantitative reasoning and critical thinking required, but no college-level mathematics.

**PHYS 216 Science and Society (5) NW, QSR** *Chaloupka* of the relationship between science, technology and society. Nuclear physics and molecular biology serves as concrete examples of fields with significant impact on society. Offered jointly with SIS 216; Sp.

**PHYS 224 Thermal Physics (3) NW** Introduction to heat, thermodynamics, elementary kinetic theory, and the physics of continuous media. Prerequisite: MATH 126, MATH 129, or MATH 136, any of which may be taken concurrently; PHYS 122 which may be taken concurrently. Offered: AWSpS.

**PHYS 225 Modern Physics (3) NW** Special theory of relativity; phenomena of modern physics with emphasis on photons, electrons, and atoms; introduction to quantum physics. Prerequisite: 2.0 in PHYS 123 which may be taken concurrently. Offered: WSpS.

**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, MATH 136, MATH 308, or MATH 318; 2.0 in PHYS 123. Offered: AS.

**PHYS 228 Elementary Mathematical Physics (3) 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: PHYS 227. Offered: AW.

**PHYS 229 Mathematical Methods and Classical Mechanics (3) NW** Mathematical methods applied to classical mechanics, including Lagrangian mechanics. Prerequisite: 2.0 in PHYS 228. Offered: Sp.

**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: 2.0 in PHYS 123. Offered: A.

**PHYS 232 Introduction to Computational Physics (3)** 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 311 Relativity and Gravitation (3) NW** Special theory of relativity, Newtonian gravity, and relativistic effects of gravitation, including black holes, gravitational waves, and applications to cosmology. Prerequisite: 2.0 in PHYS 123.

**PHYS 315 Applications of Modern Physics (3)** Foundations of quantum physics, including Schrodinger equation, tunneling, atoms, spin, and applications. These include semiconductor devices, lasers, magnetic resonance imaging (MRI), quantum cryptography, atomic microscopes. Prerequisite: minimum grade of 2.0 in PHYS 224, minimum grade of 2.0 in PHYS 225, minimum grade of 2.0 in PHYS 227 which may be taken concurrently.

**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 electro-



magnetism; physical optics. Prerequisite: either MATH 324 which may be taken concurrently, MATH 334, MATH 335, or MATH 336; minimum grade of 2.0 in PHYS 228. Offered: AW.

**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: WSp.

**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.

**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: either MATH 324, MATH 334, MATH 335, or MATH 336; minimum grade of 2.0 in PHYS 225; minimum grade of 2.0 in PHYS 228. Offered: ASu.

**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 physics, 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. 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: Sp.

**PHYS 334 Electric Circuits Laboratory (3) NW**

Basic elements of DC, AC, and transient circuits; electronic devices; electrical measurements. Prerequisite: either MATH 126, MATH 129, or MATH 136; 2.0 in PHYS 123. Offered: WSpS.

**PHYS 335 Electric Circuits Laboratory (3) NW**

Electrical measurements, data management, digital electronics of microprocessor systems. Building a microprocessor application. Prerequisite: PHYS 334. Offered: SpS.

**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: 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. Credit/no credit only. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS 407, PHYS 408, or PHYS 409. 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. Credit/no credit only. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS 407, PHYS 408, or PHYS 409. 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. Credit/no credit only. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS 407, PHYS 408, or PHYS 409. Offered: A.

**PHYS 421 Atomic and Molecular Physics (3)**

**NW** Survey of the principal phenomena of atomic and molecular physics. Prerequisite: PHYS 323; PHYS 325. Offered: W.

**PHYS 422 Nuclear and Elementary-Particle Physics (3) NW**

Survey of the principal phenomena of nuclear and elementary-particle physics. Prerequisite: PHYS 323; PHYS 325. Offered: Sp.

**PHYS 423 Solid-State Physics (3) NW**

Survey of the principal phenomena of solid-state physics. Prerequisite: a minimum grade of 2.0 in either PHYS 315 or PHYS 324. Offered: A.

**PHYS 424 Mathematical Physics (3) NW**

Advanced classical mechanics. Prerequisite: PHYS 323; PHYS 325. Offered: A.

**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 123; PHYS 224; PHYS 227.

**PHYS 431 Modern Physics Laboratory (3) NW**

Measurement in modern atomic, molecular, and solid-state physics. Recommended: 30 credits in physics. Offered: A.

**PHYS 432 Modern Physics Laboratory (3) NW**

Measurement in modern atomic, molecular, and solid-state physics. Recommended: 30 credits in physics. Offered: W.

**PHYS 433 Modern Physics Laboratory (3) NW**

Techniques in nuclear and elementary-particle research. Offered: Sp.

**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. 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: W.

**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 WOMEN 485.

**PHYS 460 Water in the Environment (3) NW**

*Baker, Raymond, Waddington, Warren* 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 MATH 124, MATH 126, MATH 129, or MATH 136; PHYS 123. Offered: jointly with ATM S 460/ESS 424. Offered: A.

**PHYS 485 Senior Honors Seminar (1, max. 3)**  
NW Offered: A.

**PHYS 486 Senior Honors Seminar (1, max. 3)**  
NW Offered: W.

**PHYS 487 Senior Honors Seminar (1, max. 3)**  
NW Offered: Sp.

**PHYS 491 Independent Research (1-3, max. 3)**  
Supervised, independent study requiring written and oral presentations summarizing work accomplished. Recommended: 12 credits in physics above 200 level. Offered: A.

**PHYS 492 Independent Research (1-3, max. 3)**  
Supervised, independent study requiring written and oral presentations summarizing work accomplished. Recommended: 12 credits in physics above 200 level. Offered: W.

**PHYS 493 Independent Research (1-3, max. 3)**  
Supervised, independent study requiring written and oral presentations summarizing work accomplished. Recommended: 12 credits in physics above 200 level. 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 presentation 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 presentation 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 presentation summarizing work accomplished are required. Recommended: 12 credits in physics above 200 level. Offered: Sp.

**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: A.

**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: Sp.

**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 (4)** 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 (3)** 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: W.

**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: A.

**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: W.

**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: A.

**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. Credit/no credit only. Prerequisite: introductory quantum mechanics.

**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 electroweak interactions, including an introduction to Feynman diagrams. Prerequisite: PHYS 519; recommended: PHYS 520 and PHYS 521, 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 and 521, 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) include 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 on a 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 on a Credit/no credit only. Prerequisite: PHYS 522.

**PHYS 572 Modern Quantum Field Theory (3)** Advanced topics in quantum field theory. Credit/no credit only. Prerequisite: PHYS 570, PHYS 571.

**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. Credit/no credit only. Prerequisite: permission of supervisor. Offered: AWSpS.

**PHYS 800 Doctoral Dissertation (\*)** Credit/no credit only. Prerequisite: permission of Supervisory Committee chairperson. Offered: AWSpS.

# Political Science

## Political Science

### **POL S 101 Introduction to Politics (5) I&S**

Political problems that affect our lives and shape the world around us. Offered: AWSpS.

### **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 a few 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: WSp.

### **POL S 205 Political Science as a Social Science (5) I&S, QSR**

Methodological perspectives of the various 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. Offered: W.

### **POL S 212 Philosophy of Feminism (5) I&S**

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/WOMEN 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 SISEA 213.

### **POL S 246 African American Politics (5) I&S**

*P. Rivers* 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 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 HIST 249/SOC 266

### **POL S 270 Introduction to Political Economy (5) I&S**

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 Introduction to American Political Culture (5) I&S/VLPA**

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 299 Special Topics in Political Science (2-5, max. 10) I&S**

Examines a different subject or problem of current interest with the discipline.

### **POL S 301 Special Topics in Political Theory (5, max. 10) I&S**

Selected contemporary political issues. Political principles as reflected in concrete political problems. Topics might include: women's rights, civil disobedience, national health care, affirmative action, environmental protection, privacy, human rights, and redistribution of property. Recommended: POL S 101, POL S 201, POL S 202, POL S 203, POL S 204, or POL S 205.

### **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 news writing, 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)**

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**

*Gill* Explores the intersection of religion and

politics in various regions of the world, including the U.S., Europe, Middle East, Latin America, and other regions. Presents a historical perspective on religion alongside contemporary issues in religion, politics, and church-state relations. Offered: jointly with RELIG 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, from Thales through Aquinas.

### **POL S 309 The Western Tradition of Political Thought, Pre-Modern (5) I&S**

Continuation of 308, treating materials from the fifteenth through eighteenth centuries, Machiavelli through Rousseau.

### **POL S 310 The Western Tradition of Political Thought, Modern (5) I&S**

Continuation of 308 and 309, focusing on material from the eighteenth through twentieth centuries, from Rousseau through Lenin.

### **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 313 Women in Politics (5) I&S**

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 WOMEN 313.

### **POL S 315 Black Identities and Political Power (5) I&S**

*P. Rivers* Related 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**

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**

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**

Major thinkers and themes in American political and cultural development from Puritan origins to the Civil War.

**POL S 319 American Political Thought II (5) I&S** Major thinkers and themes in American political and cultural development from the Civil War to the present.

**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** 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 SISLA 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; the role of the superpowers.

**POL S 326 Scandinavia in World Affairs (5) I&S** Introduction to the foreign relations of Scandinavia with a focus on Nordic security, international economic pressures, and global conflict resolution. Survey of the national settings for international involvements and highlights the dilemmas for industrial societies exposed to the pressure of interdependence. Offered: jointly with SCAND 326.

**POL S 327 Women's Rights as Human Rights (5) I&S** 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 337 Collective Violence and the State (5) I&S** Comparative study of collective violence in modern states with emphasis on riots and pogroms. Readings include case materials drawn from Russian pogroms of the nineteenth and twentieth centuries, Hindu-Muslim riots in modern India, and race riots in the United States and Great Britain. Offered: jointly with SIS 337.

**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 Ceylon. Offered: jointly with SISLA 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 SISCA 341.

**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 SISLA 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 SISSE 343.

**POL S 346 Governments of Western Europe (5) I&S** Modern government and politics of Great Britain, France, Germany, and Italy.

**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** 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** The American presidency; its evolution, its occupants, and its place within the American system. Topics include presidential character, war, elections, Watergate, the economy, and the Constitution.

**POL S 356 Society and Politics (5) I&S** Focus on the 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 360 Introduction to United States Constitutional Law (5) I&S** 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** 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. 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** 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. Offered: jointly with LSJ 367.

**POL S 368 The Politics and Law of International Human Rights (5) I&S** Studies the international human rights movement in its legal and political context. Focus on institutions which influence, enable, and constrain the international promotion of human rights. Offered: jointly with LSJ 320.

**POL S 382 State Government (5) I&S** 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** 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 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.

**POL S 401 Advanced Special Topics 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 403 Advanced Special Topics 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 American Politics Seminar (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** 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, technological change, and development of multinational corporations. 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. Prerequisite: POL S 201.

**POL S 413 Contemporary Political Theory (5) I&S** Analysis of political theorists, exploring contemporary theories of humanity and society that form the basis for differing political ideas.

**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 418 Japanese Trade Politics (5) I&S** 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. Offered: jointly with SISEA 486.

**POL S 419 United States-China Relations (5) I&S** 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 SISEA 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 423 International Law (5) I&S** Origin and present status of efforts to make rules of conduct for sovereign states; simulation of a treaty-drafting conference, with students playing roles of legal advisers to foreign governments.

**POL S 424 International Relations of Japan (5) I&S** 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. Offered: jointly with SISEA 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 SIS 426.

**POL S 427 International Political Economy (5) I&S** Examines major theoretical problems, substantive issues, and school 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** Focus on political parties in Japan. Combines theoretical readings on political parties with intensive study of Japanese political parties. Recommended: either SISEA 242, SISEA 423, SISEA 440, or SISEA 442. Offered: jointly with SISEA 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** 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 SIS 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 SISA 434.

**POL S 435 Japanese Government and Politics (5) I&S** Government and politics of Japan with emphasis on the period since 1945. Offered: jointly with SISEA 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 SIS 436.

**POL S 437 Politics in Scandinavia (5) I&S** 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 multiparty 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 SISEA 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** Post-1949 government and politics, with emphasis on problems of political change in modern China. Offered: jointly with SISEA 449.

**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 SISRE 445.

**POL S 446 Peasants in Politics (5) I&S** Interdisciplinary study of peasants, with special attention to questions of rural transformation. Peasant involvement in an increasingly interdependent world. Rebellion and revolution, impact of the international market, agricultural development. Offered: jointly with SIS 444.

**POL S 447 Comparative Politics Seminar (5, max. 10) I&S** Selected comparative political problems, political 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 450 State-Society Relations in Third World Countries (5) I&S** 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 SIS 456.

**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 HIST 457.

**POL S 460 Political Economy of the European Union (5) I&S** 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** Introductory public law course that examines the interplay of constitutional law and American politics with particular attention to the role of the Supreme Court in the formulation and implementation of public policy in such matters as criminal-law enforcement, civil rights political expression, and economic regulation.

**POL S 463 Political Analysis of United States Social Programs (5) I&S** Social problems in the United States and policy responses. National policies concerning poverty, health, welfare, manpower, and the Social Security system. Examination of subgovernments that cluster around each policy area.

**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 466 Feminist Legal Studies: Theory and Practice (5) I&S** Examines feminist theoretical analyses of the law. Engages in current debate on the study of critical race, gender, and class theory. Includes: women in prison, public assistance, the sex industry, women and health care, and immigration law. Recommended: WOMEN 200 or WOMEN 310. Offered: jointly with LSJ 466/WOMEN 410.

**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/SIS 419.

**POL S 469 Law, Development, and Transition in East Asia (5) I&S** Examines the role of law and the courts in economic and political change in the developing world. Topics include variations in legal traditions and institutions, economic development, property rights, dispute resolution, democratization, and human rights. Empirical materials focus on East Asia. Offered: jointly with LSJ 469/SISEA 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 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** 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: 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: POL S 101 or POL S 202; POL S 481.

**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 SISRE 479.

**POL S 481 Big City Politics (5) I&S** Contemporary big city politics, focusing on Seattle and the largest twenty-five 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** Students individually arrange for independent study of selected topics under the direction of a faculty member. Research paper is student's senior thesis. Students meet periodically as a group to discuss research in progress. Recommended: 15 credits POL S 398.

**POL S 489 Honors Senior Thesis (-5) I&S** Students individually arrange for independent study of selected topics under the direction of a faculty member. Research paper is student's senior thesis. Students meet periodically as a group to discuss research in progress. Recommended: 15 credits POL S 398.

**POL S 490 Foundations of Political Analysis (5) I&S** Fundamental issues pertaining to research in political science: "logics of inquiry," problems of concept formation, and development of research methods. Positivist, postempiricist, and other arguments about the nature of scientific knowledge.

**POL S 495 Study Abroad-Political Science (3-5, max. 15) I&S** For participants in the study abroad program. Specific course content determined by assigned faculty member and announced in study abroad bulletin. Politics, political culture, and institutions related to their national setting.

**POL S 496 Undergraduate Internship (5, max. 15)** Students serving in approved internships.

**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. Credit/no credit only. Recommended: POL S 202; 45 UW credits.

**POL S 499 Individual Conference and Research (2-5, max. 20)** Intensive study with faculty supervision. No more than one registration in 499 under same instructor.

**POL S 500 Political Research Design and Analysis (5) I&S** 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) I&S** Third methods course in political research. 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) I&S** 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) Quinn, Ward** 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 505 Comparative Politics (5)** Core course. Modern theories, approaches, and methods in the study of comparative politics.

**POL S 509 Political Theory—Core (5, max. 10)** Introduction to 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) Adolph, Wardy** 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/CS&SS 501; POL S/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. Prerequisite: permission of instructor.

**POL S 521 International Relations I: Theory and Method (5)** Part one of the core course in the field of international relations. Reviews contemporary theory, research, and methodology in the study of world politics.

**POL S 522 International Political Economy (5)** Theories of international political economy. Focuses on the emergence and development of the modern world system, the transition 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 523 World System Analysis (4)** Evolution of the world system. Historical-structural approaches to world politics: neo-realism; long cycles; world economy. Prerequisite: POL S 521.

**POL S 524 International Security (5)** *Kier, Mercer* 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 — Policy (5)** 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 ()** *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 SISEA 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 528 Advanced International Relations Theory (5)** Covers advanced works in international relations theory. e.g., realism, neorealism, game theory, and theories of cooperation and conflict. Includes some classic works (Thucydides, Hobbes, E. H. Carr) to show continuity of debates in the present. Modern theories of war, conflict, cooperation, and international institutions also explored. Prerequisite: POL S 521.

**POL S 529 Problems of American Foreign Policy (3)** Critical analysis of the historical foundations and contemporary problems of foreign-policy making, with attention given to selected foreign-policy decisions. Prerequisite: POL S 321 or permission of instructor.

**POL S 530 Transatlantic Relations: The United States and Europe in World Politics (5)** 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)** Examination of key approaches, interpretations, and secondary literature in the study of contemporary Chinese politics. Prerequisite: permission of instructor. Offered: jointly with SISEA 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 SISEA 533.

**POL S 534 International Affairs (3)** Provides a broad understanding of international issues and United States policy. Students explore US 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/ SIS 534.

**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 SISEA 535.

**POL S 536 Ethnic Politics and Nationality Formation (3)** Seminar on analysis and theoretical understanding of two interrelated processes: ethnic group persistence and change over time; and the transformation of ethnic groups into politically self-conscious and influential nationalities. The readings and discussions deal with these two processes in the contexts of both developing societies and advanced industrial societies.

**POL S 537 Approaches to East European Politics (3-5)** Selected concepts and methodolo-

gies 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 SISRE 504; alternate years.

**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)** 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 SISEA 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. Prerequisite: permission of instructor.

**POL S 542 Seminar: State and Society (5)** 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 SIS 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 affect 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)** Core course in American government and politics. Systematic survey of the literature; focuses on national politics. Prerequisite: undergraduate courses in American government and 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)** 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)** *Price* 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) VLPA I&S *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 561 Law and Politics (5)** 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 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 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 566 Comparative Law and Politics (5)** 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 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 Administrative and Executive Leadership (3)** 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.

**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 concerning, 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 health care and politics has much to do with why our health-care system works as it does. Investigates how social science helps us understand health issues.

**POL S 579 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 SISRE 579.

**POL S 582 Institutional Analysis (5)** Social change and property rights theory. Exploration of long-term secular change through works whose approaches derive from neoclassical 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 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: graduate student standing and 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. Prerequisite: POL S 406, POL S 416, ECON 400, and permission of instructor.

**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 599 Independent Writing II (3-5)** Supervised research and writing for graduate students completing the Ph.C. essay of distinction.

**POL S 600 Independent Study or Research (\*)**

**POL S 800 Doctoral Dissertation (\*)**

## Law, Societies, and Justice

**LSJ 299 Special Topics in Law, Societies, and Justice (2-5, max. 10) I&S** Examines a different subject or problem of current interest within the discipline.

**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** 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** 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 327 Women's Rights as Human Rights (5) I&S** 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 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: LSJ 363 or one course in either AES or WOMEN. Offered: jointly with AES 330.

**LSJ 331 The Politics of Race and Ethnicity in the United States (5) I&S** 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: Introduction to Disability Studies (5) I&S** Introduction to the field of disability studies. Focuses on theoretical questions of how society predominantly understands disability and the social justice consequences. Examines biological, social, cultural, political, and economic determinants in social creation/construction (framing) of disability and effects on those claiming and/or labeled as disabled. Offered: jointly with CHID 332.

**LSJ 355 Introduction to the American Court System (5) I&S** Philosophical and structural bases of the American court system; roles of attorneys, judges and the public in that system. Some focus also on current challenges to the courts posed by court congestion and alternative dispute resolution, and on future prospects for the courts.

**LSJ 360 Introduction to United States Constitutional Law (5) I&S** 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** 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 362 Law and Justice: An Introduction to Social Theory (5) I&S** Godoy Provides conceptual tools for understanding law and its role in society by acquainting students with major currents of social theory. Topics include liberalism, Marxism, critical feminist theory, and critical race theory. Offered: jointly with SIS 362.

**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. Offered: jointly with POL S 363.

**LSJ 367 Comparative Law and Courts (5) I&S** 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. Offered: jointly with POL S 367.

**LSJ 375 Crime, Politics, and Justice (5) I&S** 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** *Beckett* 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 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** *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 379 Prisons in Anthropological Perspective (5) I&S** *Rhodes* An introduction to prisons from an anthropological point of view, with focus on prisons as total institutions. Topics include the experiences of prisoners and staff, prison history, issues of race and gender associated with incarceration, and the imprisonment of the mentally ill. Offered: jointly with ANTH 379.

**LSJ 380 Contemporary Issues in Law, Societies, and Justice (5, max. 10) I&S** Theoretical, empirical, and comparative aspects of such topics as human rights, socio-legal concepts, justice, and legal policy. Recommended: POL S 101, POL S 202, POL S 204, or SOC 110.

**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)** Participant observation in a public or private agency relevant to the study of law, justice, human rights, or court systems.

**LSJ 410 Human Rights in Latin America (5) I&S** Human rights in Latin America, focusing on twentieth century dictatorships and current regional events and their implications for human rights. Cannot be taken for credit if GIS 174 or SISLA 120 previously taken. Offered: jointly with SIS 470. Prerequisite: either ANTH 323, LSJ 320, LSJ 321, POL S 368, PHIL 338, SIS 200, or SIS 201.

**LSJ 420 The Politics of Rights (5) 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 identify 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** 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** 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 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 433 Disability Law, Policy, and the Community (5)** Seminar addressing legal rights of disabled people, history of disability policy in the United States, and the role of community activism and other forces in policy development and systems change. Introduction to the existing social service systems that affect disabled people. Recommended: LSJ 332. Offered: jointly with CHID 433.

**LSJ 434 Civil and Human Rights Law for Disabled People (5) I&S** Designed for students interested in expanding their 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 332. Offered: jointly with CHID 434.

**LSJ 440 Criminal Law and Procedure (5) I&S** Substantive and procedural criminal law for lay persons; analysis of the philosophy behind the law, with an emphasis on due process in adult and juvenile courts; case-analysis teaching technique.

**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 466 Feminist Legal Studies: Theory and Practice (5) I&S** Examines feminist theoretical analyses of the law. Engages in current debate on the study of critical race, gender, and class theory. Includes: women in prison, public assistance, the sex industry, women and health care, and immigration law. Recommended: WOMEN 200 or WOMEN 310. Offered: jointly with POL S 466/WOMEN 410.

**LSJ 469 Law, Development, and Transition in East Asia (5) I&S** Examines the role of law and the courts in economic and political change in the developing world. Topics include variations in legal traditions and institutions, economic development, property rights, dispute resolution, democratization, and human rights. Empirical materials focus on East Asia. Offered: jointly with POL S 469/SISEA 469.

**LSJ 470 Evaluation Research in Criminal Justice (5) I&S** Social science research methods relevant to criminal justice evaluation and operations research. Ethical considerations, formulation of goals and objectives, problem definition and research design, sources and methods of data collection, descriptive statistics, data interpretation, and utilizations of research results.

**LSJ 473 Corrections (5) I&S** Analyzes research on diversionary methods, treatment of convicted offenders. Emphasis on program evaluation. Community treatment, fines, restitution, probation, parole, halfway houses, other alternatives to incarceration; correctional institutions. Organization of state, federal systems. Problems of administration. Subsidies, governmental control. Planning, public participation. Recommended: SOC 371 and SOC 372. Offered: jointly with SOC 473.

**LSJ 474 Geography and the Law (5) I&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 The Police (5) I&S** Conceptual and empirical issues concerning multifaceted and changing roles of the American police.

**LSJ 485 Introduction to Organized and White Collar Crime (3) I&S** Overview of organized and white collar crime. Exposure to definitional problems, distinctive characteristics, potential areas of overlap, and barriers to more effective social control. Addresses impediments resulting from inadequate conceptualizations, legal and operational difficulties in pursuing offenders, and effects of corruption and discretion in the justice system.

**LSJ 488 Honors Thesis (5-) I&S** First of a two-course hyphenated sequence. To be completed with LSJ 489.

**LSJ 489 Honors Thesis (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 Law, Societies, and Justice (1-5, max. 15) I&S** Examination of socio-legal topics. Content varies.

**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 and Society Studies (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.

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## Psychology

**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: AWWSpS.

**PSYCH 200 Comparative Animal Behavior (5) NW Barash, Beecher, O'Donnell** 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 Human 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, Mizumori, 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 Marlatt, 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 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 207 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 psychological opportunities and obstacles to the establishment of a peaceful society.

**PSYCH 209 Fundamentals of Psychological Research (5) Kerr, Leu, 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: 2.0 in PSYCH 101. Offered: AWSpS.

**PSYCH 210 Human Sexuality (5) I&S McDermott** Broad survey of biological, psychological, and social determinants of human sexuality and sexual behavior. Topics include cultural diversity, sexual development (physical and psychological), sexual health, reproduction (pregnancy, contraception, abortion), development of sex, gender and orientation, adult sexual bonding, 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 Barrett** 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 U. S. and selected international topics.

**PSYCH 257 Psychology of Gender (5) I&S 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 WOMEN 200. Offered: jointly with WOMEN 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 psychological underpinnings of deterrence, relations between nations, and the personal and social forces operative in the arms race and peace movements.

**PSYCH 300 Animal Behavior (5) NW Barash, Beecher, O'Donnell, 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 101, BIOL 118, BIOL 161, BIOL 180, or BIOL 203.

**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: PSYCH 101; PSYCH 202; PSYCH 209; either PSYCH 315 or PSYCH 317.

**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: 2.0 in PSYCH 202; 2.0 in PSYCH 209.

**PSYCH 306 Developmental Psychology (5) I&S Barrett, 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: 2.0 in PSYCH 202; 2.0 in PSYCH 209.

**PSYCH 315 Understanding Statistics in Psychology (5) QSR 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: 2.0 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, G. 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: 2.5 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, G. 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: 2.0 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: either PSYCH 202 or PSYCH 222.

**PSYCH 330 Laboratory in Animal Behavior (5) NW Brenowitz** Experience with a variety of animal species and experimental procedures and instrumentation. Prerequisite: either 2.0 in PSYCH 213, 2.0 in PSYCH 217, 2.0 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: 2.0 in PSYCH 209; either 2.0 in PSYCH 213, 2.0 in PSYCH 217, 2.0 in PSYCH 315, or 2.0 in PSYCH 317.

**PSYCH 332 Laboratory in Animal Learning (5) NW Buck** Selected aspects of animal learning emphasizing behavioral experiments with the rat. Prerequisite: either 2.0 in PSYCH 213, 2.0 in PSYCH 217, 2.0 in PSYCH 315, or 2.0 in PSYCH 317.

**PSYCH 333 Sensory and Perceptual Processes (5) NW Boynton, 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: 2.0 in PSYCH 202; 2.0 in PSYCH 209.

**PSYCH 335 Human Factors Psychology (4) I&S Kerr** Consideration of human performance factors in the design of tools/equipment, tasks/jobs, and work and living environments. Emphasis on the importance of human perception, memory, attention, and motor control for understanding ways to optimize the relationship between people and technology. Prerequisite: 2.0 in PSYCH 202; 2.0 in PSYCH 209.

**PSYCH 345 Social Psychology (5) I&S J.D. Brown, Kaiser** The scientific study of how people's thought, feeling, and action influence, and are influenced by, other people. Prerequisite: 2.0 in either PSYCH 202 or PSYCH 209.

**PSYCH 347 Psychology of Language I (5) I&S/VLPA 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 2.0 in PSYCH 209, 2.0 in LING 200, or LING 201. Offered: jointly with LING 347.

**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 350 required for all junior honors and distinction candidates in conjunction with 498 and 499. Offered: AWP.

**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: 2.0 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. Recommended: PSYCH/ WOMEN 257. Offered: jointly with WOMEN 357.

**PSYCH 361 Laboratory in Social Psychology (5) I&S** Cheryan Methodology of laboratory and field research on social behavior; data analysis and report writing; group research projects. Prerequisite: 2.0 in PSYCH 209; a 2.0 in either PSYCH 315, or PSYCH 317; 2.0 in either PSYCH 245 or PSYCH 345.

**PSYCH 361 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: 2.0 in PSYCH 209; a 2.0 in either PSYCH 315, or PSYCH 317; 2.0 in either PSYCH 245 or PSYCH 345.

**PSYCH 380 Cross-Cultural Competence (4) I&S** Barrett 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 University of Washington Foreign Study Program.

**PSYCH 400 Learning (5) I&S/NW** Experimental research and basic theories primarily in animal learning. Prerequisite: 2.0 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: 2.0 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: 2.0 in PSYCH 202.

**PSYCH 404 Psychobiology of Motivation (5) I&S/NW** Physiological mechanisms underlying thirst, salt appetite, hunger, reproduction, drug addiction, and fear. Evolutionary and learning processes that influence motivation. Prerequisite: 2.0 in PSYCH 202.

**PSYCH 406 Insect Behavior (4) NW** O'Donnell Explores complexity and diversity of behavior in insects and related invertebrate animals. Overview of important lineages of insects and major behavioral traits. Examines how insect biology both constrains behavior and provides evolutionary opportunities. Prerequisite: either 2.0 in BIOL 180, 3.5 in PSYCH 200, or 2.0 in PSYCH 300. Offered: jointly with BIOL 406.

**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: 2.0 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 2.0 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** Rohwer Biological bases of social behavior, emphasizing evolution as a paradigm. Emphasizes how to think like 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 3.5 in PSYCH 200, 2.0 in PSYCH 300, 2.0 in BIOL 162, or 2.0 in BIOL 180. Offered: jointly with BIOL 409.

**PSYCH 410 Child and Adolescent Behavior Disorders (5) I&S** Barrett 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: 2.0 in PSYCH 305; either 2.0 in PSYCH 306 or 2.0 in PSYCH 202, 2.0 in both 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: 2.0 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: 2.0 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 2.0 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: 2.0 in either PSYCH 206 or PSYCH 306; 2.0 in either PSYCH 315 or PSYCH 317.

**PSYCH 416 Animal Communication (5) NW** Beecher, Brenowitz, O'Donnell, Sisneros Evolution and mechanisms of animal communication and related processes of perception, thinking, and social behavior. Prerequisite: either 2.0 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** Lockard 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** Lockard Social behavior, ecology, and group structure of monkeys and apes from an evolutionary, sociobiological, and anthropological perspective. Prerequisite: either 3.5 in PSYCH 200, 2.0 in PSYCH 300, 2.0 in BIO A 201, 2.0 in BIOL 180, or 2.0 in both BIOL 202 and BIOL 203.

**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 2.0 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. 421 recommended but not required to follow 421. Prerequisite: 2.0 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: 2.0 in either PSYCH 202 or PSYCH 333.

**PSYCH 424 Vision and Its Physiological Basis (5) NW** Behavioral neurobiology of human vision: color vision, acuity and spatial vision, light and dark adaptation, visual development. Correlation of visual functioning with known optical, biochemical, physiological, and anatomical substrates. Prerequisite: 2.0 in either PSYCH 333, NBIO 302, or PHIL 160. Offered: jointly with PBIO 424.

**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: 2.0 in either PSYCH 222, 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** *Kerr* Current theory and research in human motor performance and skill acquisition. Prerequisite: 2.0 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: 2.0 in either PSYCH 202, PSYCH 333, PSYCH 421, PSYCH 422, or PSYCH 423.

**PSYCH 432 Visual Perception (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 3-D vision; color, form, motion, and object perception; and visual illusions. Prerequisite: 2.0 in either PSYCH 202, 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: 2.0 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: 2.0 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: 2.0 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: 2.0 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: 2.0 in PSYCH 345.

**PSYCH 445 Theories of Social Psychology (5) I&S** *J.D. 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** *R. 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: 2.0 in PSYCH 303; 2.0 in PSYCH 315; 2.0 in PSYCH 317.

**PSYCH 447 Psychology of Language II (4) I&S/VLPA** *Osterhout* Psychological principles applied to linguistic development and organization; language in both its stimulus and response aspects. Prerequisite: 2.0 in either PSYCH 347, PSYCH 355, or LING 400. 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 advisory 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 450 required for all senior honors and distinction candidates in conjunction with 498 and 499. Offered: AWP.

**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: 2.0 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** *J.D. 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: 2.0 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) I&S/VLPA** First-language acquisition and use by children. Emphasis on theoretical issues and research techniques. Prerequisite: 2.0 in either PSYCH 206, PSYCH 306, LING 200, or LING 400. Offered: jointly with LING 457.

**PSYCH 458 Behavioral Genetics (4) NW** *O'Donnell* 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 3.5 in PSYCH 200, 2.0 in PSYCH 300, or 2.0 in BIOL 161, or 2.0 in BIOL 180. Offered: jointly with BIOL 458.

**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: 2.0 in either PSYCH 333, PSYCH 355, OR PSYCH 421.

**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: 2.0 in PSYCH 209; recommended: 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: 2.0 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: 2.0 in PSYCH 209; 2.0 in PSYCH 355.

**PSYCH 470 Psychology and Music (5) I&S/ VLPA** 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: 2.0 in either PSYCH 202 or NBIO 302.

**PSYCH 471 Applied Issues in Cognition (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: 2.0 in PSYCH 209.

**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: 2.0 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 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 3.5 in PSYCH 200 or 2.0 in PSYCH 300 or 2.0 in BIO A 201. .

**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: 2.0 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: 2.0 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 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 those students planning graduate work or education certification. An overall maximum of 18 credits in 496, 497, 498, and 499 may apply toward a baccalaureate degree.

**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 496, 497, 498, and 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 496, 497, 498, and 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 496, 497, 498, and 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. Credit/no credit only. Prerequisite: graduate standing in Psychology, or permission of instructor.

**PSYCH 502 Core Concepts in Animal Behavior (3) Barash, Beecher, O'Donnell, 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. Include 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) O'Donnell, 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) Bernstein, Buck, Covey, Diaz, Kenney, 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 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 instructor.

**PSYCH 507 Core Concepts in Cognitive Psychology (5) 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) G. 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) 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, R. 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) Bernstein** 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)** *Miyamoto* 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)** *Miyamoto* 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)** *Beauchaine* Surveys advances 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 515 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, develop 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 advisor is required. Credit/no credit only. Prerequisite: graduate standing Psychology, and permission of instructor.

**PSYCH 537 Teaching of Psychology (3)** *Passer* Examines issues concerning the teaching of psychology, including educational goals, course development, instructional methods, T.A.-student and T.A.-faculty relations, grading,

student diversity, and problem situations. Assignments are designed to enhance students' organizational, presentational, and problem-solving skills. Credit/no credit only. Prerequisite: graduate standing in the Department of Psychology.

**PSYCH 538 Interactive Software for Psychological Research (4)** *Loftus* Introduction to computing concepts and basic programming skills. Includes principles of programming, the MATLAB programming environment, and the psychophysics toolbox. Data collection and management. Design and program experiments. No prior programming experience needed. 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, O'Donnell, Sisnersos* 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, Kim* Intensive readings from the current literature on an emerging topic or theoretical perspective in behavior science. Student presentations and discussion. Prerequisite: graduate standing in Psychology or permission of instructor.

**PSYCH 543 Advances in Child Clinical Psychology (3-5, max. 30)** *Beauchaine, Lengua, McMahon* Intensive readings from the current literature on an emerging topic or theoretical perspective in child clinical psychology. Prerequisite: graduate student in Psychology, or permission of instructor.

**PSYCH 544 Advances in Clinical Psychology (3-5, max. 30)** *Baer, George, Kohlenberg, Linehan, Marlatt, McMahon, 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)** *G. 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)** 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)** *Bernstein, Diaz, Kenney* 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, O'Donnell, 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)** *Bernstein, 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)** *Beauchaine, King, Lengua, McMahon* 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, Marlatt, 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, Palmer* 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)** *Bernstein, 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)** *Little, Miyamoto* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in Psychology, or permission of instructor.

**PSYCH 560 Research Strategies (2, max. 30)** Group discussions of problems and continuing strategies for ongoing and future research projects. Prerequisite: graduate standing in Psychology, others by permission.

**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, O'Donnell, 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. Prerequisite: PSYCH 355 or permission of instructor. 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)** *McMahon* 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)** *Barrett, Beauchaine* 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)** *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 of Adults (3)** Training in adult assessment and development of skills in administration, scoring, and interpretation of the Rorschach with some attention to other projective techniques. Prerequisite: PSYCH 576 and 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 Behavioral Assessment (4)** *Linehan* Research, theory, and technique in behavioral assessment. Emphasis on assessing for change and relationship between assessment and therapy. Interviewing, observational techniques, self-monitoring, simulated environments, and physiological, self-report, and imaginal procedures. Prerequisite: clinical psychology graduate standing and permission of instructor.

**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)** *Barrett, 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 575.

**PSYCH 582 Cross-Cultural Competency II (2)** *Barrett, 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 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 586 Clinical Personality Assessment (3)** *R. 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 Multiaxial Inventory. Credit/no credit only. Prerequisite: clinical psychology graduate standing.

**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)** *Beauchaine, George, King, Kohlenberg, Lengua, Linehan, Marlatt, McMahon, 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. Credit/no credit only. Prerequisite: clinical psychology graduate standing and permission of instructor. 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. Credit/no credit only. Prerequisite: graduate major standing in clinical psychology. Offered: AW.

**PSYCH 593 Clinical Practica and Colloquium (1-6, max. 24)** *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 Personality Theory (5)** *Linehan* Conceptual models of behavioral functioning, cognition, emotion, and environment as organizers of behavior and other critical issues in personality theory. Opportunity to integrate previous courses, research, and practice, and arrive at coherent theoretical framework. Required for graduate majors in clinical psychology.

**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)** *Baer, Beauchaine, George, King, Kohlenberg, Lengua, Linehan, Marlatt, Simoni, R. 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.

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## Romance Languages and Literature

### Romance Languages and Literature

**ROMAN 411 Critical Approaches to Romance Literature (5)** *VLPA* Explores theoretical as well as fictional texts in a least two Romance languages.

**ROMAN 593 Literary Problems: Early Modern Period (5)**

**ROMAN 596 Problems in Comparative Contemporary Literary Studies (5)** Seminar exploring contemporary literary thought through theoretical and/or creative literature. A selection of texts from at least two Romance languages and literary traditions. Prerequisite: competence

in at least two Romance languages; completion of several upper division literature courses; some familiarity with critical methodologies.

**ROMAN 600 Independent Study or Research (\*)** Credit/no credit only.

**ROMAN 700 Master's Thesis (\*)** Credit/no credit only.

**ROMAN 800 Doctoral Dissertation (\*)** Credit/no credit only.

## French

*Credit: The sequence 121, 122, 123 is parallel to 101, 102, 103; students can receive credit for 101 and 121, but not for 102 and 122 or 103 and 123. 101 or 121 cannot be taken for credit after 102, 103, 122, or 123. 134 is a 15-credit intensive course exactly equivalent to 121, 122, 123; a maximum of 15 credits are allowed for 134 and any of 102, 103, 121, 122, and 123. A student who completes 134 cannot later take 101 for credit, but a student who earns credit for 101 can take 134 for 15 additional credits.*

**FRENCH 101 Elementary (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. Prerequisite: score of 0-14 on FR TL placement test if French is language of admission.

**FRENCH 102 Elementary (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. Prerequisite: either FRENCH 101 or score of 15-30 on FR TL placement test.

**FRENCH 103 Elementary (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. Prerequisite: either FRENCH 102, FRENCH 110, or score of 31-56 on FR TL placement test.

**FRENCH 110 Basic French Review (5)** Combines in one quarter the contents of 101 and 102. Designed for students who have studied French in high school but who are not ready for 102. Prerequisite: score of 10-30 on FR TL placement test.

**FRENCH 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 103.

**FRENCH 201 Intermediate (5)** *VLPA* Designed to bring students to an intermediate level of proficiency. Emphasis on experiencing the language in context through a multi-media approach. Prerequisite: either FRENCH 103, FRENCH 134, or score of 57-100 on FR TL placement test.

**FRENCH 202 Intermediate (5)** *VLPA* Designed to bring students to an intermediate level of

proficiency. Emphasis on experiencing the language in context through a multi-media approach. Prerequisite: FRENCH 201.

**FRENCH 203 Intermediate (5) VLPA** Designed to bring students to an intermediate level of proficiency. Emphasis on experiencing the language in context through a multi-media approach. Prerequisite: FRENCH 202.

**FRENCH 207 Second-Year Reading (5) VLPA** Intermediate vocabulary building and reading of literary texts. Students receiving credit for 207 may subsequently earn credit for lower-division French courses involving other skills.

**FRENCH 210 Paris (5) I&S/VLPA** 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** *Collins* 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.

**FRENCH 212 French Masterworks: Modern in English (5) VLPA** *Collins* 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 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 234 Intermediate French Immersion (15) VLPA** Covers the equivalent of second-year French (FRENCH 201, 202, 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 the Foreign Study Program.

**FRENCH 250 History of French Cinema in English (5) VLPA** *V. Collins* 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) VLPA** For participants in the Foreign Study Program. Literary tradition, social and cultural values as reflected in literature. Paper (in English) and higher degree of participation for 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. 303 prepares students for literature classes. 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. 303 prepares students for literature classes. 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. 303 prepares students for literature classes. 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 the Foreign Study Program. 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, 303. Prerequisite: FRENCH 302.

**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 the Foreign Study Program. 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 19<sup>th</sup> century in France. Taught in English. Prerequisite: FRENCH 203.

**FRENCH 378 The Making of Contemporary France (5) I&S/VLPA** Study of the historical origins and subsequent development of contemporary problems and characteristics 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) 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 for 6 credits. In French. Prerequisite: FRENCH 203.

**FRENCH 404 Old French (5) VLPA** . Designed for acquisition of reading facility in Old French through intensive study of selected texts. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

**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 ambience. 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 (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, 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 422 Literature and the Other Arts (5) VLPA** Examines the relationship between text and image in a variety of art forms. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

**FRENCH 424 Fiction: 1800-1850 (5) VLPA** Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

**FRENCH 425 Fiction: 1850-1900 (5) VLPA** 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 SISC 441.

**FRENCH 444 Poetry: Romantic (5) VLPA** Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

**FRENCH 445 Women Writers (5) VLPA** Focuses on French women writers and writing about women. Chronological and geographic ranges varies. Gender issues addressed in critical fashion, considering the different historical and ideological contexts in which each of the works were produced. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, FRENCH 307.

**FRENCH 446 Poetry: Twentieth Century (5) VLPA** 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) I&S/VLPA** 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 454 Nonfiction of the Classic Period (5) VLPA** 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, 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, 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 481 Twentieth-Century French Novel in English (5) VLPA**

**FRENCH 482 French Poetry From Baudelaire to the Present in English (5) VLPA** Analysis in English of the major trends and movements in modern French poetry with representative works, from Baudelaire to the poets of the 1950s.

**FRENCH 483 Trends in Twentieth-Century Theatre in English (5) VLPA** Study of the evolution of the French theatre from the turn of the century to the present. Special emphasis is given the French theatrical scene since World War II.

**FRENCH 484 Sixteenth-Century Literature in English (5) VLPA** Reading and discussion of selected passages in translation from the works of major 16<sup>th</sup> century writers. Background information through informal lectures and outside reading on the two figures as illustrative of the Renaissance in France.

**FRENCH 485 Racine and Molière in English (5) VLPA**

**FRENCH 486 Literature of the Enlightenment in English (5) VLPA**

**FRENCH 487 Nineteenth-Century Fiction in English (5) VLPA**

**FRENCH 488 Women in French Literature in English (5) VLPA** Significant texts by or about women in French literature, read in translation. Ranges from the sixteenth century through the present day.

**FRENCH 490 Honors Seminar (2-5, max. 10) VLPA** Special studies in French literature. Required of candidates for honors and distinction in French. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

**FRENCH 496 Poetry and Song as Elements in French Civilization (5) VLPA** Relationship of poetry and music as expressed in the chanson in several periods of French culture. Emphasis on twentieth-century poet-composer-performers. Attention given to the medieval troubadours and to poet-musician collaboration in the Renaissance and later periods. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

**FRENCH 499 Special Topics (1-5, max. 10)**  
Topics to meet special 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 520 Renaissance Prose: Rabelais (5)**

**FRENCH 521 Renaissance Prose: Montaigne (5)**

**FRENCH 523 Studies in Fiction: 1660-1800 (5, max. 10)**

**FRENCH 525 Studies in Fiction: 1850-1900 (5, max. 10)**

**FRENCH 526 Studies in Fiction: 1900-1950 (5, max. 10)**

**FRENCH 530 Studies in Renaissance Poetry (5, max. 10)**

**FRENCH 532 Studies in Nineteenth-Century Poetry (5, max. 10)**

**FRENCH 534 Studies in Twentieth-Century Poetry (5, max. 10)**

**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 555 French Nonfiction (5, max. 10)**

**FRENCH 561 Studies in Seventeenth-Century Drama (5, max. 10)**

**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 (5)** Methods and objectives are primarily oral-aural. Language laboratory is required. Offered: A.

**ITAL 102 Elementary (5)** Methods and objectives are primarily oral-aural. Language laboratory is required. Prerequisite: either ITAL 101 or score of 15-30 on IT TL placement test. Offered: W.

**ITAL 103 Elementary (5)** Methods and objectives are primarily oral-aural. Language laboratory is required. Prerequisite: either ITAL 102, ITAL 111, or score of 31-56 on IT TL placement test. Offered: Sp.

**ITAL 108 Intensive Italian Grammar and Reading (5)** Intensive two-quarter presentation of Italian grammar with emphasis on reading Italian texts. For persons who require solid reading knowledge of Italian or who plan to study in Italy.

**ITAL 111 Accelerated First-Year Italian (10)** Intensive version of 101 and 102. Designed for highly motivated students. Offered: A.

**ITAL 113 Accelerated First-Year Italian (10)** Intensive version of 102 and 103. Design for highly motivated students. Prerequisite: either ITAL 101 or score of 15-30 on IT TL placement test. Offered: W.

**ITAL 127 Beginning Conversational Italian (2, max. 6)** Practice 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 101, 102, 103, designed for highly motivated students. Not open for credit to students who have taken 102 and 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 103.

**ITAL 201 Intermediate (5) VLPA** Intensive speaking, reading, and writing. Functional review of grammar. Prerequisite: either ITAL 103, ITAL 113, ITAL 134, or score of 57-100 on IT TL placement test.

**ITAL 202 Intermediate (5) VLPA** Intensive speaking, reading, and writing. Functional review of grammar. Prerequisite: ITAL 201.

**ITAL 203 Intermediate (5) VLPA** Intensive speaking, reading, and writing. Functional review of grammar. Prerequisite: ITAL 202.

**ITAL 208 Intensive Italian Grammar and Reading (5) VLPA** Intensive two-quarter presentation of Italian grammar with emphasis on reading Italian texts. For persons who require solid reading knowledge of Italian or who plan to study in Italy.

**ITAL 227 Intermediate Conversational Italian (2, max. 6) VLPA** Practice of intermediate-level Italian conversational skills through class discussions and oral presentations. 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 201, 202, 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) I&S/VLPA** Focuses on Rome as an historical, intellectual, and artistic world center. Literary and historic documents, visual arts, architecture, film, and opera will be 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** *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 EURO 260; 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 319 The Italian Short Story in English (5) VLPA** The short story from the Novellino and Boccaccio to modern masters of the form. The translations are studied both as examples of narrative technique and as reflections of particular moments in Italian cultural history.

**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 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 translation fields. 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 351 Contemporary Italian Culture (5)** 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) I&S** Italian history and culture from the thirteenth to the twentieth century, with discussion of the 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 366 Italian Society in Film and Literature (5, max. 15) I&S/VLPA** Studies the evolution of Italian postwar society through the analysis of film and literature as well as critical, historical, and sociological readings.

**ITAL 384 Renaissance Literature of Italy in English (3) VLPA**

**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 400 The Development of the Italian Language (5) VLPA** Historical survey of Italian phonology, morphology, and syntax. Evolution of the language is illustrated with study of pertinent documents from various periods. Prerequisite: either ITAL 303; LING 400 or ROLING 401. Offered: jointly with LING 419.

**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, Belcarì, Alberti, Masuccio, Sannazzaro, Pulci, Boiardo. Prerequisite: ITAL 302.

**ITAL 414 Literature of the Renaissance: Cinquecento (5) VLPA** The high Renaissance. Bembo and the Petrarchans, Machiavelli, Guicciardini, Castiglione, Ariosto, Guarini, Tasso. Prerequisite: ITAL 302.

**ITAL 423 Seventeenth-Century Italian Literature (5) VLPA** New sciences and new poetics: Campanella, Sarpi, Della Valle, Marino, Tesauro, Bartoli, Galileo, Redi. Prerequisite: ITAL 302.

**ITAL 424 Eighteenth-Century Italian Literature (5) VLPA** Survey of eighteenth-century literature — the melodrama, drama and poetry: Metastasio, Goldoni, Alfieri, Parini, Monti, and Foscolo. 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 450 The Romantic Movement (5) VLPA** Beginning with an examination of the pre-romantic works of Ugo Foscolo, focuses on the literary and critical writings of Alessandro Manzoni and Giacomo Leopardi. Discusses the Romantic movement in Italy within the context of European Romanticism. Reference made to later variations on Romantic themes. Prerequisite: ITAL 302.

**ITAL 460 Verismo (5) VLPA** The development of Verismo with extensive readings from its main exponents-Capuana, Verga, Serao, Deledda, Fucini, and d'Annunzio. 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) I&S/VLPA** *Sbragia* 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) I&S/VLPA** 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; A.

**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 the student achieve a mature critical mastery of Italian literature.

**ITAL 499 Special Topics (1-5, max. 10)** Topics to meet special 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 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 special 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 (\*)**

## Portuguese

**PORT 101 Elementary (5)** Methods and objectives are primarily oral-aural. Covers all major elements of Portuguese grammar.

**PORT 102 Elementary (5)** Methods and objectives are primarily oral-aural. Covers all major elements of Portuguese grammar. Prerequisite: PORT 101.

**PORT 103 Elementary (5)** Methods and objectives are primarily oral-aural. Covers all major elements of Portuguese grammar. Prerequisite: PORT 102.

**PORT 105 Intensive Portuguese for Spanish Speakers (6)** Covers the verbal system and major grammatical points. Does not satisfy Foreign Language Requirement. Prerequisite: SPAN 203.

**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

**PORT 201 Intermediate (5) VLPA** Modern texts, compositions, conversation, and a systematic review of grammar. Prerequisite: either PORT 103 or PORT 105.

**PORT 202 Intermediate (5) VLPA** Modern texts, compositions, conversation, and a systematic review of grammar. Prerequisite: PORT 201.

**PORT 203 Intermediate (5) VLPA** Modern texts, compositions, conversation, and a systematic review of grammar. 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 Grammar and Lexicon (3) VLPA** Prerequisite: PORT 203.

**PORT 302 Grammar and Lexicon (3) VLPA** 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 (5)** Methods and objectives are primarily oral-aural. Language laboratory is required. Prerequisite: score of 0-15 on SP100A placement test if Spanish is language of admission. No credit if Spanish is the language of admission.

**SPAN 102 Elementary (5)** Methods and objectives are primarily oral-aural. Prerequisite:

either SPAN 101, or score of 16-44 on SP100A placement test.

**SPAN 103 Elementary (5)** Methods and objectives are primarily oral-aural. Prerequisite: either SPAN 102, SPAN 110 or score of 45-69 on SP100A placement test.

**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 101 or 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. Prerequisite: no previous Spanish study, or score of 0-15 on SP100A placement test if Spanish is language of admission.

**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. Prerequisite: SPAN 121.

**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. Prerequisite: SPAN 122.

**SPAN 134 Intensive First-Year Spanish (15)** Equivalent of 121, 122, 123. Employs "planned immersion" method with video as the central medium of presentation. Not open for credit to students who have taken 121, 122, 123 or 102, 103. Offered: S.

**SPAN 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 103.

**SPAN 201 Intermediate (5) VLPA** Intensive practice in speaking, reading, and writing. Review of Spanish grammar. Oral practice based on literary and cultural readings. 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 (5) VLPA** Intensive practice in speaking, reading, and writing. Review of Spanish grammar. Oral practice based on literary and cultural readings. Prerequisite: either SPAN 201 or score of 76-145 on SP200A placement test.

**SPAN 203 Intermediate (5) VLPA** Intensive practice in speaking, reading, and writing. Review of Spanish grammar. Oral practice based on literary and cultural readings. Prerequisite: either SPAN 202, SPAN 210, or score of 146-165 on SP200A placement test.

**SPAN 205 Culture of Andalusia (3) I&S/VLPA** Introduction to the culture and society of Andalusia, Southern Spain, regional vs. national identity, syncretism of Arab, Jewish, and Christian cultures, and a variety of contemporary cultural manifestations, among them Carnival, flamenco, the Alhambra, and contemporary literature and cinema. Of particular interest to students considering study abroad in Cadiz.

Prerequisite: either SPAN 202 or SPAN 210; may not be repeated for credit.

**SPAN 206 Arts and Culture of Oaxaca (3) I&S/VLPA** *Gonzalez* Introduction to the contemporary culture of Oaxaca, Mexico, particularly painting, folk arts, and Days of the Dead, in the context of recent Mexican politics and society. Prerequisite: SPAN 103, which may be taken concurrently.

**SPAN 210 Accelerated Intermediate Spanish (10) VLPA** Merges SPAN 201 and SPAN 202. Designed to build listening, speaking, reading, and writing skills and to expand knowledge of culture and literature of the Spanish-speaking world. Combines classroom experience with accelerated Web-enhanced activities provided through Spain's *Instituto Cervantes*. Prerequisite: either SPAN 103, SPAN 123, or SPAN 134.

**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, max. 6)** For participants in approved foreign study programs. Prerequisite: either SPAN 103, SPAN 123, or SPAN 134.

**SPAN 299 Foreign Study — Intermediate (2-16, max. 16) VLPA** Intermediate instruction in approved foreign study program. Further study at 200 level subject to placement test score.

**SPAN 301 Grammar and Lexicon (5) VLPA** Prerequisite: either SPAN 203 or score of 166-175 on SP200A placement test.

**SPAN 302 Grammar and Lexicon (5) VLPA** Prerequisite: SPAN 301 or 310.

**SPAN 303 Introduction to Stylistics Through Composition (5) VLPA** 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, 310 or SPAN 314.

**SPAN 305 Survey of Spanish Literature: 1498-1681 (3) VLPA** *Gilbert* Prerequisite: either SPAN 301, 310 or SPAN 314.

**SPAN 306 Survey of Spanish Literature: 1681 to the Present (3) VLPA** *Boehm, Mercer* Prerequisite: either SPAN 301, 310 or SPAN 314.

**SPAN 307 Introduction to Latin American Literature: Colonial Era through Early Independence (3/5) VLPA** *Donnelly* 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 310, or SPAN 314.

**SPAN 308 Introduction to Latin American Literature: Independence to the Present (3) 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 310, or SPAN 314.



**SPAN 310 Accelerated Intermediate-Advanced Grammar and Lexicon (10) VLPA** *Gonzalez* Intensive Web-enhanced grammar and writing, combining SPAN 301 and SPAN 302. Designed to develop skills at the intermediate-advanced level in areas of listening, speaking, reading, and writing. Prerequisite: SPAN 203.

**SPAN 311 Spanish for Reading Knowledge I (5) Bensadon** Intended primarily for graduate students. Emphasis on developing reading comprehension of Spanish texts which are pertinent to graduate student's field of research. Credit may not be applied toward Spanish major.

**SPAN 312 Spanish for Reading Knowledge II (5) VLPA Bensadon** Intended primarily for graduate students. Emphasizes developing reading comprehension of Spanish texts which are pertinent to graduate student's field of research. Credit may not be applied toward Spanish major. Prerequisite: SPAN 311.

**SPAN 313 Business Communication in Spanish (5) VLPA Bensadon** This intermediate level course offers student the opportunity develop their Spanish language skills (reading, writing, speaking, and listening) within the context of the Spanish-speaking business world. Business-specific culture emphasized. Prerequisite: either SPAN 301, SPAN 310 or SPAN 314, any of which may be taken concurrently.

**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 Bensadon** 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's 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** 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 310 or SPAN 314.

**SPAN 321 Introduction to Hispanic Literary Studies (5) VLPA Geist** 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: SPAN 301, SPAN 310, or SPAN 314, any of which may be taken concurrently. Offered: A.

**SPAN 322 Introduction to Hispanic Cultural Studies (5) I&S/VLPA Mercer** 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: SPAN 301, SPAN 310, or SPAN 314, any of which may be taken concurrently. Offered: W.

**SPAN 323 Introduction to Spanish Linguistics (5) VLPA** Synchronic and diachronic linguistic analysis of Spanish, including Spanish phonetics and phonology, morphology, syntax, and evolution of the language. Prerequisite: either SPAN 301, SPAN 310, or SPAN 314, any of which may be taken concurrently. Offered: SpS.

**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 310, or SPAN 314, any of which may be taken concurrently.

**SPAN 328 Spanish Cultural Studies (5) I&S/VLPA** Study abroad courses focussing on historical, social, and ideological aspects of modern Spanish culture. Lectures, readings, discussions, and written work in Spanish. For pre-approved study abroad courses only. Prerequisite: either SPAN 301, SPAN 310 or SPAN 314.

**SPAN 329 Latin American Cultural Studies (5) I&S/VLPA** Study abroad courses focussing on historical, social, and ideological aspects of modern Latin American culture. Lectures, readings, discussions, and written work in Spanish. For pre-approved study abroad courses only. Prerequisite: either SPAN 301, SPAN 310 or SPAN 314.

**SPAN 330 Composition and Literary / Cultural Analysis (5) VLPA** Includes writing of critical essays, practicing critical reading, developing promising thesis statements, and training in research methods. Emphasizes critiquing fellow students' work as collaborative activities. Prerequisite: either SPAN 302, SPAN 310 or SPAN 315.

**SPAN 331 Themes in Mexican-American Studies (5) I&S/VLPA** Examination of significant historical and cultural themes of the Mexican-American experience. Prerequisite: SPAN 301, SPAN 310, or SPAN 314, any of which may be taken concurrently.

**SPAN 332 Chicano Film and Narrative (5) I&S/VLPA Flores** Historical overview of the evolution of Chicano culture through film. Critical examination of the portrayal and self-portrayal of Chicanos in film and selected works of

narrative. Prerequisite: either SPAN 301, SPAN 310 or SPAN 314, any of which may be taken concurrently.

**SPAN 333 Hispanic Film Studies (5) I&S/VLPA 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 310, or SPAN 314, any of which may be taken concurrently.

**SPAN 334 Latin American Film (5) I&S/VLPA** 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 310 or SPAN 314, any of which may be taken concurrently.

**SPAN 337 Foreign Study Advanced Conversation (2-6, max. 6) VLPA** For participants in foreign study program. Does not fulfill any major or minor requirement. Prerequisite: either SPAN 301, SPAN 310 or SPAN 314, any of which may be taken concurrently.

**SPAN 339 Women Writers (3) VLPA Boehm** 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 310, or SPAN 314.

**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 310, or SPAN 314.

**SPAN 350 Drama (3) VLPA Gilbert** Generic study of Spanish drama. Prerequisite: either SPAN 301, SPAN 310 or SPAN 314.

**SPAN 351 Poetry (3) VLPA O'f Hara** Generic study of Spanish poetry. Prerequisite: either SPAN 301, SPAN 310, or SPAN 314.

**SPAN 352 Fiction (3) VLPA Petersen** Generic study of Spanish fiction. Prerequisite: SPAN 301, SPAN 310, or SPAN 314.

**SPAN 360 Contemporary Spain (5) I&S/VLPA 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 302, SPAN 310 or SPAN 315, any of which may be taken concurrently. Offered: jointly with EURO 360.

**SPAN 390 Supervised Study (2-6, max. 20) .**

**SPAN 392 Experiential Learning in Spanish (1, max. 3) I&S** Experiential learning project in the local Spanish-speaking community. Engages students in ways that supplement/enhance formal in-class language training. Prerequisite: SPAN 203.

**SPAN 393 Foreign Study (2-10, max. 20) VLPA** Study in Spanish speaking country outside the standard Spanish curriculum of the University of Washington. Prerequisite: either SPAN 301, SPAN 310 or SPAN 314, any of which may be taken concurrently.

**SPAN 400 The Syntactic Structure of Spanish (5) VLPA Zagana** Scientific study of the syntax of Spanish: structure of phrases, transformationally derived structures, grammatical relations, principles of interpretation. Prerequisite: either SPAN 301 or SPAN 314; either ANTH 203, LING 200, 201, 203, LING 400, or SPAN 323. Offered: jointly with SPLING 400.

**SPAN 401 The Morphological Structure of Spanish (5) VLPA Zagana** Principles of word formation, including derivational and inflectional morphology. Relationship between inflectional morphology and other components of grammar. Prerequisite: either SPAN 301 or SPAN 314; either ANTH 203, LING 200, 201, 203, LING 400, or SPAN 323. Offered: jointly with SPLING 401.

**SPAN 402 The Phonological Structure of Spanish (5) VLPA Zagana** 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 301 or SPAN 314; either ANTH 203, LING 200, 201, 203, LING 400, or SPAN 323. Offered: jointly with SPLING 402.

**SPAN 403 The Evolution of the Spanish Language (5) VLPA Basdeo, Zagana** Historical survey of Spanish phonology, morphology, and syntax, from Latin origins to the modern language. Prerequisite: either SPAN 301 or SPAN 314; either ANTH 203, LING 200, 201, 203, LING 400, or SPAN 323. Offered: jointly with SPLING 403.

**SPAN 404 Dialects of World Spanish (5) VLPA Fernandez** 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 301 or SPAN 314; either SPAN 323, LING 200, or LING 400. 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 301 or SPAN 314; either ANTH 203, LING 200, 201, 203, LING 400, or SPAN 323. Offered: jointly with SPLING 405.

**SPAN 406 Advanced Spanish Grammar (5) VLPA Basdeo, Diaz** Problems of Spanish grammar. Differences from English grammar. Techniques for the effective teaching of Spanish. Prerequisite: either SPAN 303, SPAN 316 or 330; SPAN 323. Offered: jointly with SPLING 406; AWSp.

**SPAN 408 Spanish Translation Workshop (5) VLPA** 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, SPAN 316, or SPAN 330; SPAN 323; recommended: SPAN 406.

**SPAN 410 Creative Writing in Spanish (5) I&S O'Hara** Creative writing in poetry for students undertaking fourth year advanced coursework in Spanish literature. . Prerequisite: either SPAN

303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional literature course above SPAN 303.

**SPAN 414 Spanish Literature: Eighteenth Century (5) VLPA Mercer** Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**SPAN 415 Spanish Literature: Nineteenth Century (5) VLPA Mercer** Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level literature course.

**SPAN 420 Spanish Poetry: Origins Through the Fifteenth Century (5) VLPA Petersen** Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**SPAN 423 Spanish Poetry: The Golden Age, Sixteenth Through Seventeenth Centuries (5) VLPA Gilbert** Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level literature course.

**SPAN 433 Golden Age Prose (5) VLPA Gilbert** Representative, and outstanding, prose works of sixteenth- and seventeenth-century Spain. Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**SPAN 436 Spanish Novel of the Nineteenth Century (5) VLPA Mercer** Representative works of Galdos, Clarin, Pereda, Valera, and Blasco Ibanez. Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**SPAN 438 Spanish Novel: 1900 - Present (5) VLPA Geist** Spanish novel from the generation of 1898 to the present. Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level literature course.

**SPAN 439 Women Writers (5) I&S/VLPA Boehm** 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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**SPAN 440 Spanish Drama: 1150-1600 (5) VLPA Gilbert** From the beginning to Lope de Vega. Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**SPAN 442 Latin American Colonial Theatre and Performance (5) VLPA Donnelly** 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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level literature course.

**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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level literature course.

**SPAN 449 Spanish Drama and Play Production (5, max. 10) VLPA Gilbert** Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course above SPAN 303.

**SPAN 461 Topics in Latin American Cultural Studies (5, max. 10) VLPA Donnelly, 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, SPAN 316, SPAN 330; SPAN 321; SPAN 322; one additional 300-level literature course.

**SPAN 462 Topics in Spanish Cultural Studies (5, max. 10) I&S/VLPA 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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level literature course.

**SPAN 464 Chicana Expressive Culture (5) I&S/VLPA** 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 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, or SPAN 376.

**SPAN 465 Contemporary Chicano Literature (5) VLPA Flores** Examination of 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 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**SPAN 466 Chicano Literature: Fiction (5) VLPA Flores** Nineteenth- and early twentieth-century fiction, as well as contemporary works, are examined in attempts to trace the development of Chicano fiction in the proper historical trajectory. Prerequisite: either SPAN 303 or SPAN 316; 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, or SPAN 376.

**SPAN 467 Spanish Women (5) I&S/VLPA** 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 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, or SPAN 376.

**SPAN 468 Latin American Women (5) I&S/VLPA Donnelly** 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; one additional 300-level course above SPAN 303. Offered: jointly with WOMEN 468.

**SPAN 472 Colonial Prose (5) VLPA Donnelly** Study of major genres of prose writing in Spanish America during the 16<sup>th</sup>-18<sup>th</sup> centuries, including history writing, travel writing, historiography, and nascent forms of fictional writing. Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level literature course.

**SPAN 473 Latin American Fiction: Nineteenth Century (5, max. 15) VLPA Donnelly** Study of prose fiction in Latin America in the nineteenth century. Prerequisite: either SPAN 303 or SPAN 316; 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, or SPAN 376.

**SPAN 474 Latin American Fiction: Twentieth Century (5) VLPA O'f Hara** Study of prose fiction in Latin America in the twentieth century. Prerequisite: either SPAN 303 or SPAN 316; 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, or SPAN 376.

**SPAN 475 Latin American Poetry: Colonial Through Nineteenth Century (5) VLPA Donnelly** 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

322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**SPAN 476 Contemporary Latin American Poetry (5) VLPA O'f 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 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**SPAN 477 Latin American Essay (5) VLPA O'f Hara** Literary expression of ideas in Latin American countries, nineteenth and twentieth centuries. Prerequisite: either SPAN 303 or SPAN 316; 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, or SPAN 376.

**SPAN 478 Modern Latin American Theater (5) VLPA** 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 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**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 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**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 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**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 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**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 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**SPAN 483 Latin American Literature: Origins to Independence (5) VLPA Donnelly** 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 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**SPAN 484 Latin American Literature: Modernismo to the Present (5) VLPA O'f 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 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**SPAN 486 Photography and Cultural Studies in Latin America (5) I&S/VLPA** 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; one additional 300-level course beyond 303. Offered: jointly with SISLA 486.

**SPAN 487 Mexican Cinema (5) I&S/VLPA 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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level course beyond SPAN 303.

**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 Cortazar (Argentina), or survey various authors. Prerequisite: either SPAN 303 or SPAN 316; 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, or SPAN 376.

**SPAN 489 The Mexico-U.S. Border in Literature and Film (5) I&S/VLPA Doremus, 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; either SPAN 321 or SPAN 322; one additional 300-level course above SPAN 303. Offered: jointly with SISLA 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 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, or SPAN 376.

**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, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; one additional 300-level literature course.

**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; one additional 300-level course above SPAN 303.

**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, SPAN 330; one additional course above SPAN 303.

**SPAN 499 Special Topics (1-5, max. 10)** Topics to meet special needs.

**SPAN 510 Methodology of Spanish Language Teaching (5)**

*Fernandez* 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)**

*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)**

*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)**

*Fernandez* 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)**

*Fernandez* 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)**

**SPAN 571 The Modern Essay in Spanish America (5)**

**SPAN 572 Twentieth-Century Spanish Poetry (5, max. 10)**

**SPAN 573 Twentieth-Century Spanish-American Poetry (5, max. 10)**

**SPAN 575 Literary Criticism (5)**

**SPAN 577 Contemporary Literary Theory (5)**

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. 10)**

**SPAN 592 Literary Problems: Renaissance (5, max. 10)**

**SPAN 593 Literary Problems: Golden Age (5, max. 10)**

**SPAN 594 Literary Problems: Eighteenth Century (5, max. 10)**

**SPAN 595 Literary Problems: Nineteenth Century (5, max. 10)**

**SPAN 596 Literary Problems: Twentieth Century (5, max. 10)**

**SPAN 597 Literary Problems: Spanish-American Colonial Literature (5, max. 10)**

**SPAN 598 Literary Problems: Latin America (5, max. 10)**

**SPAN 600 Independent Study or Research (\*)**

**SPAN 700 Master's Thesis (\*)** Credit/no credit only.

**SPAN 800 Doctoral Dissertation (\*)** Credit/no credit only.

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## Scandinavian Studies

### Scandinavian

**SCAND 100 Introduction to Scandinavian Culture (5) I&S/VLPA**

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 Ro?lvaag.

**SCAND 151 Finnish Literary and Cultural History (5) VLPA**

A survey of Finnish literature and cultural history during the 19th and 20th 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 190 Crime Scenes: Investigating the Cinema and Its Cultures (5) VLPA**

*Ames, Nestingen* Teaches students 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 190.

**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) I&S/VLPA**

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 modern world, with attentions 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 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 326 Scandinavia in World Affairs (5) I&S**

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) I&S/VLPA**

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 milieus. Theory and history of folk narrative study, taxonomy, genre classification, and interpretative approaches. Recommended: SCAND 230 or C LIT 230. Offered: jointly with C LIT 331.

**SCAND 334 Immigrant and Ethnic Folklore (5) I&S/VLPA** 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: 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 Saamland.

**SCAND 341 Sami Culture and History (5) I&S/VLPA** 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 EURO 344.

**SCAND 345 Baltic Cultures (5) I&S/VLPA** 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 EURO 345.

**SCAND 350 Environmental Norms in International Politics (5) I&S** 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/SIS 350.

**SCAND 351 Scandinavia, the European Union, and Global Climate Change (5) VLPA/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 EURO 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) I&S/VLPA** 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) I&S/VLPA** 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 403 Scandinavian Immigration in History and Literature (5) VLPA/I&S** History and literature of Scandinavian immigration to North America, including immigrant life and culture, community structures and traditions, and the literature about and by immigrants from Denmark, Finland, Iceland, Norway, and Sweden. Offered: jointly with HIST 403.

**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 WOMEN 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: 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** 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 multiparty systems, decline of political parties. Offered: jointly with POL S 437.

**SCAND 445 War and Occupation in Northern Europe: History, Fiction, and Memoir (5)** 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 EURO 445.

**SCAND 450 Scandinavian Literary History (3) VLPA** Survey of Scandinavian literary history. Recommended: 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 SISRE 465.

**SCAND 460 History of the Scandinavian Languages (5) VLPA** Development of languages from common Scandinavian to contemporary Danish, Norwegian, Swedish, Faroese, and Icelandic. Recommended: 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) reevaluated in light of current issues in literary criticism, particularly feminist criticism. Close readings of selected tales, essays, and criticism. Offered: jointly with WOMEN 462.

**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 EURO 480.

**SCAND 481 August Strindberg and European Cultural History (5) I&S/VLPA** 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 20th-century drama and film. Offered: jointly with EURO 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 EURO 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)** 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 ASIAN 518/GERMAN 518/NEAR E 518/SCAND 518/SLAV 518.

**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 poetry. 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 580 Kierkegaard and Decadence in European Literature (5)** *Sjævik* Examines Kierkegaardian thought and the literary practice of various writers of Scandinavian and European Decadence. Offered: Sp.

**SCAND 582 Knut Hamsun and Early European Modernism (5)** *Sjævik* 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: SCAND518; 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 (\*)**

## Danish

**DANISH 101 Elementary Danish (5)** Fundamentals of oral and written Danish.

**DANISH 102 Elementary Danish (5)** Fundamentals of oral and written Danish.

**DANISH 103 Elementary Danish (5)** Fundamentals of oral and written Danish.

**DANISH 199 Foreign Study: Elementary Danish (1-15, max. 15)** Fundamental 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. 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. Recommended: DANISH 103.

**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. Recommended: DANISH 103.

**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 19th and 20th 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.

**ESTO 102 Elementary Estonian (5)** Fundamentals of oral and written Estonian.

**ESTO 103 Elementary Estonian (5)** Fundamentals of oral and written Estonian.

**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. Recommended: ESTO 103.

**ESTO 202 Second-Year Estonian (5) VLPA** Intensive practice in speaking, reading and writing. Functional review of grammar. Recommended: ESTO 103.

**ESTO 203 Second-Year Estonian (5) VLPA** Intensive practice in speaking, reading and writing. Functional review of grammar. Recommended: ESTO 103.

**ESTO 250 Intensive Intermediate Estonian (15) VLPA** Accelerated second-year Estonian. Systematic review of Estonian grammar.

Intensive practice in conversation, reading, and writing. Recommended: 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.

**FINN 102 Elementary Finnish (5)** Fundamentals of oral and written Finnish.

**FINN 103 Elementary Finnish (5)** Fundamentals of oral and written Finnish.

**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. Recommended: FINN 103.

**FINN 202 Second-Year Finnish (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Recommended: FINN 103.

**FINN 203 Second-Year Finnish (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Recommended: FINN 103.

**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.

**LATV 102 Elementary Latvian (5)** Fundamentals of oral and written Latvian.

**LATV 103 Elementary Latvian (5)** Fundamentals of oral and written Latvian.

**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. Recommended: LATV 103.

**LATV 202 Second-Year Latvian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Recommended: LATV 103.

**LATV 203 Second-Year Latvian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Recommended: LATV 103.

**LATV 250 Intensive Intermediate Estonian (15) VLPA** Accelerated second-year Latvian. Systematic review of Latvian grammar. Intensive practice in conversation, reading, and writing. Recommended: 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)** Readings in a selected area of Latvian language, culture, or society.

## Lithuanian

**LITH 101 Elementary Lithuanian (5)** Fundamentals of oral and written Lithuanian.

**LITH 102 Elementary Lithuanian (5)** Fundamentals of oral and written Lithuanian.

**LITH 103 Elementary Lithuanian (5)** Fundamentals of oral and written Lithuanian.

**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. Recommended: LITH 103.

**LITH 202 Second-Year Lithuanian (5) VLPA** Intensive practice in speaking, reading and writing. Functional review of grammar. Recommended: LITH 103.

**LITH 203 Second-Year Lithuanian (5) VLPA** Intensive practice in speaking, reading and writing. Functional review of grammar. Recommended: LITH 103.

**LITH 250 Intensive Intermediate Lithuanian (15) VLPA** Accelerated second-year Lithuanian. Systematic review of Lithuanian grammar. Intensive practice in conversation, reading, and

writing. Recommended: 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.

**NORW 102 Elementary Norwegian (5)** Fundamentals of oral and written Norwegian.

**NORW 103 Elementary Norwegian (5)** Fundamentals of oral and written Norwegian.

**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. Recommended: NORW 103.

**NORW 202 Second-Year Norwegian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Recommended: NORW 103.

**NORW 203 Second-Year Norwegian (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. 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)** 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.

## Swedish

**SWED 101 Elementary Swedish (5)** Fundamentals of oral and written Swedish.

**SWED 102 Elementary Swedish (5)** Fundamentals of oral and written Swedish.

**SWED 103 Elementary Swedish (5)** Fundamentals of oral and written Swedish.

**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. Recommended: SWED 103.

**SWED 202 Second-year Swedish (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. Recommended: SWED 103.

**SWED 203 Second-year Swedish (5) VLPA** Intensive practice in speaking, reading, and writing. Functional review of grammar. 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.

## Slavic Languages and Literatures

### 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 honors" or "with distinction." Offered: AWPoS.

**SLAVIC 600 Independent Study or Research (\*)**

**SLAVIC 800 Doctoral Dissertation (\*)**

### Bosnian, Croatian, Serbian

**BCS 401 First Year Bosnian/Croatian/Serbian (5)** Comprehensive introduction to spoken and written literary Bosnian, Croatian, and Serbian. Offered: A.

**BCS 402 First Year Bosnian/Croatian/Serbian (5)** Comprehensive introduction to spoken and written literary Bosnian, Croatian, and Serbian. Prerequisite: BCS 401, which may be taken concurrently. Offered: W.

**BCS 403 First Year Bosnian/Croatian/Serbian (5)** Comprehensive introduction to spoken and written literary Bosnian, Croatian, and Serbian. Prerequisite: BCS 402, which may be taken concurrently. 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. Prerequisite: 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. Prerequisite: 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. Prerequisite: 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 the 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. 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. Prerequisite: BULGR 401. Offered: W.

**BULGR 403 First-Year Bulgarian (5)** Reading of modern texts to increase command of grammar and vocabulary. Prerequisite: BULGR 402. Offered: Sp.

**BULGR 404 Second-Year Bulgarian (5) VLPA** Continuation of 401, 402, 403. Selected readings in Bulgarian literature, history, and culture. Reinforces and extends basic knowledge of Bulgarian grammar and vocabulary. Prerequisite: 2.0 in BULGR 403. Offered: A.

**BULGR 405 Second-Year Bulgarian (5) VLPA** Continuation of 401, 402, 403. Selected readings in Bulgarian literature, history, and culture. Reinforces and extends basic knowledge of Bulgarian grammar and vocabulary. Prerequisite: BULGR 404. Offered: W.

**BULGR 406 Second-Year Bulgarian (5) VLPA** Continuation of 401, 402, 403. Selected readings in Bulgarian literature, history, and culture. Reinforces and extends basic knowledge of Bulgarian grammar and vocabulary. Prerequisite: BULGR 405. Offered: Sp.

## Czech

**CZECH 401 First-Year Czech (5)** Introduction to spoken and written Czech. Offered: A.

**CZECH 402 First-Year Czech (5)** Introduction to spoken and written Czech. 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. Prerequisite: CZECH 402. Offered: Sp.

**CZECH 404 Second-Year Czech (5) VLPA** Continuation of 401, 402, 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. Prerequisite: 2.0 in CZECH 403. Offered: A.

**CZECH 405 Second-Year Czech (5) VLPA** Continuation of 401, 402, 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. Prerequisite: CZECH 404. Offered: W.

**CZECH 406 Second-Year Czech (5) VLPA** Continuation of 401, 402, 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. Prerequisite: CZECH 405.  
Offered: Sp.

## Polish

**POLSH 320 Introduction to Contemporary Polish Culture (5) 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 21<sup>st</sup> century. Offered: AW.

**POLSH 401 First-Year Polish (5)** Principal morphological and syntactic features of the Polish language through the medium of a basic vocabulary. Cannot be taken for credit if Polish is the student's language of admission. Offered: A.

**POLSH 402 First-Year Polish (5)** Principal morphological and syntactic features of the Polish language through the medium of a basic vocabulary. Prerequisite: POLSH 401. Offered: W.

**POLSH 403 First-Year Polish (5)** Designed to enlarge general vocabulary by the reading of short texts selected from Polish authors of the nineteenth and twentieth centuries. Prerequisite: POLSH 402. Offered: Sp.

**POLSH 404 Second-Year Polish (5) VLPA** Continuation of 401, 402, 403. Selected readings of the main works from nineteenth and twentieth centuries. Reinforces basic knowledge of vocabulary, grammatical patterns, and conversation. Prerequisite: 2.0 in POLSH 403. Offered: A.

**POLSH 405 Second-Year Polish (5) VLPA** Continuation of 401, 402, 403. Selected readings of the main works from nineteenth and twentieth centuries. Reinforces basic knowledge of vocabulary, grammatical patterns, and conversation. Prerequisite: POLSH 404. Offered: W.

**POLSH 406 Second-Year Polish (5) VLPA** Continuation of 401, 402, 403. Selected readings of the main works from nineteenth and twentieth centuries. Reinforces basic knowledge of vocabulary, grammatical patterns, and conversation. Prerequisite: POLSH 405. Offered: Sp.

**POLSH 420 Modern Polish Literature in English (5) 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.

## Romanian

**ROMN 401 First-Year Romanian (5)** Comprehensive introduction to spoken and literary Romanian. Offered: jointly with RMN 401; A.

**ROMN 402 First-Year Romanian (5)** Comprehensive introduction to spoken and literary Romanian. Prerequisite: ROMN/RMN 401. Offered: jointly with RMN 402; W.

**ROMN 403 First-Year Romanian (5)** Designed to increase vocabulary and enhance knowledge of grammar through readings in modern

Romanian. Prerequisite: ROMN/RMN 402.  
Offered: jointly with RMN 403; Sp.

**ROMN 404 Second-Year Romanian (5) VLPA** Continuation of 401, 402, 403. Introduction to Romanian literature, history, and culture through selected readings. Reinforces and extends basic knowledge of grammar and vocabulary. Prerequisite: 2.0 in ROMN/RMN 403. Offered: jointly with RMN 404; A.

**ROMN 405 Second Romanian (5) VLPA** Continuation of 401, 402, 403. Introduction to Romanian literature, history, and culture through selected readings. Reinforces and extends basic knowledge of grammar and vocabulary. Prerequisite: ROMN/RMN 404. Offered: jointly with RMN 405; W.

**ROMN 406 Second-Year Romanian (5) VLPA** Continuation of 401, 402, 403. Introduction to Romanian literature, history, and culture through selected readings. Reinforces and extends basic knowledge of grammar and vocabulary. Prerequisite: ROMN/RMN 405. Offered: jointly with RMN 406; Sp.

## 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. See credit note above. 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. See credit note above. Prerequisite: 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. See credit note above. Prerequisite: RUSS 102. Offered: Sp.

**RUSS 110 Introduction to Russian Culture and Civilization (5) I&S/VLPA** 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 EURO 110.

**RUSS 120 Topics in Russian Literary and Cultural History (5) VLPA** Introduction to important issues in Russian literary and cultural history. Topics and instructors vary. Offered in English.

**RUSS 150 Intensive First-Year Russian (15)** Covers material of 101, 102, 103 in one quarter. Meets three to four hours daily. For continuation, see 250 or 201, 202, 203. See credit note above. 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. See credit note above. 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. See credit note above. 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. See credit note above. Prerequisite: RUSS 202. Offered: Sp.

**RUSS 230 Masterpieces of Russian Literature (5) VLPA** Examines the greatest authors and masterpieces of Russian literature, including Tolstoy, Dostoevsky, and Chekhov. All readings, discussions, and assignments are in English.

**RUSS 250 Intensive Second-Year Russian (15) VLPA** Covers material of 201, 202, 203 in one quarter. Meets three to four hours daily. See credit note above. 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. See credit note above. Prerequisite: either 2.0 in RUSS 203 or 2.0 in RUSS 250. Offered: A.

**RUSS 302 Third 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. See credit note above. 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. See credit note above. 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. Credit/no credit only. Prerequisite: either RUSS 203 or RUSS 250. 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 321 Russian Literature and Culture 1700 - 1840 (5) I&S/VLPA** Introduction to literary works, art, and architecture in relation to the development of Russian thought, both secular and religious. Attention given to the influences of Western Europe and what is distinctly Russian, and to the formation of national self-awareness. Offered: A.

**RUSS 322 Russian Literature and Culture 1700-1900 (5) I&S/VLPA** Literature as an element in Russian culture. Art, architecture, music, and philosophy also treated. Periods covered include the age of Peter the Great, romanticism, realism, and impressionism. Offered: W.

**RUSS 323 Russian Literature and Culture of the Twentieth Century (5) I&S/VLPA** Literature as an element in modern Russian culture. Art, architecture, and music also treated. Periods covered include symbolism, revolution, postrevolution, Stalinist, the "thaw," and contemporary. Offered: Sp.

**RUSS 324 Russian Folk Literature in English (5) I&S/VLPA** Russian popular tradition, including paganism and its survival into modern times. Genres of the oral tradition, including the folktale, the epic, spiritual and historical songs, and legends. Special attention to modern theories and western European analogues.

**RUSS 350 Intensive Third-Year Russian (15) VLPA** Covers material of 301, 302, 303 in one quarter. Meets three hours daily. See credit note above. Prerequisite: either 2.0 in RUSS 203 or 2.0 in RUSS 250. Offered: S.

**RUSS 351 Intermediate Russian Phonetics (3) VLPA** Systematic study of the Russian sound system, including phonetic transcription and intonational patterns. Instruction in correcting individual pronunciation errors. Conducted partly in Russian. Prerequisite: either RUSS 203 or RUSS 250.

**RUSS 352 Intermediate Russian Morphology (3) VLPA** Examination of Russian morphology with emphasis on topics that help to prepare the student for advanced courses in Russian. Conducted partly in Russian. Prerequisite: either RUSS 203 or RUSS 250.

**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. See credit note above. Prerequisite: either 2.0 in RUSS 303 or 2.0 in RUSS 350. Offered: AWSp.

**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. See credit note above. Prerequisite: RUSS 401. Offered: AWSp.

**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. See credit note above. Prerequisite: RUSS 402. Offered: AWSp.

**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** Russian literature of the second half of the twentieth century. 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 communism or who, though they resided in the USSR, published through unofficial channels. Discussion of Akhmatova, Siniavsky, Voinovich, Zinoviev, and others.

**RUSS 423 Russian Film (5, max. 15) VLPA** Early Russian, Soviet, and post-Soviet film. Featured filmmakers include Sergei Eisenstein, Dziga Vertov, Vsevolod Pudovkin, and others. Focuses on critical materials pertaining to filmmaking and film theory.

**RUSS 424 Topics in Ethnicity and Cultural Identity (5, max. 15) I&S/VLPA** 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 18th 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** Major Russian writers of the nineteenth and twentieth centuries. Among authors read are Pushkin, Gogol, Lermontov, Turgenev, Tolstoy, Dostoevsky, Chekhov, Babel, Ilf and Petrov, Olesha. Content varies.

**RUSS 450 Intensive Fourth-Year Russian (15) VLPA** Covers material of 401, 402, 403 in one quarter. Meets three hours daily. See credit note above. 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. 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. Offered: A.

**RUSS 452 Structure of Russian (5) VLPA** Descriptive analysis of contemporary standard Russian. 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: RUSS 451. Offered: W.

**RUSS 461 Introduction to Russian Literature in Russian (5) VLPA** Analysis of original Russian literary texts representative of different varieties of Russian writing. Vocabulary of Russian literary analysis; typically Russian approaches to literature, some readings of secondary critical texts; discussion in Russian of passages studied. Prerequisite: RUSS 403 or RUSS 450.

**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 250. 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) I&S/VLPA** 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 program, 6 for semester 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. Offered: alternate years.

**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. Offered: alternate years.

**RUSS 523 Russian Literature of the Twentieth Century (5)** Survey of twentieth-century Russian poetry and prose. Pre-revolutionary, Soviet, and ?migr? authors, trends, and genres. Includes survey of twentieth-century Literary Criticism as well, in particular Russian Formalists and Mikhail Bakhtin. Offered: alternate years.

**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: RUSS 555 or SLAV 565, or permission of instructor. Offered: alternate years.

**RUSS 570 Research Seminar in Russian Literature (5, max. 40)** *Diment, Haney, Kramer, West* 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)** Analysis of representative works of the various genres of folk literature, including the byliny, skazki, historical and lyrical songs, and the spiritual stikhi.

**RUSS 600 Independent Study or Research (\*)**

## Slavic

**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 223 Russian and East European Cinema (5, max. 20) VLPA** Introduction to Russian and Eastern European film from the origins to present day. Highlights achievements of Russian and Eastern European filmmakers, both in their countries of origin and abroad.

**SLAV 351 History of the Slavic Languages (5) VLPA** External and internal history of Slavic literary languages from the beginnings to the present time, including the development of writing systems, external attempts at reform, and the development of vocabulary.

**SLAV 420 The Other Europe: Contemporary East European Fiction (5, max. 15) VLPA** *Crnkovic* Contemporary fiction by Czech, East German, Hungarian, Polish, Baltic, and Balkan writers. Topics include: history of colonization, the imagination of social utopia, socialism and nationalism, everyday life under communism, cultural identity between East and West, experimental writing, new fiction in post-communist Eastern Europe. All readings in English.

**SLAV 423 East European Film (5, max. 15) VLPA** *Crnkovic* Survey of major East European film makers. Compares East European and Western production of those directors who worked partially in the West, e.g., Polanski,

Forman, Holland, Makavejev. Topics include film in socialist versus market economy, politics, gender, sexuality.

**SLAV 425 Ways of Meaning: Universal and Culture Specific Aspects of Language (5) I&S/ VLPA** *Dziwirek* 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. Offered: Sp.

**SLAV 426 Ways of Feeling: Expressions of Emotions Across Languages and Cultures (5) I&S/VLPA** *Dziwirek* Universal and culture specific aspects of linguistic expression of emotion. Are there feelings that all people share independent of language, culture, gender, and race? 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, Dziwirek* Special topics in Slavic linguistics. Course offerings based on instructor's specialty and student demand. Offered: AWSp.

**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: AWSpS.

**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: AWSpS.

**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: AWSpS.

**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: AWSpS.

**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: AWSpS.

**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 ASIAN 518/GERMAN 518/ NEAR E 518/SCAND 518.

**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, Corradi-Fumara, 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)** External and internal history of Slavic literary languages from the beginnings to the present time, including the development of writing systems, external attempts at reform, and the development of vocabulary.

**SLAV 560 Diachronic Slavic Linguistics (5)** Development of the phonological and morphological system of Common Slavic from Indo-European. Evolution of Russian and other modern Slavic languages from Common Slavic. Offered: A.

**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. Prerequisite: SLAV 560. Offered: alternate years.

**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. Prerequisite: SLAV 560. Offered: alternate years.

**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. Prerequisite: SLAV 560.

**SLAV 565 Old Church Slavic (4)** Rise and development of earliest Slavic literary language and a descriptive study of its orthography, phonology, morphology, and syntax. Readings from normalized texts. Offered: alternate years.

**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. Offered: alternate years.

**SLAV 570 Special Topics in Slavic Linguistics (3-5, max. 15)** Investigation and discussion of special topics in Slavic linguistics.

## Ukrainian

**UKR 401 First-Year Ukrainian (5)** Introduction to spoken and written Ukrainian.

**UKR 402 First-Year Ukrainian (5)** Introduction to spoken and written Ukrainian. Prerequisite: UKR 401, which may be taken concurrently.

**UKR 403 First-Year Ukrainian (5)** Introduction to spoken and written Ukrainian. Prerequisite: UKR 402, which may be taken concurrently.

**UKR 420 Literature, Film, and Culture of Ukraine (5) VLP** 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.

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## 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 177 The Jewish Community in the United States: Success, Influence, and Prospects (5) I&S** *Burstein* Examines relationship between American society and its ethnic/religious groups through study of the American Jewish community. Focuses on economic success; challenges to religious traditions; relationships between American and Jewish cultures; and impact of Jewish ideas and organizations on American politics. Offered: jointly with 177.

**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 212 Evolution and Revolution: An Introduction to the Study of Comparative Social Change (5) I&S** 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. Not open for credit to students who have taken SOC 112

**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 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 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** *Scott* 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) I&S/VLP** *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 265 Globalization and the Transformation Economy and Society in Asia (5) I&S** *Hamilton* Examines the rapid and extensive social and economic development throughout Asia since the mid-20th century; the corresponding retail revolution in the American economy; the evolution of characteristic Asian product categories; and the impact of these developments on the social and economic organization of Asian economies. Offered: jointly with SISA 265.

**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 HIST 249/POL S 249.

**SOC 270 Social Problems (5) I&S** 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** 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** *LePore* 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 301 War (5) I&S** Origins and conduct of war, readings from anthropology, political science, economics, and history, as well as two novels and some recent articles on the arms-control controversy. Modern forms of warfare, including guerrilla war, world war, and nuclear war. Offered: jointly with SIS 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** *Morris* 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** *Handcock* 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/STAT 321.

**SOC 322 Case-Based Social Statistics II (5) I&S, QSR** *Handcock* Continuation of CS&SS/

SOC/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/SOC/STAT 321, or permission of instructor. Offered: jointly with CS&SS/STAT 322.

**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 320 or 323.

**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 320 or 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. Use 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 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 SISLA 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** 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** Interracial contacts and conflicts.

**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 Bureaucracy in Society (5) I&S** The coming of organizational societies; historical causes of bureaucracy; informal relations and work groups; ideologies; authority and the division of labor; social change in bureaucracies; comparative organizations.

**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. Not open for credit to students who have taken SOC 105.

**SOC 371 Criminology (5) I&S** *Crutchfield, Matsueda* 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** 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** *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 SISJE 377.

**SOC 378 Contemporary Jewish American Identities (5) I&S** 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 SISJE 378.

**SOC 379 Environmental Sociology (5) I&S/ NW** 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/ ENVIR 379; WS

**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 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 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 430 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 431 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 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 SIS 432.

**SOC 433 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 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. This seminar addresses a set of these issues by focusing on the demography of one or more countries in Asia. Offered: jointly with SISEA 434.

**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 SIS 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** *Scott* 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** 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 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 Peoples Republic of China (5) I&S** *Lately* Separate development of rural and urban social institutions in the Peoples 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 SISEA 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** Focus on contemporary American diversity — the multiethnic, multicultural 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 473 Corrections (5) I&S** Analyzes research on diversionary methods and treatment of convicted offenders. Emphasis on program evaluation. Community treatment, fines, restitution; probation, parole, halfway houses, and other alternatives to incarceration; correctional institutions. Organization of state and federal systems. Problems of administration. Subsidies and governmental control. Planning and public participation. Recommended: SOC 371; SOC 372. Offered: jointly with LSJ 473.

**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 — occur. 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 in Sociology (5, max. 15)** 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. Credit/no credit only. Prerequisite: admission to graduate program in sociology.

**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-) I&S** 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) I&S** 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) I&S** 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 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 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) I&S** 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 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: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with CS&SS 526.

**SOC 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.

**SOC 536 Analysis of Categorical and Count Data (3)** *Raftery* 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 STAT 536/CS&SS 536.

**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 550 Changing Patterns of Family Organization (3)** History of the family with emphasis on changes in European and American families since 1600. Concomitant changes in other institutions and their relation to changes in the family.

**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 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 U.S. 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: 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 on Environmental Sociology (3)** Perspectives on environmental sociology, with emphasis on the social construction of environmental problems. European and American schools of thought and their implications for environmental policy. Examination of global and regional issues in the context of risk society. Offered: jointly with CFR 570; A.

**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. 9)** 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 581 through 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 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.

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## Speech and Hearing Sciences

**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 161 The Science of Auditory Space (5) NW Stecker A** hands-on introduction to the scientific method exploring the abilities of human listeners to localize sounds in space. Students will develop questions and hypotheses, design and run experiments, and evaluate evidence for and against candidate explanations of human auditory performance. Activities include classroom experiments and computer exercises. Offered: A.

**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: AS.

**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 101. Offered: W.

**SPHSC 300 Introduction to the Science of Learning: From Biology to Behavior (5) NW Kuhl** Introduction to research on human learning, taking advantage of new findings in neuroscience and behavior to examine learning from early infancy to advanced adulthood. Follows historical descriptions and studies of learning to modern formulations that include how the brain unconsciously reacts to and stores information. Offered: Sp.

**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** Introduction to techniques of linguistic analysis used in the study of phonology, morphology, syntax, and semantics. Required for majors; open to nonmajors. Offered: A.

**SPHSC 304 Developmental Aspects of Communication (5) I&S** 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; may not be repeated. 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** 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: WSu.

**SPHSC 320 Anatomy and Physiology of Speech (5) NW** Anatomy and physiology of the respiratory, laryngeal, and articulatory systems. 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** 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: ASpS.

**SPHSC 391 Practicum in Audiology (1-4, max. 10)** Guided experiences in audiological assessment and aural rehabilitation of children and adults. Credit/no credit only. Offered: AWSpS.

**SPHSC 405 Diagnosis of Speech and Language Disorders (3) NW** 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** Principles and procedures for planning, implementing, and evaluating treatment for speech and language disorders. Required for majors. Prerequisite: SPHSC 405; may not be repeated. 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: 2.0 in either PSYCH 206, PSYCH 306, or PSYCH 414. Offered: jointly with PSYCH 411.

**SPHSC 425 Speech, Language, and the Brain (5) NW** Historical perspectives and current research on speech acoustics, speech perception, and brain processing of speech information; speech development; techniques used in speech analysis; machine recognition of speech; brain imaging techniques, animal communication systems; speech evolution; implications for impaired populations. May not be repeated. Offered: A.

**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. Offered: SpS.

**SPHSC 449 Special Studies in Speech Pathology and Audiology (\*, max. 30)** Selected special problems in speech pathology and audiology. Offered: S.

**SPHSC 461 Introduction to Hearing Science (5) NW** 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** 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: even years; A.

**SPHSC 471 Basic Audiometry (5) NW** Theory and practice of the assessment of hearing function, including standard pure-tone audiometry, speech audiometry, and basic impedance audiometry. Required for majors. Prerequisite: SPHSC 371; SPHSC 461; may not be repeated. Offered: AWS.

**SPHSC 481 Management of Hearing Loss (4) NW** 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: WSp.

**SPHSC 491 Audiology Practicum in Schools (2)** 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 471. Offered: AS.

**SPHSC 499 Undergraduate Research (1-5, max. 15)** Offered: AWSpS.

**SPHSC 500 Clinical Methodology for Documenting Change (4)** Introduction to clinical methodology for examining efficacy of

treatments for 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 to document effectiveness, effects, and efficiency of treatments.

**SPHSC 501 Neural Bases of Speech, Language, and Hearing (4)** 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.

**SPHSC 502 Advanced Anatomy of Speech and Hearing Structures (2)** Directed independent dissection and study of selected anatomic structures of the speech or hearing mechanisms.

**SPHSC 503 Current Issues in Speech and Hearing Sciences (3)** Application of experimental methods to research in speech and hearing sciences.

**SPHSC 504 Research Methods in Speech and Hearing Sciences (3)** Introduction to empirical methods in the speech and hearing sciences.

**SPHSC 505 Clinical Research in Communication Disorders (3)** Introduction to clinical research. Methodological issues concerning the evaluation of treatment for speech, hearing, and language disorders. Primary emphasis on time series designs. Prerequisite: SPHSC 504 or permission of instructor.

**SPHSC 506 Evidence-based Practice in Speech-Language Pathology I (3)** *Eadie* Examines empirical methods in speech-language pathology research. Included an introduction to principles of evidence-based practice. 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: A.

**SPHSC 507 Evidence Based Practice II (2)** *Dowden* Examines use of "internal" evidence collected by clinicians for decision-making in Speech-Language Pathology, according to Evidence Based Practice principles. Builds upon SPHSC 500 and 506, preparing student to apply EBP model to treatment of speech/language disorders. Prerequisite: SPHSC status, or permission of instructor. Offered: .W.

**SPHSC 508 Evidence Based Practice III (2)** *Dowden* Develops Critically Appraised Topics (CATs) to examine evidence for clinically relevant questions, issues, and topics. Builds upon SPHSC 500, SPHSC 506, and SPHSC 507, preparing students to apply Evidence Based Practice principles to decision-making in Speech-Language Pathology. Prerequisite: graduate status in SPHSC or permission of instructor. Offered: Sp.

**SPHSC 509 Advanced Hearing Science (3)** *Souza* 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.

**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, SPHSC 510.

**SPHSC 514 Speech Physiology (3)** Study of the physiological parameters of acoustic speech production. Prerequisite: SPHSC 320, SPHSC 461.

**SPHSC 515 Speech Acoustics (3)** Study of the acoustical correlates of the distinctive parameters of speech. Prerequisite: SPHSC 320, SPHSC 461, SPHSC 514.

**SPHSC 516 Speech Perception (3)** Study of the perceptual and linguistic parameters of speech perception. Prerequisite: SPHSC 320, SPHSC 461, SPHSC 515.

**SPHSC 519 Seminar in Speech Science (2, max. 6)**

**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.

**SPHSC 522 Hearing Instrument Modification/Repair (1)** Minor repair of hearing aids or associated accessories. Includes operation of hand tools and small power tools used in repair. 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.

**SPHSC 523 Special Topics (3)** 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.

**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 (4)** *Betz* 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: W.

**SPHSC 529 Assessment and Treatment of Birth-to-4 Communication Disorders (4)** *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: A.

**SPHSC 530 Assessment and Treatment of Adolescent Communication Disorders(3)** Examines the principles and procedures used in the assessment and treatment of adolescent school-aged speech and language disorders. Prerequisite: SPHSC 303 and SPHSC 304, or equivalent.

**SPHSC 532 Assessment and Treatment of Adult Neurogenic Communication Disorders (4)** Examines the principles and procedures used in the assessment and treatment of adult neurogenic communication disorders. Prerequisite: SPHSC 501 or permission of instructor.

**SPHSC 533 Medical Speech Pathology (3)** Nature of speech pathology practiced in medical settings. Prerequisite: SPHSC 501, SPHSC 531, and SPHSC 532, or permission of instructor.

**SPHSC 534 Assessment and Treatment of Dysphagia (4)** Anatomophysiologic 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.

**SPHSC 535 Assessment and Treatment of Voice Disorders (4)** Physiology, acoustics, and perception of voice quality and speech resonance. Etiology, evaluation, and treatment of voice and resonance disorders.

**SPHSC 536 Assessment and Treatment of Elementary School-Age Communication Disorders (4)** Examines the principles and procedures used in the assessment and treatment of elementary school-aged speech and language disorders.

**SPHSC 537 Fluency Disorders (4)** 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.

**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.

**SPHSC 540 Augmentative and Alternative Communication - Development (4)** *Dowden* Evaluation and intervention for children and adults with severe congenital speech and language impairments. Examines decision-making and treatment, using multi-modal communication strategies, from low-tech books, and picture exchange to complex voice output systems. Prerequisite: graduate SPHSC, REHAB, or EDSPE students, or permission of instructor. Offered: W.

**SPHSC 541 Augmentative and Alternative Communication: Acquired (4)** *Dowden* Evaluation and intervention for severe acquired speech/language impairments. Covers decision-

making and treatment for individuals who sustained a stroke, traumatic brain injury, or degenerative disease. Solutions include multimodal 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)** 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 or permission of instructor.

**SPHSC 543 Assessment and Treatment of Pediatric Dysphasia (3)** *Faherty, Pinder* 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 530; SPHSC 534; or permission of instructor. Offered: S.

**SPHSC 545 Assessment and Treatment of Voice Disorders in Medical Settings (4)** *Eadie, Nevdahl* Examines the principles and procedures used in assessment and treatment of voice disorders typically seen in medical settings, with a focus on instrumental such as use of interpretation of laryngeal imaging, acoustics, and perceptual measures. Prerequisite: SPHSC 535. Offered: A.

**SPHSC 546 Advanced Neurological Language Disorders (4)** Nature, assessment, and treatment of acquired language disorders, including aphasia, alexia, and agraphia. Prerequisite: SPHSC 501; SPHSC 502; or permission of instructor. Offered: Sp.

**SPHSC 547 Management of Acquired Cognitive Disorders (2)** Epidemiology, neuropathology, assessment, and management of acquired cognitive disorders. Focus on traumatic brain injury in adults and children, dementia, and right brain injury. Prerequisite: SPHSC 501 and SPHSC 532.

**SPHSC 549 Clinical Forum (1-3)** Culminating presentation for faculty and staff. Participation in the following activities: review of literature pertinent to patient population, data collection for treatment, data analyses, efficacy analyses. Offered: AWSpS.

**SPHSC 550 Public School Speech-Language Pathology and Audiology (3)** *Sargent, Siva* 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: A.

**SPHSC 551 Advanced Practicum in Speech Pathology Evaluation (1-10, max. 10)** Laboratory experience in the evaluation of speech and language disorders. Credit/no credit only. Prerequisite: SPHSC 536 and permission of instructor.

**SPHSC 552 Advanced Practicum in Speech Pathology Management (1-10, max. 10)** Laboratory experience in the management of speech and language disorders. Credit/no credit only. Prerequisite: permission of instructor.

**SPHSC 553 Advanced Practicum in Speech-Language Pathology (2-4)** 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 (2-10)** 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. Offered: AWSpS.

**SPHSC 555 Preinternship in Speech and Hearing Sciences (1-10, max. 10)** 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.

**SPHSC 560 Studies in Speech Science and Disorders (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.

**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.

**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.

**SPHSC 563 Proseminar: Instructional Development Forum (1, max. 3)** *Olswang* 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. Credit/no credit only. Prerequisite: graduate standing in Speech and Hearing Sciences.

**SPHSC 564 Teaching Practicum (1-5, max. 5)** 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 and permission of instructor. Credit/no credit only. Offered: AWSpS.

**SPHSC 565 Speech and Language Pathology Proseminar (1, max. 6)** Consideration of professional issues and student and faculty research. Credit/no credit only.

**SPHSC 566 Seminar in Speech-Language Development (2, max. 6)** Prerequisite: permission of instructor.

**SPHSC 567 Research Seminar in Speech and Hearing Sciences (1)** 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.

**SPHSC 568 Grant Writing in Hearing, Language, and Speech Science (3)** 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: upper-level doctoral standing and permission of instructor.

**SPHSC 569 Seminar in Speech-Language Pathology (2, max. 6)**

**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.

**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 471.

**SPHSC 572 Pediatric Audiology (3)** 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 471 or equivalent.

**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: permission of instructor.

**SPHSC 575 Medical Backgrounds in Audiology (3)** Diseases and injuries of the ear resulting in reduced audition. Prerequisite: SPHSC 571 or permission of instructor.

**SPHSC 576 Otoacoustic Emissions (2)** 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 573, or permission of instructor.

**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 471 or permission of instructor.

**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 573, and SPHSC 576, or permission of instructor.

**SPHSC 579 Geriatric Audiology (2)** Examines the biological, psychological, and social aspects which are normal correlates of the aging process, and those changes which are disorders. Emphasizes the identification and diagnosis of hearing problems associated with the aging process and its rehabilitation. Prerequisite: SPHSC 571.

**SPHSC 580 Rehabilitative Audiology (3)** 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.

**SPHSC 581 Management of Hearing-Impaired Children (2)** Management of hearing-impaired children, including identification of target behaviors and methods for modification such as individualized therapy programs and parent and teacher involvement.

**SPHSC 582 Hearing Aid Amplification (4)** Acoustic amplification and methods of determining electroacoustic characteristics. Includes earmold technology. Prerequisite: SPHSC 471 and SPHSC 570 or permission of instructor.

**SPHSC 583 Hearing Aid Selection (4)** Consideration of strategies utilized in selecting acoustic amplification for the hearing impaired, including review of pertinent research literature. Prerequisite: SPHSC 582 or permission of instructor.

**SPHSC 584 Advanced Amplification (3)** Current topics in hearing aids and amplification technology; review of pertinent research articles. Prerequisite: SPHSC 582, 583.

**SPHSC 585 Pediatric Amplification (2)** Consideration of strategies utilized in selecting and verifying acoustic amplification for infants and children, including review of pertinent research literature. Prerequisite: SPHSC 582 or permission of instructor.

**SPHSC 586 Cochlear Implants (2)** Basics of cochlear implant technology and programming strategies. Evaluation of prospective users, monitoring, and coupling with other devices. Rehabilitation techniques and materials.

**SPHSC 587 Ethics (1)** Analysis and discussion of ethical considerations in the clinical practice of audiology, codes of professional organizations, and additional consideration of research ethics and ethics in neonatal hearing screening.

**SPHSC 588 Audiology Proseminar (1, max. 3)** Consideration of professional issues and

student/faculty research in specific areas of interest. Credit/no credit only.

**SPHSC 589 Seminar in Audiology (2, max. 6)** Prerequisite: permission of instructor.

**SPHSC 590 Cerumen Management for Audiologists (1)** Review of anatomy and physiology of the external auditory canal. Examination of the physiology and pathophysiology of cerumen. Instrumentation of examining and cleaning the ear canal. Cerumen management procedures including otoscopy with normal and abnormal findings. Contraindications for cerumen management. Discussion of scope of practice, medical/legal issues, and reimbursement.

**SPHSC 591 Advanced Practicum in Audiology (1-10, max. 10)** Credit/no credit only. Prerequisite: permission of instructor.

**SPHSC 592 Electrophysiologic Assessment I (4)** Consideration of physiologic techniques that may be used to evaluate the normal and disordered auditory system. Outside laboratory required. Prerequisite: SPHSC 461, SPHSC 571.

**SPHSC 593 Electrophysiologic Assessment II (3)** *Tremblay* Examines evoked and event-related potentials including recording techniques, neurophysiological mechanisms, and applications to clinical populations. Offered: Sp.

**SPHSC 595 Cochlear Implants II (2)** *Bierer* Examines cochlear implant fitting procedures, outcomes, and rehabilitation for children and adults. Offered: Sp.

**SPHSC 599 Research Practicum (\*, max. 12)** Supervised laboratory experience in experimental approach to problems in speech and hearing sciences. Prerequisite: permission of instructor.

**SPHSC 600 Independent Study or Research (\*)** Prerequisite: permission of instructor.

**SPHSC 601 Internship (1-10, max. 10)** Supervised field experiences in settings other than public schools. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**SPHSC 602 Internship in the Schools (3-10, max. 10)** Supervised field experience in a public school setting. Credit/no credit only. Prerequisite: permission of instructor.

**SPHSC 603 Clinical Fellowship (8-12)** Supervised, professional clinical experience. Offered: AWSpS.

**SPHSC 700 Master's Thesis (\*)**

**SPHSC 800 Doctoral Dissertation (\*)**

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## Statistics

**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. Contact instructor for information on emphasized fields of applications. Credit/no credit only. Offered: jointly with BIOST 111; Sp.

**STAT 220 Basic Statistics (5) NW, QSR** Objectives and pitfalls of statistical studies.

Structure of data sets, histograms, means, and standard deviations. Correlation and regression. Probability, binomial and normal. Interpretation of estimates, confidence intervals, and significance tests. (Students may receive credit for only one of 220, 311, and ECON 311.) Offered: AWSpS.

**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 220, 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** 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.

**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; A.

**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/SOC 321; W.

**STAT 322 Case-Based Social Statistics II (5) I&S, QSR** Continuation of CS&SS/SOC/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/SOC/STAT 321, or permission of instructor. Offered: jointly with CS&SS/SOC 322; Sp.

**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: STAT/ECON 311; either MATH 126, MATH 129, or MATH 136; STAT/MATH 394. 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 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 390, STAT/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: 2.5 in MATH 126; 2.5 in MATH 308; either CSE 326, CSE 373, CSE 417, or CSE 421.

**STAT 394 Probability I (3) NW** Sample spaces; basic axioms of probability; combinatorial probability; conditional probability and independence; binomial, Poisson and normal distributions, central limit theorem. Prerequisite: either 2.0 in MATH 126, or 2.0 in MATH 136; recommended: 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: 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: either 2.0 in MATH 395 or 2.0 in STAT 395. Offered: jointly with MATH 396; Sp.

**STAT 403 Introduction to Resampling Inference (4) NW** 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. Credit allowed for 403 or 503 but not both. Prerequisite: either STAT 220, STAT 301, STAT/ECON 311, STAT 341, STAT 361, STAT/MATH 390, or STAT/ECON 481. Offered: 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, STAT/MATH 390, or STAT/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/MATH 390, STAT 421, or STAT/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/MATH 390. Offered: jointly with BIOST 425; when demand is sufficient.

**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** 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; even years.

**STAT 481 Introduction to Mathematical Statistics (5) NW** Probability, generating functions; the d-method, Jacobians, Bayes theorem; maximum likelihoods, Neyman-Pearson, efficiency, decision theory, regression, correlation, bivariate normal. (Credit allowed for only one of 390, 481, and ECON 580.) Prerequisite: STAT/ECON 311; either MATH 136 or MATH 126 with either MATH 308 or MATH 309. Recommended: MATH 324. Offered: jointly with CS&SS/ECON 481; A.

**STAT 486 Experimental Design (3) NW** Topics in analysis of variance and experimental designs: choice of designs, comparison of efficiency, power, sample size, pseudoreplication, factor structure. Prerequisite: Q SCI 482; recommended: Q SCI 483. Offered: jointly with Q SCI 486.

**STAT 491 Introduction to Stochastic Processes (3) NW** Random walks, Markov chains, branching processes, Poisson process, point processes, birth and death processes, queueing theory, stationary processes. Prerequisite: either 2.0 in 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: MATH STAT 394-5. Offered: jointly with MATH 492; W.

**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, STAT 390, ECON/STAT 481, ECON 580 or equivalent; MATH 308 or equivalent. Offered: A.

**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/MATH 390, STAT 421, STAT/ECON 481, 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 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 (4-)** Markovian and semi-Markovian models, point processes, cluster models, queueing models, likelihood methods, estimating equations. Prerequisite: STAT 511 or STAT 396. Offered: A.

**STAT 517 Stochastic Modeling of Scientific Data (-4)** Markovian and semi-Markovian models, point processes, cluster models, queueing models, likelihood methods, estimating equations. Prerequisite: STAT 516. Offered: W.

**STAT 518 Stochastic Modeling Project (4)** Supervised, applied project based on stochastic modeling of scientific data. Prerequisite: STAT 517. 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. Offered: A.

**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, or IND E 315. Offered: jointly with E E 520; W.

**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)** 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 students in biostatistics and other scientific fields. Prerequisite: BIOST 511 or equivalent, and one of STAT 421, STAT 423, BIOST 513, BIOST 518, or EPI 512; or permission of instructor. Offered: jointly with BIOST 524; even years.

**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 or STAT 390, ECON or STAT 481, or STAT 513; or IND E 315. Offered: jointly with E E 24; Sp.

**STAT 533 Classical Theory of Linear Models (3)** Introduction to one-, two-way analysis of variance; randomized blocks; fixed, random effects, multiple comparisons. Statistical distribution theory for quadratic forms of normal variables. Fitting of the general linear model by least squares. 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 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 535; 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 424, SOC 425, SOC 426, or equivalent; recommended: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with SOC 536/CS&SS 536; annually.

**STAT 538 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 538; W.

**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. Offered: alternate years.

**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. Offered: alternate years.

**STAT 547 Derivatives: Theory, Statistics, and Computing (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 equivalent, or permission of instructor. Recommended: ECON 424.

**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. 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 BIOST 550; A.

**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; W.

**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; GENET 371; or permission of instructor. Offered: jointly with BIOST 552; Sp.

**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 504-505-506 or equivalent; recommended: CS&SS 505-506 or equivalent. Offered: jointly with CS&SS 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. SOC 504-505-506 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 504-505-506 or equivalent; recommended: CS&SS 505-506 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 504-505-506 or equivalent; recommended: CS&SS 505; CS&SS 506. Offered: jointly with CS&SS 567.

**STAT 570 Advanced Applied Statistics and Linear Models (3)** Generalized linear models, REML in mixed models for randomized blocks, split plots, longitudinal data. Generalized estimating equations, empirical model building, cross validation, recursive partitioning, generalized additive models, projection pursuit. Prerequisite: STAT 513; STAT 533 or STAT 421 and STAT 423, and a course in matrix algebra for STAT 570. Offered: jointly with BIOST 570; A.

**STAT 571 Advanced Applied Statistics and Linear Models (3)** Generalized linear models, REML in mixed models for randomized blocks, split plots, longitudinal data. Generalized estimating equations, empirical model building, cross validation, recursive partitioning, generalized additive models, projection pursuit. Prerequisite: STAT 570. Offered: jointly with BIOST 571; W.

**STAT 572 Advanced Applied Statistics and Linear Models (3)** Generalized linear models, REML in mixed models for randomized blocks, split plots, longitudinal data. Generalized estimating equations, empirical model building, cross validation, recursive partitioning, generalized additive models, projection pursuit. Prerequisite: STAT 571. Offered: jointly with BIOST 572; Sp.

**STAT 573 Statistical Methods for Categorical Data (3)** Advanced topics in generalized linear models and the analysis of categorical data: overdispersion, quasilielihood, parameters in link and variance functions, exact conditional inference, random effects, saddlepoint approximations. Credit/no credit only. Prerequisite: STAT 571 and STAT 582. Offered: jointly with BIOST 573; alternate years.

**STAT 574 Multivariate Statistical Methods (3)** Use of multivariate normal sampling theory, linear transformations of random variables, one- and two-sample tests, profile analysis, partial and multiple correlation, multivariate ANOVA and least squares, discriminant analysis, principal components, factor analysis, robustness, and some special topics. Some computer use included. Prerequisite: STAT 570 or permission of instructor. Offered: jointly with BIOST 574; alternate years.

**STAT 576 Statistical Methods for Survival Data (3)** Statistical methods for censored survival data. Covers 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 STAT 423, BIOST 515, or Q SCI 483, or equivalent. Offered: jointly with BIOST 576; alternate years.

**STAT 577 Advanced Design and Analysis of Experiments (3)** Concepts important in experimental design and analyzing data from planned experiments. Multi-way layouts, randomized block designs, incomplete block designs, Lating and Graeco-Latin squares, factorial and fractional designs, split-plot designs, optimal design theory, response surface experiments. Prerequisite: either BIOST 515, BIOSTAT 533, STAT 502, STAT 504, STAT 533, or permission of instructor. Offered: jointly with BIOST 577.

**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)** 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 586 Martingales: Survival Analysis (3)** Theory of counting processes and martingales to provide unified study of survival analysis methods. Focus on survival distribution estimators, censored data rank statistics, regression methods with censored survival data. Development of small samples moments, asymptotic distributions, and efficiencies. Prerequisite: STAT 521 or STAT 583 or permission of instructor; recommended: STAT 576. Offered: jointly with BIOST 586; W.

**STAT 590 Statistics Seminar (\*, max. 15)** Credit/no credit only. Prerequisite: permission of graduate program coordinator. 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. Credit/no credit only. Prerequisite: permission of graduate program coordinator. 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.

## Women Studies

### **WOMEN 200 Introduction to Women Studies**

**(5) I&S** 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: AWPSP.

### **WOMEN 206 Philosophy of Feminism (5) I&S**

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.

### **WOMEN 207 Introduction to Feminist Theories (5) I&S**

Introduction to the multiplicity of feminist theories in both the United States and transnational contexts; examination of the histories of different theoretical positions and their relationship to feminist praxis. Topics include feminist analysis of knowledge production, power, and the categories of gender, race, class, sexualities, ethnicity, and nation.

### **WOMEN 257 Psychology of Gender (5) I&S**

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, PSYCH 102, or WOMEN 200. Offered: jointly with PSYCH 257.

### **WOMEN 283 Introduction to Women's History (5) I&S**

Includes units on American, European, and Third World women that examine centers of women's activities, women's place in male-dominated spheres (politics), women's impact on culture (health, arts), and the effect of larger changes on women's lives (technology, colonization). Offered: jointly with HIST 283; A.

### **WOMEN 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.

### **WOMEN 299 Women Studies Community in Colloquia (2) I&S**

Introduces new majors to the field of women studies. Includes helping students develop a course of study for their major, meeting their departmental advisor and the faculty. Students are encouraged to take this course immediately upon declaring the major. May be linked to service learning. Credit no credit only.

### **WOMEN 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 WOMEN 200 or WOMEN 206.

### **WOMEN 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.

### **WOMEN 310 Women and the Law (5) I&S**

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.

### **WOMEN 313 Women in Politics (5) I&S**

*DiStefano* 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.

### **WOMEN 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: joint with AFRAM 321.

### **WOMEN 322 Race, Class, and Gender (5) I&S**

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. Offered: jointly with AES 322.

### **WOMEN 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.

### **WOMEN 333 Gender and Globalization: Theory and Process (5) I&S**

*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 SIS 333.

### **WOMEN 339 Social Movements in Contemporary India (5) I&S**

*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/ SISA 339.

### **WOMEN 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; AWPSP.

### **WOMEN 345 Women and International Economic Development (5) I&S**

*Ramamurthy* Questions how women are affected by economic development in Third World and celebrates redefinitions of what development means. Theoretical perspectives and methods to interrogate gender and development policies introduced. Current processes of globalization and potential for changing gender and economic inequalities assessed. Offered: jointly with ANTH 345/SIS 345.

### **WOMEN 350 Women in Law and Literature (5) I&S/VLPA**

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.

### **WOMEN 351 Women of Color as Cross-Cultural Artists (5) I&S/VLPA**

*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 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. Offered: jointly with AES 310.

### **WOMEN 353 Anthropological Studies of Women (5) I&S**

Critical examination of the intersections between anthropology, research on gender issues, and feminism. Readings and class discussions examine the ways women have been represented in the field of anthropology and the repercussions of these anthropological images of women on contemporary understandings of gender. Offered: jointly with ANTH 353; W.

### **WOMEN 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: WOMEN 200.

### **WOMEN 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, menstruation, and menopause; sexuality; pregnancy, childbirth; the role of culture in determining the psychological response to the physiological events. Recommended: PSYCH/WOMEN 257. Offered: jointly with PSYCH 357.

### **WOMEN 383 Social History of American Women to 1890 (5) I&S**

*Yee* A multi-racial, multicultural study of women in the United States from the 17th century to 1890 emphasizing women's unpaid work, participation in the paid labor force, charitable and reform activities, and 19th century social movements. Uses primary materials such as diaries, letters, speeches, and artifacts. Offered: jointly with HSTAA 373; W.



**WOMEN 384 Social History of American Women in the 20th 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 20th century. Offered: jointly with HSTAA 374.

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

**WOMEN 392 Asian-American Women (5) I&S** *Root* History of and contemporary issues related to Asian-American women in the United States. Recommended: AAS 205 or AAS 206. Offered: jointly with AAS 392.

**WOMEN 404 Critical Pedagogies of Social Change (5) I&S** Examines theories of critical pedagogy as developed in struggles against race, class, and gender oppression in the U.S. and transnationally. Topics include the relation between theory and practice, the position of educators in struggles for social change, and the role of the arts in movement-building. Offered: jointly with AES 404.

**WOMEN 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 WOMEN 205, WOMEN 305, or SOC 364.

**WOMEN 410 Feminist Legal Studies: Theory and Practice (5) I&S** Examines feminist theoretical analyses of the law. Engages in current debate on the study of critical race, gender, and class theory. Includes: women in prison, public assistance, the sex industry, women and health care, and immigration law. Recommended: WOMEN 200 or WOMEN 310. Offered: jointly with LSJ 466/POL S 466.

**WOMEN 415 Gender and Education (5) I&S** Gender bias, discrimination, and gender-equity efforts in education. Includes curriculum instruction, instructional materials, testing, counseling, athletics, teacher education, educational employment issues, and sexual harassment. Relevant federal and state laws, court decisions, and strategies for promoting gender equity also addressed. Recommended: WOMEN 200 or SOC 110. Offered: jointly with EDC&I 440; S.

**WOMEN 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.

**WOMEN 423 Feminism, the State, and Democracy in Indonesia (5) I&S** Questions how women's issues and interests are affected by the history of Indonesia and by changes in the global political economy. Celebrates ways in which Indonesian women, feminists, and

feminisms negotiate their subject positions. Analyzes issues of gender and human rights in national political arenas, and of democratic reform. Offered: AWSpS.

**WOMEN 424 Women in Midlife (5) I&S** Explores women's lives, experiences, and concerns in the middle years. Topics include physical and physiological changes; psychological development; representations and treatment of midlife women in literature, media, and other institutions; economics of aging; crosscultural and subcultural differences in the aging process; the synergistic effects of sexism and ageism on women.

**WOMEN 425 Femininity, Feminism, and Antifeminism in Popular Culture (5) I&S/VLPA** Explores shifting meanings and reconfigurations of femininity, feminism, and antifeminism in United States popular culture. Analyzes the incorporation and transformation of feminist critiques of dominant ideologies into popular culture. Popular forms examined may include television serials, music videos, advertisements, films, and novels. Prerequisite: WOMEN 200.

**WOMEN 427 Women and Violence (5) I&S** *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: WOMEN 200.

**WOMEN 429 Scandinavian Women Writers in English Translation (5) VLPA** *Gavel-Adams* 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.

**WOMEN 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.

**WOMEN 438 Jewish Women in Contemporary America (5) I&S** 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 SISJE 438.

**WOMEN 440 Reading Native American Women's Lives (5) I&S** 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.

**WOMEN 442 Images of Natives in the Cinema and Popular Cultures (5) I&S/VLPA** *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.

**WOMEN 444 Criminality and "Deviance" in Native Communities (5)** 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.

**WOMEN 446 Global Asia (5) I&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/SISA 442; W.

**WOMEN 447 Economics of Gender (5) I&S** *Rose* 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: 2.0 ECON 300. Offered: jointly with ECON 447.

**WOMEN 450 Language and Gender (5) I&S, VLPA** *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.

**WOMEN 451 Latina Cultural Production (5) I&S/VLPA** 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. Offered: jointly with CHSTU 410.

**WOMEN 453 Lesbian Lives and Culture (5) I&S** An exploration and overview of lesbianism in historical, social, cultural, and interpersonal contexts. Prerequisite: either WOMEN 200 or WOMEN 206.

**WOMEN 454 Women, Words, Music, and Change (5) I&S/VLPA** 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: WOMEN 353. Offered: jointly with ANTH 454.

**WOMEN 455 Contemporary Feminist Theory (5) I&S** Raises the question of how political contexts condition the way some ideas become theory. Emphasizes the present crises in thinking about a transnational feminism.

**WOMEN 456 Feminism, Racism, and Anti-Racism (5) I&S** 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: WOMEN 200.

**WOMEN 457 Women in China to 1800 (5) I&S** *Ebrey* 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.

**WOMEN 458 Ideologies and Technologies of Motherhood (5) I&S** 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: WOMEN 200. Offered: jointly with ANTH 484.

**WOMEN 459 Gender Histories of Modern China, 18th to 20th Centuries (5) I&S** *Barlow* 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.

**WOMEN 462 Isak Dinesen and Karen Blixen (5) VLPA** *Stecher-Hansen* 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.

**WOMEN 468 Latin American Women (5) I&S/ VLPA** *Steele* 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; one additional 300-level course above SPAN 303. Offered: jointly with SPAN 468.

**WOMEN 474 Trans/Gender Queries (5) I&S** *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.

**WOMEN 476 Women and the City (5) I&S** *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.

**WOMEN 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 WOMEN 200, WOMEN 283, or WOMEN 383.

**WOMEN 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.

**WOMEN 486 Representing Beyond the Binaries: Mixing Race, Gender, and Sexuality in the Media (5) I&S** *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/AES 490.

**WOMEN 488 Women and/in Science (5) I&S** *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: one Women Studies course and one college-level science course.

**WOMEN 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.

**WOMEN 493 Senior Thesis (2-5, max. 15)** 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.

**WOMEN 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. Offered: AWSpS.

**WOMEN 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. Credit/no credit only.

**WOMEN 496 Global Feminisms: International and Indigenous Communities (5-12, max. 24)** Participation in academic study abroad programs related to Women Studies emphasizing globalization and study in international contexts or indigenous communities within the United States. Prerequisite: WOMEN 200.

**WOMEN 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. Credit/no credit only. Offered: AWSpS.

**WOMEN 499 Undergraduate Research (1-5, max. 10)** Independent study and research supervised by a faculty member with appropriate academic interest. Offered: AWSpS.

**WOMEN 501 History of Feminism (5)** Study of feminism from the 18th through the 20th 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.

**WOMEN 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.

**WOMEN 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.

**WOMEN 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.

**WOMEN 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.

**WOMEN 512 Critical and Interdisciplinary Approaches to Women's Health (3) Ensign, Schroeder** Critical examination of the historical, socio-political, and scientific influences on women's health. Issues of sexism, racism, and heterosexism discussed from the perspective of different disciplines. Offered: jointly with NURS 512; W.

**WOMEN 513 Seminar in Contemporary Women's Health Issues (1-5, max. 12)** Critical analysis of contemporary and historical literature relevant to health care for women across the life span. Synthesis of a holistic view of women's health to guide research and practice. Offered: jointly with NURS 513.

**WOMEN 534 Feminism and History of Women in China (5)** Explores historical question of gendered subjects in modern China and feminist stories of emancipation of Chinese women asking how these render invisible other kinds of history. Prerequisite: background in China studies or ability to handle Chinese primary sources.

**WOMEN 539 Social Movements in Contemporary India (5) 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 SISSA 539/ANTH 539.

**WOMEN 546 Gender and Colonialism in Eastern Asia (5) d** Economic-political colonialization, post colonialism, and statist-gendered citizenship; intra-Asian subimperialism structuring domestic production, family, and gendered subjectivities; humanism and the New

Woman; modern contests over new masculinity and new femininity; and the effect of war, imperialist occupation and colonial modernity on interregional flows of ideas, labor, capital, and jurisprudence. Offered: jointly with HSTAS 546; AWSpS.

**WOMEN 547 Gender and the New International Division of Labor in Asia Pacific (5)** Shift of the dynamic relation of gender, state, and citizens from modernization (national development) to globalization (intraregional development) strategies in Pacific Asia, 1945 to present. Consumption, service provision, migratory labor, intra-Asian investment, localization. Offered: jointly with HSTAS 547.

**WOMEN 550 White Privilege and Racism in Health and Human Services (3)** Explores relationships among the psychosocial health of people of color, American cultural patterns of intersecting forms of oppression (e.g., gender, race, and class) and the role of health professionals in defining, ameliorating, and aggravating psychosocial distress. Credit/No credit only. Offered: jointly with NURS 550; AWSp.

**WOMEN 553 Discourses in Feminist Anthropology Seminar (5)** Exploration of feminist anthropological theories and the works of their critics. Ways of using feminist anthropology in preparation for and conducting fieldwork. Topics include foundations in feminist

anthropology, grand theories, variation in feminist theoretical foci within the "four fields," responses to critics. Prerequisite: graduate standing. Offered: jointly with ANTH 555; W.

**WOMEN 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; •ethird world• and transnational feminisms; feminist critiques of globalization, governmentality, and neoliberalism.

**WOMEN 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.

**WOMEN 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.

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

**WOMEN 595 Graduate Student Colloquium (2, max. 12)** Forum for graduated students to share their research ideas and progress, general examination preparation issues, and teaching concerns. Prerequisite: Women Studies graduate students only. Offered: AWSp.

**WOMEN 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.

**WOMEN 597 Fieldwork in Women Studies (2-5, max. 15)** Supervised ethnographic and other on-site research by women studies graduate students. Women Studies graduate students only.

**WOMEN 598 Directed Readings in Women Studies (\*, max. 35)** Selected topics for individualized or small group study.

**WOMEN 600 Independent Study or Research (\*)** Offered: AWSpS.

**WOMEN 700 Master's Thesis (\*)** Credit/no credit only. Offered: AWSpS.

**WOMEN 701 Master's Practicum (\*)** Offered: AWSpS.

**WOMEN 800 Doctoral Dissertation (\*)** .

## School of Business Administration

### 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. Credit/no credit only. Corequisite: ACCTG 215.

**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.

**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.

**ACCTG 301 Intermediate Accounting I (3)** Concepts and principles of financial accounting. Analysis of controversies and problems related to the measurement of enterprise income and asset and liability valuation. Prerequisite: 2.0 in ACCTG 225; may not be repeated.

**ACCTG 302 Intermediate Accounting II (3)** Concepts and principles of financial accounting. Analysis of controversies and problems related to the measurement of enterprise income and asset and liability valuation. Prerequisite: 2.0 in ACCTG 301; may not be repeated.

**ACCTG 303 Intermediate Accounting III (3)** Concepts and principles of financial accounting.

Analysis of controversies and problems related to the measurement of enterprise income and asset and liability valuation. Prerequisite: 2.0 in ACCTG 302; may not be repeated.

**ACCTG 311 Cost Accounting (3)** 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: 2.0 in ACCTG 301; may not be repeated.

**ACCTG 320 Introduction to Accounting Information Systems (3)** 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: 2.0 in ACCTG 225; I S 300 which may be taken concurrently; may not be repeated.

**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 301. Prerequisite: 2.0 in ACCTG 225; may not be repeated.

**ACCTG 401 Federal Income Tax Factors in Business Decisions (3)** Service course in taxation recommended for the junior year for non-accounting majors. May also be taken by MBA students for graduate credit. Not open to accounting majors. Prerequisite: 2.0 in ACCTG 225; may not be repeated.

**ACCTG 411 Auditing Standards and Principles (3)** Intensive introduction to the attest function in society today. The environ-

ment, the process, and the report of the public auditor are analyzed. Potential extensions of the attest function are examined. Prerequisite: 2.0 in ACCTG 302; 2.0 in ACCTG 311; 2.0 in either ACCTG 320 or ACCTG 330; may not be repeated.

**ACCTG 420 Database Management for Accounting (3)** 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 445. Prerequisite: 2.0 in ACCTG 320; may not be repeated.

**ACCTG 421 Tax Effects of Business Decisions (3)** 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: 2.0 in ACCTG 302; may not be repeated.

**ACCTG 440 Accounting and Financial Management Decisions (3)** 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: 2.0 in ACCTG 302; 2.0 in ACCTG 311; FIN 350; may not be repeated.

**ACCTG 450 Business Taxation (3)** Issues of taxation for entities other than individuals, including corporations, subchapter S corporations, partnerships, estates, and trusts. Includes

corporate distributions, liquidations, and reorganizations. Prerequisite: 2.0 in ACCTG 421; may not be repeated.

**ACCTG 451 Individual Income Taxation (3)**

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: 2.0 in ACCTG 421; may not be repeated.

**ACCTG 460 Advanced Cost Accounting (3)**

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: 2.0 in ACCTG 311; may not be repeated.

**ACCTG 480 Accounting for Not-for-Profit Organizations (3)**

Fund and budgetary accounting as applied to public sector organizations, such as governments, foundations, hospitals, and colleges. Prerequisite: 2.0 in ACCTG 302; may not be repeated.

**ACCTG 485 Advanced Financial Accounting (3)**

Accounting for partnerships, accounting for business combinations, parent-subsidiary and branch relationships, foreign exchange. Prerequisite: 2.0 in ACCTG 302; may not be repeated.

**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. Credit/no credit only. Prerequisite: ACCTG 301.

**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 (3)**

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)**

*Noreen, Sundem* 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 required core for undergraduate accounting majors: intermediate accounting, advanced accounting, cost accounting, auditing, and tax accounting. Credits will not count toward MBA degree. Prerequisite: ACCTG 215 and ACCTG 225 or equivalent, or permission of instructor.

**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 502, 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 502, 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 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. Prerequisite: ACCTG 520.

**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. Prerequisite: ACCTG 522.

**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. Included corporate distributions, liquidations, and reorganizations. International dimensions of business taxation are introduced. Prerequisite: ACCTG 524.

**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 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.

**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 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 534 and 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 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; 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 541 Communications for Taxation Professionals (4)** Introduction to the communications forms and to practices 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 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 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 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 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 596 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 Seminar in Managerial Accounting Research (4)** Critical analysis of current managerial accounting research, both published and unpublished. Prerequisite: doctoral student status and 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. The seminar is generally concerned with unpublished areas of research as well as research methodology and philosophy. It is conducted by departmental faculty and occasional distinguished visiting faculty. Prerequisite: doctoral student status.

**ACCTG 600 Independent Study or Research (\*)**

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## Business Administration

### Administration

**ADMIN 510 Essentials of Business ([1-15, max. 15]-)** *Huber* 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 masters of business administration majors. Credit/no credit only.

### 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 410 Business Advantage (10)** Four-week integrative course which focuses on business basics — finance, accounting, marketing strategy and human resources. Team-taught by faculty experts using case discussions, lectures, and student presentations. Not open for credit to students pursuing a Business degree.

**B A 470 Accounting and Finance for Non-business Majors (3) QSR** Addresses economic foundations of demand, supply, and costs as basis for accounting system. Focuses on using data for evaluating performance, budgeting and financial statement analysis. Short-term and long-term decision making compared. Not open for credit to students pursuing a Business degree. Offered: A.

**B A 471 Marketing Analysis and Strategy for Non-business Majors (3) I&S** Provides understanding of marketing principles and their usefulness in diverse business and organizational situations. Includes study of controllable and uncontrollable factors in making marketing decisions; developing working knowledge of marketing strategy and understanding of implications of product life cycle for decision-making. Not open for credit to students pursuing a Business degree. Offered: W.

**B A 472 Managing Human Assets for Non-business Majors (3) I&S** Deals with understanding management of human resources in businesses and other organizations. Includes study of relevant theories and research, analyses of cases, and experiential exercises including overview of new work place, diversity, leading, deciding, negotiations, attracting, motivating and rewarding, and team management. Not open for credit to students pursuing a Business degree. Offered: Sp.

**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 School of Business Administration.

**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 School of Business Administration.

**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 School of Business Administration.

**BA 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 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 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 541, 542, 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 indepen-

dent 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 (\*)**

## 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 580. Measurement errors, distributed lags, and simultaneous equation models. Prerequisite: BA RM580.

**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. It is primarily concerned with developing alternative approaches to research problems and with discussing specific applications. It 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 Basic Written Business**

**Communications (4)** Broad analytical approach to written communications as a management tool. Analysis of the psychology, semantics, planning, and principles of effective business writing. Practical application through messages that inform and persuade, grant and refuse; plus

short business reports and applications for positions. Cannot be taken for credit if B CMU 302 already taken. Offered: AWSp.

**B CMU 302 Basic Written Business Communications for Accounting Majors (4)**

Broad analytical approach to written communications as a management tool for accountants. Analysis of the psychology, semantics, planning, and principles of effective business writing. Practical applications through messages that inform and persuade, grant and refuse; plus short business reports and applications for positions. Cannot be taken for credit if B CMU 301 already taken. Corequisite: ACCTG 301.

**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: BA 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 (\*)**

*Goethals, Kalitzki* 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 311, or STAT 390; may not be repeated.

**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.

**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 301 or ECON 301; may not be repeated.

**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; either B ECON 301 or ECON 301.

**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.

**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: B ECON 500.

**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: FIN 509.

**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: either B A 502 or both B ECON 501 and FIN 502.

**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 (\*)**

## Business Policy

**B POL 482 Strategies for New Ventures (4)** Focuses on market analysis and strategy formation. Includes building an entrepreneurial firm, market opportunity analysis, product testing, developing and implementing business plans, venture financing, and managing a growing company. Prerequisite: B POL 471; MKTG 335; MKTG 455; FIN 454.

**B POL 499 Undergraduate Research (1-6, max. 9)**

## Electronic Business

**EBIZ 501 E-Business Marketing (4)** *Schlosser* Uses current strategies for Internet marketing and explores new frontiers. Topics include examining the history, culture, and design of the Internet and the resulting impact on marketing; Web-based business models; consumer demographics; Web usage behavior; privacy issues; brand loyalty; virtual communities; and commercial Web site effectiveness metrics. Offered: W.

**EBIZ 502 E-Business Technology (4)** *Mookerjee* Examines the underlying information technologies that are driving the e-business revolution, including the overall technical infrastructure required to execute an e-business solution. Taught via lectures, projects, and hands-on sessions in the E-Business lab. Students implement and manage an e-business site. Offered: A.

**EBIZ 503 E-Business Economics (4)** *Rice, Schall, Tarhouni* Uses economic principles to assess the implications of evolving Internet technology for business decision-making, market prices, and market structure. Develop theoretical extensions of the models covered in B A 500 to analyze the questions that the Internet poses. Includes a group paper and a group evaluation of an Internet company. Offered: W.

**EBIZ 504 E-Business Strategy (4)** *Kotha* Integrates issues pertaining to management of technology and entrepreneurship: the emergence of the global digital economy and its impact on commerce, business models in e-commerce, "netpreneurship" and its place in existing corporations. Lectures and featured speakers from online Seattle firms, case discussions, and group projects. Offered: ASp.

**EBIZ 509 Foundations of E-Business (2)** Examines the fundamental technologies associated with business-to-consumer and business-to-business interaction and delivery of content via the Internet. Contrasts clients-

versus server-side approaches to database processing and XML, and execution of business rules and logic. Includes experience with the various technologies. Prerequisite: Permission of School of Business Administration. Offered: Sp.

**EBIZ 579 Special Topics in E-Business (2-4, max. 12)** Topics vary. Offered only when faculty members are available and there is sufficient student interest.

**EBIZ 600 Independent Study or Research (8)**

## Entrepreneurship

**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.

**ENTRE 402 Managing Rapid Growth Companies (4)** Focuses on developing and managing rapid-growth businesses. Topics include developing and executing business plans in markets poised for rapid growth, expanding beyond niche segments, seeking venture financing from private and public markets, and managing and directing growth appropriate hiring and market expansion. Prerequisite: ENTRE/ MGMT 401.

**ENTRE 440 Business Plan Competition Practicum (4)** Explores the challenges/ requirements of transforming an idea into a business. Emphasizes developing business concepts/strategy, marshalling resources, providing the business model, and creating strategic plans for growth. Students must attend the business plan competition resource nights and participate in the business plan competition held the following quarter.

**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)** 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 School of Business Administration. Offered: Sp.

**ENTRE 510 Entrepreneurial Ventures (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 511 Entrepreneurial Marketing (2)**

Focuses on marketing issues related to the generation and development of innovative ideas, assessment of feasibility, implementation and execution, and valuation of business ventures, highlighting the real world applications by new ventures. Prerequisite: B A 501 and entrepreneurial bridge course.

**ETNRE 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 530 New Venture Creation and**

**Managing Growth (4)** *Song* Focuses on gaining experience in market analysis, new venture strategy formulation, and the management of a new venture. Topics include building an entrepreneurial firm, market opportunity analysis, product testing, developing and executing business plans, venture financing, and managing a growing company. Prerequisite: B POL 509; B A 501. Offered: W.

**ENTRE 531 Developing Business Models for Emerging Technologies (4)**

*Song* 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 Entrepreneurship Practicum (2,**

**max. 4)** *Bigley, Sundem* Enables students interested in new venture creation to explore their entrepreneurial aptitude by competing in a Business Plan Competition offered by the Center for Technology Entrepreneurship. Requires enrollment in the CTE certificate program. Credit/no credit only.

**ENTRE 541 Technology Commercialization**

**Practicum (4)** *Derrickson, Kotha* 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: W.

**ENTRE 542 Venture Capital Investment**

**Practicum (2)** *Dooley, Sigl* 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 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 Entrepreneur-**

**ship (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)** *Song* 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. Class sessions review and critique assigned readings associated with each topic. Offered: A.

**ENRE 582 Technology, Innovation, and**

**Entrepreneurship (4)** *Kotha* 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)** *Kotha, Song* 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 311, or STAT 390.

**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.

**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.

**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.

**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.

**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.

**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: W.

**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.

**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.

**FIN 462 Management of Financial Risk (4)**

*y* 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.

**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. Credit/no credit only. Prerequisite: FIN 350. Offered: AWSpS.

**FIN 499 Undergraduate Research (1-6, max. 9)**  
Research in selected areas of business finance, money and banking, or investments, with permission of instructor. Recommend: 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 509 Foundations of Asset Valuation (2)**  
Introduction to valuation, focusing on topics in asset-pricing, fixed income, financial options, and international markets. Emphasizes both theoretical and applied concepts. Course material prepares students for advanced topics covered in the finance electives. Prerequisite: either B A 501 or FIN 502, or permission of School of Business Administration. Offered: Sp.

**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: FIN 509.

**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. 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. Cannot be taken for credit in combination with FIN 551. Prerequisite: FIN 509.

**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: FIN 509.

**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: FIN 509.

**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: FIN 509.

**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. Offered: WSp.

**FIN 560 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, securities portfolios, and total wealth. Prerequisite: FIN 509.

**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: FIN 509.

**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: FIN 509.

**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 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 (\*)**

## Human Resources Management and Organizational Behavior

**HRMOB 499 Undergraduate Research (1-6, max. 9)**

## 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 311, or STAT 390; may not be repeated.

**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.

**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:

site: I S 300; I S 310, which may be taken concurrently; may not be repeated.

**I S 423 E-Business System Development (4)** Introduces key e-business enabling information technologies. Covers object-oriented principles, representing objects in software, object analysis and design, and use of modern programming language, and advanced database technology for web-based application development. Prerequisite: I S 320; may not be repeated.

**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.

**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 310; I S 320, which may be taken concurrently; may not be repeated.

**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, which may be taken concurrently; may not be repeated.

**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.

**I S 499 Undergraduate Research (1-6, max. 12)** Selected problems in information systems and computer applications.

**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., spread sheet, 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 formation systems design, software engineering, decision support and expert systems, empirical methods, optimal control theory. Prerequisite: I S 58 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 professors and departmental faculty. Prerequisite: doctoral student status.

**I S 600 Independent Study or Research (\*)**

## International Business

**I BUS 300 The International Environment of Business (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.

**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.

**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.

**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.

**I BUS 461 Science, Technology, and Innovation Policies in East Asia (5)** 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.

**I BUS 462 Japanese Business and Technology (5)** 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 SISEA 482.

**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.

**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.

**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. Credit/no credit only. Prerequisite: I BUS 300. 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.

**I BUS 499 Undergraduate Research (1-6, max. 9)** Prerequisite: I BUS 300.

**I BUS 509 Foundations of International Business (2)** Introduction to governmental and organizational forces shaping international business. Considers the issues of trade, direct foreign investment, balance of payments, and comparative advantage. Looks at economic policies of governments and multilateral organizations such as WTO, IMF, and World Bank. Prerequisite: permission of School of Business Administration. Offered: Sp.

**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 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)** 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. Offered: jointly with SISEA 581.

**I BUS 562 Japanese Business and Technology (5)** 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 SISEA 582.

**I BUS 570 International Study Tour (2)** Educational international study tour. Includes pre-tour and post-tour activities. Prerequisite: B A 502 and permission of School of Business Administration.

**I BUS 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.

**I BUS 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.

**I BUS 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.

## **I BUS 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 300 Managing for Organizational Effectiveness (4)** Organizational behavior and organization theory concepts show how managers can improve organizational effectiveness by attending to the human side of the enterprise. Topics such as leadership, motivation, power and politics, and organization design are examined for their effects on 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.

**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 yourself in a competitive marketplace and present yourself 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: AWSp.

**MGMT 321 Legal and Regulatory Environment of Business (4)** Managerial implications of restrictions imposed by government on corporations from legal point of view. Constitutional law impacting business managers; antitrust, administrative, and regulatory issues; environmental law, product liability law, and securities law. Not a business or commercial law course.

**MGMT 322 Inventing Modern Capitalism (4)** Business-government relationships in American history, with aim of defining and explaining patterns in attitudes and behavior rather than detailing events. Discussions organized in terms of policy areas (e.g., national banking, transportation, agriculture, energy, industry in wartime, trade, and research).

**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.

**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.

**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.

**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 ones job. Effects of these formal and informal strategies on job attitudes.

**MGMT 404 Organization Development and Change (4)** Provides a conceptual understanding of organization development theory, practice, and research. Organization development is an umbrella term for a collection of behavioral science techniques for increasing individual, group, and organizational effectiveness.

**MGMT 411 Recruiting and Hiring Talent (4)** Affirmative action, recruitment, testing, interviewing, placement, promotion, and overall human resource planning. Prerequisite: MGMT 311.

**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.

**MGMT 413 Labor Law and Collective Bargaining (4)** Labor-management relations. The legal context, union organizing, grievance administration, collective bargaining. Individual and group simulations used.

**MGMT 421 Commercial Law (5)** Principles of the law of contracts, agency, property, sales, negotiable instruments, and security transactions. Prerequisite: O E 200 or MGMT 200.

**MGMT 422 Protecting Intellectual Property in a Global Economy (2)** Provides instruction to help people who are not lawyers and who are starting new companies recognize, protect, develop, and manage intellectual property in a global economy. Assists managers of more mature firms better understand the intellectual property protection process. Includes topics related to e-commerce.

**MGMT 430 Business Policy (4)** Policy making and administration from a general management point of view. Emphasis is on problem analysis, the decision-making process, administration and control, and continuous reappraisal of policies and objectives. Integrates and builds upon the work of the core curriculum. Prerequisite: FIN 350; MKTG 301; either HRMOB 300 or MGMT 300; recommended: OPMGT 301. Offered: AWSp.

**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. Credit/no credit only. Prerequisite: MGMT 300.

**MGMT 500 Management and Leadership (3)** 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 (3)** 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)** *Reynolds* 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 505 Business Ethics (2)** Business organization's political, social and legal environments. Critical managerial issues from historical, theoretical, and social/ethical perspectives. Corporate political power, corporate boards of directors, industrial power, social responsibility, business ethics, roles of the corporation in society, themes of change.

**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)** *Dooley, Steensma* 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. Offered: WSp.

**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 The Individual and the Organization (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 Power, Influence, and Citizenship Behavior (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 Organization Entry, Training, and Exit (4)**

Focuses on the systems, processes, and experiences that newcomers to organizations undergo. Covers staffing, employee selection, training, socialization, and attachment.

**MGMT 583 Contemporary Research in Organizational Behavior (4)**

Focuses on importance of group processes for organizational effectiveness. Covers concepts of group dynamics including interpersonal communication, role and norm development, and group decision making as well as organizational processes such as team development and organizational culture.

**MGMT 584 Contemporary Research in Human Resource Management (4)**

Focuses on the

organization's employee performance appraisal and compensation systems. Examines effects of different practices.

**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 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.

**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.

**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.

**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.

**MKTG 410 Product Management (4)** Important aspects of product planning and development, concept testing, product-life cycle, portfolio analysis, targeting and positioning, branding issues, product-line extension, pricing policies, and implementing product decisions. Computer simulation project provides practice for implementing product strategies. Prerequisite: MKTG 301; may not be repeated.

**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.

**MKTG 445 Multicultural Marketing and Business Development (4)**

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.

**MKTG 446 Repositioning and Instituting Change in a Multicultural Business Environment (4)**

*Montoya, Rowland, Thomas* Study of market forces, strategies for leading marketing organization change. Teams work with clients on implementing project. Emphasis on consulting sessions with client, strategic thinking exercises, class presentations, final oral and written reports. Prerequisite: MKTG 301. Offered: Sp.

**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.

**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.

**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, STAT 301, STAT 311, or STAT 390; may not be repeated.

**MKTG 465 Marketing Data: Measurement and Analysis (4)** Tools for aiding market segmentation, positioning, product design, and demand analysis. Examines multidimensional scaling, conjoint analysis, factor analysis, cluster analysis, discriminant analysis, multiple regression, logistic regression, and decision trees. Emphasis on applications of practical marketing problems and using statistical packages. Prerequisite: MKTG 301; may not be repeated.

**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.

**MKTG 475 Retail Strategy: Internet and Global Dimensions (4)** Explores how owners and top managers of retail firms analyze and solve problems, design, implement, and evaluate strategies and other wise manage for competitive advantage. Utilizes cases, readings, and writing assignments as the main tools for teaching and learning. Prerequisite: MKTG 370; may not be repeated.

**MKTG 477 Merchandise Acquisition and Management (4)** Integration of summer internship experiences with discussion of merchandise acquisition. Includes retail inventory management system, processes of planning and buying merchandise, private label and imported goods, and relevant personnel management area. Centers on major project done for and with company buying staff. Prerequisite: MKTG 301; MKTG 370; MKTG 495. Offered: A.

**MKTG 478 Retail Merchandising and Design Management (4)** Second of capstone seminars includes integration of summer internship experiences with customer service, customer communications, merchandise presentation, and leadership skills. Visit local retailers to observe visual presentations, prepare design plan for store, and examine management styles to determine philosophy for employees, and provide customer service. Prerequisite: MKTG 301; MKTG 370; MKTG 495. Offered: W.

**MKTG 480 Advanced Marketing Management (4)** Capstone course connecting principles, tools, and elements of multiple marketing disciplines to a manager's perspective and responsibilities in today's company. Emphasizes strategy, analysis, and problem solving. Analyzes marketing problems using conceptual and quantitative tools utilized in marketing decision making. Prerequisite: MKTG 301; MKTG 450; MKTG 460; may not be repeated.

**MKTG 485 Strategic Market Management (4)** Utilize cases and/or projects to examine strategic market-based management. Analyze marketing situations to identify market trends and understand consumer and competitor behavior. Develop and justify appropriate course of action to address marketing problems and

opportunities in terms of product planning, distribution channels, pricing, and promotion. Prerequisite: MKTG 301.

**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.

**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.

**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 509 Foundations of Marketing Analysis (2)** Examines analytical and statistical methods useful in strategic decision making in marketing. A dynamic computer simulation activity allows students to develop and receive feedback on competitive marketing strategies. Prerequisite: either B A 501 or MKTG 501. Offered: Sp.

**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: B A 501.

**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: B A 501 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: B A 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: B A 501.

**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: B A 501.

**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: B A 501.

**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: B A 501.

**MKTG 555 Entrepreneurial Marketing and Management (4)** Examines the skills and tools entrepreneurs need for bootstrap marketing in their firms. 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 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: B A 501.

**MKTG 565 Database Marketing and Decision Models (4)** Examines methodologies that are useful for analyzing customer databases. Presents models that can be applied in the analysis of marketing problems and the support of marketing decisions. Prerequisite: B A 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: B A 501; 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: B A 501.

**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: B A 501.

**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 development 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 311, or STAT 390.

**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)** Use of material and supply chain management in manufacturing and service organizations to reduce inventory levels while providing adequate service to customers. Specific topics include forecasting, Just-in-Time production, deterministic and stochastic inventory models, and material requirements planning (MRP). Prerequisite: OPMGT 301.

**OPMGT 450 Introduction to Project Management (4)** Focuses on the management of complex projects and the tools and techniques which have been developed in the past 25 years to assist managers with such projects. The course covers all elements of project planning, scheduling and control as well as implementation and organizational issues. Prerequisite: OPMGT 301.

**OPMGT 461 Business of Process Design (4)** Examines systems theory, project design, and strategic decision-making in a teaming environment. Provides a unique opportunity to get involved with real-life design problems in the chemical and aeronautical industries. Prerequisite: OPMGT 301.

**OPMGT 490 Special Topics in Operations Management (1-6, max. 20)** Operations management topics of current concern to faculty and students. Potential topics are: 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. Credit/no credit only. Prerequisite: OPMGT 301.

**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 535 Global Trade, Transportation, and Logistics Management (4)** *Goodchild, Schmitt, Shelton* 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: jointly with CEE 587/GTTL 501; AWSp.

**OPMGT 536 Seminar in Global Trade, Transportation, and Logistics (4)** Interdisciplinary seminar that brings together students with academics and practitioners at the forefront of trade, transportation, and logistics in discussions of selected topics. Additionally, students research issues of special interest. Prerequisite: OPMGT 535, GTTL 501, or permission of instructor. Offered: jointly with GTTL 502; Sp.

**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 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. The seminar is generally concerned with unpublished areas of research and is conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status.

**OPMGT 600 Independent Study or Research (\*)**

## Organization and Environment

**O E 499 Undergraduate Research (1-6, max. 9)** Selected problem areas or issues in consultation among faculty members and students. Prerequisite: permission of the undergraduate office.

## 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.

**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.

**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 (3)** 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.

**QMETH 503 Practical Methods for Data Analysis (4)** Presentation of 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. Prerequisite: B A 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. The seminar is generally concerned with unpublished areas of research and is conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status. Credit/no credit only.

**QMETH 600 Independent Study or Research (\*)**

# School of Dentistry

## Dentistry

### Dental Public Health Sciences

**DPHS 201 Planning a Career in Dentistry for the Future (2)** 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-, and third-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: A WSps.

**DPHS 510 Social and Historical Perspectives in Dentistry (2)** Examines dental care problems involving biological, behavioral, and community elements and has student develop hypotheses regarding nature and complexity of problem, set objectives, seek resources and information, and contribute to development of outcomes. Credit/no credit only. Offered: A.

**DPHS 535 P-Scientific Literature in Clinical Decision Making (1)** 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 541 P-Ethics in Dentistry (1)** Seminar improving ethical reasoning skills and conveying ethical and legal standards of the profession. Credit/no credit only. Offered: Sp.

**DPHS 550 P-Directed Studies in Dental Public Health Sciences (\*, max. 6)** 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: A WSps.

**DPHS 568 Biostatistics in Dentistry (3)** 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.

**DPHS 569 Clinical Epidemiology and Study Design in Dentistry (2)** 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 575 Behavioral Dental Research (1)** Survey of behavioral science research and methodology in dentistry and related fields. Emphasis in various quarters varies: literature review, research design, instrumentation, data analysis. Designed for advanced students who plan a research career. Credit/no credit only. Prerequisite: doctoral degree or permission of instructor. Offered: AWSp.

**DPHS 640 P-Professional Issues: Clinical Management of the Fearful and Phobic (1)** 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: AWSpS.

**DPHS 660 Dental Fear Clinic (2)** Clinical instruction in the care of the severely anxious or phobic adult or child. Strategies from behavioral and cognitive psychology. Credit/no credit only. Prerequisite: graduate standing in dentistry or permission of instructor. Offered: AWSpS.

## 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 521 P-Oral Pathology (3)** Survey of the diseases of the oral-facial regions in lecture and laboratory sessions. Among the conditions discussed are diseases of teeth and their supporting structures and diseases of the oral and paraoral soft tissues and bones. Correlations between clinical findings, etiologic factors, and histopathologic features are stressed. Attendance in the laboratory is required. Offered: A.

**DENT 522 P-Oral Pathology (3)** Survey of the diseases of the oral-facial regions in lecture and laboratory sessions. Among the conditions discussed are diseases of teeth and their supporting structures and diseases of the oral and paraoral soft tissues and bones. Correlations between clinical findings, etiologic factors, and histopathologic features are stressed. Attendance in the laboratory is required. Offered: W.

**DENT 523 Medical Emergencies in the Dental Setting (1)** Initial emergency training, focusing primary upon recertification in BLS. Emphasizes

intellectual and psychomotor skills for universal treatment of emergencies (which includes BLS). Offered: A.

**DENT 533 Medical Emergencies in the Dental Setting II (2)** Comprehensive medical emergency training, including review of BLS. Students participate in real-time simulated drills to prepare both their intellectual and psychomotor skills for emergency care situations. Credit/no credit only. Offered: A.

**DENT 534 P-Geriatric Dentistry (1, max. 2)** Two-quarter sequence on special needs of older persons seeking dental care: oral health, psychology of aging, socioeconomic problems, effective communication, dental management, and special problems in long-term care settings. 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 543 Medical Emergencies in the Dental Setting III (1)** Comprehensive review/refreshment of medical emergency training, including recertification in BLS. Students participate in real-time simulated drills to prepare both intellectual and psychomotor skills for emergency care situations. Offered: S.

**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: A.

**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: W.

**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: Sp.

**DENT 550 P-Special Studies in Dentistry (\*, max. 12)** Series of courses offered by the various departments from which students may elect study in areas of special interest to them. These courses include 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 (2)** 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: AS.

**DENT 569 Contemporary Dental Practice Management (1)** *Chasteen* 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 640 P-Extramural Clinics in Geriatric Dentistry (2)** Extramural geriatric clinical experience, including three days at a nursing home or community clinic, and brief didactic component. Credit/no credit only. Offered: AWSpS.

**DENT 645 P-Hospital Rotation (2)** Clinical experience that puts into practice the material presented in 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.

**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. Credit/no credit only. Prerequisite: permission of instructor. 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. 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. Offered: AWSpS.

**DENT 700 Master's Thesis (\*)** Offered: AWSpS.

## Oral Surgery

**O S 520 P-Local Anesthesia (2)** Pharmacology, physiology, anatomy, and techniques of local anesthesia for dental students.

**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.

**O S 532 P-Sedation and Pain Control (2)** Techniques of sedation (oral, inhalational, intravenous) and pain control.

**O S 550 P-Directed Studies in Oral Surgery (\*, max. 16)** See DPHS 449 for course description and prerequisite.

**O S 560 Dental Sedation (2)** For graduate students in the various dental specialties on the theory, application, and techniques of dental sedation. All forms of sedation, including oral, intramuscular, intravenous, and inhalation, are covered.

**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.

**O S 651 P-Harborview Clerkship (2-10, max. 10)** Four -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. Credit/no credit only. Prerequisite: permission of department chairperson.

## 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 and prerequisite. Offered: S.

**PEDO 560 Fundamentals of Pediatric Dentistry (1)** Preclinical 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 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 575 Pediatric Dentistry Seminar VI (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 576 Pediatric Dentistry Seminar VII (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 577 Pediatric Dentistry Seminar VIII (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 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 at the University of Washington pediatric dental clinic.

**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. 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 Children•fs Hospital Dental Clinic. Offered: S.

**PEDO 671 Hospital Pediatric Dentistry (1-3, max. 3)** Diagnosis, management, and treatment of patients with disabilities in Children•fs Hospital Dental Clinic. Offered: A.

**PEDO 672 Hospital Pediatric Dentistry (1-3, max. 3)** Diagnosis, management, and treatment of patients with disabilities in Children•fs Hospital Dental Clinic. Offered: W.

**PEDO 673 Hospital Pediatric Dentistry (1-3, max. 3)** Diagnosis, management, and treatment of patients with disabilities in Children•fs Hospital Dental Clinic. Offered: Sp.

**PEDO 674 Hospital Pediatric Dentistry (1-3, max. 3)** Diagnosis, management, and treatment of patients with disabilities in Children•fs Hospital Dental Clinic. Offered: S.

**PEDO 675 Hospital Pediatric Dentistry (1-3, max. 3)** Diagnosis, management, and treatment of patients with disabilities in Children•fs Hospital Dental Clinic. Offered: A.

**PEDO 676 Hospital Pediatric Dentistry (1-3, max. 3)** Diagnosis, management, and treatment of patients with disabilities in Children•fs Hospital Dental Clinic. Offered: W.

**PEDO 677 Hospital Pediatric Dentistry (1-3, max. 3)** Diagnosis, management, and treatment of patients with disabilities in Children•fs 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.

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## Endodontics

**ENDO 521 Introduction to Clinical Endodontics (4)** Lecture component covers the biology, pathology, diagnosis, treatment, and outcome of dentin-pulp complex and pulpal-related periradicular pathology. Preclinical laboratory component covers endodontic treatment techniques on extracted 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: W.

**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: Sp.

**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. Offered: W.

**ENDO 550 P-Directed Studies in Endodontics (\*, max. 6)** See DPHS 449 for course description and prerequisite. 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. Offered: W.

**ENDO 561 Anatomical Basis for Clinical Endodontics (2)** Root canal anatomy of significance in clinical endodontics is discussed in a seminar format. Offered: A.

**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, are discussed. Offered: Sp.

**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. Offered: W.

**ENDO 568 Endodontic Practice Management (1)** Essential elements for establishing and managing a successful specialty practice in Endodontics. Prerequisite: ENDO 562. Offered: A.

**ENDO 580 Endodontic Seminar (2)** Continuous weekly seminar devoted to review of endodontic and related literature and discussion of research methods.

**ENDO 581 Endodontic Seminar (2)** Continuous weekly seminar devoted to review of endodontic and related literature and discussion of research methods.

**ENDO 582 Endodontic Seminar (2)** Continuous weekly seminar devoted to review of endodontic and related literature and discussion of research methods.

**ENDO 583 Endodontic Seminar (2)** Continuous weekly seminar devoted to review of endodontic and related literature and discussion of research methods.

**ENDO 584 Endodontic Seminar (2)** Continuous weekly seminar devoted to review of endodontic and related literature and discussion of research methods.

**ENDO 585 Endodontic Seminar (2)** Continuous weekly seminar devoted to review of endodontic and related literature and discussion of research methods.

**ENDO 586 Endodontic Seminar (2)** Continuous weekly seminar devoted to review of endodontic and related literature and discussion of research methods.

**ENDO 587 Endodontic Seminar (2)** Continuous weekly seminar devoted to review of endodontic and related literature and discussion of research methods.

**ENDO 590 Treatment Planning Seminar (2, max. 16)** Weekly seminar to discuss controversial treatment problems, difficult diagnostic cases, and presentation of endodontic treatment cases.

**ENDO 593 Clinical Practice Teaching (1, max. 3)** Closely supervised experience in teaching clinical endodontics to the undergraduate dental student.

**ENDO 594 Current Endodontic Literature (1)** A review and critical evaluation of the current literature relative to endodontics.

**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. Offered: W.

**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. Offered: Sp.

**ENDO 600 Independent Study or Research (\*)** Prerequisite: permission of graduate program adviser.

**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 630 and all course requirements before a grade is awarded.

**ENDO 658 Endodontic Emergency Rotation (1)** Clinical experience in managing and treating patients in pain. 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.

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## Oral Biology

**ORALB 449 Undergraduate Research Topics in Oral Biology (\*)** Individual research on topics selected in collaboration with a faculty member. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**ORALB 510 P-Development, Structure, and Function of Oral Tissues (3-)** *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: Sp.

**ORALB 521 Medical Microbiology and Immunology (2)** *Darveau* 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: W.

**ORALB 540 P-Clinical Oral Pathology Conference (2)** *Morton* Seminar stressing basic science aspects and clinical findings of various oral lesions through exploration of etiology, pathogenesis, histopathology, and treatment modalities for oral pathology cases drawn from files of the Division of Oral Pathology. Offered: A.

**ORALB 550 P-Directed Studies in Oral Biology (\*, max. 12)** *Morton* Selected readings and seminars on a topic chosen by individual arrangement in collaboration with a faculty member. Credit/no credit only. Prerequisite: permission of instructor. 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 course 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 Oral Pathology (1-3, max. 10)** *Morton* Microscopic examination of oral lesions exhibiting basic histopathologic changes with gradual transition to the presentation of

interesting cases from the Oral and Maxillofacial Biopsy Service, correlating the clinical findings with morphologic and pathogenic mechanisms. Primarily designed for DDS, MD, or DVM students. Offered: AWSpS.

**ORALB 565 Clinical Oral Pathology (1-3, max. 10)** *Morton* Presentation of interesting oral lesions from the dental school and the University of Washington Medical Center and the correlation of the clinical findings with the underlying morphologic and biochemical changes in the tissues. The relation of these oral lesions to systemic disease is stressed. Primarily designed for students with DDS, MD, or DVM. degrees. Prerequisite: permission of instructor. Offered: AWSpS.

**ORALB 566 Surgical Oral Pathology (2-4, max. 16)** *Morton* 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.

**ORALB 570 Seminar in Oral Pathology (1-3, max. 9)** *Morton* Consists of in-depth studies of specific oral diseases through use of seminar and discussion. Students are required to present literature reviews and to act as discussion leaders. Primarily designed for students with DDS, MD, or DVM. degrees. Prerequisite: permission of instructor. Offered: AWSpS.

**ORALB 572 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: AW.

**ORALB 574 Clinical Stomatology (3)** *Morton* 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: Sp.

**ORALB 575 Oral Biology Seminar (1-3, max. 10)** *Izutsu* 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: AWSpS.

**ORALB 576 Molecular Aspects of Epithelial Biology (1-2, max. 2)** *Dale* In-depth discussion of cytoskeleton, cell junctions, influence of growth factors, retinoids, and other exogenous agents on differentiation and function of normal stratified epithelia. Prerequisite: BIOC 440 (or equivalent) or permission of instructor. Offered: odd years; Sp.

**ORALB 577 Applied Therapeutics in Dentistry (2)** *Watson* Practical information about drugs included in practice of dentistry. Topics include evaluation of case histories, dental considerations pertaining to medical conditions and drug therapies, types of drugs and dosages used for common medical conditions, the pharmacology of drugs prescribed by the clinician, and the mechanisms involved in drug interactions. Offered: odd years; A.

**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)** *Izutsu* 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 582 Secretory Process in Exocrine Glands (1-3, max. 3)** *Izutsu* 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.

**ORALB 583 Secretory Process in Exocrine Glands (1-3, max. 3)** *Izutsu* 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.

**ORALB 591 Advanced Topics in Oral Biology and Medicine I (1-2, max. 2)** *Herring* Review of current molecular and cellular advances in developmental biology relevant to head and neck embryology, tooth development and epithelial differentiation. Offered: jointly with ORTHO 591; W.

**ORALB 592 Advanced Topics in Oral Biology and Medicine II (1-2, max. 2)** *Herring* Review of current scientific literature relevant to cranioskeletal development and growth, bone biology and orthodontic tooth movement. Offered: jointly with ORTHO 592; Sp.

**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.

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## 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 developing 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 Hx-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: AWSpS.

**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 and prerequisite. 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 Behavioral Management of Acute and Chronic Orofacial Pain (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. Credit/no credit only. Prerequisite: permission of instructor. 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. Credit/no credit only. Prerequisite: permission of instructor. 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.

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## Orthodontics

**ORTHO 449 Directed Studies in Orthodontics (\*)** See DPHS 449 for course description and prerequisite. 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 use 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 and prerequisite. Offered: AWSpS.

**ORTHO 551 Review of Selected Literature in Orthodontics (1)** Students select a topic for review, review appropriate literature, and prepare written critique. Offered: WSp.

**ORTHO 552 Journal Club (1)** Graduate students review the current orthodontic literature. 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 (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 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: w.

**ORTHO 580 Functional Cranial Anatomy (3)** *Herring* Lecture and laboratory dissection concentrating on clinical and functional anatomy of the head and neck. Offered: S.

**ORTHO 582 Adult Orthodontics Seminar (2)** 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 585 Surgical Orthodontic Diagnosis and Treatment Planning (3)** 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 584 Clinical Management of Cleft Lip and Palate and Craniofacial Anomalies (2)** 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: graduate students in orthodontics. Offered: AW.

**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)** Review of the scientific method. Evaluation of dental literature. Discussion of proposed master's degree research projects. Formulation and discussion of hypothetical research projects related to orthodontics. Offered: A.

**ORTHO 591 Advanced Topics in Oral Biology and Medicine I (1-2, max. 2)** *Herring, Izutsu* Review of current molecular and cellular advances in developmental biology relevant to head and neck embryology, tooth development and epithelial differentiation. Offered: jointly with ORALB 591; W.

**ORTHO 592 Advanced Topics in Oral Biology and Medicine II (1-2, max. 2)** *Herring* Review of current scientific literature relevant to cranoskeletal development and growth, bone biology and orthodontic tooth movement. Offered: jointly with ORALB 592; Sp.

**ORTHO 597 Preclinical Technique (1)** Techniques of construction and manipulation of the edgewise arch mechanism. 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. Preparation and writing of a thesis or publishable manuscript. Prerequisite: permission of instructor. Offered: SpS.

**ORTHO 630 P-Introduction to Clinical Orthodontics (1)** 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. 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.

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## Periodontics

**PERIO 449 Directed Studies in Periodontics (\*)** See DPHS 449 for course description and prerequisite.

**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-)** Diagnosis of periodontal diseases and development of a treatment plan including maintenance program, rationale for non-surgical, surgical, and antibacterial management of periodontal diseases. Discussion of principles of various periodontal procedures. Prerequisite: PERIO 525-526 and PERIO 527. Offered: A.

**PERIO 531 P-Principles of Periodontics (-2)** Seminar emphasizing multidisciplinary approach to comprehensive treatment planning. 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 and prerequisite.

**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. 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)** Lecture course designed to acquaint students with basic concepts of immunology and immunopathology. Topics include cellular immunology, antibody structure and function, complement system, immunopathologic mechanisms, tumor immunology and immunologic manifestations in mucocutaneous oral lesions as well as immunology of caries and periodontal disease. Offered: W.

**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 immunologic 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: history 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. CR/NC 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)** Close examination of case progress from initial therapy to most recent maintenance visits to determine efficacy of method, demands upon patient, and temporal effect of therapy and survival. Preparation and delivery of a lecture on a therapeutic modality. Offered: AWSp.

**PERIO 592 Prescription Surgery (1-)** 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 to stimulate 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. 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 525-526 and PERIO 517. 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 525-526 and PERIO 517. 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 525-526 and PERIO 517. 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 dentoforms 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.

**PERIO 665 Clinical Practice Teaching (\*)** 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.

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## Prosthodontics

**PROS 520 P-Introduction to Complete Dentures-Lecture (3)** Didactic course in the treatment of completely edentulous patients. Instruction is provided in diagnostic procedures, complete denture construction, and maintenance care. Offered: A.

**PROS 521 P-Management of Immediate Denture Patients (1)** Lecture course describing and illustrating the clinical management of immediate denture patients (typical and overdenture). Offered: S.

**PROS 523 P-Removable Partial Denture Design (2)** Lectures in the basic principles of removable partial denture design. Practical drawings and more advanced designs are discussed in seminars. Certain technical aspects of design procedures are done in the classroom. Offered: W.

**PROS 525 P-Partial Denture technique and Immediate dentures (4)** Deals with those procedures the dentist must perform to fabricate a physiologically acceptable removable partial denture. The student gains experience via clinically submitted laboratory exercises prior to beginning prosthodontic treatment of a partially edentulous patient. The immediate denture component deals with the major treatment options and characteristics of immediate dentures.

**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: A.

**PROS 562 Removable Partial Dentures (2)** Lecture/seminar concentrating on factors peculiar to fabrication of removable partial dentures, with emphasis on management of combined fixed and removable therapy. Offered: W.

**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.

**PROS 571 Review of Literature Seminar (1, max. 12)** Continuous weekly seminar devoted to the review of prosthodontic and related literature.

**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.

**PROS 600 Independent Study or Research (\*)** Prerequisite: permission of graduate program adviser.

**PROS 620 P-Clinical Complete Dentures (1/3, max. 3)** Basic principles of complete denture fabrication and of diagnosis and treatment of completely edentulous patient. In second quarter student completes denture patient care, provides follow-up treatment, and participates in four competency examinations. Offered: AW.

**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.

**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. Credit/no credit only. Prerequisite: permission of instructor.

**PROS 660 Clinical Prosthodontics (1-2, max. 6)** Practical application of material covered in 560 and 562.

**PROS 665 Clinical Practice Teaching (1-, max. 4)** Supervised experience in teaching clinical prosthodontics to the undergraduate dental student.

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## 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 tooth histology and function and the influence of tooth anatomy on clinical dental procedures. Offered: A.

**RES D 516 P-Introduction to Occlusion (3)** Lecture/laboratory in the functional determinants of occlusal morphology. Preparation and waxing techniques for developing opposing quadrants by the additive waxing technique. 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, cavity classification, instrumentation, pulp protection, and principles of cavity preparation. Offered: Sp.

**RES D 520 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 one-surface 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: 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. Following 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 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 530 P-Restorative Dentistry (2)** Lecture series related to 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 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 532 P-Restorative Dentistry (2)** Lecture series related to 630 presenting restorative dentistry principles, including supportive material on clinical procedures. Offered: Sp.

**RES D 535 Implant Dentistry (3)** *Junge* 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 complications; developing a treatment plan on assigned case; and restoring a single tooth implant. Offered: A.

**RES D 540 Esthetic Dentistry (2)** Restorative procedures to create lifelike prosthodontics that mimic the appearance of natural teeth, including the theory and applications of bleaching, composites, and ceramics. Encompasses simple orthodontic and periodontic procedures for multidisciplinary treatment to improve restorative outcomes. Introduces proper technique, materials and case selection to maximize clinical issues. Credit/no credit only. Offered: A.

**RES D 541 P-Advanced Restorative Dentistry (2)** Broadens base of restorative procedures. Introduction of new techniques and presentation of complex restorative treatment involving other specialties. 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 demonstrated. Offered: Sp.

**RES D 550 P-Directed Studies in Restorative Dentistry (\*, max. 6)** See DPHS 449 for course description and prerequisite. 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 completion of initial treatment plans. Emphasizes problem-based learning, treatment outcomes, the sequence of clinical treatment, and the diagnosis and management of caries-susceptible patients. 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 operative dentistry, fixed prosthodontics, and occlusal treatment. Offered: AWSp.

**RES D 635 Clinical Restorative Dentistry (3)** *Verhoef* Knowledge and experience in the diagnosis and restoration of diseased, 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.

**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 operative dentistry, fixed prosthodontics, and occlusal treatment. Offered: AWSp.

**RES D 650 Restorative Dentistry Clinical Elective (1-6, max. 12)** Elective offering in clinical areas related to discipline. 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 clinical fixed prosthodontics to undergraduate dental students. Offered: AWSpS.

# College of Education

## Education

**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.

**EDUC 310 Current Issues in Education (5, max. 10) 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.

**EDUC 401 Practicum in Community Service Activity (1-18, max. 18)** 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. 18)** Tutoring and teaching experiences in a primary school setting (grades K-3). Placements made according to participants 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. 18)** Tutoring and teaching experiences in an intermediate school setting (grades 4-8). Placements made according to participants 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. 18)** Tutoring and teaching experiences in an intermediate school setting (grades 6-12). Placements made according to participants 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. 18)** 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 800 Doctoral Dissertation (\*)** Prerequisite: permission of supervisory committee chairperson and graduate program coordinator. Offered: AWSpS.

## Early Childhood and Family Studies

**ECFS 200 Introduction to Early Childhood and Family Studies (3) I&S Joseph, Sandall** 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 300 Child Observation and Assessment (5) I&S Joseph** Focuses on observation and other methods used to study and understand young children in the context of families and society. Develops observation skills in order to understand children's behavior in learning environments. Examines various approaches to and purposes for assessment of young children and documentation of their development and learning. Explores approaches to assessing early learning environments. Offered: A.

**ECFS 301 Early Childhood Curriculum (5) I&S Joseph, Sandall** Focuses on the developmental foundations and theoretical and researched-based models of early childhood curriculum. Studies approaches to designing, organizing, and implementing early learning programs for young children. Studies curricular content and methods for supporting children's learning and development in the areas of 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 (3) 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(3) Sandall** First of a three-quarter experienced to provide 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: A.

**ECFS 304 Service Learning and Research II(3) Joseph, Sandall** Second of a three-quarter experienced to provide 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. Offered: W.

**ECFS 305 Service Learning and Research III (3) Jegatheesan, Sandall** Third of a three-quarter experienced to provide 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. Offered: Sp.

**ECFS 401 Understanding Early Childhood and Family Studies Research (3) I&S Jegatheesan** 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 Joseph, Sandall** 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 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. Included a weekly seminar to reflect on and expand on applied experiences. Offered: A.

**ECFS 455 Advanced Service Learning and Research II (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. Included a weekly seminar to reflect on and expand on applied experiences. Offered: W.

**ECFS 456 Senior Project (3) Sandall** Third of a three-quarter sequence leading to the completion and presentation of the senior project. Community ?based learning and research experience continues during the quarter.. Offered: Sp.

## 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 341 The Teaching of Art in the Secondary School (3)** For majors in secondary art education planning to teach on the junior or senior high school level.

**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 354 Teaching in the Secondary School (3)** Development of basic skills in instructional methods, lesson planning, classroom management procedures, evaluation of teaching. Attention also given to school culture.

**EDC&I 355 Language Arts in the Elementary School (3)** Basic course in planning and teaching elementary language arts: listening and speaking, written composition, handwriting, spelling, creative and practical writing.

**EDC&I 356 The Teaching of English (3)** Combines theoretical understanding of teaching with specific techniques and materials for literature, language, composition, and mass media at the secondary level; coordinated with concurrent experience in schools.

**EDC&I 357 The Teaching of Speech (3)** Special methods course in the teaching of speech communication at the elementary and secondary levels.

**EDC&I 360 Reading in the Elementary School (3)** Basic course in methods, techniques, and materials used the teaching reading through decoding, comprehension, strategies, and literature in primary and intermediate grades.

**EDC&I 424 Multiethnic Curriculum and Instruction (3)** 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 425 Instructional Strategies for Minority Students (3)** Designed to equip educators with appropriate skills in effective teaching of culturally and socioeconomically different students. Attention is directed to understanding how these students differ from mainstream youth and what the implications are for instructional strategies in the classroom.

**EDC&I 434 Introduction to Computers in the Classroom (3)** Overview of the uses of computers in education. Uses of computers in instruction, classroom management (gradebooks, utilities), evaluation of software, overview of programming, and word processing. Prior experience not required.

**EDC&I 436 Design and Authoring of CAI (3)** Introduction to the design of computer-assisted-instructional programs. Types of learning, characteristics of effective instruction. Students design and produce CAI programs using authoring systems for computers. Offered: jointly with T C 436.

**EDC&I 437 Uses of Computer Application Packages in Schools (3)** Introduction to the instructional and management uses of application programs. Topics may include: databases, spreadsheets, word processing, graphics packages, graphing utilities, telecommunication, desktop publishing. Emphasis is on K-12 setting. Prerequisite: EDC&I 434.

**EDC&I 440 Gender and Education (5) I&S** Gender bias, discrimination, and gender-equity efforts in education. Includes curriculum instruction, instructional materials, testing, counseling, athletics, teacher education, educational employment issues, and sexual harassment. Relevant federal and state laws,

court decisions, and strategies for promoting gender equity also addressed. Recommended: WOMEN 200 or SOC 110. Offered: jointly with WOMEN 415.

**EDC&I 443 Improvement of Teaching: Elementary School Music (3)** Advanced studies in the teaching of music in the elementary school. For experienced teachers.

**EDC&I 451 Second Language Acquisition and Language Study (3)** *Stritikus, Varghese* Identifies the major theories, concepts, processes, and factors pertinent to learning a second language, especially in relation to English. Relates second language acquisition theories, concepts, processes, and factors to pedagogical implication for classroom teaching.

**EDC&I 453 Teaching the Bilingual-Bicultural Student (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 454 Cooperative Learning in the Classroom (3)** Theory and research on cooperative learning and current practices of managing such learning. Team learning activities and opportunities to plan and try out lessons and materials using several different cooperative strategies. Credit/no credit only.

**EDC&I 455 The Language Arts: Language and Learning (3)** The teaching of language arts requires research-based knowledge of language learning and its influence on listening, speaking, reading, writing, and nonverbal communication. Emphasizes techniques for building both a solid literacy curriculum and sound instructional practices.

**EDC&I 456 Workshop in Instructional Improvement: Language Arts (1-6, max. 15)** Individual or group study projects on the improvement of instruction in language arts.

**EDC&I 457 Methods in Teaching English as a Second Language (3)** Prepares preservice and in-service teachers to teach English as a second language and to meet the educational and linguistic needs of students who have little or no English language skills. Emphasis on a survey of first- and second-language acquisition research and its educational implications, as well as instructional strategies consistent with the audiolingual, cognitive, and creative construction approaches to second-language learning. Includes diagnostic-prescriptive strategies for classroom application.

**EDC&I 458 Content Area ESL Instruction (3)** *Stritikus, Varghese* 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. Prerequisite: EDC&I 457.

**EDC&I 459 Workshop in Instructional Improvement: Reading (1-6, max. 15)** Projects on the improvement of instruction in reading. For experienced teachers and students in Teacher Education Program.

**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 Adult's 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)** 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: Sp.

**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)** 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.

**EDC&I 470 Science Education: Elementary School Programs and Practices (3)** Designed for classroom teachers with reference to the teaching and learning of science from kindergarten through grade 6. Emphasis is placed on objectives, methods, and materials as related to the concepts and processes of science.

**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. 15)** Individual or group study projects on the improvement of instruction in science.

**EDC&I 474 Multi-Ethnic Studies: Methods, Content, and Materials (3)** 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 475 Improvement of Teaching: Elementary School Mathematics (3)** Designed for elementary teachers. Emphasis is placed on the contributions of research to the improvement of the teaching of mathematics in the elementary school. For experienced teachers.

**EDC&I 476 Improvement of Teaching: Junior High School Mathematics (5)** Exploration of mathematical concepts for the purpose of improving the teaching of middle school mathematics.

**EDC&I 477 Improvement of Teaching: Secondary School Mathematics (5)** Exploration of mathematical concepts for the purpose of improving the teaching of secondary-school mathematics. For experienced teachers.

**EDC&I 478 Special Topics in Mathematics for Teachers (2-9, max. 9) NW** Study of selected areas of mathematics. Designed for the improvement of teachers of mathematics. Offered: jointly with MATH 497.

**EDC&I 479 Workshop in Instructional Improvement: Mathematics (1-6, max. 15)** 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. 6)** 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. 15)** 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. 15)** 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. 6)** Individual or group study projects on the improvement of instruction with attention to designing instructional plans.

**EDC&I 499 Undergraduate Research (2-5, max. 5)** 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. 10)** 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 505 Seminar in Curriculum and Instruction (1-5, max. 15)** Seminar on advanced topics in curriculum and instruction. Critical examination of current research and practice. Content varies, check quarterly Time Schedule for topics to be covered. Prerequisite: permission of instructor.

**EDC&I 510 History of Educational Technology (3)** Examines the role of technology in education through history. Early systems of instruction, advent of textbooks, models for school architecture, instructional devices and teaching machines, mediated and distance learning. Focuses on the interplay between designed educational approaches and contexts in which they were implemented, and consequent success for failure.

**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. Prerequisite: EDC&I 510 or instructor permission.

**EDC&I 512 Survey of Educational Technology Research (2, max. 4)** Critically examines active research projects in educational technology. Critiques of research practice. Corequisite: EDC&I 511 and EDC&I 580.

**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 inservice issues. Prerequisite: permission of instructor.

**EDC&I 530 Approaches to Literacy Instruction (4)** Designed to aid experienced teachers who possess background in the teaching of literacy, this course 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 (3)** 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 (3, max. 9)** Primary focus on those aspects of the literacy process that are of concern in a developmental literacy program. Emphasis on research design, evaluation of research, and research findings, dealing with factors influencing literacy ability, problems in skill development, recreational reading, and writing. 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 Seminar in the Reading of Literature (3)** Reading of literature and its effect on reading skills, language development, social values, and literary judgment of children and adolescents. Emphasis on analysis of research in these areas and on the development of action research designed to study response to literature. 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 Seminar: Conducting Research in Response to Literature (3, max. 6)** Students design, conduct, and interpret original research studies in the field of reading literature within the context of the school curriculum. Emphasis on the analysis of literary content and structure and the relationship of those qualities to the literary experience. Prerequisite: EDC&I 534.

**EDC&I 536 Inquiry and Methods in Writing Instruction (3)** *Troia* 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 540 Teaching the Bilingual-Bicultural Student (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 541 Seminar in Bilingual Education: Organization and Structure (4)** Study of the structure and organization of bilingual programs. Includes study of the developmental and organizational factors affecting bilingual education. Assists graduate students in reviewing the historical antecedents in bilingual education and in developing a personal philosophy about bilingual education.

**EDC&I 542 Approaches to Assessing Second Language Students in K-12 Schools (3)**

*Stritikus, Varghese* 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 543 Seminar in Bilingual Education: Instructional Strategies (4)**

Study of instructional factors affecting bilingual education. Particular emphasis is given to research related to the variables involved in teaching in a bilingual environment. Assists graduate students in exploring instructional methodologies and formats as they apply to bilingual education and in becoming familiar with the current issues in bilingual education.

**EDC&I 544 Immigration and Education:**

**Immigrant Student Perspectives (3)** *Stritikus, Varghese* Examines the multitude of factors which 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.

**EDC&I 545 Multilingual Socialization and Development (3)**

*Stritikus, Varghese* 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)**

*Stritikus, Varghese* 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 453 or equivalent.

**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 552 Management of Educational Technology Programs (3)**

Factors contributing to effective management of programs incorporating educational technology and microcomputers. Manager's role as agent of instructional change and processes leading to successful adoption and long-term implementation of a new instructional system. Prerequisite: EDC&I 510.

**EDC&I 553 Seminar on Instructional Systems Development (3)**

Critical analysis of processes involved in the development of instructional systems. Prerequisite: EDC&I 481 or permission of instructor.

**EDC&I 555 Educational Futures (3)** Concept of alternative futures stressing manageability of the future. Attention is given to current and future events that can or might impact education. Basic future studies methods are considered with opportunities to apply such methods within educational arena. Prerequisite: prior graduate course work or experience in education.

**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 (3)**

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 curriculum patterns, instructional procedures, resource materials, and a selection of content in social studies education. For experienced teachers and students in Teacher Education Program.

**EDC&I 561 Seminar in Language Arts (3)**

Study of language with special attention to research pertaining to the social context of language in the classroom. Course work includes group and individual analysis of language arts studies with attention to research design and measurement. Prerequisite: EDC&I 455.

**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. 6)**

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. Prerequisite: EDC&I 466 or equivalent.

**EDC&I 567 Current Issues in Social Studies Education (1-3, max. 6)**

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 Seminar in Science Education: Secondary Emphasis (3)**

Investigation of curriculum and instruction in science at secondary-school levels, with particular emphasis on current literature and research. 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. Prerequisite: graduate standing.

**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. Prerequisite: graduate standing.

**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. Prerequisite: graduate standing.

**EDC&I 577 Current Issues in Mathematics Education (1, max. 6)**

Discussion of problems and issues of current interest and importance in mathematics education. Prerequisite: graduate standing.

**EDC&I 578 Qualitative Methods of Educational Research (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. Offered: jointly with EDPSY 586.

**EDC&I 579 Qualitative Methods of Educational Research (-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. Offered: jointly with EDPSY 587.

**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 512, or permission of instructor.

**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 583 Message Design (3)** Research and theory on design of instructional messages in various modalities (visual, auditory), and in various formats (pictorial, verbal, graphic). Prerequisite: EDC&I 480 or permission of instructor.

**EDC&I 584 Instructional Graphics for Microcomputers (3)** Study of current research on instructional uses of computer graphics. Development, selection, and application of design principles for graphically-based instructional and training programs. Prerequisite: EDC&I 436, EDC&I 481.

**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. Prerequisite: EDC&I 480 or permission of instructor.

**EDC&I 586 Current Issues for Computers in the Classroom (1, max. 6)** Addresses many of the current topics in computer-related education. Issues and research related to computer uses in curriculum, instruction, and management of instruction.

**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: EDC&I 481 or EDC&I 583, EDC&I 436, or permission of instructor.

**EDC&I 588 Seminar: Computers in Education (3)** Provides opportunity for graduate students to analyze, discuss, and design research in areas of computers in education. Includes historical development of research in this area as well as a platform for the development of research proposals and refinement of ongoing research. Prerequisite: EDC&I 434 or EDC&I 436.

**EDC&I 589 Current Issues in Educational Communications (1, max. 9)** Discussion of problems and issues of current interest and importance in the field of educational communications. Serves also as a forum for discussion of doctoral research. Designed for master's and doctoral candidates in educational communications. Credit/no credit only. Prerequisite: graduate standing.

**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. 10)** Credit/no credit only. Prerequisite: graduate standing and permission based on approval of proposal submitted during quarter preceding the internship.

## Educational Leadership and Policy Studies

**EDLPS 444 Constitution and American Public Education (3-6, max. 6)** I&S Emphasis on the principles, processes, and content of constitutional law in an effort to provide new insights and new tools with which school administrators and teachers may examine questions involving political and civil rights in the United States, especially as these affect the conduct of education. Specific topics on constitutional freedom include the obligation to go to school; legal controls over curriculum, teachers, and students; and racial integration and equal financing of public schools. Open to law students and to nonlaw students enrolled as graduate students or as upper-division undergraduates. Credit/no credit only. Offered: jointly with LAW 444.

**EDLPS 458 History of American Education to 1865 (3)** I&S Development of American education in cultural context; colonial period, influence of Enlightenment, and common school movement. 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. 12)** 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 EDLPS 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; history of educational reform; curriculum deliberation and 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 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; history of educational reform; curriculum deliberation and 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 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; history of educational reform; curriculum deliberation and 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 Principal/Program Administrator Preparation Program.

**EDLPS 505 Transition to Leadership (3-6, max. 6)** Development and administration of systems for selection, evaluation and clinical supervision of certificated and classified personnel. Focuses on leadership models and transition to a leadership role, including opening a school or program and dealing with student/school crises. (Only for students admitted to the EDLPS Principal/Program Administrator Preparation Program.)

**EDLPS 507 Reflective Seminar (1-6, max. 6)** Integration of theory and internship experience; group process laboratory and peer feedback and review of written work, oral presentations, and journals. Reading and discussion of crucial issues. (Only for students admitted to the EDLPS Principal/Program Administrator Preparation Program.) Credit/no credit only.

**EDLPS 509 Planning, Organizing, and Decision Making (3)** Application of principles utilized in planning, organizing, and decision making in districts and schools. Formation of policy and procedures; formal and informal organization; power, authority, and responsibility; utilization of people, time, and space.

**EDLPS 510 School Finance (3)** 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 512 Seminar in Personnel Administration and Development (3)** Major emphasis on the analysis of factors to be considered in the selection and evaluation of teachers and administrators and considerations in staff development.

**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 514 Washington School Law (3)**

Overview of Washington State specific legal provisions affecting the operations and management of public schools, including school organization and operations, school finance, separation of church and state, school employment, student conduct, discipline and rights, equity, intergovernmental agreements, and student health and safety.

**EDLPS 515 Management of Labor Relations in Education (3)** Examination of procedures and techniques pertinent to the management of organizational conflict. Among the areas covered are collective bargaining, grievance procedures, mediation, fact finding, and arbitration.

**EDLPS 516 Special Education and the Law**

**(3)** 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; W.

**EDLPS 517 Seminar in Administration:**

**Facilities (3)** Contemporary issues, problems, and techniques of educational facility administration. Emphasis placed on such factors as planning, financing, development, design, construction, operation, liabilities, property management, state regulation. Credit/no credit only.

**EDLPS 518 Reflective seminar: The Superintendency (1-6, max. 6)** Integration of theory and internship experience. Readings and discussion of crucial issues, presentations by local school superintendents: district budgeting processes, personnel, staff relations and collective bargaining, superintendent-board relations, bond issues, facilities planning, superintendent as instructional leader. Credit/no credit only.

**EDLPS 519 Special Topics in Educational Leadership (1-10, max. 15)** 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; check Time Schedule for topic(s) to be covered.

**EDLPS 520 Education as a Moral Endeavor (3)** 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. Credit/no credit only.

**EDLPS 521 Philosophy of Education (3)**

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)** Intensive study of the writings of selected contemporary philosophers of education.

**EDLPS 523 Analysis of Educational Concepts (3)** Selected concepts central to conduct and understanding of education.

**EDLPS 524 Seminar in Philosophy of Education (3, max. 6)** Philosophical examination of ways in which education might be studied. Uses and limits of conventional scientific approaches in education inquiry. Consideration of alternatives.

**EDLPS 525 Educational Inquiry (3)** 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. Credit/no credit only. Prerequisite: doctoral status in education.

**EDLPS 526 Educational Inquiry (3)** 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. Credit/no credit only. Prerequisite: doctoral status in education.

**EDLPS 530 History of Education (3)** 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 532 Seminar: American Education in the Twentieth Century (3, max. 6)** Selected problems in American education over the last century, with special emphasis on contemporary issues and trends.



**EDLPS 533 Seminar in Educational Classics**

**(3)** Analysis in depth and in the context of the relevant history of several major works in educational thought from Plato to Dewey.

**EDLPS 534 History of the Modern University**

**(3)** Growth of the modern university with attention to intellectual trends as well as organizational and curricular changes. Special attention is given to nine American universities in the twentieth century.

**EDLPS 535 Historical Inquiry in Education Research (3, max. 6)**

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 Analysis of Educational Issues (3)**

Analysis and interpretation of the history of education in its broadest sense: the transfer of culture across generations. Examination of the problems of evidence and interpretation with which the authors of exemplary works in the history of education struggled.

**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 541 Topics in Comparative Education (3, max. 6)**

International efforts in education, including the role of the United States in overseas programs. Analysis of the relation of education and society in foreign areas, stressing social change and conflict. Regions of the world considered in the course vary from one offering to another.

**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 543 Seminar: Research in Educational Sociology (3)**

Theory, concept, and method of sociological inquiry as applied to problems in education.

**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 (3)**

Introduces 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. (Only for students admitted to the Leadership for Learning Ed. D. Program.) Credit/no credit only.

**EDLPS 546 Leadership Inquiry I: The design of research on Local Problems of Practice (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. (Only for students admitted to the Leadership for Learning Ed. D. Program.)

**EDLPS 547 Leadership Inquiry II: Developing Useful Quantitative and Qualitative Evidence (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. (Only for students admitted to the Leadership for Learning Ed. D. Program.)

**EDLPS 548 Leadership Inquiry III: Refining the Design and Analysis of Research that Informs Practice (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. (Only for students admitted to the Leadership for Learning Ed. D. Program.)

**EDLPS 549 Special Topics in Educational Studies (1-6, max. 15)**

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; check Time Schedule for topic(s) to be covered.

**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 Foundational Studies in Complex Organizations (3)**

Examination of conceptual and theoretical bases for complex organizations, characterized by problematic goals, knotty decision-making processes, and fluid participation. Impact of information, power, beliefs, resources, organizational structure, and environment. Although issues discussed are generic, examples focus on educational organizations.

**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 553 Human Resources in Educational Organizations (3)**

Analysis of factors involved in human resource problems related to operation of educational organizations. Motivation, perception, communication, role analysis, and dynamics of groups are studied through use of cases and seminal literature.

**EDLPS 554 Foundations I: Leading for Learning in Complex Educational Systems**

**(3)** Explores (1) the conceptions of educational leadership as it manifest itself and is exercised in large-scale education systems (districts, regional entities, states); and (2) the possible connections between leadership and learning. (Only for students admitted to the Leadership for Learning Ed. D. Program.) Credit/no credit only.

**EDLPS 555 Foundations II: Moral and hisstorical 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. (Only for students admitted to the Leadership for Learning Ed. D. 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. (Only for students admitted to the Leadership for Learning Ed. D. 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. (Only for students admitted to the Leadership for Learning Ed. D. Program.)

**EDLPS 560 Perspectives on Policy and Policy Making in Education (3)**

This course 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)**

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)**

Current problems in school finance, including costs, ability to support schools, and the 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 Decisionmaking (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)** This seminar 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, max. 12)** *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: AWSpS.

**EDLPS 570 Critical Views on Educational Leadership (3)** Leadership theory is undergoing a wave of development influenced, in part, by critical theory and postmodern perspectives. Topics include the emerging literature on critical leadership perspectives with a particular goal of understanding how this informs leadership practice for those in educational organizations.

**EDLPS 571 Instructional Renewal and the Achievement Gap (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. (Only for students admitted to the Leadership for Learning Ed. D. 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. (Only for students admitted to the Leadership for Learning Ed. D. 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 (preservice and inservice). Offers system-level leaders ways to address the quality of teaching and learning in classrooms. (Only for students admitted to the Leadership for Learning Ed. D. Program.)

**EDLPS 575 Education Policy Implementation (3)** *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. Offered: Sp.

**EDLPS 579 Special Topics in Organizational and Policy Analysis (1-6, max. 15)** 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; check Time Schedule for topic(s) to be covered.

**EDLPS 580 The American College and University (3)** 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 the 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 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.

**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. Offered: Sp.

**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.

**Secondary Data Analysis (3)** 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. Offered: Sp.

**EDLPS 597 Advanced Secondary Data Analysis (3)** 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. Offered: Sp.

**EDLPS 598 Special Topics in Higher Education (1-6, max. 15)** 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; check for topic(s) to be covered.

**EDLPS 599 Independent Studies in Education (1-10, max. 10)** 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. Credit/no credit only. Prerequisite: permission of instructor.

**EDLPS 601 Internship (1-4, max. 12)** Name of faculty member responsible for supervising the student should be indicated on program of studies. Credit/no credit only. Prerequisite: permission of Supervisory Committee chairperson or graduate program adviser.

## Educational Psychology

**EDPSY 228 Learning and Motivation in Contexts (5) I&S** How people learn and remember, what motivates them to learn, and how learning and motivation are shaped by social contexts in homes, school, and communities. Cognitive and socio-cultural theories of learning and motivation (including distributed cognition, goal theories, self-determination theory, and interest theories), especially as related to college learners.

**EDPSY 304 Educational Psychology (5)** Human learning in the educational setting. Cognition, development, learning, motivation, affective processes, and socialization. Emphasis on skills in influencing classroom learning and discipline. Open to students in the Music Education program or by permission of instructor. Offered: A.

**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. This course is 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. The course focuses on special topics that have either local or contemporary significance.

**EDPSY 471 Educational Neuropsychology (5)** *Berninger* Covers brain imaging technologies; micro- and macro-structure and function; brain development; and functional brain systems for reading, writing, and math and their developmental and instructional links. Recommended: prior course on learning.

**EDPSY 490 Basic Educational Statistics (3)** Measures of central tendency and variability, point and interval estimation, linear correlation, hypothesis testing. Offered: AWSpS.

**EDPSY 495 Introduction to Educational Measurement (3)** 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: W.

**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 (\*)** 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. Prerequisite: graduate standing. 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)** 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. Credit/no credit only. Prerequisite: EDPSY 501 and graduate status in education or psychology. Offered: alternate years; W.

**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)** 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 Clinical Supervision-Practicum (2-6, max. 12)** Practicum in supervising counseling, group counseling, diagnostic activities, and remedial academic therapy.

Prerequisite: advanced graduate standing in School Psychology. Offered: AWSp.

**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. Offered: alternate years; W.

**EDPSY 510 Cognition in the Context of the School Curriculum (3)** 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. Offered: alternate years.

**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.

**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 masters students to develop instruments for their own research. Prerequisite: EDPSY 490 or equivalent.

**EDPSY 518 Assessment and Diagnosis of Reading Disabilities (3)** 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. Offered: alternate years; Sp.

**EDPSY 519 Jegatheesan Vulnerable Children and Families in Comparative Perspective: Psychosocial Development Processes (3)** 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 psycho-social and development processes in different cultural and international contexts. Offered: Sp.

**EDPSY 520 Psychology of Reading (3)** 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. Offered: alternative years.

**EDPSY 521 Psychology of Writing (3)**

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. Offered: alternative years.

**EDPSY 522 Reading Disability Clinic (3-5)**

Supervised practicum in diagnosis and remediation of reading disabilities. Prerequisite: EDEP 532, EDEP 533 or equivalent; EDC&I 460 or permission of instructor.

**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. Offered: A.

**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)**

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)**

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. Credit/no credit only. Prerequisite: EDPSY 501 and graduate status in education or psychology.

**EDPSY 528 Achievement Motivation in Education (3)**

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: W.

**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. Offered: A.

**EDPSY 531 Socialization of School-Age Children (3)**

Study of personal social development and behavior from preschool 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. Offered: W.

**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)**

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)**

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: W.

**EDPSY 540 School Psychological Assessment (5)**

Study of assessment of human intelligence with supervised training in the administration, scoring, and interpretation of individual intelligence tests with emphasis on Stanford-Binet and Wechsler scales. Prerequisite: graduate standing in the school psychology specialization and permission of instructor. Offered: A.

**EDPSY 541 Group Tests in Counseling (5)**

Emphasis on the utilization of objective measures in counseling. Prerequisite: EDPSY 490 or equivalent. Offered: Sp.

**EDPSY 542 Career Development (3)**

Emphasis on vocational development theory and research. Psychological, social, and economic determinants of vocational development and choice are examined as a basis for vocational counseling.

Prerequisite: graduate standing or permission of instructor.

**EDPSY 543 Facilitating Career Development (3)**

Theory and practice in exploring, self-identified strengths, interests, resources, and other considerations when developing career plans. Emphasizes career development in the schools. Offered: Sp.

**EDPSY 544 Counseling (5)**

Emphasis on the theory and practice of counseling. Prerequisite: standing in School Psychology or permission of instructor.

**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)**

Supervised practice in counseling. Prerequisite: EDPSY 545 or permission of instructor. Offered: WSp.

**EDPSY 548 Educational Implications of Personality Theory (5)**

Study of personality development and personality theories with continuous attention to the meaning of these in educational practice, testing, and counseling. Prerequisite: 15 credits of psychology or educational psychology. Offered: A.

**EDPSY 549 Seminar in Consultation Methods (3)**

Theory and practice of process consultation in educational settings. Field practice in teams with clients. Prerequisite: graduate standing in School Psychology or permission of instructor. Offered: W.

**EDPSY 550 Family Counseling (3)**

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)**

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: EDPSY 545 or course in counseling techniques or permission of instructor. 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: graduate standing in School Psychology or permission of instructor. Offered: Sp.

**EDPSY 555 Seminar in Counseling Specialty (1-2, max. 6)**

Oriented toward the role of a counselor as a professional worker. Credit/no credit only. Offered: ASP.

**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: EDPSY 540; EDPSY 564. Open to Doctoral students only.

**EDPSY 561 Group Process Laboratory (3)**

Explores the theoretical concepts of group process with a special emphasis in how to conduct group process in school and agency settings. Offered: A.

**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. 6)**

Practicum in assessment and consultation, emphasizing diagnosis of behavior and learning disabilities, and focusing on techniques acquired in 507 and 540. Prerequisite: EDPSY 540; EDPSY 545. Offered: W.

**EDPSY 565 Advanced Practicum in Assessment and Cognitive Therapy with High Risk Students with E/BD (3) *Mazza, Stage***

Designed for doctoral level school psychologists to learn advanced assessment and cognitive therapy techniques in working with students with EBD under the supervision of a licensed psychologist during a two-quarter sequence. Prerequisite: EDPSY 544, EDPSY 546 or equivalent and advanced graduate standing in the school psychology program.

**EDPSY 566 Case Study Seminar (1-6, max. 6)**

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 or graduate of School Psychology program and ESA School Psychology certification. Offered: AWSpS.

**EDPSY 568 Seminar in Professional Issues and Ethics (2)**

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. Credit/no credit only. Prerequisite: graduate standing in College of Education or permission of instructor. Offered: W.

**EDPSY 569 Seminar in Counseling Psychology Research (2)**

Methodological and professional issues related to research in counseling and psychological services. Counseling psychology research literature with focus on content and methods. Prerequisite: EDPSY 591 or equivalent. .

**EDPSY 570 Introduction to School Psychology (2, max. 4)**

Current issues in professional psychology practice and research. Prerequisite: graduate standing in school psychology. Offered: A.

**EDPSY 572 Social-Emotional Assessment (3)**

Techniques in social-emotional assessment of school-aged children. Diagnostic systems including DSM IV presented in conjunction with assessment techniques. Emphasis on integrative method for understanding social emotional assessment batteries and reliability and validity of their test score interpretation. Prerequisite: graduate standing in school psychology or permission of instructor. Offered: A.

**EDPSY 573 Psychological Assessment of**

**Preschool Children (3)** 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. Credit/no credit only. Prerequisite: graduate standing in the school psychology and permission of instructor. Offered: Sp.

**EDPSY 575 Structural Equation Modeling (3)**

Theory and data analysis using linear structural equation models. Application to data in educational research. Prerequisite: EDPSY 594 or equivalent. Offered: alternate years.

**EDPSY 576 Hierarchical Linear Models (3)**

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: alternate years.

**EDPSY 577 Neuropsychology of School Learning and Behavioral Problems (5)**

The microstructure, macrostructure, and structural and functional development of the brain are reviewed with a focus on the educational relevance of developmental neuropsychology. Four areas are covered: Hemispheric differences and integration; neurological soft signs, attention deficit, and hyperactivity; language, reading, and learning disabilities; and medical syndromes. Credit/no credit only. Prerequisite: graduate standing in school psychology or instructor permission. Offered: Sp.

**EDPSY 578 Educational Applications of Neuropsychology: Assessment and Intervention (5)**

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. Prerequisite: graduate standing. .

**EDPSY 581 Seminar in Educational Psychology (1-5, max. 15)**

Advanced seminar on selected topics in educational psychology. A critical appraisal of current research. Prerequisite: advanced degree work in educational psychology. Offered: AWSp.

**EDPSY 582 Seminar in Development and Socialization (3, max. 15)**

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 predesignated emphasis in one of the following topics:

linguistics, phonology, pragmatics, psycholinguistics, semantics. : graduate standing in College of Education or instructor permission.

**EDPSY 584 Seminar in Quantitative Methods (3, max. 15)**

Seminar on such topics as measurement techniques, research design, psychometrics, and statistics. : EDPSY 490 and instructor permission.

**EDPSY 585 History, Systems, and Contemporary Issues in School Psychology (3)**

Covers the history, systems, and research relating to the contemporary issues relevant to research and practice of school psychology. Meets APA and WA state requirements for course in history and systems of psychology. Credit no credit only. Prerequisite: advanced graduate standing in School Psychology or instructor permission. Offered: Sp.

**EDPSY 586 Qualitative Methods of Educational Research (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: jointly with EDC&I 578; A.

**EDPSY 587 Qualitative Methods of Educational Research (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: EDPSY 586/ EDC&I 578; second-year doctoral standing and one course in statistics. Offered: jointly with EDC&I 579; Sp.

**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: Sp.

**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. Credit/no credit only. Prerequisite: doctoral standing, and permission of instructor.

**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. Offered: A.

**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: AWSp.

**EDPSY 592 Advanced Educational Measurements (3)** 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)** 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)** 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: AWPSP.

**EDPSY 600 Independent Study or Research (\*)** Prerequisite: permission of instructor. required. Offered: AWPSP.

**EDPSY 601 Internship (3-10, max. 10)** Offered: AWPSP.

## Special Education

**EDSPE 404 Exceptional Children (3)** *Edgar* Children with disabilities studied from the point of view of education.

**EDSPE 414 Introduction to Early Childhood Special Education (3)** *Schwartz* 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: W.

**EDSPE 419 Interventions for Families of Children with Disabilities (3)** Upper-division course for professionals and paraprofessionals working with families of children with disabilities.

**EDSPE 499 Undergraduate Research (2-5, max. 5)** 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: AWPSP.

**EDSPE 500 Field Study (1-6, max. 6)** 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. Offered: AWPSP.

**EDSPE 502 Collaboration: Working with Parents and Professionals (3)** *Sandall* 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. Offered: WS.

**Classroom Management for Elementary School Educators (2-, max.4)** Examines how to set up effective classrooms to facilitate learning and the development 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 on procedural and substantive rights of children with disabling conditions. Offered: jointly with EDLPS 516; W.

**EDSPE 505 Curriculum Development of Students with Moderate to Severe Disabilities (3)** Addresses issues and practices in the development of appropriate curriculum and accessing the general education curriculum for students with moderate to profound disabilities in educational settings.. Topics include: assessing general education curriculum, inclusion, and development of IEPs.

**EDSPE 506 Classroom Management of the Physical Problems of Individuals with Severe or Profound Disabilities (3)** Overview and practices of physical management of students with severe or profound disabilities. Topics include principles of typical and atypical motor development, positioning, handling, use of adaptive equipment, and issues regarding the educational implications of students with medical and chronic illness.

**EDSPE 507 Instructional Methods for Students with Moderate to Severe Disabilities (3)** *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. Offered: A.

**EDSPE 511 Methods of Applied Behavior Analysis Research (3)** *Schwartz, White* 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. Offered: WSP.

**EDSPE 513 Principles of Clinical Appraisal for Teachers of Exceptional Children (3)** *Jenkins* 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)** *Jenkins* 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. Offered: Sp.

**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: AWPSP.

**EDSPE 518 Seminar in Special Education Research (1-3, max. 9)** 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: AWPSP.

**EDSPE 520 Seminar in Applied Special Education (1-12, max. 12)** Designed for graduate students in special education. Focus on contemporary topics relating to the application of the theoretical constructs to special education. Offered: AWPSP.

**EDSPE 521 Communication and Language in Young Exceptional Children (3)** Review and discussion of theories of language acquisition as they relate to communication and language in young children with special needs. Review of research of language environments that relate to early literacy and education and how to use this information to modify environments for children with special needs. Offered: jointly with EDPSY 519; W.

**EDSPE 522 Seminar on the Education of Students with Severe Disabilities (3)** *White* 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. Offered: Sp.

**EDSPE 523 Specific Numeracy Techniques for Elementary Students with Mild Disabilities (3)** *Neel* Provides the teacher with specific techniques for teaching numeracy to elementary students with mild disabilities in inclusive settings. Prerequisite: EDTEP 522 or equivalent. Offered: SpSP.

**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)** *Schwartz* Consideration of the identification, etiology, education, and outcomes of individuals with Autism Spectrum Disorder. Offered: Sp.

**EDSPE 526 Techniques for Instructing Social Behaviors for Elementary Students with Mild Disabilities (3)** *Cheney* 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: ASp.

**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.

**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 541 Education of Children with Behavior Disorders (3)** *Neel* 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: alternate years; W.

**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. Offered: WS.

**EDSPE 546 Seminar in Educating Children with Behavior Disorders (3, max. 9)** *Cheney* 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. Offered: alternate years; W.

**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. Offered: A.

**EDSPE 562 Curricula for Preschool Children with Disabilities (3)** *Sandall* 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.

**EDSPE 563 Issues in Working with Families of Students with Disabilities (3)** Explores issues, theories, models, research, and recommended practices related to family-professional relationships in special education. Explores the dynamics of interactions with families including roles and responsibilities, decision-making, communication, and collaboration. Offered: W.

**EDSPE 565 Seminar: Early Childhood Education for Children with Disabilities (3, max. 9)** *Sandall, Schwartz* 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)** 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 (2-10, max. 15)** Field experience and group discussions accompanying the first quarter of study in the Elementary Teacher Education Program. Field experience in Community Based Organizations. Credit/no credit only. Prerequisite: elementary TEP student.

**EDTEP 502 Second Quarter Field Experience — Elementary (2-10, max.15)** Field experience accompanying the second quarter of study in the Elementary Teacher Education Program. Observe school-year opening full-time in late August through September; field experiences

during the quarter in supervised school placements. Credit/no credit only. Prerequisite: elementary TEP student. Offered: A.

**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 Elementary Teacher Education Program. Observe school-year opening full-time in late August through September; field experiences during the quarter in supervised school placements. Credit/no credit only. Prerequisite: elementary TEP student.

**EDTEP 505 Portfolio: Tool for Reflection — Elementary (2)** Group discussions fostering integration of course work and field experience through reflection. Using program goals and targets, students illustrate their learning through multiple forms of evidence. Final portfolio is presented to an audience. Related field experiences may be arranged. Credit/no credit only. Prerequisite: elementary TEP student.

**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 502 Second Quarter Field Experience — Elementary (2-10, max.15)** Field experience accompanying the second quarter of study in the Elementary Teacher Education Program. Observe school-year opening full-time in late August through September; field experiences during the quarter in supervised school placements. Credit/no credit only. Prerequisite: elementary TEP student. Offered: A.

**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 (4)** Covers human learning in the elementary school setting with emphasis on discipline-specific cognition and cognitive development. Prerequisite: elementary TEP student.

**EDTEP 542 Meeting the Needs of All Students-Elementary (3)** Overview of physical, cognitive, and social development of elementary school age children. Discussion of ways in which differences in development may affect children in school. Provides elementary teachers with understanding of how to facilitate the success of all children in general education classrooms. Prerequisite: elementary TEP student.

**EDTEP 543 Teaching and Learning in Social Studies.(3)** Strategies for teaching social studies and the arts through integrated thematic units of curriculum and instruction. Prerequisite: elementary TEP student.

**EDTEP 544 Differentiated Instruction (2-, max. 8)** *Hudson, Varghese* Introduction to the concepts and practice of differentiated instruction for children with diverse developmental, linguistic, and cultural characteristics. Prerequisite: elementary TEP student. Offered: AWPSP.

**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 553 Introduction to Multicultural Education - Elementary (4)** *Banks, Gay* Explores concepts, theories, and strategies that constitute major dimensions of multicultural education. Focuses on racial and ethnic groups, social class, and gender. Examines dimensions of multicultural education including content integration, knowledge construction process, prejudice reduction, equity pedagogy, and empowering school culture and social structure. Prerequisite: elementary TEP student. Offered: SpS.

**EDTEP 561 Dilemmas of Teaching and Learning (5)** 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. Prerequisite: secondary TEP student.

**EDTEP 562 Adolescent Development and Education I (3-)** Overview of trends and issues

of adolescent development and behavior in relation to contemporary secondary schooling. Psychological perspectives on adolescent identity, interpersonal relationships, academic engagement, and social deviancy in schools examined with special attention to classroom management and accommodating differences. Prerequisite: secondary TEP student.

**EDTEP 563 Adolescent Development and Education II (-3)** Overview of trends and issues of adolescent development and behavior in relation to contemporary secondary schooling. Psychological perspectives on adolescent identity, interpersonal relationships, academic engagement, and social deviancy in schools examined with special attention to classroom management and accommodating differences. Prerequisite: secondary TEP student.

**EDTEP 564 Working in Secondary Schools (3)** Organizational, personal, and interpersonal aspects of working as a teacher in a secondary school. Preparation for membership and leadership in a learning community and for continuing professional growth. Credit/no credit only. Prerequisite: secondary TEP student

**EDTEP 565 Planning and Teaching an Integrated Curriculum (3)** Introduction of models for integrating curriculum, congruent instructional and assessment strategies, and team planning skills. Provides direct and experiential learning activities and results in production of team-planned curricular units based on two different models of curriculum integration. Prerequisite: secondary TEP student.

**EDTEP 571 Topics and Tensions in School and Society (3)** 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 (3)** 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 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 I (-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, speaking, listening — and culture. Current and future trends in pedagogy and technology. Prerequisite: secondary TEP student.

**EDTEP 591 First Quarter Field Experience — Secondary (3)** Field experience and small group discussions accompanying the first quarter of study in the Secondary Teacher Education Program. Observe school year opening full-time for approximately one month in August and September and two weeks full-time during the quarter in supervised school placements. Credit/no credit only. Prerequisite: secondary TEP student.

**EDTEP 592 Second Quarter Field Experience — Secondary (3)** Field experience and small group discussions accompanying the second quarter of study in the Secondary Teacher Education Program. Three weeks full-time during the quarter in supervised school placements. Credit/no credit only. Prerequisite: secondary TEP student.

**EDTEP 593 Third Quarter Field Experience — Secondary (3)** Field experience and small group discussions accompanying third quarter of study in Secondary Teacher Education Program. Four weeks full-time during the quarter in supervised school placements. Credit/no credit only. Prerequisite: secondary TEP student.

**EDTEP 595 Portfolio: Tool for Reflection — Secondary (3)** Group discussions fostering integration of course work and field experience through reflection. Using program goals and targets, students illustrate their learning through multiple forms of evidence. Final portfolio is presented to an audience. Related field experience may be arranged. Credit/no credit only. Prerequisite: secondary TEP student.

**EDTEP 600 Independent Study or Research (1)** Registration must be accompanied by a study prospectus endorsed by the 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 the Teacher Education

Program. Full-time student teaching in supervised school placements. Prerequisite: TEP student.

# College of Engineering

## Engineering

**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 Technology and Society (5) I&S** Examines revolutionary technologies and how they have shaped the world. Investigates how railroads, computers, automobiles, airplanes, the Internet, nanotechnology, and other innovations affect everyday life. Includes examination of how geographers, philosophers, scientists, artists, engineers, and others are involved in creation, implementation, and criticism of technology.

**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, government. Corroboration by an engineering faculty member is required. Project suggestions are available. Offered: AWSpS.

**ENGR 202 Special Projects (1-3, max. 3)** Projects on topics of current interest in engineering. Offered: A.

**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. Offered: AW.

**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) Kalonji, Reed** Graduate seminar series on topics of interest to all engineering students.

## Aeronautics and Astronautics

**A A 101 Air and Space Vehicles (5) NW** Introduction to aircraft and spacecraft; how airplanes fly, how airplanes and rockets are made, how they are controlled, and how space missions are designed. Laboratory and computer simulations used as illustrations. Emphasis on conceptual, rather than mathematical, comprehension. Not recommended for upper-division students in physical sciences and engineering. Offered: A.

**A A 210 Engineering Statics (4) NW** Vector analysis applied to equilibrium of rigid body systems and subsystems. Force and moment resultants, free body diagrams, internal forces, and friction. Analysis of basic structural and machine systems and components. Prerequisite: either MATH 126, MATH 129, or MATH 136; PHYS 121; recommended: graphics background. Offered: AWSpS.

**A A 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. Offered: AWSpS.

**A A 301 Compressible Aerodynamics (4)** Aerodynamics as applied to the problems of performance of flight vehicles in the atmosphere. Kinematics and dynamics of flow fields. Thin airfoil theory; finite wing theory. Compressible fluids; one-dimensional compressible flow; two-dimensional supersonic flow. Prerequisite: CHEM E 260. 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: 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.

**A A 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 multidegree-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 in aerospace instrumentation. Students build sensors, power supplies, and circuits. Application of signal conditioning to wind tunnel data. Digital systems, A/D conversion, D/A conversion, and actuator control. Introduction to instrumentation requirements for space vehicles. 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)** The 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. Offered: Sp.

**A A 331 Aerospace Structures I (4)** Analysis and design of aerospace structures. Review of concepts of stress, deformation, strain, displacement and equations of elasticity. Applications 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)** Bending of plates and shells. Buckling analysis. Energy principles and minimum potential energy. Introduction to the finite element method. Airworthiness and airframe loads. Strength and damage characteristics of ductile, brittle and composite materials. Elements of fracture mechanics and fatigue. Prerequisite: 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: 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; CHEM E 260. Offered: W.

**A A 402 Fluid Mechanics (3)** Inviscid equations of motion, incompressible potential flows, small perturbation flows, bodies of revolution, viscous equations, exact solutions, laminar boundary-layer equations, similar solutions, integral methods. Compressibility, instability, turbulent boundary layers. Prerequisite: MATH 324; A A 301. Offered: Sp.

**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.

**A A 409 Computer Tools for Aerospace Engineers (2)** Computer-aided drawing basics, three-dimensional drawing, projections, views. Computer-aided design and analysis tools for stress and heat transfer calculations. Offered: A.

**A A 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.

**A A 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.

**A A 421 Spacecraft and Space System Design II (4-)** A continuation of 420. Course content varies from year to year and is dependent on the design topic chosen for 420. Prerequisite: A A 420. Offered: Sp.

**A A 430 Finite Element Structural Analysis (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.

**A A 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. : 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. Offered: Sp.

**A A 447 Control in Aerospace Systems (4)** Overview of feedback control. Linearization of nonlinear models. Model properties: stability, controllability, observability. Dynamic response: time and frequency domain techniques. Frequency response design techniques. Design of aerospace control systems via case studies. Prerequisite: M E 230; MATH 308. Offered: A.

**A A 448 Control Systems Sensors and Actuators (3)** Study of control systems components and mathematical models. Amplifiers, DC servomotors, reaction mass actuators. Accelerometers, potentiometers, shaft encoders and resolvers, proximity sensors, force transducers, piezoceramic materials, gyroscopes. Experimental determination of component models and model parameters. Two 3-hour laboratories per week. Prerequisite: either A A 447 or E E 447. Offered: jointly with E E 448; W.

**A A 449 Design of Automatic Control Systems (4)** Design problems for aerospace vehicles, systems with unstable dynamics, lightly damped modes, nonminimum phase, nonlinear dynamics. Computer-aided analysis, design, and simulation, with laboratory hardware-in-the-loop testing. Team design reviews, oral presentations. Prerequisite: either A A 448 or E E 448. Offered: jointly with E E 449; Sp.

**A A 461 Advanced Propulsion (3)** Physical characteristics and components of rockets. Nozzle gasdynamics and non-ideal flow effects. Solid and liquid propulsion systems, components, and design. Aerodynamics of airbreathing engine components: inlets, compressors, turbines, afterburners, nozzles. Engine design methodology. Prerequisite: A A 360. Offered: A.

**A A 462 Rocket Propulsion (3)** Physical and performance characteristics of rocket propulsion devices. Mission requirements, chemical rockets, arcjets, electrostatic and electromagnetic thruster. 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; A.

**A A 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)** Lectures and discussions on topics of current interest in aviation and space technology by guest speakers. Topics vary. Offered: W.

**A A 498 Special Topics (1-5, max. 15)** Topics of current interest in the department of Aeronautics and Astronautics.

**A A 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.

**A A 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: odd years; A.

**A A 504 Fluid Mechanics (3)** Review of thermodynamics; vectors and dyads. Derivation of the Navier-Stokes equations, stream functions and potential functions; integrals of the equations of motion. Boundary conditions and discontinuity surfaces in fluids. Exact solutions. Dimensional analysis. Vorticity dynamics. Highly viscous flows. Rotational flows. 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. Prerequisite: A A 504. Offered: Sp; even years.

**A A 507 Aerodynamics of Viscous Fluids I (3)** Introduction to viscous flow; exact solutions of the laminar equations of motion; approximate equations. Exact solutions for laminar boundary-layer equations. Approximate methods for compressible laminar boundary layers. Offered: odd years; W.

**A A 508 Aerodynamics of Viscous Fluids II (3)**

The phenomena of turbulence; transition prediction; Reynolds stresses; turbulent boundary-layer equations. Approximate methods for turbulent boundary layers. Prerequisite: A A 507 or permission of instructor. Offered: odd years; Sp.

**A A 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. Prerequisite: graduate standing or permission of instructor. Offered: jointly with CHEM E 510/E 510/M 510; A.

**A A 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: even years; Sp.

**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.

**A A 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: odd years; Sp.

**A A 520 Seminar (1-, max. 10)** Topics of current interest in aerospace engineering. Credit/no credit only. Prerequisite: A A major. Offered: AWSp.

**A A 523 Special Topics in Fluid Physics (3)** Offered: AWSp.

**A A 524 Aircraft Engine Noise (3)** Description and measurement of noise, power spectra. Elementary duct acoustics, rotor-stator interaction, effect of design blade loading. Turbine noise, core noise, acoustic linings. Jet noise, Lighthill theory, scaling laws. Offered: odd years; A.

**A A 525 Aerothermodynamics of Aircraft Engines Components (3)**

Estimation of component performances. Inlets and nozzles. Aerodynamics of turbines and compressors. Radial equilibrium theory, through-flow theory. Offered: even years; W.

**A A 527 Energy Conversion I (3)** Energy resources. Heat generation by combustion, solar collection. Analysis of power systems for space and advanced commercial power generation. High-temperature cycles. Offered: even years; A.

**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.

**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: odd years; Sp.

**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.

**A A 531 Structural Reliability and Damage (3)**

Theory of plasticity, yield surfaces, flow rules, limit theorems. Concepts of failure and fatigue in aerospace structures, residual strength, cumulative damage, probability aspects and case histories. Prerequisite: A A 530 or equivalent or permission of instructor. Offered: odd years; W.

**A A 532 Mechanics of Composite Materials (3)**

Analyses and design of composite materials for aerospace structures. Micromechanics. Anisotropic elasticity. Laminated plate theory. Thermo-viscoelastic behavior and fracture of composites. Prerequisite: A A 530 or permission of instructor. Offered: odd years; Sp.

**A A 538 Introduction to Structural Optimization (3)**

*Live* 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.

**A A 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 I (3)**

Numerical approximation of the inviscid compressible equations of fluid dynamics. Analysis of numerical accuracy, stability, and efficiency. Use of explicit, implicit, and flux split methods. Discussion of splitting, approximate factorization, discrete point, and finite volume approaches. Applications to the solution of simple hyperbolic systems of equations and the Euler equations. Offered: W.

**A A 545 Computational Methods for Plasmas (3)**

*Shumlak* 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: odd years; Sp.

**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. Offered: when adequate enrollment develops prior to close of advance registration.

**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. Prerequisite: either A A 447, E E 447 or M E 471. Offered: jointly with E E 547/M E 547; A

**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 M E 548/E E 548.

**A A 549 State Estimation and Kalman Filtering (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: E E 505 or AMATH 506 or STAT 506; recommended: 548 or A A 548. Offered: jointly with M E 549/E 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. Prerequisite: graduate standing; recommended: A A 548, E E 548, or M E 548. Offered: jointly with E E 550/M E 550; odd years; A.

**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: odd years; Sp.

**A A 554 Aeroelasticity (3)**

Static and dynamic aeroelasticity, unsteady aerodynamics, aeroservoelastic modeling, and active control. Offered: even years; Sp

**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: either A A 405, ESS 515, or GPHYS 505, or permission of instructor. Offered: jointly with ESS 576; W.

**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: even years; W

**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: even years; Sp.

**A A 559 Plasma Science Seminar (1, max. 10)** 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: AWPp.

**A A 560 Plasma Diagnostics (3)** *Jarboe* 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: even years, A.

**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: odd years; W.

**A A 570 Manifolds and Geometry for Systems and Control (3)** *Morgansen* 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 versus coordinate-free representations. Applications from physics, robotics, and control theory. Offered: jointly with EE 570/M E 571; W; even years.

**A A 575 Continuum Mechanics (3)** General foundations of the fundamental concepts of motion, stress, energy, and electromagnetism for a continuum. General equations of conservation of mass, momentum, and energy. Linear and nonlinear elastic, viscous, and inelastic materials. Offered: jointly with CEE 508; even years; W.

**A A 578 Optimization in System Sciences (3)** *Mesbahi* 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 547. Offered: jointly with E E 578/M E 578; W; even years.

**A A 580 Geometric Methods for Non-Linear Control Systems (3)** *Morgansen* 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 570/M E 570. Offered: jointly with E E 580/M E 580; Sp; even years.

**A A 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: either E E/A A/ or M E 548. Offered: jointly with E E/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 447/ M E 471. Offered: jointly with E E 582/M E 582; even years; Sp.

**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/E E 447/M E 471. Offered: jointly with E E/M E 583; odd years; SP.

**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. Prerequisite: either E E 505 or AMATH 506 or STAT 506; E E 548/A A 548/M E 548. Offered: jointly with M E 585/E E 585.

**A A 589 Special Topics in Solid Mechanics (3)** Offered: AWPp.

**A A 591 Robotics and Control Systems Colloquium (1, max. 3)** 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/E E/M E 591; AWPp.

**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-actuators. Prerequisite: A A

547/E E 547/M E 547. Offered: jointly with E E/ 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. Offered: jointly with E E 594/M E 594; odd years; 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 599 Special Projects (1-5, max. 15)** Investigation on a special project by the student under the supervision of a faculty member. Offered: AWPp.

**A A 600 Independent Study or Research (\*)** Offered: AWPp.

**A A 700 Master's Thesis (\*)** Offered: AWPp.

**A A 800 Doctoral Dissertation (\*)** Offered: AWPp.

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## Chemical Engineering

**CHEM E 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: either CHEM 140, CHEM 142, or CHEM 145; either MATH 126, MATH 129, or MATH 136; PHYS 121. Offered: AWPp.

**CHEM E 301 Leadership Seminar (1)** *Stuve* 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 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 PSE 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:

either CHEM E 260 or ENGR 260 with either ENGR 142 or CSE 142. 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 310 with either CHEM E 260 or CHEM 456. 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: W.

**CHEM E 340 Transport Processes II (4)** Heat transfer, basic principles, and applications. Conduction, convection, and radiation. Prerequisite: CHEM E 330. Offered: Sp.

**CHEM E 341 Energy and Environment (3) NW** *Malte* 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, PHYS 114, or PHYS 121. Offered: jointly with ENVIR 341/M E 341; A.

**CHEM E 442 Renewable Energy (4) NW** *Malte* Introduction to renewable energy. Principles and practices: solar, wind, water, and biomass energy conversion. Prerequisite: either MATH 112, MATH 124, or Q SCI 291; either CHEM 120, CHEM 142, PHYS 115, or PHYS 122. Offered: jointly with M E 442/ENVIR 442; W.

**CHEM E 345 Introduction to Fuel Cells (3)** *Adler, Schwartz, Stuve* Overview of fuel cells, fuel cell efficiency, types of fuel cells, applications of fuel cells, and fuels for fuel cells. Intended for students in science and engineering and fuel cell professionals desiring a technical knowledge of fuel cells. No credit available, if already given for CHEM E 445. Prerequisite: CHEM 162; PHYS 122; recommended CHEM E 260. Offered: A.

**CHEM E 355 Biological Frameworks for Engineers (3)** 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: CHEM 142; PHYS 123; MATH 307; recommended: CHEM 220. Offered: A.

**CHEM E 375 Chemical Engineering Computer Skills (2)** *Finlayson* Use Excel, 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. Credit/no credit only. 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; T C 231; recommended: T C 333. Offered: Asp.

**CHEM E 437 Chemical Engineering Laboratory II (3)** Continuation of 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 445 Fuel Cell Engineering (3)** 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 (1/3, max. 3)** *Berg* 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; CHEM 461. Offered: Sp.

**CHEM E 458 Surface Analysis (3)** 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; W.

**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. Offered: W.

**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)** *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 particular pollutants. Actual case studies. Offered: jointly with CEE 494/M E 468; W.

**CHEM E 470 Chemistry of Wood (3)** Chemical and physical properties of cellulose, lignin, hemicellulose, and extractives; wood as a raw material for the chemical industry. Prerequisite: either CHEM 220, CHEM 238, or CHEM 336. Offered: A.

**CHEM E 471 Pulping and Bleaching Processes (3)** Conversion of wood to mechanical and chemical pulps. Kraft, sulfite, and semichemical pulping processes. Chemical recovery systems. Bleaching of mechanical and chemical pulps. Offered: jointly with PSE 476; W.

**CHEM E 472 Papermaking Processes (3)** Fiber sources and properties. Secondary fibers. Stock preparation, sheet forming, water removal, finishing. Coating, lamination, and printing. Paper products. Offered: jointly with PSE 477; A.

**CHEM E 473 Pulp and Paper Laboratory (2)** Laboratory experiments in chemical and semichemical pulping of wood. Bleaching of chemical and high-yield pulps. Physical and chemical characteristics of pulp fibers. Prerequisite: PSE 476. Offered: jointly with PSE 478; Sp.

**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)** 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: Sp.

**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, 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)** *Hoffman* Combined application of the principles of physical chemistry, biochemistry, materials engineering, mass transfer, and fluid mechanics to biomedical problems. Case studies include considerations of the selection of materials, the design and the operation of instruments, components of, or entire, artificial organs (heart, kidney, lung) and artificial structural elements (bone, teeth, skin), all for use in contact with body fluids. Offered: jointly with BIOEN 490; W.

**CHEM E 491 Controlled Release Systems-Principles and Applications (3)** *Hoffman* Mechanisms or controlled release of active agents and the development of useful systems for this purpose. Release mechanisms include diffusive, convective, or erosive driving forces. Applications to the biomedical, agricultural, forestry, and oceanography fields. Some special case studies covered in detail. Offered: jointly with BIOEN 491; even years; 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. Prerequisite: graduate standing or permission of instructor. Offered: jointly with A 510/E 510/M 510; A.

**CHEM E 511 Biomaterials Seminar (1)** *Hoffman, Horbett, Ratner* Presentation of student research results. Credit/no credit only. Prerequisite: permission of instructor. Offered: jointly with BIOEN 511; AWSp.

**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 205, 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.

**CHEM E 523 Seminar in Chemical Engineering (1)** 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 526 Topics in Thermodynamics (3)** Classical and molecular thermodynamics of phase equilibria, solution theory, thermodynamic stability, and critical phenomena. Prerequisite: CHEM E 525 or permission of instructor.

**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 530. Flows of fluid-particle systems; convective heat transfer, natural convection. Prerequisite: CHEM E 530. Offered: W.

**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.

**CHEM E 557 Research in Interfacial and Colloid Science (1)** *Berg* Weekly research seminar and discussion of scientific literature pertaining to interfacial and colloid science. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSp.

**CHEM E 558 Surface Analysis (3)** *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 592; W.

**CHEM E 560 Reactions at Solid Surfaces (3)** *Stuve* Fundamental studies of adsorption systems and reactions that occur at surfaces with application toward heterogeneous catalysis, electrochemistry, etching, and corrosion. Analysis of reaction poisons and promoters, acid-base theory of metal surfaces, jellium theory of metals, and water and ion adsorption, plus other topics of current interest. Recommended: CHEM E 558 or CHEM 560.

**CHEM E 562 Hazardous Air Pollution (3)** Control of emission of hazardous or toxic air pollutants. Government regulations, determination of needed control efficiency. Emission control by thermal incineration, catalytic incineration, flares, condensation, carbon adsorption, and adsorption (wet and dry).

Hazardous waste incinerators. Case studies. Offered: jointly with CEE 556; W.

**CHEM E 564 Applications of Chemical Kinetics (3)** Fast reactions and highly energetic reactions with applications to combustion, explosions, and lasers. Coupling of transport processes and reaction rates, photochemical kinetics, intermolecular energy transfer, free radical, and chain reaction kinetics. Rate plasmas, flames, and biological systems.

**CHEM E 565 Kinetics and Catalysis (3)** *Finlayson, Krieger, Stuve* Homogeneous and heterogeneous systems with emphasis on chemical engineering principles applied to industrial reactor design. Prerequisite: CHEM E 525. Offered: W.

**CHEM E 566 Control of Gaseous Air Pollutants (3)** *Pilat* Physical and chemical processes used to control gaseous air pollutants. Absorption into liquids. Aqueous spray dryer scrubbers. Adsorption beds. Control of sulfur oxide and nitrogen oxide. Case studies of control systems. Prerequisite: CHEM E 435 or CHEM E 468 or permission of instructor. Offered: jointly with CEE 558; even years; Sp.

**CHEM E 567 Control of Particulate Air Pollutants (3)** *Pilat* Processes used to control emissions of particulate air pollutants. Use of settling chambers, cyclones, fabric filters, wet scrubbers, and electrostatic precipitators to control aerosol particles. Case studies of particulate air-pollutant control systems. Prerequisite: CHEM E 468 or permission of instructor. Offered: jointly with CEE 559; odd years; A.

**CHEM E 570 Chemistry of High Polymers (3, max. 6)** *Allan* Fundamentals of high polymer chemistry, including kinetics of addition and condensation polymerization, the determination of average molecular weights and chain length distributions, solution properties and the relationship between molecular structure and plastic film and fiber properties of various polymers. Prerequisite: an undergraduate sequence in organic chemistry. Offered: W.

**CHEM E 575 Nonlinear Analysis in Chemical Engineering (3)** *Finlayson* Comparison of numerical techniques: similarity, perturbation, finite difference, Galerkin, orthogonal collocation methods as applied to nonlinear chemical engineering problems.

**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)** *Lidstrom* Weekly research seminar and discussion of scientific literature pertaining to applied microbiology. Credit/no credit only. Prerequisite: permission of instructor. 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: CHEM E 490 or BIOEN 490. Offered: jointly with BIOEN 590; odd years; Sp.

**CHEM E 591 Robotics and Control Systems Colloquium (1, max. 3)** 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/E/E/M E 591; AWSp.

**CHEM E 599 Current Topics in Chemical Engineering (1-3, 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.

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## Civil and Environmental Engineering

**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. Offered: W.

**CEE 220 Introduction to Mechanics of Materials (4) NW** Introduction to the concepts of stress, deformation, and strain in solid materials. Development of basic relationships between 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: A A 210. Offered: AWSpS.

**CEE 306 Construction Engineering I (3)** Introduction to construction engineering, planning, methods, contracts, and specifications. Scheduling manually and by using computer software. Production estimates; equipment selection; ownership and operating costs; role of the engineer in construction and cost estimating.

**CEE 316 Surveying Engineering (4)** Measurement and mapping techniques. Computer adjustment of measurements, analysis of error. Horizontal and vertical control. Global and plane coordinate systems, transformation. Horizontal/vertical curve computations, layout. Earthwork and volume measurements, computations. Leveling and datum considerations, photogrammetry, GPS, GIS, remote sensing, cadastral surveys, and construction surveys. Prerequisite: MATH 126; recommended: statistics. Offered: A.

**CEE 320 Transportation Engineering I (3)** Study of vehicular transportation fundamentals including geometric design, pavement design, traffic flow concepts, level of service analysis, intelligent transportation systems, travel demand prediction methods, and management of transportation systems. Includes a review of relevant vehicle operating characteristics. Prerequisite: MATH 126; PHYS 121.

**CEE 342 Fluid Mechanics (4)** Elementary mechanics of incompressible fluids. Hydrostatics. Continuity, energy, and momentum equations. Introduction to potential flow. Resistance phenomena for laminar and turbulent flows. Dynamic similitude. Prerequisite: CEE 220; M E 230; PHYS 122. Offered: A.

**CEE 345 Hydraulic Engineering (4)** Extension and application of fluid mechanics principles to hydraulic engineering problems. Open channel flow, pipeline systems, turbomachinery, unsteady flow in pipes, diffusion and mixing processes, groundwater, surface water hydrology. Prerequisite: CEE 342. Offered: WS.

**CEE 350 Environmental Engineering — Water and Air Quality (4)** Description of water and air resources and parameters that characterize their quality, how their use alters their properties. Mass and energy balances as they apply to environmental systems. Global environment change. Basics of aquatic chemistry and microbiology applied to municipal water and wastewater treatment operations. Prerequisite: CHEM 142; MATH 126. Offered: Sp.

**CEE 363 Constructional Materials (4)** General treatment of physical and mechanical properties and engineering behavior of metallic and nonmetallic materials. Steel, aluminum, asphalt concrete, Portland cement concrete, wood. Laboratory testing, instrumentation, and investigation into macrobehavior. Correlation with microstructure and various aspects of materials science. Prerequisite: CEE 220.

**CEE 366 Basic Soil Mechanics (4)** Introduction to basic soil properties, soil classification, volumetric relationships, compaction, consolidation, soil rheology, shear strength, and introduction to settlement and stability of foundations. Prerequisite: CEE 220; CEE 342. Offered: WSp.

**CEE 379 Elementary Structures I (4) Eberhard, Miller, Turkiyyah** Fundamental analysis and modeling of civil structural systems (trusses, beams, and frames), including design applications. 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 local structures. Prerequisite: CEE 220. Offered: ASp.

**CEE 380 Elementary Structures II (4) MacRae, Roeder, Stanton** Structural design concepts, approaches, procedures, and codes. Characterization and determination of loads (dead, live, seismic, wind, etc.) Structural systems and system behavior (load paths, lateral and vertical response, failure modes and limit states). Structural component behavior and design (composite action, inelastic bending, column stability, member capacities). Prerequisite: CEE 379. Offered: WSp.

**CEE 390 Civil Engineering Systems (3)** Introduction to civil engineering system processes. Decision methods, economic considerations, and optimization. Examples illustrating quantitative and subjective aspects of civil engineering practice. Prerequisite: MATH 308. Offered: A.

**CEE 391 Graphics Communication and Computer-Aided Design (3)** Introduction to graphics communication and computer-aided design tools to manipulate drawings, data, and geometric representations in civil engineering applications. Prerequisite: MATH 124.

**CEE 392 Basic Civil Engineering Computing (1)** Introduction to computer-based methods in civil and environmental engineering problems using Matlab. Prerequisite: CEE 220.

**CEE 404 Infrastructure Construction (4) Muench** Basic concepts of large infrastructure construction projects including planning, scheduling, life-cycle cost analysis (LLCA), construction cost, logistics, productivity and, where applicable, traffic impacts. Uses currents and prototype industry software and involves direct contact with agency and contractor personnel involved in infrastructure projects. Prerequisite: CEE 306. Offered: Sp.

**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 320.

**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, on-line information sharing, statistical analysis, system optimization, and decision support.

**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 320. Offered: A.

**CEE 418 Computer-Aided Planning of Urban Systems (3)** Survey of on-line 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 URBDP 429.

**CEE 421 Pavement Design (3)** Current and developing procedures for the structural thickness design of pavements. Bituminous and concrete pavements for highways, airports, and special heavy loading. Elastic layered systems, slab theory. Performance evaluation for maintenance and overlay design. Offered: ASp.

**CEE 423 Heritage of Civil Engineering (3/4) I&S** Contribution of civil engineering to civilization based on the lives and projects of prominent engineers and cultures. Incidents and

individuals from prehistory to the nineteenth century give the student an awareness of the profession and its influence on society. Industrial archaeology and historic sites are considered. An additional 1 credit may be earned by participating in a special project. Emphasis on the control of elements and the methodology, planning, objectives, and reasons for the project. May be used as social science distribution. 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 316.

**CEE 425 Reinforced Concrete Construction (3)** *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.

**CEE 428 Lightweight Cementitious Composites (2)** *Janssen* Introduction to the process of designing within constraints and introductory experimental design. Importance of proper laboratory documentation. Examines the characteristics of cementitious binders and elementary composite behavior. Considers constructability. Interprets pre- and post-cracking elastic behavior. 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 MATH 126, 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 366.

**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.

**CEE 441 Transportation and Construction Capstone (4)** Comprehensive design project focusing on planning, design and construction of transportation project such as highways, transit, and airports. Prerequisite: CEE 320; CEE 440, which may be taken concurrently.

**CEE 442 Structural Geotechnical Capstone Design Project (4)** 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, or CEE 457.

**CEE 444 Water Resources and Hydraulic Engineering Capstone Design Project (4)** 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: CEE 345; CEE 440; either CEE 475, CEE 476, CEE 482, CEE 483, or CEE 484.

**CEE 445 Environmental Engineering Capstone Design Project (4)** 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: CEE 345; CEE 440; either CEE 475, CEE 476, CEE 481, CEE 482, CEE 483, or CEE 484.

**CEE 451 Design of Metal Structures (3)** 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 380; recommended: CEE 457, CEE 458.

**CEE 452 Design of Reinforced Concrete Structures (3)** Fundamentals of design of buildings in reinforced concrete in accordance with current codes and practices. Prerequisite: CEE 380.

**CEE 453 Prestressed Concrete Design (3)** Analysis, design, and construction of prestressed concrete structures. Prerequisite: CEE 452.

**CEE 454 Design of Timber Structures (3)** The design and construction of timber structures, using elements made of sawn wood, glued-laminated wood, and plywood. Prerequisite: CEE 380.

**CEE 455 Structural Unit Masonry (3)** Structural behavior and design of reinforced brick, tile, and unit concrete masonry structures. Prerequisite: CEE 380. Offered: jointly with ARCH 426.

**CEE 457 Advanced Structures I (3)** The displacement method in matrix form with programming applications. Fundamentals of modeling of various types of structures. Prerequisite: CEE 379.

**CEE 458 Advanced Structures II (3)** Introduction to stability, including a consideration of

elastic and inelastic buckling with applications to beam-columns and plates. Introduction to plastic analysis. Prerequisite: CEE 457.

**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 379.

**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.

**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, any of 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 342; CEE 345.

**CEE 473 Coastal Engineering I (3)** Linear theory of water waves, wave transformations due to boundary conditions, sediment motion, elementary tidal theory; applications illustrated by laboratory experiments and selected case histories. Prerequisite: CEE 342.

**CEE 474 Hydraulics of Sediment Transport (3)** 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 345.

**CEE 475 Analysis Techniques for Groundwater Flow (3)** Development of appropriate equations to describe saturated groundwater flow, and application of numerical methods for solving groundwater flow problems and flow to wells. Participants required to solve specific problems using numerical techniques developed during the course. Prerequisite: CEE 342.

**CEE 476 Physical Hydrology (3)** Global water picture, data sources and data homogeneity, precipitation, evapotranspiration, hydrographs. Hydrologic data frequency analysis. Hydrologic design: flood mitigation, drainage. Introduction to deterministic and stochastic models. Prerequisite: CEE 345.

**CEE 477 Open-Channel Engineering (3)** Water flow in natural and constructed channels. Analysis and design of canals, transitions, energy dissipators, and similar structures. Analysis of surface profiles and effect of nonlinear alignment on flow. Introduction to river mechanics. Design-oriented problems. Prerequisite: CEE 345.



**CEE 480 Air-Quality Modeling (3)** Evaluation of air-quality models relating air pollution emissions to environmental concentrations. Topics include meteorological dispersion models and various "receptor" models based on chemical "fingerprinting" of sources. Emphasizes current problems. Offered: jointly with ATM S 480.

**CEE 481 Hydraulic Design for Environmental Engineering (3)** *Stensel* Introduction to the theory and the practice of planning and design of urban water supply distribution, pump stations, and sewage and storm-water collection systems. Evaluation of service areas and service requirements and their relationships to urban and regional planning activities. Engineering methods and computer programs for designing basic system elements. Prerequisite: CEE 345; CEE 350.

**CEE 482 Wastewater Treatment and Reuse (3)** Introduction to wastewater treatment and systems, emphasizing fundamental biological, chemical and physical processes related to protection of public health and water pollution control. Process analysis of the configuration of sizing of major types of treatment processes for various sizes of plants and effluent requirements. Prerequisite: CEE 350.

**CEE 483 Drinking Water Treatment (3)** Scientific and engineering principles underlying drinking water treatment; analysis of key contaminants; 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 350.

**CEE 484 Decentralized and On-Site Wastewater Management and Reuse (3)** Design and performance of onsite 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 350.

**CEE 485 Environmental Engineering Chemistry (3)** *Benjamin, Korshin* Fundamentals of chemical equilibrium in natural water systems. Behavior of open and closed aqueous and multi-media (air/water/solids) systems. Chemistry of major species affecting the environment. Identification of key parameters for characterizing water quality and of chemical processes. Recommended: one year of general chemistry or equivalent.

**CEE 486 Environmental Analysis Laboratory (3)** Introduction to water quality parameters; theory of instrumentation and methods used for the environmental analysis. Laboratory analysis of environmental samples using a variety of techniques including titrations, chromatography, and absorption and emission spectrophotometry. Recommended: one year of general chemistry.

**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 351.

**CEE 489 Water and Air Quality Sampling (2)** Samples collected from lakes, streams, precipitation, and air and 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. Emission sources, atmospheric dispersion, ambient concentrations, adverse effects, governmental regulations, emission standards, air-quality standards, processes and equipment for controlling emissions. Offered: jointly with ENV H 461.

**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. Prerequisite: CEE 390.

**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/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; S.

**CEE 498 Special Topics (1-5, max. 5)** Special topics in civil engineering offered as course with lecture and/or laboratory. Maximum of 6 credits in combination of 498 and 499 may be applied toward an undergraduate degree.

**CEE 499 Special Projects (1-5, max. 5)** Individual undergraduate research projects. Maximum of 6 credits in combination of 498 and 499 may be applied toward an undergraduate degree. Recommended: 400-level CEE course.

**CEE 500 Civil and Environmental Engineering Seminars (1)** Credit/no credit only. Prerequisite: graduate standing in Civil and Environmental Engineering.

**CEE 501 Structural Mechanics (6)** *Elias, Miller, Turkiyyah* 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, MacRae, Reed* 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, Lagrange's equations. Prerequisite: CEE 501. Offered: W.

**CEE 503 Materials Modeling (3)** *Miller, Reed, Roeder* 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.

**CEE 504 Finite Element Methods in Structural Mechanics (3)** 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.

**CEE 505 Engineering Computing (3)** *Lowes, Miller, Turkiyyah* 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: AW.

**CEE 506 Nonlinear Analysis of Structural Systems (3)** *Lowes, Miller, Turkiyyah* 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: AW.

**CEE 508 Continuum Mechanics (3)** *Elias, Miller* General foundation of fundamental concepts of motion, stress, and energy for a continuum. General equations of conservation of mass, momentum, and energy. Linear and nonlinear elastic, viscous, and inelastic materials. Prerequisite: CEE 501. Offered: jointly with A A 575.

**CEE 511 Advanced Reinforced Concrete (3)** *Eberhard, MacRae, 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. Includes floor vibrations. Prerequisite: CEE 453; CEE 502.

**CEE 513 Advanced Steel I (3)** *MacRae, 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 effect of different fabrication methods on behavior of structure. Prerequisite: CEE 501. Offered: W.

**CEE 515 Earthquake Engineering I (3)** 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.

**CEE 516 Earthquake Engineering II (3)** 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.

**CEE 517 Wind Engineering Design (3)** 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.

**CEE 518 Reliability and Design (3)** Introduction to theory of structural reliability and its application to design procedures in civil engineering, including probability theory; assessment of uncertainties; code specification (first-order, second-moment format) and the related concept of risk and the influence of socioeconomic factors; loads, load combinations, and probabilities of damage.

**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 366 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 366 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 366 or equivalent.

**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: graduate standing and 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: graduate standing and CEE 437 or permission of instructor.

**CEE 540 Microbiological Process Fundamentals (3)** *Stensel* 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.

**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, and toxic organics removal. Prerequisite: CEE 540 and CEE 482 or equivalent.

**CEE 543 Aquatic Chemistry (4)** *Benjamin, Ferguson, Murray* 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. Prerequisite: Graduate standing or permission of instructor.

**CEE 544 Physical-Chemical Treatment Processes (4)** Principles and design of major physical-chemical unit processes used in water, wastewater, and hazardous waste treatment. Processes include chemical and reactor kinetics, filtration, chemical coagulation, ion exchange, adsorption, and gas transfer. Development of mathematical models, laboratory demonstrations, and evaluation of current design practice. Prerequisite: CEE 485 or permission of instructor.

**CEE 545 Advanced Environmental Chemistry (3)** Behavior of controlled chemical species (heavy metals, pesticides, disinfection by-products, and endocrine disruptors) and persistent organic pollutants in the environment. Modeling of chemical interactions pertinent to environmental technologies (ozonation, advanced oxidation, photochemical transformations, halogenation, dehalogenation, application of zero-valence metals and electrochemical controls). Prerequisite: aquatic chemistry or permission of instructor.

**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.

**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, bacterial metabolism in chemically complex solutions, and acid precipitation. May be taken more than once for credit. Prerequisite: CEE 540, CEE 541.

**CEE 550 Environmental Chemical Modeling (3)** *Benjamin, Murray* 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

include acid mine drainage, acid deposition, and groundwater and lake water contamination. Offered: jointly with OCEAN 524.

**CEE 552 Environmental Regulations (3) GE**  
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 pollutions, wetlands, hazardous wastes, and endangered species.

**CEE 553 Seminar-Topics in Atmospheric Chemistry (1-3, max. 6) Charlson, Harrison**  
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. Faculty lectures, student participation. 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 556 Hazardous Air Pollution (3)** Control of emissions of hazardous or toxic air pollutants. Government regulations, determination of needed control efficiency. Emission control by thermal incineration, catalytic incineration, flares, condensation, carbon adsorption, and absorption (wet and dry). Hazardous waste incinerators. Case studies. Offered: jointly with CHEM E 562.

**CEE 557 Air Resources Management (3)**  
Technical, administrative, and legal aspects of air conservation. Current case studies involving engineering analysis, air-quality modeling, and regulatory aspects at local, state, and federal governmental levels.

**CEE 558 Control of Gaseous Air Pollutants (3)** Physical and chemical processes used to control gaseous air pollutants. Absorption into liquids. Aqueous spray dryer scrubbers. Adsorption beds. Control of sulfur oxide and nitrogen oxide. Case studies of control systems. Prerequisite: CHEM E 435 or permission of instructor. Offered: jointly with CHEM E 566; even years.

**CEE 559 Control of Particulate Air Pollutants (3)** Processes used to control emissions of particulate air pollutants. Use of settling chambers, cyclones, fabric filters, wet scrubbers, and electrostatic precipitators to control aerosol particles. Case studies of particulate air-pollutant control systems. Prerequisite: CEE 468 or permission of instructor. Offered: jointly with CHEM E 567; odd years.

**CEE 560 Risk Assessment for Environmental Health Hazards (3/4) Faustman** 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 570 Hydrodynamics (4)** Applications of the equations of motion to the flow of ideal and real fluids. Fundamentals of fluid potential motion. Viscous flows; Navier-Stokes equations and some exact solutions. Boundary-layer theory. Introduction to turbulence. Two- and three-dimensional examples, including free surface flows. Applications of field equations to problems of engineering significance. Prerequisite: CEE 342 or equivalent.

**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 Advanced Computational Hydraulics (4)** Review of hydrodynamic and transport equations for hydraulic engineering application; numerical solution methods; implementation and practice with existing two- and three-dimensional numerical models; numerical model calibration and verification techniques; case studies. Theoretical and civil engineering decision makers aspects. Prerequisite: CEWA 474, CEE 570, CEE 571 or permission of instructor.

**CEE 574 Advanced Hydrology (3)** Detailed treatment of statistical methods used in hydrologic analysis. Stochastic hydrology, detailed examination and use of a deterministic watershed model (e.g., Stanford Watershed Model). Prerequisite: graduate standing in civil and environmental engineering or permission of instructor.

**CEE 576 Water Resources Planning (3) Palmer**  
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. Offered: W.

**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, and CEE 491.

**CEE 578 Water Resource System Management and Operations (3) Burges, Palmer**  
A readings course 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. Recommended: CEE 556; CEE 557. Offered: A.

**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.

**CEE 581 Travel Demand Forecasting (4) Rutherford** 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.

**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 Systems (ITS) social, organizational, and operational changes.

**CEE 583 Airport Engineering (3)** Definitions and terminology relating to airport engineering. Characteristics of aircraft, air traffic control, and resulting impact upon design process. Airport capacity, configuration, and planning associated with terminal design. Emphasis on geometric and structural design of pavements and airside. Design projects relating to airport engineering required. Prerequisite: permission of instructor.

**CEE 584 Analytical Methods in Transportation I (3)** Application of analytical and statistical methods to transportation planning problems. 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: graduate standing or permission of instructor. Offered: Sp.

**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)** Graduate seminar concentrating on walking as a mode of transportation in cities and city-regions, including social, cognitive, and perpetual dimensions of pedestrian movement and behavior theory. Offered: Sp.

**CEE 587 Global Trade, Transportation, and Logistics Management (4) Goodchild, Schmitt, Shelton** 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: jointly with GTTL 501/OPMGT 535; AWSp.

**CEE 588 Land Use/Transportation Models (3)**  
Review of theoretical basis of several existing models used to forecast urban growth patterns and their associated land use, transportation, and energy requirements. Model validation studies in relation to empirical studies of urban growth and change. Environmental implications of alternative urban growth patterns. Offered: jointly with URBDP 530.

**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. Prerequisite: graduate standing or permission of instructor.

**CEE 590 Traffic Systems Operations (3)**  
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.

**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.

**CEE 592 Statistical Fundamentals for Construction and Materials Applications (3)**  
*Mahoney* Overviews 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)**  
*Wang* 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, Muench* 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 the behavior of materials in various construction applications. Offered: W.

**CEE 596 Pavement Construction (3)** *Mahoney, 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 597 Pavement Construction and Quality Control (3)** Covers concepts of hot mix asphalt (HMA) and portland cement concrete (PPC) pavement construction including plant production, transport, placement, compaction, early age behavior, long-term performance, emerging technologies and research. Benefits students with a construction or transportation focus. Uses combination of instructor lectures, guest speakers and student led discussions

**CEE 599 Special Topics in Civil and Environmental Engineering (1-3, max. 15)**  
*Rutherford* Special topics in civil and environmental engineering offered occasionally by permanent or visiting faculty members.

**CEE 600 Independent Study or Research (2-5)** *Rutherford* Topics covered depend on the faculty who offer the course 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.

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## Computer Science and Engineering

### Computer Science and Engineering

**CSE 100 Fluency in Information Technology (5) QSR** Introduces skills, concepts, and capabilities necessary to effectively use information technology. Includes logical reasoning, managing complexity, operation of computers and networks, and contemporary applications such as effective Web searching and database manipulation, ethical aspects, and social impacts of information technology. Not available for credit to students who have completed CSE 142 or ENGR 142. Offered: jointly with INFO 100.

**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. Offered: AWSpS.

**CSE 143 Computer Programming II (5) NW, QSR** Continuation of 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 190 Current Topics in Computer Science and Engineering (1-5, max. 15)**

**CSE 303 Concepts and Tools for Software Development (3)** Introduction to key concepts and tools in the development of software not introduced in the introductory programming courses. Includes programming with explicit memory management and layout (e.g. C or C++), techniques for group software development, modern design, implementation, and testing patterns and strategies, and societal impact. Prerequisite: CSE 143.

**CSE 321 Discrete Structures (4)** Fundamentals of set theory, graph theory, enumeration, and algebraic structures, with applications in computing. Prerequisite: CSE 143; either MATH 126, MATH 129, or MATH 136.

**CSE 322 Introduction to Formal Models in Computer Science (3)** Finite automata and regular expressions; context-free grammars and pushdown automata; nondeterminism; Turing machines and the halting problem. Emphasis on understanding models and their applications and on rigorous use of basic techniques of analysis. Induction proofs, simulation, diagonalization, and reduction arguments. Prerequisite: CSE 321.

**CSE 326 Data Structures (4)** Abstract data types and their implementations as data structures. Efficient of algorithms employing these data structures; asymptotic analyses. Dictionaries: balanced search trees, hashing. Priority queues: heaps. Disjoint sets with union, find. Graph algorithms: shortest path, minimum spanning tree, topological sort, search. Sorting. Not available for credit for students who have completed CSE 373. Prerequisite: CSE 321.

**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 370 Introduction to Digital Design (4)** Introductory course in digital logic and its specification and simulation. Boolean algebra, combinational circuits including arithmetic circuits and regular structures, sequential circuits including finite-state-machines, use of programmable logic devices. Simulation and high-level specification techniques are emphasized.

**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. No credit to students who have completed 326, 374, or E E 374. Prerequisite: CSE 143.

**CSE 378 Machine Organization and Assembly Language (4)** Differences and similarities in

machine organization; central processors; fundamentals of machine language and addressing; assembly language programming, including macros; operating system interfaces. No credit to students who have completed 410. Prerequisite: CSE 143; CSE 303; CSE 370.

**CSE 399 CSE Foreign Study (\*)** Upper division computer science or computer engineering course, taken through an approved study abroad program, which there are no direct University of Washington equivalents. Credit/no credit only.

**CSE 401 Introduction to Compiler Construction (3)** 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 413. Prerequisite: CSE 322; CSE 326; CSE 341; CSE 378.

**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; 303; CSE 326; CSE 341; recommended: project experience in an academic or work setting.

**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 378 or 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 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 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 322; CSE 326.

**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 326.

**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 326.

**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 322.

**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 326.

**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 Introduction to Database Systems (4)** The rational 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 rational database backend. Prerequisite: CSE 303; CSE 326.

**CSE 446 Machine Learning (3)** 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. CSE majors only. Prerequisite: CSE 326; either STAT 390 or STAT 391.

**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 410 or E 474. Prerequisite: CSE 326; CSE 378.

**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 326.

**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 303; CSE 326; recommended: MATH 308.

**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 303; CSE 326; recommended: MATH 308.

**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: either CSE 457, ART 380, or MUSIC 403.

**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: CSE 326.

**CSE 464 Advanced Topics in Digital Animation (5)** 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. Prerequisite: CSE 458.

**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 326; CSE 370; CSE 378.

**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 326; CSE 370.

**CSE 468 Very Large Scale Integration (5)**

Introduction to CMOS technology and circuit design; implementation of combinational and sequential logic; VLSI design methodologies; CAD tools for layout, simulation, and validation. Students design a VLSI chip using modern CAD tools. Prerequisite: CSE 370.

**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 370; CSE 378.

**CSE 472 Introduction to Computational Linguistics (5) NW/VLPA Hoard**

Introduction to computer applications of linguistic theory, including syntactic processing, semantic and pragmatic interpretation, and natural language generation. Prerequisite: either LING 200 or LING 400; either LING 461 or CSE 321. 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 415. Prerequisite: CSE 326; recommended: CSE 341.

**CSE 476 Embedded System Design (5)**

System building course to provide students with a complete experience in embedded system design. Students will design, simulate, construct, debug, and document a substantial project of their choosing. Lectures will focus on case studies and emerging components and platforms. Prerequisite: CSE 451; CSE 466.

**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 major; CSE 326; CSE 341; CSE 378; substantial programming experience, such as in CSE 451 or CSE 457.

**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 326; CSE 378.

**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 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 are: (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 498; 9 credits are required for 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 (3)**

Design and implementation of compilers and run-time systems for imperative, object-oriented, and functional languages. Intra- and interprocedural analyses and optimizations. Prerequisite: CSE major and CSE 341; recommended CSE 401.

**CSE 503 Software Engineering (3)**

Specification, implementation, and testing of large, multiperson, software systems. Topics include abstraction, information hiding, software development environments, and formal specifications. Prerequisite: CSE major and CSE 322, CSE 326, and CSE 378 or equivalents.

**CSE 504 Advanced Topic in Software Engineering (3)**

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. Prerequisite: CSE major or permission of instructor.

**CSE 505 Principles of Programming Languages (3)**

Design and formal semantics of modern programming languages, includes functional and object-oriented languages. Prerequisite: CSE major and CSE 341.

**CSE 506 Advanced Topics in Programming Languages (3)**

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 major, CSE 501 which may be taken concurrently, and CSE 505.

**CSE 510 Advanced Topics in Human-Computer Interaction (3)**

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 515 Statistical Methods in Computer Science (3)**

Introduction to the probabilistic and statistical techniques used in modern computer systems. Graphical models, probabilistic inference, statistical learning, sequential models, decision theory. Prerequisite: either STAT 341 or STAT 391, and graduate standing in computer science, or permission of instructor.

**CSE 519 Current Research in Computer Science (1, max. 3)**

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. 9)**

Weekly public presentations on topics of current interest by visiting computer scientists. Credit/no credit only

**CSE 521 Design and Analysis of Algorithms I (3)**

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: CSE major and CSE 326 or equivalent. CSE majors only.

**CSE 522 Design and Analysis of Algorithms II (3)**

Analysis of algorithms more sophisticated than those treated in 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 major and CSE 521.

**CSE 523 Computational Geometry (3)**

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 major and CSE 521; recommended: CSE 457 or equivalent.

**CSE 524 Parallel Algorithms (3)**

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 major and CSE 521.

**CSE 525 Randomized Algorithms and Probabilistic Analysis (3)**

*Beane, Guruswami, Karlin, Lee* 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: CSE 521 or equivalent; CSE majors only. Offered: WSp.

### **CSE 527 Computational Biology (3)**

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. Prerequisite: graduate standing in biological, computer, mathematical or statistical science, or permission of instructor.

### **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 by permission of instructor. Offered: jointly with NEUBEH 528.

### **CSE 531 Computability and Complexity I (3)**

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: CSE majors only; CSE 322 or equivalent.

### **CSE 532 Computational Complexity II (3)**

Advanced computational complexity including several of the following: circuit complexity lower bounds, #P and counting classes, probabilistically-checkable proofs, derandomization, logical characteristics of complexity, communication complexity, time-space tradeoffs, complexity of data structures. Prerequisite: CSE majors only; Recommended: CSE 531.

### **CSE 533 Advanced Topics in Complexity Theory (3)**

An in-depth study of advanced topics in computational complexity. Prerequisite: CSE major.

### **CSE 536 Theory of Distributed Computing (3)**

Formal approaches to distributed computing problems. Topics vary, but typically include models of distributed computing, agreement problems, impossibility results, mutual exclusion protocols, concurrent reading while writing protocols, knowledge analysis of protocols, and distributed algorithms. Prerequisite: CSE major.

### **CSE 540 Discrete System Simulation (3)**

Principles of simulation of discrete, event-oriented systems. Model construction, simulation and validation. Distributed and parallel simulation techniques. Basic statistical analysis of simulation inputs and outputs. Use of C, an object-oriented language, and S, a statistical analysis package. Prior familiarity with the concepts of probability and statistics desirable. Prerequisite: CSE major.

### **CSE 543 Computer System Performance (3)**

Emphasizes the use of analytic models as tools for evaluating the performance of centralized, distributed, and parallel computer systems.

Prerequisite: CSE major and CSE 451.

### **CSE 544 Principles of Database Systems (3)**

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 Data Mining (3)**

Methods for identifying valid, novel, useful, and understandable patterns in data. Induction of predictive models from data: classification, regression, and probability estimation. Discovery of clusters and association rules.

### **CSE 548 Computer Systems Architecture (3)**

Notations for computer systems. Processor design (single chip, look-ahead, pipelined, data flow). Memory hierarchy organization and management (virtual memory and caches). Microprogramming. I/O processing. Multiprocessors (SIMD and MIMD). Prerequisite: CSE major and CSE 451.

### **CSE 549 High-Performance Computer Architectures (3)**

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 major and CSE 548 or permission of instructor.

### **CSE 551 Operating Systems (3)**

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 major and CSE 451.

### **CSE 552 Distributed and Parallel Systems (3)**

Principles, techniques, and examples related to the design, implementation, and analysis of distributed and parallel computer systems. Prerequisite: CSE major and CSE 551.

### **CSE 553 Real-Time Systems (3)**

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 major and CSE 451.

### **CSE 557 Computer Graphics (3)**

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: CSE major, solid knowledge of linear algebra.

### **CSE 558 Special Topics in Computer**

**Graphics (3)** 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 major and CSE 557 or permission of instructor.

### **CSE 561 Computer Communication and**

**Networks (3)** Fundamentals of data transmission: coding, message formats, and protocols. Organization of computer networks. Examples of network implementations. Prerequisite: CSE or E E major and CSE 451 or equivalent.

### **CSE 567 Principles of Digital Systems**

**Design (3)** 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: CSE major and basic knowledge of logic design.

### **CSE 568 Introduction to VLSI Systems (3)**

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: CSE 567 or permission of instructor. CSE majors only.

### **CSE 571 AI-based Mobile Robotics (3)**

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: CSE major and CSE 473, or permission of instructor.

### **CSE 573 Artificial Intelligence I (3)**

Intensive introduction to artificial intelligence: Problem solving and search, game playing, knowledge representation and reasoning, uncertainty, machine learning, natural language processing. Prerequisite: CSE 421 or equivalent; exposure to logic, probability and statistics; CSE major.

### **CSE 574 Artificial Intelligence II (3)**

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 major and CSE 573.

### **CSE 576 Computer Vision (3)**

Overview of computer vision, emphasizing the middle ground between image processing and artificial intelligence. Image formation, preattentive image processing, boundary and region representations, and case studies of vision architectures. Prerequisite: Solid knowledge of linear algebra, good programming skills, CSE or E E major or permission of instructor. 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/E E 576 or permission of instructor. Offered: jointly with E E 577.

### **CSE 581 Parallel Computation in Image**

**Processing (3)** Parallel architectures,

algorithms, and languages for image processing. Cellular array, pipelined and pyramid machines, instruction sets, and design issues. Parallel implementations of filtering, edge detection, segmentation, shape, stereo, motion, relaxation algorithms, multiresolution methods, and iconic-to-symbolic transforms. Students write and debug programs for parallel computers. Prerequisite: permission of instructor.

**CSE 590 Research Seminar (\*)** Several offerings each quarter, on topics of current interest. Prerequisite: permission of instructor.

**CSE 591 Group Projects in Computer Science (1-3, max. 3)** Focuses on specialized topics and research activities in computer science. Credit/no credit only.

**CSE 597 Performance Analysis (4)** Broad introduction to computer system performance evaluation techniques and their application. Includes measurement/benchmarking, stochastic and trace driven simulation, stochastic queuing networks, and timed Petri nets. Applications of the techniques are studied using case study papers. CSE majors only. Not open for credit to students who have completed CSE 543.

**CSE 599 Special Topics in Computer Science (1-3, max. 15)** 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.

## Computer Science and Engineering Professional Master's 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. Prerequisite: CSE majors only.

**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). Prerequisite: CSE majors only.

**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. Prerequisite: CSE majors only.

**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. Prerequisite: CSE majors only.

**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. Prerequisite: CSE majors only.

**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 majors only.

**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 will be placed on historical and philosophical aspects of the theory of computation. Prerequisite: CSE PMP majors only.

**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 majors only.

**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. Prerequisite: CSE majors only.

**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. Prerequisite: CSE majors only.

**CSE P 552 Distributed Systems (4)** Principles, techniques, and examples related to the design, implementation, and analysis of distributed computer systems. Prerequisite: CSE PMP majors only.

**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. Prerequisite: CSE majors only.

**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. Prerequisite: CSE majors only.

**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. Prerequisite: CSE majors only.

**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. Prerequisite: CSE majors only.

**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)**

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## Electrical Engineering

**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 or MATH 136; PHYS 122.

**E E 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.

**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.

**E E 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.

**E E 299 Special Topics in Electrical Engineering (1-5, max. 5)** 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 emphasis 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.

**E E 332 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.

**E E 341 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.

**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 electromechanical conversion, power electronics, electric safety, renewable energy, and electricity blackouts. Prerequisite: 1.0 in E E 233.

**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.

**E E 398 Introduction to Professional Issues (1)** *Afromowitz* 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.

**E E 399 Special Topics in Electrical Engineering (1-5, max. 5)** 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 multidisciplinary collaboration. The team designs, prototypes, manufactures, assembles, texts, modifies, troubleshoots, and learn 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)** *Wilson* 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. Offered: Sp.

**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.

**E E 417 Modern Wireless Communications (4)** *Liu* 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.

**E E 418 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: Sp.

**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.

**E E 433 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.

**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 who are preparing for careers in bioengineering-both research and industrial.

**E E 440 Introduction to Digital Imaging Systems (4)** *Hwang* 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.

**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.

**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.

**E E 448 Control Systems Sensors and Actuators (3)** Study of control systems components and mathematical models.

Amplifiers, DC servomotors, reaction mass actuators. Accelerometers, potentiometers, shaft encoders and resolvers, proximity sensors, force transducers, piezoceramic materials, gyroscopes. Experimental determination of component models and model parameters. Two 3-hour laboratories per week. Prerequisite: either A A 447 or E E 447. Offered: jointly with A A 448.

**E E 449 Design of Automatic Control Systems (4)** Design problems for aerospace vehicles, systems with unstable dynamics, lightly damped modes, nonminimum phase, nonlinear dynamics. Computer-aided analysis, design, and simulation, with laboratory hardware-in-the-loop testing. Team design reviews, oral presentations. Prerequisite: either A A 448 or E E 448. Offered: jointly with A A 449.

**E E 452 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.

**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 motors. Special forms of individual- and multimotor drives. Prerequisite: 1.0 in E E 351.

**E E 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.

**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.

**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.

**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.

**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, IND E 315.

**E E 462 Principles of Mobile Robotics (4)** Design-oriented course in autonomous mobile robots. C programming, microprocessors, motors, gears, sensors, advanced sensing techniques, serial communications, PID control, algorithmic control, reactive control, multi-tasking. Laboratory exercises include design, construction, and testing of autonomous mobile robots, which compete at the end of the term.

**E E 463 Autonomous Mobile Robots (4)** Design-oriented course in autonomous mobile robots. C programming, motors, sensors, IR and RF wireless communication, digital image processing, and robot motion control. Laboratory exercises include design, construction, and testing of autonomous mobile robots, which compete at the end of term. Prerequisite: E E 462.

**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: 1.0 in E E 332; recommended: 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.

**E E 471 Computer Design and Organization (5)** Introduction to computer architecture, algorithms, hardware design for various computer subsystems, CPU control unit design, hardwired 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.

**E E 472 Microcomputer Systems (5)** Concepts of multi-level machines and computer systems organization. Utilizing microprocessors, digital computer studied at assembly- and 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: either E E 271 or CSE 370; CSE 143.

**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.

**E E 476 Digital Integrated Circuit Design (5)** *Sechen* 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 271 or CSE 370; E E 331; CSE 143.

**E E 477 VLSI II (5)** *Sechen* 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 Avanti (Hspice). Credit not allowed for both E E 477 and E E 525. Prerequisite: E E 476.

**E E 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: 1.0 in E E 331; 1.0 in E E 472.

**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.

**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.

**E E 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 332; E E 361.

**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.

**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.

**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 E E 482 or MSE 351. Offered: jointly with MSE 486.

**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.

**E E 501 Radar Remote Sensing (3)** *Sahr*  
General introduction to radar remote sensing of geophysical targets. Fundamentals of radar systems, range-time diagram, ambiguity function, pulse compression, spectrum estimation for underspread and overspread targets; multi-antenna correlations, interferometry, closure phases; maximum entropy source imaging; Aperture Synthesis (SAR and ISAR).

**E E 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)** *Mamishv*  
Explores microelectromechanical 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, electromechanical, magneto (quasi) static, and fluidic phenomena; parametric analysis, visualization of multi-dimensional solutions; and verification of validity of results. Offered: Sp.

**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 Communication Theory I (3)** *Ritcey*  
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 505 or equivalent.

**E E 507 Communication Theory II (3)** *Ritcey*  
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 or equivalent.

**E E 508 Stochastic Processes (3)** *Ritcey*  
Modeling and analysis of random processes encountered in engineering applications. Stationarity and ergodicity. Harmonic analysis, power spectral densities. Karhunen-Loeve expansions. Poisson, Gaussian, and Markov processes. Stochastic integrals and differential equations. Prerequisite: E E 505 or permission of instructor.

**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. Prerequisite: graduate standing or permission of instructor. Offered: jointly with CHEM E 510/A A 510/M E 510; A.

**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. Offered: W.

**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. Offered: Sp.

**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 n 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)** *Bilmes, Kirchhoff, Ostendorf* 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)** *Bilmes, Kirchhoff, Ostendorf* 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.

**E E 518 Digital Signal Processing (4)** *Atlas*  
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 and graduate standing, or permission of instructor.

**E E 519 Stochastic Analysis of Data From Physical Systems (4)** *Atlas* 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 or equivalent.

**E E 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, or IND E 315. Offered: jointly with STAT 520.

**E E 521 Multidimensional Signal Processing (3)** *Marks* Multidimensional (MD) signals and systems, MD sampling theorem, sample dependence in higher dimensions, MD FIR filter design using windows and the McClellan transform, MD IIR filter stability and design. Current topics in MD signals and systems. Prerequisite: E E 442 or E E 518 or equivalent.

**E E 524 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, smoothers. Estimation of wavelet variance. Offered: jointly with STAT 530; Sp.

**E E 525 VLSI II (5)** *Sechen* 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 Avanti (Hspice). Credit not allowed for both E E 477 and E E 525. Prerequisite: E E 476.

**E E 526 VLSI III (4)** *Helms, Sechen, Soma* 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.

**E E 527 Solid-State Laboratory Techniques (4)** *Darling* Principles and laboratory techniques used in solid-state electronics research. Basic familiarity with practices and equipment used on-campus. Laboratory safety; materials handling, storage and disposal; clean room use; photoresist characteristics; mounting, bonding, and probing; wet chemical etching; vacuum evaporation; patterning of metal films using photoresist. Extensive laboratory with limited enrollment. Prerequisite: graduate standing and permission of instructor.

**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.

**E E 529 Semiconductor Optics and Optical**

**Devices (4)** *Afromowitz, Yee* Perturbations of energy states in semiconductors; direct and indirect transitions; absorption processes; optical constants; absorption spectroscopy; radiative and nonradiative transitions; processes occurring at p-n junctions; junction devices; LEDs and lasers, photovoltaics; self-electro-optic effect device; modern laser structures. Prerequisite: graduate standing or permission of instructor.

**E E 531 Semiconductor Devices and Device**

**Simulation (4)** *Darling, Lauritzen, Yee* 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 or graduate standing.

**E E 533 Photodetectors and Photodetection**

**(4)** *Afromowitz, Yee* Includes both the device physics and signal processing aspects of photodetection. Photodiodes, photoconductors, photomultipliers, and solar cells are covered. Noise, signal to noise ratios and imaging considerations are also discussed. Prerequisite: E E 482 or graduate standing.

**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. Prerequisite: graduate standing.

**E E 536 Design of Analog Integrated Circuits**

**and Systems (4)** *Helms, Soma* Design of analog VLSI: specifications, design, simulation, layout. Covering CMOS and Bi CMOS technologies. Prerequisite: E E 433 or equivalent and graduate standing in electrical or computer engineering, or permission of instructor.

**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. 5)** 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. Prerequisite: permission of instructor.

**E E 539 Advanced Topics in Solid-State**

**Electronics (1-5, max. 5)** 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. Prerequisite: permission of instructor.

**E E 540 VLSI Testing (4)**

*Soma* 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 542 Advanced Embedded Systems Design**

**(5)** *Peckol* 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. Offered: A.

**E E 543 Models of Robot Manipulation (3)**

*Hannaford* 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 and graduate standing or permission of instructor.

**E E 544 Advanced Robot Manipulation (4)**

*Hannaford, Meldrum* 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 will 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 or graduate student standing.

**E E 546 Advanced Topics in Control System**

**Theory (1-5, max. 5)** 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. Prerequisite: either A A 447, E E 447 or M E 471. 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: E E 505 or AMATH 506 or STAT 506; recommended: 548 or A A 548. 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. Prerequisite: graduate standing; recommended: A A 548 or E E 548. Offered: jointly with A A 550/M E 550.

**E E 551 Power System Protection (4)**

*Liu* The protection of electric power systems from overcurrents and overvoltages. Analysis and design of overcurrents resulting from faults, lightning induced or otherwise, or from excessive loads or power swings. Analysis and design of overvoltages resulting from switching transients or lightning. Principal concern is with relays and lightning arrestors as protection means. Prerequisite: E E 455 or equivalent.

**E E 552 Power Systems Dynamics and**

**Control (4)** *Damborg, El-Sharkawi* Advanced computer modeling and analysis of power systems. Application of modern systems and control theories. Prerequisite: E E 351 and E E 455 or permission of instructor.

**E E 553 Power System Economics (4)**

*Christie, Damborg, Liu* 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. Prerequisite: graduate standing or permission of instructor.

**E E 554 Large Electric Energy Systems**

**Analysis (4)** *Christie, Liu* 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 or permission of instructor.

**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 559 Special Topics in Electrical Energy**

**Systems (1-5, max. 5)** 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. Prerequisite: permission of instructor.

**E E 562 Artificial Intelligence for Engineers (3)** *Shapiro* 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 or equivalent.

**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 or equivalent.

**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 or permission of instructor.

**E E 567 Mobile Radio Networks (3)** Wireless communication networks, including digital broadcasting, wireless LAN, wireless access networks and ultra wide band (UWB); OFDM modem design; MAC and RLP; TCP/UDP over wireless; cross-layer protocol optimization; radio network planning. Prerequisite: E E 506; E E 565.

**E E 568 Image Processing Computer Systems (4)** *Kim* 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. Offered: jointly with BIOEN 568.

**E E 570 Manifolds and Geometry for Systems and Control (3)** *Morgansen* 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 versus coordinate-free representations. Applications from physics, robotics, and control theory. Offered: jointly with A A 570 and 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: E E 482, E E 572, or equivalent.

**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. Prerequisite: graduate standing or permission of instructor.

**E E 573 Electromagnetic Computations and Applications I (4)** *Tsang* 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 or permission of instructor.

**E E 574 Electromagnetic Computations and Applications II (4)** *Tsang* 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 or permission of instructor.

**E E 575 Waves in Random Media (4)** *Tsang* 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. Prerequisite: graduate standing or permission of instructor.

**E E 576 Computer Vision (3)** Overview of computer vision, emphasizing the middle ground between image processing and artificial intelligence. Image formation, preattentive image processing, boundary and region representations, and case studies of vision architectures. Prerequisite: Solid knowledge of linear algebra, good programming skills, CSE or E E major or permission of instructor. 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/E E 576 or permission of instructor. Offered: jointly with CSE 577.

**E E 578 Optimization in System Sciences (3)** *Mesbahi* 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/M E/E E 547. Offered: jointly with A A/M E 578; W.

**E E 579 Advanced Topics in Electromagnetics, Optics, and Acoustics (1-5, max. 5)** 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. Prerequisite: permission of instructor.

**E E 580 Geometric Methods for Non-Linear Control Systems (3)** *Morgansen* 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 580/M E 580. 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: either E E/A A/ or M E 548. Offered: jointly with A A/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; even years; Sp.

**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/E E 447/M E 471. Offered: jointly with M E/A A 583; odd years; Sp.

**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. Prerequisite: either E E 505 or AMATH 506 or STAT 506; E E 548/A A 548/M E 548. Offered: jointly with M E 585/A A 585.

**E E 586 Digital Video Coding Systems (4)** *Sun* 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. Prerequisite: graduate standing or permission of instructor.

**E E 587 Multimedia Compression and Networking (4)** *Hwang* 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. Prerequisite: permission of instructor.

**E E 590 Advanced Topics in Digital Computers (2-5, max. 15)** Lectures or discussions of topics of current interest in the field of digital systems. Subject matter may vary from year to year. Prerequisite: permission of instructor.

**E E 591 Robotics and Control Systems Colloquium (1, max. 3)** 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/CHEM E/M E 591.

**E E 592 Electrical Engineering Research Survey (1)** 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/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. Offered: jointly with A A 594/M E 594; odd years; Sp.

**E E 595 Advanced Topics in Communication Theory (1-5, max. 5)** Extension of 507, 508, 518, 519, 520. Material differs each year, covering such topics as: detection theory, decision theory, game theory, adaptive communication systems, nonlinear random processes. Prerequisite: permission of instructor.

**E E 596 Advanced Topics in Signal and Image Processing (2-5, max. 5)** Topics of current interest in signal and image processing. Content may vary from offering to offering. Prerequisite: permission of instructor.

**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/ME 597.

**E E 599 Selected Topics in Electrical Engineering (\*)** Prerequisite: permission of instructor.

**E E 600 Independent Study or Research (\*)**

**E E 700 Master's Thesis (\*)**

**E E 800 Doctoral Dissertation (\*)**

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: Sp.

**IND E 250 Fundamentals of Engineering Economy (4)** *NW* 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: ASp.

**IND E 315 Probability and Statistics for Engineers (3)** *NW* 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 or MATH 307. 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)** *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)** 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)** *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)** *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)** *Ghate, Zabinsky* Modeling and optimization of problems and dynamic programming approach to optimization. Topics include: 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 433 Introduction to Computational Manufacturing (4)** Fundamentals in computer aided design/manufacturing. Visualization, 3-D wireframes, curves and surfaces, solid modeling. Numerical control machining, robotics, and assembly. Prerequisite: IND E 337; IND E 410. Offered: W.

**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 T C 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.

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## Industrial Engineering

**IND E 101 Introduction to Industrial Engineering (1)** *I&S* Examines the basic concepts and methods of industrial engineering

**IND E 494 Design in the Manufacturing Firm**

**(4)** *Storch* 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; T C 333. Offered: W.

**IND E 495 Industrial Engineering Design (4)**

*Storch* 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; IND E 351. Offered: Sp.

**IND E 496 Technology-Based Entrepreneurship (3)**

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. Prerequisite: IND E 250. 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. 9)****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/MATH/IND E 515 and MATH 328 or permission of instructor. Offered: jointly with AMATH 510.

**IND E 518 Seminars on Advances in Manufacturing and Management (1)**

*Ramulu* Current topics and advances made in manufacturing and management. Topics presented by invited speakers from academia and industry. Emphasis on the multidisciplinary nature of manufacturing and management. Offered: jointly with M E 518 AWSp.

**IND E 521 Quality Control in Manufacturing (3)**

*Matrangelo* 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 533 Computational Methods in Design and Manufacturing (3)**

Sampling size and accuracy: uniform, random, and Hammersley. Approximation of curves and surfaces. Optimization: minima and maxima. Search and gradient techniques. Line integral for geodesic and optimal path. Offered: jointly with M E 507.

**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)**

*Storch* 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)**

*Turns* 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 T C 518.

**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.

**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; odd years; Sp.

**IND E 567 Applied Occupational Health and Safety (3)** *Camp, Johnson* 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 and NSG 505. Offered: Sp.

**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: IND E 566 or permission of instructor. Offered: jointly with ENV H 569; even years, Sp.

**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 591 Seminar (1-)** Credit/no credit only. Topics of current interest in industrial engineering. Prerequisite: graduate standing in Industrial Engineering or permission of instructor. : A.

**IND E 592 Seminar (1-)** Credit/no credit only. Topics of current interest in industrial engineering. Prerequisite: graduate standing in Industrial Engineering or permission of instructor. : W.

**IND E 593 Seminar (-1)** Credit/no credit only. Topics of current interest in industrial engineering. Prerequisite: graduate standing in Industrial Engineering or permission of instructor. : 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 (\*)**

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## Materials Science and Engineering

**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 150, CHEM 152, or CHEM 155. Offered: AWSpS.

**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: Sp.

**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 (2)** 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. Offered: A.

**MSE 312 Integrated Junior Laboratory II (2)** 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. Offered: W.

**MSE 313 Integrated Junior Laboratory III (2)** 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. 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; detailed 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. Offered: S.

**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 are discussed. Prerequisite: MSE 170; MSE 322. Offered: W.

**MSE 351 Electron Theory of Engineering 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: S.

**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 421 Case Studies in Thermodynamics (3)** Applications of thermodynamics to the steady state. Statistical interpretation of entropy. Heterogeneous equilibria. Thermodynamics of solutions. Defects in solids and thermodynamics of surfaces. Prerequisite: MSE 321, MSE 322. Offered: A.

**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.

**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 Extractive Process Analysis (3)** Extractive processes analyzed by the methods of material and energy balances, computational thermodynamics, process kinetics and reactor theory. Introduction to process optimization. Prerequisite: MSE 321. Offered: S.

**MSE 452 Functional Properties of Materials II (4)** Dielectric materials including ferroelectrics, piezoelectrics and pyroelectrics, magnetic properties, high temperature superconductivity,



shape memory materials. Detailed 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: MSE 362. Offered: W.

**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: S.

**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. Recommended: one quarter of physical chemistry and one quarter of organic chemistry. 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: S.

**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. Recommended: basic background in materials science and engineering (level of MSE 170), mechanics of materials (level of CEE 220), and linear algebra and familiarity with matrix operations (level of MATH 308 or 318). 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.

**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 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; A.

**MSE 485 Introduction to Electronic Packaging and Materials (3)**

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; A.

**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 E E 482 or MSE 351. Offered: jointly with E E 486; W.

**MSE 487 Laboratory in Electronic Packaging and Materials (1)**

Laboratory course to accompany M E 485 Experiments related to design, processing and reliability of electronic packaging used in consumer electronics. Corequisite: MSE 485. Offered: jointly with M E 487; A.

**MSE 489 Integrated Circuit Laboratory (1)**

Hands-on experience in the building of a PMOS device, complete with oxidation, diffusion, photolithography, etching, metallization, and testing. Prerequisite: E E 486/MSE 486, which may be taken concurrently. Offered: jointly with E E 489; W.

**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 begin a two-quarter, team design project on materials engineering. Prerequisite: MSE 313. Offered: W.

**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. Complete the two-quarter team design project on materials engineering. Prerequisite: MSE 491. Offered: Sp.

**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.

**MSE 498 Special Topics (1-5, max. 8)**

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: even years; A.

**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, nano-composites, meso- and microporous materials, organic/inorganic hybrids, and biomaterials that have important applications in both leading technologies and modern industries. Offered: odd years; A.

**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; A.

**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.

**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.

**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. Offered: odd years; Sp.

**MSE 518 Advanced Mineralogy (3)**

Crystal symmetry: point groups, space groups. Mathematical description of crystal structures; group theory and irreducible representations; tensor description of physical properties; stress, strain, piezoelectricity, elasticity; structural and magnetic phase transition, Landau theory, deformation and creep in crystals; elasto-

viscous properties of Earth's mantle, crystal chemistry and solid state reactions. Offered: jointly with ESS 537; Sp.

**MSE 520 Seminar (1, max. 6)** Review of research problems in recent literature. Registration required for all graduate students. Credit/no credit only. Offered: AWPp.

**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 544 Mechanical Behavior of Materials (3)** Mechanical properties of metals, ceramics, and polymers. Elasticity and viscoelasticity. Macroscopic and microscopic aspects of deformation and fracture. Continuum plasticity and microscopic hardening mechanisms. High temperature deformation. Fracture mechanics, brittle and ductile fracture. Deformation and fracture mechanisms maps. Prerequisite: MSE 510 and MSE 541 or permission of instructor.

**MSE 550 Magnetism, Magnetic Materials, and Related Technologies (3)** A comprehensive introduction to magnetism, magnetic materials, and related applications. Discusses intrinsic and phenomenological concepts of magnetism, ordered magnetic materials (emphasizing their structure-sensitive properties), magnetic phenomena, small particles/thin films, and applications (magnetic recording, permanent magnets, quantitative imaging of magnetic domains, surface and interface magnetism, giant magneto-resistance). 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.

**MSE 559 Thin Film Science, Engineering, and Technology (3)** The physics, chemistry,

and engineering aspects of thin film deposition and technology. Vapor phase deposition emphasized. Topics include reactor types, vapor phase transport and hydrodynamics, surface and mass transport limited kinetics, nucleation and growth, homoepitaxy, heteroepitaxy, and thin film characterization. Prerequisite: permission of instructor. Offered: jointly with CHEM E 559.

**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; two-photon absorption materials for 3-D microfabrication. Offered: jointly with CHEM 564.

**MSE 562 Introduction to Electronic Composites (3)** 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. Recommended: 475 or M E 450. Offered: jointly with M E 562; odd years; 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. Prerequisite: MSE 466 or equivalent. Offered: W.

**MSE 568 Active and Sensing Materials (3)** Fundamental knowledge of the nano-structure property relations of active and sensing materials, and their devices. Examples of the active and sensing materials are: 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 590 Advanced Seminar in Materials Science and Engineering (2)** Advanced topics in material science, led by faculty with specific expertise in the area of interest. Topics to be chosen and announced quarterly.

**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.

**MSE 599 Special Topics in Materials Science (1-5, max. 5)** Studies of special advanced topics

in materials science. Prerequisite: permission of instructor. Offered: AWPp.

**MSE 600 Independent Study or Research (\*)** Offered: AWPp.

**MSE 700 Master's Thesis (\*)** Offered: AWPp.

**MSE 800 Doctoral Dissertation (\*)** Offered: AWPp.

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## Mechanical Engineering

### Mechanical Engineering

**M E 123 Introduction to Visualization and Computer-Aided Design (4) NW/VLPA 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: AWPp.

**M E 124 Visualization and Computer-Aided Design Laboratory (2) NW/VLPA 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: AWPp.

**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: CHEM 142; 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 Malte** 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, PHYS 114, or PHYS 121. Offered: jointly with ENVIR 341/CHEM E 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. Lecture and laboratory. 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. Lecture and laboratory. Prerequisite: M E 123; M E 323; M E 373; IND E 315 or MATH 390.

**M E 403 Material-Removal Processes (3)** *Ramulu* Cutting and noncutting processes for material removal in the shaping of manufactured products. Study of forces and of power consumption and relative costs in the various processes. Prerequisite: M E 355 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 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 ENVIR 415/CEE 495.

**M E 424 Combustion Systems and Pollutant Formation (4)** *Malte* Combustion theory, including chemical thermodynamics, chemical kinetics, mixing and diffusion, and flame structure. Combustion chamber design concepts and performance. Pollutant formation and combustion methods for minimizing pollutant formation. Prerequisite: M E 323; recommended: M E 331; M E 333.

**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 (4)** *Malte* Energy systems with renewable (solar) 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 432 Gas Dynamics (3)** Dynamic and thermodynamic relationships for the flow of a gas. Application of thermodynamic processes involving nozzles, diffusers, compressors, and turbines. Prerequisite: either M E 333 or CEE 342. Offered: by request only.

**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 436 Friction and Wear of Materials (3)** Study of principles of friction and wear behavior of materials and of those material properties that affect such behavior. Principles of lubrication. Applications to design of surfaces for wear resistance. Prerequisite: M E 333; M E 356.

**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** *Malte* Introduction to renewable energy. Principles and practices: solar, wind, water, and biomass energy conversion. Prerequisite: either MATH 112, MATH 124, or Q SCI 291; either CHEM 120, CHEM 142, PHYS 115, or PHYS 122. Offered: jointly with CHEM E 442/ENVIR 442.

**M E 445 Introduction to Biomechanics (4)** *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.

**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. recommended: MSE 475.

**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)** *Garner* Synthesis of linkage-type mechanisms using graphical and computer methods.

**M E 468 Air-Pollution Control Equipment Design (3)** *Pilat* 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/CEE 494.

**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 474 Systems Modeling and Simulation (3)** *Fabien* Unified approach to modeling of systems, and computer simulation of systems behavior. Selecting system variables; writing state, loop, and node equations; modal response and state transition response; system functions and convolution; analogs. Applications to control, vibrations, and other problems. 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; CSE 142.

**M E 481 Combustion Engines and Alternatives (4)** *Kramlich, Malte* Thermodynamics, fuels, performance, combustion, and exhaust emissions control for spark ignition and compression ignition piston engines. New technologies, including hybrid combustion-electric fuel cell engines. Principles and practice. Prerequisite: M E 323. Recommended: M E 333.

**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.

**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. Corequisite: M E 485. Offered: jointly with MSE 487.

**M E 490 Naval Architecture (3)** *Adee* Theory of naval architecture; ship's lines, hydrostatic curves, intact and damaged stability, launching.

**M E 491 Naval Architecture (3)** *Adee* Theory of naval architecture; strength, ABS rules, water waves, ship and platform motions.

**M E 492 Naval Architecture (3)** *Adee* Theory of naval architecture; dimensional analysis, resistance, model testing, propellers, steering.

**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 are used as reference sources. Lecture and laboratory. Prerequisite: M E 395.

**M E 496 Technology-Based Entrepreneurship (3)** 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. Prerequisite: IND E 250. 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 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 502 Plasticity and Metal Forming (3)** Stress-strain and stress-strain-rate relations in metal forming; plastic instability. Work of deformation. The slip-line field, load bounding, applications to frames, drawing, forging, and extrusion. Offered: odd years.

**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. Offered: jointly with IND E 531.

**M E 507 Computational Methods in Design and Manufacturing (3)** Sampling size and accuracy: uniform, random, and Hammersley. Approximation of curves and surfaces. Optimization: minima and maxima. Search and gradient techniques. Line integral for geodesic and optimal path. Offered: jointly with IND E 533.

**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)** *Damborg* 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. Prerequisite: graduate standing or permission of instructor. Offered: jointly with A A 546/CHEM E 510/E E 510; 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 518 Seminars on Advances in Manufacturing and Management (1)** *Ramulu* Current topics and advances made in manufacturing and management. Topics presented by invited speakers from academia and industry. Emphasis on the multidisciplinary nature of manufacturing and management. Offered: jointly with IND E 518; AWSp.

**M E 519 Seminar (0-)** Credit/no credit only. Offered: AWSp.

**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. Offered: by request only.

**M E 523 Energy and Environment Seminar (1)** *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: odd years; Sp.

**M E 525 Applied Acoustics I (3)** 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 from instructor. Offered: Sp.

**M E 526 Special Topics in Acoustics (3)**

Advanced study of special topics in acoustics, such as medical ultrasound, underwater sound, noise control and vibrations. Prerequisite: ME 525, or permission from instructor. Offered: A.

**M E 528 Acoustics of Environmental Noise (4)**

Offered: jointly with CEE 554.

**M E 530 Heat Conduction and Radiation (3)**

*Mescher* Heat conduction advanced fundamentals, emphasizing microscale applications. Radiative transfer for transparent and for absorbing and scattering media, emphasizing combustion, biomedical, and atmospheric/oceanic environmental applications. Forward and inverse problems for both conduction and radiation. Prerequisite: graduate standing in mechanical engineering or permission of instructor. 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. Offered: by request only.

**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 533 Fluid Mechanics I (3)**

*Riley* Basic conservation laws and kinematics of fluid flow constitutive relationships, Newtonian fluids, dimensional analysis, vorticity dynamics, inviscid flows, applications. Offered: A.

**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 533 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 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. Offered: by request only.

**M E 538 Turbulent Boundary Layer Theory (3)**

Characteristic features of turbulent boundary layers; development of the turbulent boundary layer equations; equilibrium boundary layers; integral methods of solution based on power law and wall-wake velocity profiles; methods of

solution based on higher order constitutive equations; application to diffuser flows and free shear flows; new developments and physical models. Offered: odd years; A.

**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: even years; W.

**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 course work. Offered: even years by request only; Sp.

**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. Prerequisite: either A A 447, E E 447 or M E 471. Offered: jointly with E E 547/A A 547; A

**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: E E 505 or AMATH 506 or STAT 506; recommended: 548 or A A 548. 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. Prerequisite: graduate standing; recommended: A A 548 or E E 548. Offered: jointly with A A 550/E E 550; odd years.

**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 Elasticity II: Viscoelasticity and Elastodynamics (3)**

*Taya* Elastodynamics includes wave propagation in linear elastic and linear viscoelastic solids where solids are monolithic materials, composite materials. Viscoelasticity part includes the stress-strain equations in terms of convolution integral, Fourier transform and Laplace transform modes. Simple and fundamental problems are solved by several techniques as demonstration. Offered: even years; Sp.

**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: even years; Sp.

**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. Offered: by request only.

**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: even years; W.

**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 560 Advanced Theory of Fracture (3)**

*Ramulu* Theories of linear fracture mechanics, fracture dynamics, ductile fracture, stable crack growth and mixed mode fracture. Discussion of advanced topics from recent literature. Prerequisite: M E 559 or permission of instructor. Offered: even years; Sp.

**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. Recommended: M E 450 or MSE 475. 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: M E 450 or MSE 475 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 566 Introduction to Random Processes (3)** Probability and random variables. Ensemble averaging, probability density function, auto- and cross-correlation functions. Brownian motion, Poisson process. Ergodicity. Frequency domain analysis, auto- and cross-spectrum, transfer function. Fundamentals of digital spectral analysis. Applications in fluid mechanics, acoustics and vibrations. Offered: by request only; even years; A.

**M E 568 Active and Sensing Materials (3)** Fundamental knowledge of the nano-structure property relations of active and sensing materials, and their devices. Examples of the active and sensing materials are: 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 MSE 568; Sp.

**M E 570 Manifolds and Geometry for Systems and Control (3)** *Morgansen* 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 versus coordinate-free representations. Applications from physics, robotics, and control theory. Offered: jointly with A A 570 and 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: even years; W.

**M E 573 Methodologies for Engineering Design: Probabilistic Mechanical Design (3)** *Ramulu* Study, implementation of probabilistic methods to design. Loading, geometry, stress, strain/deflection described as random variables, compared to material properties/behavior in terms of random variables. Design, analysis,

reliability, risk analyses conducted on common structures with results compared to conventional deterministic approaches. Projects using probabilistic methods to optimize selected component designs. Offered: even years; Sp.

**M E 578 Optimization in System Sciences (3)** *Mesbahi* 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/M E/E E 547. Offered: jointly with A A/E E 578; W.

**M E 579 Fluid Power Systems (3)** Design, analysis, and control of fluid power systems. Steady-state analysis of valves, actuators, and transmissions. Dynamic modeling, response, stability, and control analysis via linear element representation and computer simulation. Prerequisite: graduate standing in mechanical engineering or permission of instructor. Offered: Sp.

**M E 580 Geometric Methods for Non-Linear Control Systems (3)** *Morgansen* 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: either E E/A A or M E 548. Offered: jointly with A A/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; even years; Sp.

**M E 583 Nonlinear Control Systems (3)** *Berg* 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/E E 447/M E 471. Offered: jointly with E E/A A 583; odd years: Sp.

**M E 584 Combustion in Airbreathing Propulsion (3)** Fundamentals of gasdynamics, mixing, and thermodynamics applies to the analysis and design of gas turbine, ramjet and scramjet engine combustors, with treatment of computer simulation. Offered: by request only.

**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. Prerequisite: either E E 505 or AMATH 506 or STAT 506; E E 548/A A 548/M E 548. Offered: jointly with M E 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: even years; W.

**M E 590 Vibrations (3)** *Reinhall* Study of systems with nonlinear damping and restoring forces excited by deterministic or random inputs. Applications in measurement, testing, and design of mechanical systems. Random inputs are emphasized. Prerequisite: M E 588 or permission of instructor. Offered: even years; Sp.

**M E 591 Robotics and Control Systems Colloquium (1, max. 3)** *Berg* 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/CHEM E/E E 591; AWSp.

**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/ 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. Offered: jointly with A A 594/E E 594; odd years; Sp.

**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 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/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.

## Mechanical Engineering Industrial Engineering

**MEIE 516 Advanced Topics in Engineering Statistics (3)** *Roberts, Zabinsky* Topics are flexible and tailored to the needs of the particular student group involved. Topics usually considered: regression, correlation, experimental design, Monte Carlo techniques, Markov processes, extreme value theory, time-series analysis. Prerequisite: graduate standing or permission of instructor.

**MEIE 599 Special Projects in Industrial Engineering (1-5, max. 9)** Prerequisite: permission of industrial engineering program director. Offered: AWSp.

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## Technical Communication

**T C 100 Introduction to Technical Communication (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.

**T C 231 Introduction to Technical Writing (3)** Principles of organizing, developing, and writing technical information. Report forms and rhetorical patterns common to scientific and technical disciplines. Technical writing conventions such as headings, illustrations, style, and tone. Numerous written assignments required. Required for all engineering majors. 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: AWSpS.

**T C 310 Introduction to Communication Design (5)** *Turns* Functions of, and relationships among, major software tools in the context of common technical communication design problems. Students practice explaining and justifying design solutions in terms of key features and user characteristics. Offered: A.

**T C 317 Survey of 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. Offered: Sp.

**T C 318 Survey of 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. Offered: Sp.

**T C 319 Survey of Concepts in Human-Computer Interaction (5)** 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. Offered: W.

**T C 333 Advanced Technical Writing and Oral Presentation (4)** Emphasis on the presentation of technical information to various audiences. Style of writing required for proposals, reports, and journal articles. Oral presentation principles, including use of visuals, as well as organizing and presenting an effective talk. For engineering majors. Prerequisite: T C 231. Offered: AWSpS.

**T C 400 Scientific and Technical Communication (5)** *Kasonic, Kolko* Principles and practices of writing to communicate scientific and technical information to a variety of readers, including the expert, general scientific and technical reader, manager, and general public. Examines research and issues in the TC field including social contexts and environments (legal, ethical, cultural). Required of technical communication majors. Prerequisite: T C 231. Offered: A.

**T C 401 Style in Scientific and Technical Writing (5)** *Spyridakis* Grammatical structures and stylistic strategies within specific professional contexts. Achieving clarity and conciseness through word choice and placement, using a variety of sentence structures for appropriate emphasis, handling details, establishing effective tone. Required of technical communication majors. Prerequisite: T C 231. Offered: A.

**T C 402 Scientific and Technical Editing (5)** *Farkas, Kolko* Editorial responsibilities and practice in the communication of scientific and technical information; the editor's role both as editor and as supervisor of publication groups. Addresses managing collaborative teams and basic XML concepts and metadata. Required of technical communication majors. Prerequisite: T C 400 with a minimum grade of 3.0; T C 401 with a minimum grade of 3.0. Offered: W.

**T C 403 Publication Project Management (3)** *Plumb* Responsibilities and practice in managing publication projects in scientific and technical organizations. Project design, coordination, production, and evaluation, including planning, organizing, staffing, and directing. Required of technical communication majors. Offered: Sp.

**T C 407 Software User Assistance (5)** *Farkas* Concepts and skills for preparing manuals, online help systems, performance-support systems, and other forms of locally stored and Web-based software user assistance. Includes principles of human-computer interaction, usability evaluation, and the software-development process. Students create both end-user and developer documentation. Prerequisite: T C 310. Offered: Sp.

**T C 408 Public Documents: Proposals, EISs, Assessments (3)** *Bereano* 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: odd years; Sp.

**T C 411 Visual Media in Technical Communication (5)** *I&S/VLPA Williams* Use of visuals in print and electronic communication. Topics include vision, perception, comparison of text and visual media principles for the selection and use of visual media, information graphics icons, page and screen design typography, and color. Offered: W.

**T C 412 Print Production (5)** *Sauer, Williams* Introduction to print production for technical communicators. Topics include digital pre-press, printing, binding, and finishing. Offered: Sp.

**T C 415 Production Editing (4)** *Williams* The editorial role in the preparation of text and visual materials for production. The editor's responsibilities and prerogatives as they relate to those of other professionals in the production phase of the publications field.

**T C 422 Style in Technical Writing (3)** Grammatical structures and stylistic strategies. Achieving clarity and conciseness through word choice and placement, using a variety of sentence structures for appropriate emphasis, handling details, establishing effective tone.

**T C 435 Introduction to Content Management (3)** Principles and practices of building, managing and using content management systems in the technical communication workplace. Examines both the intricacies of collaborative workflow technologies and the organizational contexts that surround them.

**T C 436 Design and Authoring of CAI (3)** *Winn* Introduction to the design of computer-assisted-instructional programs. Types of learning, characteristics of effective instruction. Students design and produce CAI programs using authoring systems for computers. Offered: jointly with EDC&I 436; A.

**T C 437 Web Design and Web Publishing (5)** *I&S/VLPA Farkas* 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: T C 310. Offered: W.

**T C 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: T C 310; T C 437. Offered: Sp.

**T C 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.

**T C 461 Japanese for Technical and Business Professions I (5)** *VLPA Kato* Strengthens knowledge of grammar and vocabulary and applies this to basic technical business communication situations. Covers cultural concepts underlying these situations. Reviews authentic materials on technology-related topics. Teaches skills to analyze sentence structure for accurate interpretation. Lab work required. Placement test before admission. Offered: A.

**T C 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. Lab work required. Prerequisite: T C 461. Offered: W.

**T C 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. Lab work required. Prerequisite: T C 462. Offered: Sp.

**T C 493 Senior Study (5)** Integration of knowledge and skills acquired during major program into one paper or project. Offered: AWSpS.

**T C 495 Professional Practice (3-10, max. 10) Williams** Supervised internship in a publications organization approved by the faculty adviser. A minimum of one internship is required of students majoring in technical communication. Credit/no credit only. Offered: AWSpS.

**T C 496 Directed Research in Technical Communication (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.

**T C 497 Study Abroad: Technical Communication (3-5, max. 15)** Upper-division technical communication courses, for which there are no direct University of Washington equivalents, taken through the Department of Technical Communication's Study Abroad Program. Offered: S.

**T C 498 Special Topics (1-5, max. 15)** Special topics in technical communication to be offered occasionally by permanent or visiting faculty members.

**T C 499 Special Projects (1-5, max. 10)** Individual undergraduate projects in technical communication. Offered: AWSpS.

**T C 501 Theoretical Dimensions of Technical Communication (4) Coney, Sauer** Theories and research drawn from a variety of fields that inform such topics as the historical and social context of technical communication, the aims of technical discourse, readability, invention and audience, audience analysis, technical style, and graphics. Prerequisite: admission to an engineering master's program or permission of instructor. Offered: A.

**T C 502 Empirical Traditions in Technical Communication (4) Williams** Introduction to empirical traditions that inform research and practice in field of technical communication. Topics include epistemological 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.

**T C 505 Computer-Assisted Communication (4) Kolko** 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.

**T C 509 Writing the Scientific Article (3) Haselkorn, Illman** 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.

**T C 510 Information Design (4) Farkas** 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: T C 501 or permission of instructor. Offered: A.

**T C 511 Visual Media in Technical Communication (5) Williams** Use of visuals in print and electronic media. Topics include vision, attention and perception, semiotics, depiction, information graphics, icons, typography, and principles of page and screen design. Offered: W.

**T C 512 International Technical Communication (4) Spyridakis** Examines theory, research, and practice in the internationalization and localization of paper and electronic documents. Topics include cultural models and schemata, contrastive rhetoric, controlled languages, translation, visuals, and usability testing. Prerequisite: graduate standing or permission of instructor. Offered: W.

**T C 515 Ecological Information Systems (4)** Introduction to cognitive work analysis framework. Prepares for active role in design and evaluation of information systems. Familiarization with basic concepts of cognitive systems engineering and practice in field study, data analysis, and transforming field findings into requirements for the design of an information system. Offered: jointly with LIS 515.

**T C 516 Research Theory and Application in Technical Communication (4) Spyridakis** Introduction to research methods in technical communication. Students examine 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.

**T C 517 Usability Testing (4) Ramey** 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.

**T C 518 User-Centered Design (4) Turns** 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.

**T C 520 Technical Communication Systems (4) Haselkorn** Emphasizes the role and function of communication as a key to understanding organizational frameworks and managerial practices. Traditional and innovative approaches to viewing and managing technical communication. Roles, responsibilities, impact of technology. Offered: W.

**T C 521 Seminar: Current Issues in Technical Communication (1-2, max. 3)** Presentations on current issues in technical communication. Credit/no credit only. Prerequisite: T C graduate student status or permission of instructor. Offered: AW.

**T C 523 Seminar: Issues in TC Scholarship and Professional Activity (1, max. 3)** Exploration of advanced issues in technical communication scholarship and practice. Credit/no credit only. Prerequisite: TC PhD student status or permission of instructor. Offered: AWSpS.

**T C 537 User-Centered Web Design (5) Farkas** 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, mockups, and production.

**T C 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: T C 463. Offered: A.

**T C 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. Lab work is required. Prerequisite: either T C 561, T C 495, or T C 601.

**T C 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: T C 562. Offered: Sp.



**T C 596 Directed Research in Technical Communication (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. Prerequisite: permission of instructor. Offered: AWSpS.

**T C 597 Approaches to Teaching Technical Communication (1-2, max. 2)** *Kasonic* Readings in pedagogical theory of technical communication and discussion of practical applications. Credit/no credit only. Prerequisite: concurrent teaching appointment or permission of instructor. Offered: AWSpS.

**T C 598 Special Topics (1-5, max. 6)** Prerequisite: permission of instructor.

**T C 599 Special Projects (1-5, max. 5)** Written report required. Prerequisite: permission of graduate adviser or committee chair. Offered: AWSpS.

**T C 700 Master's Thesis (\*)** Prerequisite: permission of thesis adviser. Offered: AWSpS.

**T C 800 Doctoral Dissertation (1-10)** Credit/no credit only. Prerequisite: permission of thesis adviser. Offered: AWSpS.

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## College of Forest Resources

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### College of Forest Resources

**CFR 500 Graduate Orientation Seminar (1)** Introduction to graduate study at the College, student resources and services, and current research. Offered: A.

**CFR 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.

**CFR 502 Data Collection, Analysis, and Presentation (3)** *Bakker* Design of scientific experiments, collection of data, and use of computers to store, analyze and present data. Limited by equipment availability to 8 students; Urban Horticulture students have priority. Offered: Sp.

**CFR 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. Offered: AWSp.

**CFR 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.

**CFR 505 Introduction to Pulp, Paper, and Bioproducts (3)** *Hodgson, Gustafson* Introduction to pulp and paper technology for PSE 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: concurrently with PSE 201; A.

**CFR 507 Soils and Land Use Problems (4)** *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.

**CFR 509 Natural Resource Issues: Unspoken Basics (3)** 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. Offered: W.

**CFR 510 Graduate Studies in Forest Soils (1-5)** Offered: AWSpS.

**CFR 512 Biogeochemical Cycling in Soils and Forest Ecosystems (3)** *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: even years; W.

**CFR 513 Advanced Soil Genesis and Classification (5)** *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: ESC 210 or permission of instructor. Offered: even years; Sp.

**CFR 514 Advanced Forest Soil Fertility and Chemistry (4)** *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: odd years; Sp.

**CFR 515 Advanced Soil and Plant Analysis (3)** *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: even years; Sp.

**CFR 519 Conducting and Publishing an Industry Performance Review (3, max. 12)** *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

**CFR 520 Geographic Information Systems in Forest Resources (5)** Applications of GIS technology to forest science and management. Fundamental 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.

**CFR 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.

**CFR 522 Plant-Microbe Interactions (1)** *Doty* Discusses current research related to forest tree-microbe interactions. Credit/no credit only. Offered: Sp.

**CFR 525 Advanced Wildland Hydrology (4)** *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.

**CFR 526 Seminar in Advanced Silviculture (3)** *Ford* Seminar on current and emerging silvicultural issues and underlying biological principles. Topics include: stand management to enhance wildlife, biodiversity and high productivity in sub-tropical 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.

**CFR 527 Ecosystems Seminar (1)** Discussion by invited speakers on current research related to ecosystems. Credit/no credit only. Offered: A.

**CFR 528 International Forestry (3)** *Gara, Greulich* Discussion on biological, social, and economic basis linked with forest practices in the world. Focuses on examples of how forests and renewable resources are both exploited and managed, with thoughts on how these resources can be sustainability managed. Emphasizes group presentations and seminar style discussion. Offered: Sp.

**CFR 529 Water Center Seminar (1)** *Steinmann* Weekly seminars covering water resources and watershed topics with lectures from scientists on and off campus. Credit/no credit only. Offered: jointly with FISH 529/PB AF 521; AWSp.

**CFR 535 Fire Ecology (3)** 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.

**CFR 541 Advanced Landscape Ecology (5)**  
*Lawler* Investigates the causes and consequences of spatial patterns in ecology. Concentrates on applied questions and approaches, covering topics such as scaling, landscape processes, pattern measurement, biogeography, landscape modeling, and conservation planning. Prerequisite: CFR 501. Offered: W.

**CFR 545 Principles of Forest Entomology (3)**  
*Gara* Historical perspective of the discipline, introduction to general entomology and taxonomy, forest insect ecology, integrated pest management concepts for defoliators, bark beetles, wood borers, and urban forestry pests. Offered: W.

**CFR 547 Stream and River Ecology (5)** *Naiman*  
Characterizations of stream and river ecosystems from a watershed perspective. Emphasis on fundamental processes affecting the structure and dynamics of aquatic communities and the riparian zone. Resource conflicts, new technologies, field trips, and class projects. Recommended: general ecology, forestry-fisheries interactions. Offered: jointly with FISH 547; Sp.

**CFR 549 Urban Horticulture Seminar (1, max. 6)** Discussion by invited speakers on current topics in urban horticulture. Credit/no credit only. Offered: A.

**CFR 550 Graduate Seminar (2-5, max. 10)**  
Graduate seminar to evaluate and discuss current research topics in forest resources. Topics and requirements vary. Offered: AWSp.

**CFR 554 Wildlife Seminar (1-2, max. 10)**  
*Manuwal, West* Discussion of current research and application in wildlife biology and conservation. Credit/no credit only. Offered: AWSp.

**CFR 561 Public Presentation in Urban Horticulture (2)** *Wott* 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: W.

**CFR 564 Advanced Forest Biometry (3/5)**  
*Turnblom* Classical problems in analysis of forest populations and growth theory, and principles of parametric analysis and estimation processes in forest biometry. Offered: odd years; A.

**CFR 571 Resource Policy and Administration (5)** 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.

**CFR 590 Graduate Studies (1-5, max. 5)** Study in fields for which there is not sufficient demand to warrant the organization of regular courses. Offered: AWSpS.

**CFR 591 Seminar in Resource Policy and Management (1)** *Ryan* Introduction and orientation for concurrent degree program between the Evans School of Public Affairs and

the College of Forest Resources. 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; A.

**CFR 592 Environmental Policy Processes (3)**  
*Cullen* 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.

**CFR 595 Graduate Teaching Practicum (1-5, max. 5)** Principles of teaching and learning applied to undergraduate instruction in the College of Forest Resources Development, delivery, and evaluation of lectures and homework assignments. Graduate teaching experience for CFR students only. Credit/no credit only. Offered: AWSp.

**CFR 600 Independent Study or Research (\*)**  
Offered: AWSpS.

**CFR 601 Graduate Internship in Forest Resources (3-9, max. 9)** Graduate internship under the supervision of a college faculty member. Credit/no credit only. Offered: AWSpS.

**CFR 700 Master's Thesis (\*)** Offered: AWSpS.

**CFR 800 Doctoral Dissertation (\*)** Offered: AWSpS.

## Environmental Sciences and Resource Management

**ESRM 100 Introduction to Environmental Science (5) I&S/NW** *Harrison* 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**  
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. Offered: Sp.

**ESRM 150 Wildlife in the Modern World (5) I&S/NW** *Manuwal* 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** *Bradley, Ryan* 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. : Sp

**ESRM 201 Sustaining Pacific Northwest Ecosystems (5) I&S/NW** *Edmonds, Reichard*  
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: A.

**ESRM 210 Introductory Soils (4) NW** *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) NW** 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.

**ESRM 250 Introduction to Geographic Information Systems in Forest Resources (5) NW, QSR** 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: AW.

**ESRM 300 Principles of Sustainability (2) I&S/NW** *Bare* 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. Prerequisite: ESRM 200; ESRM 201. Offered: W.

**ESRM 304 Environmental and Resource Assessment (5) I&S/NW, QSR** 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. Prerequisite: either Q SCI 381 or STAT 311, either of which may be taken concurrently. Offered: A.

**ESRM 310 Trees in Our Environment (5) NW**  
Explores tree form and function from perspectives of dendrology, ecology, and adaptation in wildland and urban environments. Lectures, projects, and field investigations introduce 50-60 trees of the Pacific Northwest. Acquire skills to increase knowledge of trees. Prerequisite: either BIOL 162 or BIOL 220. Offered: Sp.

**ESRM 311 Soils and Land Use (3) NW**  
*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** *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** *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: A, S.

**ESRM 321 Finance and Accounting from a Sustainability Perspective (5) I&S/NW** *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** *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 Forest Bioresources (3) NW** *Doty* Explores current topics in forest bioresources with an emphasis on bioenergy, remediation of pollutants, and carbon sequestration. Prerequisite: either BIOL 162 or BIOL 180. Offered: A.

**ESRM 326 Wildlife Habitat and Silviculture (3) NW** Principles of wildlife habitat in forest and range ecosystems. Silvicultural principles applicable to wildlife conservation and management. Prerequisite: either ESRM 302 or ESRM 303. Offered: Sp.

**ESRM 328 Forestry-Fisheries Interactions (4) NW** *Schiess* Characteristics of forestry-fisheries interactions in terrestrial and aquatic landscapes. Effects of changes in landforms on forest and aquatic communities. River basin and watershed features. Forest stand dynamics, forest hydrology, fish and wildlife histories and behavior. Resource conflicts and resolution. Offered: jointly with FISH 328; even years; Sp.

**ESRM 331 Landscape Plant Recognition (3) NW** *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. Recommended: either BIOL 117 or BOTANY 113. Offered: jointly with BIOL 331; SpS.

**ESRM 350 Wildlife Biology and Conservation (5) NW** *Manuwal* 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 102, BIOL

162, BIOL 180, BIOL 202, BIOL 203, or BIOL 220, any of which may be taken concurrently. Offered: W.

**ESRM 351 Wildlife Research Techniques (8) NW** *Manuwal*, *West* 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, or ESRM 350; recommended Q SCI 381. Offered: Sp.

**ESRM 362 Introduction to Restoration Ecology (5) I&S/NW** *Ewing* 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** *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 or Q SCI 381; recommended ESRM 304. Offered: W.

**ESRM 381 Management of Wildland Recreation and Amenities (3) NW** *Bradley* 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: W.

**ESRM 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.

**ESRM 400 Natural Resource Conflict Management (3) I&S/NW** *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** *Hinckley* 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.

**ESRM 402 Curation and Education in Public Gardens (3) I&S/NW** *Wott* Techniques of

curatorial practice relevant to living collections of plants, including documentation, policies, conservation, and display. Aspects of establishing and implementation of a public horticulture program including assessment, program tools and methods, and funding in a public environment. Offered: even years; A.

**ESRM 403 Forest and Economic Development in the Developing World (4) NW** *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. : A.

**ESRM 404 Forest Science Inquiry for Teachers (5)** Inquiry-based scientific methods for K-12 instruction; asking how and why questions; stating answerable questions; forming hypothesis to answer questions; testing hypothesis by making observations, making measurements, and conducting experiments; displaying results. Writing curriculum plans to implement district and state requirements. Offered: S.

**ESRM 409 Soil Ecology (5) NW** *Vogt* 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** *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. Recommended: ESRM 210. Offered: odd years; A.

**ESRM 411 Plant Propagation: Principles, and Practice (3) NW** *Wott* 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. Recommended: 10 credits of introductory biology or botany, or equivalent. Offered: Sp.

**ESRM 412 Native Plant Production (3) NW** *Reichard*, *Wott* 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. Recommended: ESRM 411, which may be taken concurrently. Offered: Sp.

**ESRM 413 Soil Genesis and Classification (5) NW** *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. Recommended: ESRM 210. Offered: even years; Sp.

**ESRM 414 Forest Soil Fertility and Chemistry (3) NW** *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. Recommended: ESRM 210. Offered: even years; Sp.

**ESRM 415 Biology, Ecology, and Management of Plant Invasions (5) NW 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: one of the following: BIOL 162, BIOL 220, BIOL 333, BIOL 471, BIOL 472, ESRM 401, ESRM 472, or ESRM 473. Offered: A, odd years.

**ESRM 416 Field Survey of Wildland Soils (3) NW Harrison, 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.

**ESRM 420 Wildland Fire Management (5) NW** 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: A.

**ESRM 423 International Trade, Marketing, and the Environment (3) I&S/NW Roos** Introduction to international trade, marketing, and environmental business. Concepts include plan writing, exporting and importing, carbon credits, green marketing, and how global exchange rates affect environmental assets such as forests.

**ESRM 425 Ecosystem Management (5) NW 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. Offered: A.

**ESRM 426 Wildland Hydrology (4) NW 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 427 Integrated Management of Forest Landscapes in a Changing World (3) Franklin** Examines objectives of 21<sup>st</sup> century forest management along a continuum from economic to ecologic and dominance of mixed objectives; development of integrated approaches to simultaneously achieving ecological and economic goals at large scales and in mixed ownerships; recognizing and dealing with uncertainties associated with social and environmental changes. Prerequisite: ESRM 425. Offered: Sp.

**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. : A.

**ESRM 429 Water Center Seminar (1, max. 6) NW Steinemann** Weekly seminars covering water resources and watershed topics with lectures from scientists on and off campus. Credit/ no credit only. Offered: AWSp.

**ESRM 430 Aerial Photos/Remote Sensing Natural Resources (3) NW** Principles of photogrammetry, interpretation, and remote sensing; and their application to management of natural resources and wildlands. Uses for watersheds, forest resources, wildlife, point and nonpoint pollution, land-use planning, and outdoor recreation. Offered: Sp.

**ESRM 435 Forest Entomology (3) NW Gara** Introduction to general entomology, characteristics, life histories, ecological relations, prevention, and control of forest insects. Offered: A.

**ESRM 436 Laboratory in Forest Entomology (2) NW Gara** Introduction to the insect orders; identification of forest insects and their damage. One field trip to study insect problems required. Offered: A.

**ESRM 441 Landscape Ecology (5) NW Franklin** 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). Recommended: ESRM 326. Offered: W.

**ESRM 444 Forest Ecosystems Protection: Insects and Diseases (5) Edmonds, Gara** Examines the effects of insects and diseases on wildland and managed forest ecosystems: defoliators, bark beetles, wood boring insects, abiotic and biotic diseases, insects and diseases in intensively managed forests, principles of insect and disease management. Prerequisite: either ESRM 301, 302 or 303 (can be taken concurrently). Offered: odd years: Sp.

**ESRM 450 Wildlife Ecology and Conservation (5) NW Marzluff** Covers advanced principles of wildlife ecology such as habitat selection, population viability, and landscape ecology, and illustrates how they apply to wildlife conservation problems with terrestrial, aquatic, and marine wildlife. Students must share costs of field trips. Prerequisite: either ESC 350 or ESRM 350; either CFR 250 or ESRM 250; recommended: introductory statistics. Offered: W.

**ESRM 451 Urban Plant Protection (5) NW Gara** Working knowledge on insects and diseases of plants growing in the urban environment. Emphasis placed on pest and damage recognition, control methods, and integrated pest management systems. Offered: even years; Sp.

**ESRM 452 Field Ornithology (3) NW Manuwal** 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: either BIOL 102, BIOL 162, BIOL

180, BIOL 202, BIOL 203, or BIOL 220, any of which may be taken concurrently. Offered: odd years; A.

**ESRM 455 Wildlife Seminar (1, max. 8) NW Manuwal,** West 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 Manuwal** 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 102, BIOL 162, BIOL 180, BIOL 202, BIOL 203, or BIOL 220, any of which may be taken concurrently. Offered: odd years; 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 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: A.

**ESRM 459 Wildlife Conservation in Northwest Ecosystems (3) NW Manuwal,** West 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 will share costs of trip. Offered when there is sufficient student demand. Prerequisite: ESRM 350; may not be repeated. Offered: Sp.

**ESRM 460 Institutionalizing Sustainable Ecological Practices. (5) I&S/NW** Introduction to how sustainability and conservation are possible. Case studies of successful institutionalization of sustainable ecological functions, including curbside and biosolids recycling, ecological restoration, bioremediation, sustainable wood production, and product certification. Emphasis on individual student projects. Offered: jointly with ENVIR 460; Sp.

**ESRM 461 Forest Management and Economics (5) I&S/NW Greulich** Presents important contemporary decision tools, especially how they are used by forest managers so they can 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: W.

**ESRM 462 Restoration Ecology Capstone: Introduction (2) NW Ewing, Fridley** 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 ENVIR/TESC/BES 462. Offered: A.

**ESRM 463 Restoration Ecology Capstone: Proposal and Plan (3) NW** *Ewing, Fridley*  
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 ENVIR/TESC/BES 463. Offered: W.

**ESRM 464 Restoration Ecology Capstone: Field Site Restoration (5) NW** *Ewing, Fridley*  
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 ENVIR/TESC/BES 464. : Sp.

**ESRM 465 Economics of Conservation (3) I&S/NW** *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. : Sp.

**ESRM 468 Forest Operations (5) Schiess**  
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 323; ESRM 368. Offered: Sp.

**ESRM 470 Natural Resource Policy and Planning (5) I&S/NW** *Bradley, Ryan*  
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: A

**ESRM 471 Urban Forest Landscapes (5) NW** *Bradley*  
Comprehensive view of urban forest and urban forest landscapes. Includes close examination of factors that differentiate urban forest landscapes along the urban to wildland gradient. Compare legal, social, political, administrative, physical, and biological variations. Offered: Sp.

**ESRM 472 Wetland Ecology and Management (5) NW** *Ewing*  
Wetland types and functions, global and North American distribution, wetland plant types, soil chemistry. The influence of stresses on wetland composition and form. Autecology of wetland plants; response to and detection of stresses. Impacts of urbanization; management techniques. Recommended: either BIOL 471, BIOL 472, BOTANY 354, or BOTANY 371. Offered: A.

**ESRM 473 Ecosystem-Based Restoration Ecology (5) NW** *Ewing*  
Philosophy of restoration, structural components of ecosystem degradation, analysis of restoration projects and methods, and an ecosystem by ecosystem review of how systems are restored. An ecology

courses that emphasizes applied scientific knowledge of ecosystems. Recommended: plant ecology, plant identification, horticulture, landscape ecology coursework. Offered: W.

**ESRM 478 Plant Ecophysiology (5) NW** *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 102, BIOL 162, or BIOL 220. Offered: jointly with BIOL 424; W

**ESRM 479 Restoration Design (5) I&S/NW** *Fridley*  
Covers the design process in ecosystem restoration demonstrated through examples of restoration necessitated by a number of extractive processes and other consumptive practices in human society. Examples include agriculture, forestry, grazing, wetland damage, water use, mining, recreation, urban activities, transportation and waste management. : Sp.

**ESRM 480 Landscape Plant Science and Sustainable Management (5) NW** *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 aftercare; plant performance evaluation; long-term sustainable management and plant health care. Recommended: either ESRM 210 or ESRM 311; either BIOL 116 or BIOL 117. Offered: A.

**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 for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWSpS.

**ESRM 494 Senior Thesis Proposal (5)**  
Selection of a thesis topic, literature review, and preparation of a formal senior thesis proposal. Students select a faculty advisor to assist them in the proposal writing process. Regular or Honors credit. 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. 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 advisors to complete field or laboratory research and then prepare the senior thesis. 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.

## Paper Science and Engineering

**PSE 102 Paper, Society, and the Environment (5) I&S/NW** *Gustafson*  
Types of products and patterns of use. Overview of manufacturing processes in terms of raw material, costs, world trade and consumer requirements. Environmental implications of manufacturing, recycling, and disposal of paper and its byproducts. Societal and environmental costs of substituting petroleum-based or nonwood raw materials in paper products. Offered: A.

**PSE 104 Products and Energy from Renewable Resources (5) I&S/NW**  
Introduction to the structure, composition, and availability of renewable resources. Conversion of these materials into solid products, energy, and useful chemicals. Particular attention to the production of fiber (paper/board), fuels (ethanol/aromatics), and specialty chemicals (biopolymers, medicines, etc.). Includes weekly laboratory session. : Sp.

**PSE 201 Introduction to Pulp, Paper, and Bioproducts (3) NW** *Gustafson, Hodgson, McKean*  
Broad overview of the science and technology of producing pulp and paper. Introduction of the PSE major course sequence and various career options. Examination of Pacific Northwest pulp and paper production facilities. Offered: concurrently with CFR 505; A.

**PSE 202 Pulp and Paper Lab and Field Studies (1) NW** *Gustafson, Hodgson, McKean*  
Laboratory and field trip studies in pulp and paper technology. Visits to local forest product manufacturing facilities. Required for PSE majors. Credit/no credit only. Offered: A.

**PSE 211 Creativity and Society (5) VLPA, I&S** *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: A.

**PSE 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. Prerequisite: PSE 201. Offered: A.

**PSE 309 Creativity and Innovation (2) VLPA** *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.

**PSE 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.

**PSE 402 Paper Physics (3) NW** *Johnson*  
Exploration of paper product behavior from a materials science perspective. Fundamental laws of physics, both deterministic and statistical, will be used to explain experimental

results. Discusses and analyzes theoretical models to explain paper behavior. Prerequisite: PSE 248; PHYS 121, 122, 123. Offered: A.

**PSE 404 Raw Materials and Wet End Chemistry of Papermaking (3) NW McKean, Hodgson** Examines fiber properties for producing various paper and paperboard products. Studies the effects of fiber length, coarseness, and general morphology on properties. Explores characteristics, processing and use of secondary fiber and nonwood fiber. Introduces surface and colloid chemistry; papermaking •ewet end chemistry•; fillers, and functional additives. Prerequisite: PSE 201; PSE 202; PSE 248. Offered: Sp.

**PSE 406 Natural Products Chemistry (3) NW Bura** Covers the essential in natural products chemistry ? celluloses, hemicelluloses, lignins, and extractives. Describes structure and chemistry of lignocellulosic biomass, as well as current work in the conversion of residues to bioethanol. Prerequisite: either CHEM 237 or CHEM 335.

**PSE 450 Paper Science and Engineering Seminar (1, max. 4)** Discussion of current topics in the science and technology of pulp and paper production. Emphasis on employer expectations of students in the paper science industry. Credit/no credit only. Offered: Sp.

**PSE 476 Pulping and Bleaching Processes (3) Gustafson** Conversion of wood to mechanical and chemical pulps. Kraft, sulfite, and semi-chemical pulping processes. Chemical recovery systems. Bleaching of mechanical and chemical pulps. Offered: jointly with CHEM E 471; W.

**PSE 477 Papermaking Processes (3)** Fiber sources and properties. Secondary fibers. Stock preparation, sheet forming, water removal, finishing. Coating, lamination, and printing. Paper products. Offered: jointly with CHEM E 472; A.

**PSE 478 Pulp and Paper Laboratory (2)** Laboratory experiments in chemical and semi-chemical pulping of wood. Bleaching of chemical and high-yield pulps. Physical and chemical characteristics of pulp fibers. Prerequisite: PSE 476. Offered: jointly with CHEM E 473; Sp.

**PSE 479 Pulp and Paper Laboratory II (3)** Paper testing, paper additives, flocculation, drainage, retention, heat transfer, and fluid dynamics in papermaking from virgin and recycled raw materials. Prerequisite: PSE 402; PSE 477. Offered: W.

**PSE 480 Pulp and Paper Process Control (3) Gustafson** Control of pulp and paper processes. Sensors, actuators, interface equipment, and computer control strategies common to this industry. Prerequisite: PSE 476; PSE 477. Offered: W.

**PSE 481 Pulp and Paper Unit Operation (3)** Unit operations of particular interest in the pulp and paper industry in addition to those covered in CHEM E 330 and 340. Prerequisite: CHEM E 340. Offered: W.

**PSE 482 Paper Science and Engineering Design I (3) I&S/NW Briggs, Gustafson** Basic engineering economics applied to design of pulp and paper facilities. Analysis of engineering alternatives based on use cost analysis and accounting tools. Introduction to process and mill design. Prerequisite: 2.0 in PSE 406; 2.0 in PSE 476; 2.0 in PSE 477. Offered: Sp.

**PSE 487 Paper Science and Engineering Design II (5)** 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: PSE 482, which may be taken concurrently. Offered: Sp.

**PSE 488 Polymer Chemistry (3) Allan** Fundamental review of synthetic and natural polymers, including kinetics of formation, molecular weight distributions, and solid-state and solution properties. Prerequisite: either CHEM 237 or CHEM 335. Offered: W.

**PSE 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: AWWSpS.

**PSE 490 Special Topics (1-5, max. 15)** Individual tutorial study of topics for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWWSp.

**PSE 491 Undergraduate Studies (1-5, max. 5)** Individual tutorial study of topics for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWWSp.

**PSE 492 Undergraduate Studies (1-5, max. 5)** Individual tutorial study of topics for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWWSpS.

**PSE 494 Senior Thesis Proposal (5)** Selection of a thesis topic, literature review, and preparation of a formal senior thesis proposal. Students select a faculty advisor to assist them in the proposal writing process. Regular or Honors credit.

**PSE 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. Offered: AWWSpS.

**PSE 496 Senior Thesis (5)** Statistical analysis and presentation of research results and discussion of results in a thesis paper. Students work with faculty advisors to complete field or laboratory research and then prepare the senior thesis. Offered: AWWSpS.

**PSE 497 Pulp and Paper Internship (1-2, 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: AWWSpS.

**PSE 499 Undergraduate Research (1-5, max. 15)** Individual research supervised by a faculty member. For advanced students desiring to extend their educational experience. Offered: AWWSpS.

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## The Information School

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### Informatics

**INFO 100 Fluency in Information Technology (5) QSR** Introduces skills, concepts, and capabilities necessary to effectively use information technology. Includes logical reasoning, managing complexity, operation of computers and networks, and contemporary applications such as effective Web searching and database manipulation, ethical aspects, and social impacts of information technology. Offered: jointly with CSE 100.

**INFO 198 Introductory Seminars in Informatics (1-5, max. 13)** Selected introductory topics in informatics oriented toward freshman and non-major undergraduates and presented in a seminar format. Topics and content vary to represent the interests of the Information School faculty. Credits do not automatically apply to major/minor requirements.

**INFO 200 Intellectual Foundations of Informatics (5)** 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 220 Information Research Strategies (3/5) I&S** Use information technology for research and information problem-solving. Create web sites or other presentations, as well as find, manage, and evaluate information, and learn the ethical and legal constraints on information use.

**INFO 221 Information Research Strategies in History (3) I&S** Information research and problem solving in the context of history. Focuses on identifying information, need, information seeking, evaluation and presentation, and selection of the appropriate sources. Offered: jointly with HIST 221.

**INFO 222 Understanding Photographs as Historic Documents (3) I&S/NW** Introduction to understanding how to view and interpret information contained in photographs. Examines the photograph as artifact, intent of the photographer, photographic codes and meanings; how such information is used, misused, and manipulated for various purposes and how to navigate archival institutions in search of photographs. Offered: jointly with HIST 222.

**INFO 299 Study Abroad - Informatics (1-5, max. 15)** For participants in study abroad program. Specific course content varies. Credits do not automatically apply to major requirements.

**INFO 310 Individual Perspectives on Information Systems (5) I&S** Social, cognitive, behavioral, and contextual aspects of information systems, including human information behavior, interpersonal interaction, and social responses to information technology. Emphasis on well-being and information

exchanges as a communicative event. Exposure to experimental and naturalistic methodologies through laboratory assignments and field work.

**INFO 320 Information Needs, Searching, and Presentation (5)** Introduction to information needs, database and information organization and structure, Web and database searching and browsing, and information presentation. Examination of underlying principles in knowledge representation, indexing, record structures, online search process, search strategies and tactics, assessment of user needs, reference interviewing, post-processing, organization and presentation of information.

**INFO 330 Information Structures (5)** Introduction to the concepts and methods used to analyze, store, manage, and present information and navigation. Equal weight is given to understanding structures and implementing them. Topics include information analysis and organization methods, XML, and metadata concepts and application.

**INFO 340 Database Management and Information Retrieval (5)** NW Theories and models in system-centered approaches to information retrieval and database management. Information retrieval and database management systems include text and multimedia databases, web search engines and digital libraries. Issues in system design, development and evaluation, and tools for searching, retrieval, user interfaces, and usability. Prerequisite: CSE 373.

**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 143.

**INFO 344 Web Tools and Development (5)** Introduction to fundamental web technologies with an emphasis on scripting and programming. Includes both client and server technologies. Examines effective information architecture for Web sites, information presentation on Web pages, privacy policies, and Web security. Prerequisite: CSE 142.

**INFO 360 User-Centered Design (5)** 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 380 Information Systems Analysis and Management (5)** Examines the evolution of how information is defined and managed in order to add value to organizations. Views information management and the CIO as key facilitators in creating or improving relationships, processes, competitiveness, products, and services.

**INFO 414 Information Behavior (5)** Advanced study of information behavior. Focus on the user-centered approach and the research literature of human information behavior. Introduces methods for evaluating and translating the results of user behavior studies

into the design of information services and systems. Prerequisite: INFO 310.

**INFO 419 Special Topics in Social Aspects of Information (1-5, max. 10)** Various topics in the social aspects of information. Offered by visitors or resident faculty.

**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. Prerequisite: CSE 143.

**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 300; INFO 320.

**INFO 440 Design Methods for Interaction and Systems (5)** NW Theoretical and practical examination of the information systems design process. Techniques for assessing the need for technology, specifying the system design, and involving users in the design process are explored. Design methods include social impact statements, future scenarios, mock-ups, rapid prototyping, field-testing, heuristic evaluation. Prerequisite: CSE 373.

**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: CSE 373.

**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; CSE 373.

**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)** 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. Prerequisite: INFO 310.

**INFO 449 Special Topics in Information Technology (1-5, max. 10)** Various topics in information technology.

**INFO 450 Information Ethics and Policy (5)** 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)** 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. Prerequisite: INFO 311.

**INFO 458 Reading Seminar in Social Aspects of Information Systems (2, max. 12)** Addresses foundational issues in social aspects of information systems. Introduction to the intellectual traditions that underlie fields such as computer ethics, social informatics, and value sensitive design. Format entails in-depth discussions based on careful reading of primary source texts selected by seminar participants.

**INFO 470 Research Methods in Informatics (5)** Introduction to the research process investigating information needs, creation, organization, flow, retrieval, and use. Stages include: research definition, questions, objectives, data collection and management, data analysis, and data interpretation. Techniques include: observation, interviews, questionnaires, and transaction-log analysis. Prerequisite: STAT 220 or STAT 311.

**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 484 Information Entrepreneurship (5)** Investigates the development of innovative human-centered informatics products, with emphasis on the unique challenges and opportunities in high-value information products. Includes competition, strategic planning, tactical marketing, informatics product launches, and applied entrepreneurship. Teamwork to create and present plans for innovative informatics products/services. Prerequisite: either INFO 300, INFO 310, or INFO 311.

**INFO 490 Design and Development of Interactive Systems (4-8, max. 8)** Design and formative evaluation of an interactive information system to solve a real problem. Student-organized team projects are encouraged. Must be taken for a minimum of 5 credits.

Prerequisite: INFO 340; INFO 341; INFO 380; INFO 440.

**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 498 Special Topics in Informatics (1-5, max. 15)** Various topics in informatics.

**INFO 499 Independent Study (1-5, max. 15)** Readings, design projects, or research under faculty supervision. .

## <2>Information School

**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 we 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.

## Information Management and Technology

**IMT 500 The Information Management Framework (1)** Overview of the major concepts in the MSIM curriculum. Includes an introduction to the concept of information as well as its relation to organizational management, technology, and design and culture.

**IMT 501 Technology Foundations for Information Professionals (1-5, max. 5)** Introduction to selected topics in information technology including systems concepts, computer architecture, computer network communication, discrete mathematics, database design, algorithms and data structures, imperative programming, markup languages, and end-user programming tools.

**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 531 Metadata Design and Interoperability (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 IMT 530, IMT 541, or instructor's permission.

**IMT 532 Ontology Design and Interoperability (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: IMT 531 or instructor's permission.

**IMT 540 Design methods for Interaction and 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 Principles of Database and Semi-Structured Data Systems (5)** Introduction of database management systems for teh storage and access of structured and semi-structured information. Examines the relational model, Structured Query Language (SQL), Entity-Relationship modeling, database design methodology ) conceptual, logical, and physical

design), and Extensible Markup Language (XML) for storage, retrieval, and interchange. Prerequisite: IMT 540.

**IMT 542 Principles of Information Retrieval Systems (3)** Introduction to information systems for the storage and retrieval of unstructured information. Examines information retrieval architectures, processes, retrieval models, query languages, and methods of system evaluation. Gives emphasis to Internet-based services for storing and accessing information to be used in integrated application development. Prerequisite: IMT 540.

**IMT 546 Data Communications and Networking (4)** Local and wide area computer networking including network topologies and hardware, packet switching, client/server architectures, network protocols, and network servers and applications. Addresses server operating systems, management, security, authentication, and policy issues associated with distributed networks. Prerequisite: IMT 510.

**IMT 548 Information System Design (5)** Theoretical and practical examination of information systems analysis and design processes as they apply in the workplace. Explores techniques for assessing the need for technology, defining specifications, and involving users in the design process. Design methods include social impact statements, future scenarios, mock-ups, rapid prototyping, and field-testing. Prerequisite: IMT 540.

**IMT 550 Policy, Law, and Ethics in Information Management (3)** Select concepts, processes, and issues related to the organizational contexts within which information professionals practice. Topics include information as public/private good, intellectual property, privacy, confidentiality, information liability, and information policy. Focus on contemporary issues affecting the role of the information manager.

**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 (3-5)** 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 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 581 Information and the Management of Change (3)** Practical application of the critical roles and aspects of information and information processes in the management of organizational change. Topics include organization learning, knowledge management as a process, business process change, change project management, business/competitive intelligence, benchmarking, and best practices. Prerequisite: IMT 580.

**IMT 582 Strategic Information Initiatives (4)** Studies and applies strategic information initiatives within an organization, including: readiness assessment, organizational mandates, information inventories, content management, information audits, and information architecture initiatives. Focuses on building business cases for and leading information initiatives in organizations. Prerequisite: IMT 581.

**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. Prerequisite: IMT 510; IMT 580.

**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. Prerequisite: IMT 510; IMT 580.

**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. Prerequisite: IMT 510; IMT 580.

**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 Information Dynamics II (4)** Advanced 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), including model building, testing, and validating. Prerequisite: IMT 586.

**IMT 588 Project Management in Information Organizations (4)** Examines roles, responsibilities, and methods of planning, and controlling

projects. Analysis of 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; organizational learning, change and knowledge management. 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 595 Stakeholders, Information, and Technology (3-5, max. 5)** Capstone experience. Addresses system integration and the increasing demand to apply a broad range of technologies to the information needs of diverse user groups during the implementation of comprehensive information systems across an organization. Encourages student-organized individual/team projects. Credit/no credit only. Prerequisite: completion of IMT core courses 510 through 582.

**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: IMT 510.

**IMT 590 Fieldwork in Information Management (1-4, max. 12)** Supervised fieldwork. May be taken in as many as six consecutive quarters. Prerequisite: enrollment in the MSIM program.

**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.

## Information Science

**INSC 500 Faculty Seminar(2)** Presentations by faculty concerning research projects in which they are involved.

**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 510 Theoretical Foundations of Human Information Behavior (4)** Study of constructs, concepts, models, and theories information scientists use in studying human information behavior. Socio-cognitive aspects of individuals needing, seeking, giving, and using information. Models of information behavior, conceptual frameworks, assumptions, analytical tools, and the factors that differentiate groupings of information users and predict or influence information behavior.

**INSC 512 Community Analysis (4)** Explores key concepts of community in its broadest sense, methodological approaches for analyzing information needs and available resources, how to design information services in response to identified needs, and service evaluation. Facilitating the information behavior of all groups within a community and identifying how their

needs interconnect. Prerequisite: LIS 510. Offered: jointly with LIS 512.

**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 530 Knowledge Representation (2/4)** In-depth survey of the various approaches to knowledge representations in areas such as taxonomy, library classification, anthropology, cognitive psychology, linguistics, and artificial intelligence.

**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 540 HCI Design Foundations for Interactive Systems (4)** Develops knowledge and skills for design-based inquiry of interactive systems. Practices user-centered design methods and studies theories of human-computer interaction, including: 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 544 Information Retrieval System (3)** Covers theories and models in information retrieval (IR) and reviews user-centered and system-centered approaches. Issues involved in the design, development and evaluation of IR systems are examined including: methods and tools for document analysis, retrieval techniques, search engines, interfaces, usability, evaluation. Offered: jointly with LIS 544.

**INSC 550 Information Policy (4)** Doctoral seminar in the foundations of information policy including intellectual freedom s public/private good, intellectual property, privacy, and digital convergence, and the reshaping of information practices and information industries. Prerequisite: Permission of instructor.

**INSC 555 Information and Values (4, max. 12)** Explores value systems within a range of different social and technological environments.

**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. Credit/no credit only. Prerequisite: INSC 565.

**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 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 will work with an approved researcher as an active member of a research team. Credit/no credit only. Prerequisite: INSC 575 or permission of instructor.

**INSC 578 Research Seminar (1-2, max. 15)** Research presentations on a wide variety of topics in Information Science.

**INSC 579 Research Colloquium in Information Science (2, max. 6)** Research colloquium on various research topics in information science. Faculty, visitors, and students present current research. Credit/no credit only. Prerequisite: permission of instructor.

**INSC 580 Organizational Theories of Information Systems (4)** Survey of major trends of management of information systems (MIS) research. Introduces behavioral, economic, strategic, and technical research perspectives of MIS research. Reviews seminal articles in each area, identifies future research trends, develops research proposals, and conducts a small research project. Prerequisite: permission of instructor.

**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 Project Management in Information Organizations (4)** Examines roles, responsibility,

ties, and methods of planning, and controlling projects. Analysis of 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; organizational learning, change and knowledge management. Offered: jointly with IMT 588.

**INSC 598 Special Topics in Information Science (3, 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 (\*)** 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 applications, 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*™ 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 Life Cycle of Information (2)** Overview of the major concepts, processes and systems, actors, and operations in the life cycle of information. Introduction to the creation, publishing and distribution, evaluation and selection, organization, access, retrieval, and use of information. Exploration of the social context in which these processes and their stakeholders interact. Credit/no credit only.

**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 (4)** Introduction to the user-centered approach to information behavior. Theoretical foundations of various information behaviors such as information need, utilizing, gathering, seeking, and evaluating. Synthesis of user studies, construction of user profiles, performance of gap analysis, and application of the results of user studies to improve services and system design. Prerequisite: LIS 500.

**LIS 511 Systems Analysis (4)** Introduction to the systems approach including basic concepts in the approach, dimensions of systems and steps in systems design. Emphasis is on the analysis, evaluation and design of information systems and services. Prerequisite: LIS 500.

**LIS 512 Community Analysis (4)** Explores key concepts of community in its broadest sense, methodological approaches for analyzing information needs and available resources, how to design information services in response to identified needs, and service evaluation. Facilitating the information behavior of all groups within a community and identifying how their needs interconnect. Prerequisite: LIS 510. Offered: jointly with INSC 512.

**LIS 515 Ecological Information Systems (4)** Introduction to cognitive work analysis framework. Prepares for active role in design and evaluation of information systems. Familiarization with basic concepts of cognitive systems engineering and practice in field study, data analysis, and transforming field findings

into requirements for the design of an information system. Offered: jointly with T C 515.

**LIS 519 Special Topics in Information Behavior (1-4, max. 18)** Introduction to innovative and specialized topics in information behavior. Course may be offered irregularly and may be repeated for credit. Prerequisite: LIS 510.

**LIS 520 Information Resources, Services, and Collections (4)** Concepts, processes, and skills related to parts of the life cycle of knowledge involving creation, 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; principles associated with development of recorded knowledge and collections. Prerequisite: LIS 500.

**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 523 Advanced Information Services (4)** Investigation of the development, administration, and evaluation of information services for supporting the research process both within and across organizations. Prerequisite: LIS 521 or permission of instructor.

**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)** 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 MEDED 570.

**LIS 529 Special Topics in Information Resources, Services and Collections (1-5, max. 18)** Introduction to innovation and specialized topics in information resources, services and collections. Prerequisite: LIS 500, LIS 520.

**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 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 536 Indexing and Abstracting (3)** Exploration of issues in subject representation. Survey of different approaches, techniques, and methods for representing the subject matter of documents, including an evaluation of the role of users and context in subject representation. Formulation of policies for indexing and abstracting services. Prerequisite: LIS 530.

**LIS 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. Credit/no credit only. Prerequisite: LIS 530.

**LIS 538 Metadata: Evolving Principles and Practices (3)** Principles, skills and practices in the conceptualization and implementation of metadata and metadata systems with a focus on semantic interoperability in distributed environments. Topics include metadata development for attribute and value spaces, metadata registry roles and services, organizational mechanisms, Web Services and advanced search engines. Prerequisite: LIS 530, LIS 540 or equivalent.

**LIS 539 Special Topics in Organization of Information and Resources (1-4, max. 18)** Introduction to innovative and specialized topics in the organization of information and resources. Prerequisite: LIS 500, LIS 530.

**LIS 540 Information Systems, Architectures and Retrieval (5)** Introduction and overview of information systems, system architectures, and

retrieval models. Emphasis given to the role of users in the design, development, and evaluation of information retrieval and database management systems. Prerequisite: LIS 500, which may be taken concurrently.

**LIS 541 Internet Technologies and Applications (3)** Overview of Internet technologies including networking hardware, the TCP/IP protocol suite, addressing, packets and routing, the client/server model. End-user applications for communication and collaboration such as telnet, FTP, email, conferencing, and streaming media. Web site creation, development, and management. Credit/no credit only.

**LIS 542 Conceptual Database Design (5)** Introduction to relational database theory and technology from an information science perspective. Focuses on traditional transactional database theory, architecture and implementation in a user-centered systems context. Introduces set and graph theory, relational algebra, and data warehouses. Credit/no credit only. Prerequisite: LIS 511 or LIS 540.

**LIS 543 Design of Information Systems (3)** Discusses how theories of conceptual data modeling affect design of database and information systems, examines relationships between modeling and implementation, and bridges gaps between theoretical understanding of database design and implementation issues. Implements conceptual schemata development in LIS 542.

**LIS 544 Information Retrieval System (3)** Covers theories and models in information retrieval (IR) and reviews user-centered and system-centered approaches. Issues involved in the design, development and evaluation of IR systems are examined including: methods and tools for document analysis, retrieval techniques, search engines, interfaces, usability, evaluation. Offered: jointly with INSC 544.

**LIS 545 Programming for Information Systems (5)** Introduction to structured object-oriented programming for information systems. Focus on fundamental principles of programming with attention to elementary algorithms and data structures, interface design, user testing, and knowledge representation. Prerequisite: LIS 540 or permission of instructor.

**LIS 546 Network System Administration (4)** Introduction to local area network hardware, topologies, operating systems, and applications. Covers aspects of network setup and management including network and application protocols, system configuration, security and Internet connectivity. Hands-on experience with network applications and operating systems. Prerequisite: LIS 500.

**LIS 549 Special Topics in Information Systems, Architectures, and Retrieval (1-4, max. 18)** Introduction to innovative and specialized topics in information systems, architectures, and retrieval. Prerequisite: LIS 540.

**LIS 550 Information in Social Context (4)** Concepts, processes, and issues related to the larger social context within which the life cycle of knowledge is played out. Discussion topics include intellectual freedom, information as public/private good, intellectual property, privacy, confidentiality, information liability, information and telecommunications policy, the economics of information, and other profes-

sional values. 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 554 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; digital convergence and the emerging mega-industries. Prerequisite: LIS 550 or permission of instructor.

**LIS 558 Reading Seminar in Social Aspects of Information Systems (2)** Addresses foundational issues in social aspects of information systems. Introduces students to the intellectual traditions that underlie fields such as computer ethics, social informatics, and value sensitive design. Format entails in-depth discussions based on careful reading of primary source texts selected by seminar participants. Prerequisite: permission of instructor.

**LIS 559 Special Topics in the Social Context of information (1-4, max. 18)** Introduction to innovative and specialized topics in the social context of information. Course may be offered irregularly and may be repeated for credit. Prerequisite: LIS 550.

**LIS 560 Instructional and Training Strategies for Information Professionals (3)** Develops knowledge and skills in instruction and training functions for library and information settings. Issues and strategies for learning and teaching. Design, development, and evaluation of information and technology literacy programs. Addresses the needs of users when designing and delivering instruction. Prerequisite: LIS 500, which may be taken concurrently.

**LIS 561 Storytelling: Art and Techniques (3)** Storytelling, past and present, noting its development as an art form. Analyzing storytellers materials (folk literature and literary forms) throughout historical periods. Essential techniques necessary to this artistic skill. Planning storytelling programs for various ages, interest groups, and situations, utilizing folk, classic, and contemporary literature.

**LIS 565 Children's Materials: Evaluation and Use (4)** Library materials for children from infancy through elementary grades. Focus on resources in all media that serve informational, educational, cultural, and recreational needs of the young. Focuses on standard bibliographies and other resources designed to meet informational needs of adults serving children. Prerequisite: LIS 500, LIS 510, LIS 520, or permission of instructor.

**LIS 566 Young Adult Materials: Evaluation and Use (4)** An overview of materials reflecting adolescents' interest in media and addressing their educational, cultural, and recreational needs. Students evaluate print literature, electronic and other non-print media for young adults. Content also designed to assist adult caregivers of adolescents. Prerequisite: LIS 500, LIS 510, and LIS 520 or permission of instructor.

**LIS 567 Public Library Services for Youth (3)**

Administration of youth departments in public libraries; planning and promoting programs and services; evaluation of library collections; community and professional roles of the youth librarian. Prerequisite: LIS 500 or permission of instructor.

**LIS 568 Information Literacy for Teaching and Learning (3)** Explores theories, process, and practical applications of information literacy. Examines the development of information literacy programs for libraries, community agencies, business, education or other information settings. Explores integral relationship between technology and information literacy, and continual evaluation.

**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 Methods (4)** Research as a process from problem definition and formulation of questions to design, data collection, analysis, and reporting. Students recognize research opportunities, translate them into researchable frameworks, design research projects, and implement results in libraries and other information agencies. Prerequisite: LIS 500, which may be taken concurrently.

**LIS 579 Special Topics in Research Methods (1-4, max. 18)** Introduction to innovative and specialized topics in research methods. Prerequisite: LIS 500, LIS 570.

**LIS 580 Management for 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 582 Strategic Planning and Management of Information Technology (3)** Exploration of methods of strategic planning for managing information resources and technology to support online information services and the role of the systems librarian and CIO. Topics include mission and goals, strategic planning, the information technology function within organizations, and the desirable abilities of managers and leaders. Prerequisite: LIS 580.

**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 540, LIS 580, or permission of instructor.

**LIS 588 Special Librarianship (3)** Seminar in the practice of special librarianship in business and industrial firms, government agencies, and the free-lance sector. User services and information resources. Credit/no credit only. Prerequisite: LIS 580.

**LIS 589 Special Topics in Management of Information Organization (1-4, max. 18)** Introduction to innovative and specialized topics in management of information organizations. Prerequisite: LIS 500, LIS 580.

**LIS 590 Directed Fieldwork (2-4, max. 8)** Minimum of 100 hours, maximum of 200 hours of professional, supervised fieldwork in a library or professional information setting. Fieldwork is a one-quarter experience; however, this may be repeated in a different setting with a different set of learning objectives for a subsequent quarter. Library and Information Science majors only. Credit/no credit only. Prerequisite: 30 credits in Library and Information Science program.

**LIS 591 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 LAW A 598.

**LIS 592 Legal Research II (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. Credit/no credit only. Prerequisite: LIS 591 or permission of instructor.

**LIS 595 Current Issues in Law Librarianship (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. Credit/no credit only. Prerequisite: Law Librarianship majors or permission of instructor.

**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.

**LIS 700 Master's Thesis (\*)** Credit/no credit only.

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## Interdisciplinary Graduate Programs

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### Biomolecular Structure and Design

**BMSD 520 Research Seminar (1, max. 9)** Group conferences on graduate student research. Prerequisite: BMSD graduate student or permission of instructor. Offered: AWSp.

**BMSD 540 Literature Review (2)** Emphasizes critical evaluation of original articles in literature from all fields relevant to Biomolecular Structure and Design. Scientific writing and oral presentations emphasized. Concurrent registration in BIOC 530 required. Prerequisite: first-year BMSD student or permission of instructor. Offered: A.

**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.

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### Global Trade, Transportation, and Logistics

**GTTL 501 Global Trade, Transportation, and Logistics Management (4)** *Goodchild, Schmitt, Shelton* 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: jointly with CEE 587/OPMGT 535; AWSp.

**GTTL 502 Seminar in Global Trade, Transportation, and Logistics (4)** Interdisciplinary seminar that brings together students with

academics and practitioners at the forefront of trade, transportation, and logistics in discussions of selected topics. Additionally, students research issues of special interest. Prerequisite: OPMGT 535, GTTL 501, or permission of instructor. Offered: jointly with OPMGT 536; Sp.

**GTTL 598 Global Aviation Management (3)** Integrates aviation-related engineering, marketing, logistics, global trade, transport geography, and finance disciplines. Introduction to airplane, airport, and air traffic technology; aircraft/air traffic control/airline terminology; and aviation practices.

**GTTL 599 Special Topics in Global Trade, Transportation, and Logistics Studies (1-5, max. 15)** Selected topics with special emphasis on issues of pressing importance to the world trading community. Topics vary with departmental discretion. Prerequisite: Graduate students or permission of instructor.

**GTTL 600 Independent GTTL Studies(\*)** Opportunity to pursue GTTL-related issues that may not be explored in established UW courses. May involve projects undertaken in conjunction with entities beyond the University, subject to instructor approval.

**GTTL 601 Internship in GTTL Studies(3-5, max. 9)** Opportunity to pursue relevant research or to gain practicum experience in the employment of a department-approved public or private entity.

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## Graduate School

**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. Credit/no credit only. Prerequisite: permission of faculty member, graduate program coordinator, and the Associate Dean of the Graduate School.

**GRDSCH 615 Teaching Assistant Preparation (1-6, max. 6)** Department or University-wide training for teaching and research assistants. Credit/no credit only.

**GRDSCH 616 Research Assistant Preparation (1-6, max. 6)** Department or University-wide training for research assistants. Credit/no credit only.

**GRDSCH 620 Teaching Mentorship Seminar (2)** Interdisciplinary seminar. Individual mentorship projects are presented and discussed, as are more general topics related to the teaching mentorship experience. Credit/no credit only. Prerequisite: GRDSCH 610 which

may be taken concurrently or permission of the Associate Dean of the Graduate School.

**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.

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## Individual Ph.D.

**IPHD 600 Independent Study (\*)**

**IPHD 800 Independent Study (\*)**

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## Molecular and Cellular Biology

**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 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)** *Emmerman* Special topics reading and discussion. Offered: A.

**MCB 521 Embryos, Genes and Development (4)** *Parkhurst, Priess, Soriano* Introduction to vertebrate and invertebrate development emphasizing cellular, genetic, and molecular mechanisms. Focuses on development of fruit flies, nematodes, and mice. Emphasizes embryological processes including induction, determination, pattern formation. Relationship between development and evolution. Technologies include transgenic animals, genetics, mosaic analysis, homologous recombination, somatic cell genetics, embryonic manipulations. Offered: W.

**MCB 532 Human Pathogenic Viruses (3)** *Galloway, Linail* 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: W.

**MCB 542 Nucleic Acids and Enzymes (2)** *Stoddard* Covers the biology, evolution, mechanisms, and structure/function relationships of enzymes that act on DNA and RNA. Focuses both on various molecular systems, and also on important techniques used for their study, including high resolution structure determination, single molecule methods, kinetics and thermodynamic binding analyses, and protein engineering. Offered: Sp.

**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 (3, max. 6)** Supervised training in the teaching of molecular and cellular biology. Credit/no credit only. Prerequisite: permission of instructor. 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 (\*)**

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## Museology

**MUSEUM 580 Introduction to Museology (5)**

Museum history, philosophy, and basic operations, including organization, income, collection management, conservation, exhibition, security, education, research, and ethics.

**MUSEUM 581 Preservation and Management of Collections (5)** I&S 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 582 Preservation of Collections II (5)** I&S 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 583 Museum Operations Practicum (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, through project-oriented work in the Burke Museum or other approved University facility. Recommended: MUS 581, MUS 582.

**MUSEUM 584 Museum Curation Practicum: Archaeology (1-5, max. 15)** Application of museological training in curation of archeological 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. Recommended: MUS 581.

**MUSEUM 585 Museum Curation Practicum: 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. Recommended: MUS 581.

**MUSEUM 588 Special Topics in Museology (1-5, max. 15)** In-depth examination of selected current issues within the field of museology.

**MUSEUM 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: MUS 580. Offered: jointly with ANTH 590.

**MUSEUM 593 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. Recommended: MUSEUM 590.

**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. Recommended: MUSEUM 580.

**MUSEUM 598 Museum 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. Recommended: MUSEUM 580; MUSEUM 581; MUSEUM 582; MUSEUM 590.

**MUSEUM 600 Independent Study or Research (1-10)**

**MUSEUM 700 Master's Thesis (1-10)**

**MUSEUM 710 Master's Project (1-10, max. 10)** Credit/no credit only.

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## Near and Middle Eastern Studies

**N&MES 800 Doctoral Dissertation (\*)**

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## Neurobiology and Behavior

**NEUBEH 501 Introduction to Neurobiology (4)** Surveys all aspects of molecular and cellular neuroscience, including the electrical properties of neurons, synaptic physiology, and neuronal cell biology. Includes lecture discussion of original literature. Offered: A.

**NEUBEH 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, prosected, and sectioned brain and spinal cord. Emphasis is on human nervous system. Offered: W.

**NEUBEH 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. Offered: Sp.

**NEUBEH 510 Seminar in Neurobiology and Behavior (0.5)** 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. Offered: AWP.

**NEUBEH 515 Teaching Practicum in Neurobiology and Behavior (3-6, max. 15)**

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. Offered: AWP.

**NEUBEH 526 Introduction to Laboratory Research in Neurobiology (4)**

Students become familiar with, and assist in, the performance of research on ongoing projects in designated laboratories. Emphasis on employed methodology and techniques. Credit/no credit only. Prerequisite: first-year graduate students in neurobiology. Offered: AWP.

**NEUBEH 527 Current Topics in Neurobiology and Behavior (1)**

*Sullivan* Presentation and discussion of current research provides exposure to diverse areas of neurobiology and behavior research. Credit/no credit only. Prerequisite: graduate student in neurobiology and behavior program or permission of instructor. Offered: AWP.

**NEUBEH 528 Computational Neuroscience (3)**

*Fairhall, Rao* 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 by permission of instructor. Offered: jointly with CSE 528.

**NEUBEH 532 Discussion in Cell Signaling and Molecular Physiology (2)**

*Fairhall, Rieke* Discusses fundamental issues in cell excitability and molecular and cellular physiology. Focuses on problem solving and reading from original literature. Emphasizes student participation. Prerequisite: first-year graduate students in neurobiology or physiology and biophysics. Offered: jointly with P BIO 532; W.

**NEUBEH 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, odd years only.

**NEUBEH 545 Quantitative Methods in Neuroscience (3)**

*Rieke, Shadlen* 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, 502, 503, or by permission of instructor. Offered: jointly with P BIO 545; W, odd years.

**NEUBEH 549 Molecular Basis of Neurodegenerative Disease (2)**

*La Spada,*

*Muchowski, Pallanck* Introduces a broad range of neurodegenerative diseases, focusing upon the approaches that have led to recent discoveries and emphasizing the elucidation of mechanisms and pathways of disease pathogenesis. Offered: jointly with GENOME 549/PHCOL 549; W.

**NEUBEH 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.

**NEUBEH 551 Mouse Models (1)**

*Illustrates the use of transgenic and targeted-gene disruption technologies for developing mouse models of the disease. Introduces the methodology of producing transgenic and knock out mice. Discusses several examples of disease models using the most recent primary literature as a source. Offered: jointly with P BIO 551.*

**NEUBEH 552 Synaptic Integration (1)**

*Binder, Powers* Discussion of recent papers on how neurons in the central nervous system integrate concurrent synaptic inputs. Includes: effects of driving force on synaptic currents, effects of conductances on dendritic properties, transfer of currents from dendrites to soma, and transformation of currents into spike train outputs. Offered: jointly with P BIO 552.

**NEUBEH 553 Learning and Memory:**

**Synapses and Systems (2)**

*Jagadeesh, Sullivan* Five-week mini-course evaluates the current state of knowledge on the mechanisms that allow people to learn and remember. After introductory overviews of the cellular and molecular mechanisms underlying long-term synaptic plasticity and the multiple systems existing for learning and memory, students choose specific topics for discussion. Offered: jointly with P BIO 553.

**NEUBEH 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 P BIO 554.

**NEUBEH 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

**NEUBEH 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.

**NEUBEH 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.

**NEUBEH 559 Neurobiology of Disease (3)**

*Garden, Moeller, Neumaier, Weiss* 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.

**NEUBEH 600 Independent Study or Research (\*)**

Credit/no credit only. Offered: AWP.

**NEUBEH 700 Master's Thesis (\*)**

Offered: AWP.

**NEUBEH 800 Doctoral Dissertation (\*)**

Offered: AWP.

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## Nutritional Science

**NUTR 300 Nutrition for Today (3)**

*NW 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: A.

**NUTR 405 Phys Activity in Health and Disease (3)**

*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 build environment on activity. Prerequisite: BIOL 118. Offered: jointly with EPI 405; Sp.

**NUTR 441 Chemistry of Foods (3)**

*Peck* Principles of food science integrated with laboratory sessions that observe the effects of various parameters of food composition, and applied sensory evaluation. Explores current trends in the culinary sciences to promote pleasurable eating. Recommended: general and organic chemistry. Offered: even years; S.

**NUTR 445 Food Safety and Production Laboratory (2)**

*Peck* Examination of food safety systems including HACCP methodology. Experiential study of food production, receiving systems, inventory control, menu planning, budget consideration, and cost control. Offered: W.

**NUTR 462 Medical Nutrition Therapy I (2)**

*Peck* Intervention strategies, counseling skills, and diet modifications that pertain to chronic disease prevention and management. Corequisite: NUTR 562. Offered: Sp.

**NUTR 463 Medical Nutrition Therapy II (2)**

*Peck* Didactic training in nutrition support theories and skill development for interpretation of laboratory values. Management of fluids and electrolytes, and nutrition interventions in acute care. Prerequisite: NUTR 462; corequisite: NUTR 563. Offered: S.

**NUTR 465 Nutritional Anthropology (3)**

*I&S/ NW Neill* Concerns 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, nutrition-related biobehavioral influences on human growth, development, and disease resistance. Prerequisite: BIO A 201. Offered: jointly with BIO A 465.

**NUTR 499 Undergraduate Research (1-5, max. 10)** Independent study and research supervised by a faculty member with appropriate academic interest. 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. Offered: AWSp.

**NUTR 505 Phys Activity in Health and Disease (3)** *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: BIOL 118. Offered: jointly with EPI 502; Sp.

**NUTR 511 Survey of Advanced Nutrition (2-3)** *Bruemmer, Chan* 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 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)** *Kirk* Advanced Study of biologically essential minerals and vitamins. To include absorption, transport, function, storage, excretion; imbalance, deficiency and toxicity; dietary structures; role of these nutrients in prevention diseases directly or indirectly. Offered: Sp.

**NUTR 526 Maternal and Infant Nutrition (3)** *Johnson* Influence of maternal and infant nutrition on the health of populations. Nutrition-related physiological, psychological, and social factors in pregnancy, lactation, and infancy. Application of evidence-based approaches to maternal and infant nutrition recommendations

and interventions for populations and high-risk individuals. Prerequisite: human nutrition and human physiology. Offered: A.

**NUTR 527 Nutrition: Childhood Through Adolescence (3)** *Rees, Trahms* Interactions of nourishment with behavior, growth, and development of children, from infancy through adolescence. Critical evaluation of normative data and special problems, as well as strategies for individual and public health interventions. Prerequisite: graduate student in nutritional sciences or permission of instructor. Offered: even years; Sp.

**NUTR 528 Nutrition in Aging (3)** *Drewnowski* Physiological, psychological, social, cultural, and economic factors affecting health nutrition and status in the middle and later years. Prerequisite: human nutrition and human physiology. Offered: odd years; Sp.

**NUTR 529 Nutrition Research Design (3)** *Duncan* Critical review of selected nutrition literature. Evaluation of experimental design, research protocols, data analyses, and data presentations. Prerequisite: BOST 511. Offered: odd years; A.

**NUTR 530 Nutrition for Children with Special Health Care Needs (3)** *Lucas* Principles of nutrition screening and assessment, clinical nutritional care, family-centered care, and health services as applied to meeting nutritional needs of children with special health care needs. Both population-based and individual care concepts are explored for children with a variety of chronic conditions. Offered: odd years; Sp.

**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)** *Peck* 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. Offered: AWSpS.

**NUTR 536 Nutrition Education Principles and Practice (2)** *Peck* Examines principles of design and presentation of nutrition education for specific groups including developing goals and objectives, selection of components including activities, visual aides, and specifications of evaluation processes. Explores principles of communication, written and oral, in presenting nutrition education including learning styles, cultural competence, literacy levels, including, working with the media. Offered: W.

**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 on-going research for preparation of dissertation topics. Prerequisite: permission of instructor. Offered: AWSpS.

**NUTR 538 Nutritional Epidemiology (3)** *Beresford* Application of epidemiological methods

to current studies of diet, nutrition, and chronic disease. A discussion of current issues and controversies enable students to plan studies in nutritional epidemiology and disease prevention. Prerequisite: EPI 511 or EPI 512 and BOST 511 or permission of instructors. Offered: jointly with EPI 538; A.

**NUTR 545 Food Safety and Health (3)** *Bruemmer* 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. Recommended: course in microbiology. Offered: W.

**NUTR 550 Obesity: Prevention and Control (3)** *Drewnowski* Integrated biomedical and social approached to obesity and provides opportunities to design and evaluate strategies for obesity prevention and control. Prerequisite: graduate standing or permission of instructor. Offered: W.

**NUTR 551 Nutrition and Gene Expression (3)** *Rosenfeld* Lectures, student presentations, and discussions of current research on nutrient:gene interactions. Focus on how dietary factors act both directly as transcriptional regulators or indirectly as inducers of signal transduction cascades leading to alterations in expression of proteins associated with cellular nutrient metabolism. Prerequisite: NUTR 520, NUTR 521, NUTR 522, or permission of instructor. Offered: 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.

**NUTR 561 Dietetics Internship (6-10, max. 30)** *Peck* Focuses on the competencies for entry-level practice in dietetics. Autumn and winter quarters include core experiences in wellness, public health, food service, ambulatory care, home health, and clinical services. Spring quarter activities are devoted to either nutrition therapy or public health, depending on student's career goals. Prerequisite: clinical students only. Offered: AWSp.

**NUTR 562 Nutrition and Chronic Disease (4)** *Bruemmer* Epidemiology/pathophysiology of chronic disease related to nutrition (e.g., obesity, cardiovascular disease, osteoporosis, hypertension, diabetes). Examines nutritional risk/protective factors in relation to public health, individual nutrition, and clinical intervention. Prerequisite: physiology, biochemistry. Offered: Sp.

**NUTR 563 Nutrition in Acute Care (4)** *Bruemmer* 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: NUTR 562, or permission of instructor. Offered: S.

**NUTR 564 Management of Nutrition Services (4)** *Bruemmer* Policy and administrative issues that impact delivery of nutrition services in health care environments. Topics include organization behavior, productivity, financial environments, clinical management, and human resources. Offered: odd years; S.



**NUTR 590 Special Topics in Nutritional Science (1-4, max. 4)** Examines emerging issues in nutrition. Reviews the evidence and potential policy implications. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWPpS.

**NUTR 595 Nutritional Sciences Master's Practicum (1-12, max. 12)** *Peck* 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. Credit/no credit only. Prerequisite: HSERV 511; NUTR 531; EPI 511; NUTR 520; 521; 522: Offered: AWPpS.

**NUTR 600 Independent Study or Research (\*)** Offered: AWPpS.

**NUTR 700 Master's Thesis (\*)** Offered: AWPpS.

**NUTR 800 Doctoral Dissertation (\*)** Credit/no credit only. Offered: AWPpS.

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## Quantitative Ecology and Resource Management

**QERM 502 Statistical Consulting for the Life Sciences (1-4)** *Conquest* Consulting experience in data analysis, applied statistics, experimental design, parameter estimation, and sampling. Student provides consultation services to students and faculty. Students spend one classroom hour per week under faculty supervision discussing problems encountered. Prerequisite: QERM 482, QERM 483, STAT 421, STAT 423, or BOST 514, BOST 515, or equivalents, and permission of instructor. Offered: W.

**QERM 514 Analysis of Ecological and Environmental Data I (4)** *Conquest* 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 521 Scientific Method in Resource Management (4)** *Ford* Describes process of scientific discovery and strategies used for problems in ecology and natural resources management. Relationships between growth and use of objective knowledge in natural resources management is explored through case studies.

**QERM 550 Ecological Modeling and Spatial Analysis (5)** *Ford* Describes the principles of ecological modeling, and theoretical and methodological issues involved in their design and implementation. Emphasizes the analysis of spatial processes and how such analyses are used in developing ecological models. Students make and analyze a spatial process and/or construct a model of their own choice. Offered: W.

**QERM 597 Seminar in Quantitative Ecology (2)** Current topics in quantitative ecology and resource management. Fisheries, forestry, and marine resources. Offered: ASp.

**QERM 598 Special Topics in Quantitative Resource Management (1-3, max. 12)** Population and community ecology, systems ecology, and physical processes in ecosystems. Prerequisite: permission of instructor.

**QERM 599 Research in Quantitative Resource Management and Ecology (\*, max. 12)** Topics can be theoretical in nature or combined theory and experiment. Research might be a prelude to thesis or dissertation research. Credit/no credit only.

**QERM 600 Independent Study or Research (\*)**

**QERM 700 Master's Thesis (\*)**

**QERM 800 Doctoral Dissertation (\*)**

## Quaternary Sciences

**QUAT 417 Environmental Change in the Glacial Ages (3)** *NW Porter* 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. Offered: jointly with ESS 433.

**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. Credit/no credit only. Prerequisite: graduate standing.

**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. Credit/no credit only. Prerequisite: background courses in earth sciences and ecology.

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## Interdisciplinary Undergraduate Programs

### Program on the Environment

**ENVIR 100 Environmental Studies: Interdisciplinary Foundations (5)** *I&S/NW* Introduces the interdisciplinary approach to environmental studies. Examines the ethical, political, social and scientific dimensions of current and historical environmental issues, at the local and global scale. First in a three course sequence required of Environmental Studies majors. Offered: ASp.

**ENVIR 150 Orientation to Environmental Studies (2)** Broad overview of environmental studies. Faculty members and professionals from outside the University identify opportunities for study and work in the field and offer suggestions for optimal academic preparation. Strong emphasis on class participation and experiential learning.

**ENVIR 200 Environmental Studies: Communication and Research (5)** *I&S*

Focuses on reading, writing, presentation, and critical analysis of written material, in an interdisciplinary context of environmental problems. Develops proficiency in use of bibliographic databases, scholarly journals, and the Internet as research tools. Second in three course series required of Environmental Studies majors. Prerequisite: ENVIR 100. Offered: WSp.

**ENVIR 210 Introduction to Environmental Modeling (5)** *NW,QSR* Introduction to the use of computer modeling software in environmental policy and decision making. In weekly computer lab meetings, students use established programs to analyze the outcomes of management strategies and policy decisions relating to topics such as conservation of endangered species, climate change, and deforestation. Offered: jointly with Q SCI 210.

**ENVIR 220 Urban Ecology (5)** *I&S/NW* Examines nature-society interactions in urban settings. Drivers, patterns, processes, impacts and consequences of urban and urbanizing

ecosystems. Presents the state of our knowledge of urban ecology in its interdisciplinary format. Offered: W.

**ENVIR 215 Earth, Air, Water: The Human Context (5)** *NW Rhines* Lab-based introduction to Earth's environment, primarily for non-scientists: energy, atmosphere, ocean, and biosphere stability. Beginning from basic science, growing toward impacts and applications; e.g., study of the sun's energy spectrum and greenhouse effect, construction of solar box cookers, study of energy profiles of developing countries. Offered: Sp.

**ENVIR 235 Introduction to Environmental Economics (5)** *I&S/NW* Introduces non-economics majors to environmental and natural resource economics. Discussion of fundamental economic concepts, including markets and private property. Students learn basic tools used in the economic assessment of environmental problems and apply these methods to key environmental issues. Offered: jointly with ECON 235/ESRM 235.

**ENVIR 243 Environmental Ethics (5) I&S**

*Clatterbaugh, Coburn, Woody* 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 260 The Puget Sound Ecosystem (3/5) I&S/NW**

Examines historical human impacts on the land/water ecosystem of the Puget Sound, roles of regional governance and citizen action, and prospects for ecological restoration. Computer labs and field trips for additional credit. Offered: jointly with OCEAN 260.

**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**

Multi-scale case studies of socially and scientifically complex environmental problems, including how the Earth works as a biogeochemical system, ecological principles, human health, energy, and global change. Emphasizes quantitative environmental analysis. Third in a required three course series of Environmental Studies majors. Prerequisite: ENVIR 200; recommended: ENVIR major foundational courses. Offered: WSp.

**ENVIR 313 Environmental Earth Science (5) NW**

*Swanson* 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 210, ESS 211, GEOL 101, GEOL 201, or GEOL 205. Offered: jointly with ESS 315; A.

**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.

**ENVIR 341 Energy and Environment (3) NW**

*Malte* 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, PHYS 114, or PHYS 121. Offered: jointly with M E 341/CHEM E 341; A.

**ENVIR 350 Independent Fieldwork (1-3, max. 5)**

Fieldwork, coursework, or other learning experience conducted off-campus, but supervised by UW faculty. 1 academic credit for 30 hours of environment-related work per quarter. 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 SCAND 350/SIS 350.

**ENVIR 362 Introduction to Restoration Ecology (5) I&S/NW**

*Gold* 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**

*Sivaramakrishnan* 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**

*Lee* 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; WS

**ENVIR 380 Study Abroad: Comparative International Perspectives on Cities and the Environment (15) I&S/NW**

Interdisciplinary approach to integrating urban and environmental issues in two or more world cities. Includes site visits and interactions with foreign scholars and practitioners. Topics may include coastal development, transportation, parks, marine conservation, indigenous cultures, environmental planning, gentrification, urban governance, and watershed management. Offered: jointly with TEST 380/T URB 380.

**ENVIR 384 Global Environmental Politics (5) I&S**

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 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; S.

**ENVIR 416 Ethics and Climate Change (5) I&S**

*Gardiner* 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**

*Gardiner, Light* 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 433 Environmental Degradation in the Tropics (5) I&S/NW**

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 SIS 433/SMA 433.

**ENVIR 439 Attaining a Sustainable Society (1/3, max. 3) I&S/NW**

*Karr* 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: jointly with FISH 439; A.

**ENVIR 442 Renewable Energy (4) NW**

*Malte* Introduction to renewable energy. Principles and practices: solar, wind, water, and biomass energy conversion. Prerequisite: either MATH 112, MATH 124, or Q SCI 291; either CHEM 120, CHEM 142, PHYS 115, or PHYS 122. Offered: jointly with CHEM E 442/M E 442.

**ENVIR 450 Special Topics in Environmental Studies (1-5, max. 15)**

Format may range from seminar/discussion to formal lectures to laboratory or modeling work.

**ENVIR 451 Comparative Historical and Social Ecology of the Tropics (5) I&S**

*Sivaramakrishnan* Historical and social aspects of tropical environmental change. Comparative analysis of resource management, conservation, and environmental regulation issues in Asia, Africa, and Latin America from cultural and political economic perspectives. Special focus on issues of state policy, expert knowledge, social conflict, and international politics. Prerequisite: ANTH 210. Offered: jointly with ANTH 451.

**ENVIR 459 Culture, Ecology and Politics (5) I&S**

*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 Institutionalizing Sustainable Ecological Practices. (5) I&S/NW**

*Lee* Introduction to how sustainability and

conservation are possible. Case studies of successful institutionalization of sustainable ecological functions, including curbside and biosolids recycling, ecological restoration, bioremediation, sustainable wood production, and product certification. Emphasis on individual student projects. Offered: jointly with ESC 460; Sp.

**ENVIR 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 ESRM/TESC/BES 462.

**ENVIR 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: ENVIR 462. Offered: jointly with ESRM/TESC/BES 463.

**ENVIR 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: ENVIR 463. Offered: jointly with ESRM/TESC/BES 464.

**ENVIR 474 Problem Analysis in Urban Ecology (5) I&S/NW** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Investigates pressing local issues in urban ecology and develops each into a researchable project proposal. Examines and evaluates how different disciplines study environmental issues, explores criteria for conducting and evaluating quality research, develops skills in problem formulation, and sharpens proposal writing skills. Offered: jointly with GEOG 486/CFR 474; A.

**ENVIR 475 Environmental Impacts of Small Scale Societies (5) I&S/NW** *Grayson, Smith* Examines the environmental impacts (positive and negative) among prehistoric and historic/ethnographic small-scale (hunter-gatherer and horticultural) societies worldwide, and debates these impacts, within a theoretical framework provided by evolutionary ecology and biogeography. Offered: jointly with BIO A 475.

**ENVIR 476 Introduction to Environmental Law and Process (3) I&S** *Bryant, Hershman* 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 SMA 476; A.

**ENVIR 477 Marine Conservation (3) NW** *Parrish* Terrestrially based concepts of conservation biology applied to marine systems: human activities affecting the marine environment including fishing and pollution, influence of legal and cultural frameworks, and ecosystem management. Prerequisite: either BIOL 102, BIOL 162, BIOL 180, or BIOL 203. Offered: jointly with BIOL 477; W.

**ENVIR 478 Topics in Sustainable Fisheries (3, max. 9)** *Parrish* Seminar series featuring local, national and internationally known speakers in fisheries management and conservation. Case studies. Conservation/restoration in practice. Pre-seminar discussion section focusing on select readings. Final paper. Topics may include harvest management, whaling, by-catch, salmon, marine protected areas, introduced species, citizen action, co-management, and marine ethics. Offered: jointly with FISH 478/BIOL 478; odd years; W.

**ENVIR 480 Marine Resource Conservation and Management (3) I&S/NW** *Gallucci, Miller* 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/SMA 480.

**ENVIR 486 Problem Analysis in Urban Ecology (5) NW** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Investigates pressing local issues in urban ecology and develops each into a researchable project proposal. Examines and evaluates how different disciplines study environmental issues, explores criteria for conducting and evaluating quality research, develops skills in problem formulation, and sharpens proposal writing skills. Offered: jointly with ESRM 474/GEOG 486/URBDP 443; A.

**ENVIR 487 Applied Theory and Methods in Urban Ecology (5) I&S/NW** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Discusses broad perspectives in urban ecology and how to analyze data relevant to urban ecology problems. Students write objectives and methods for a selected urban ecology problem that critiques different methodological approaches and reviews/synthesizes literature. Prerequisite: either ENVIR 486, CFR 474, or GEOG 486. Offered: jointly with CFR 475/GEOG 487; W.

**ENVIR 488 Research in Urban Ecology (5) I&S/NW** *Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen* Teams analyze, present, and begin to interpret data that is relevant to addressing issues in urban ecology. Write and orally present revised objectives and methods sections of interdisciplinary project and present results section. Prerequisite: either ENVIR 486, CFR 475, or GEOG 487. Offered: jointly with CFR 476/GEOG 488; Sp.

**ENVIR 490 Pre-Capstone Seminar (2)** 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. Recommended: 15 credits of ENVIR 201/202/203. Offered: ASP.

**ENVIR 491 Capstone Experience (2-8, max. 8)** Capstone experiences, arranged during ENVIR 490, may include internships and other applied environmental work, directed research on environmental topics, or team efforts. Credit/no credit only. Prerequisite: ENVIR 490. Offered: AWSpS.

**ENVIR 492 Post-Capstone Seminar (3)** 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 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. Credit/No credit only. Offered: AWSpS.

**ENVIR 498 Independent Study (1-5, max. 5)** 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 multidisciplinary themes in environmental studies. 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 503 Role of Scientific Information in Environmental Decisions (3)** Examines how science contributes to decisions that affect the natural environment: how science and scientists help frame debates and decisions; how scientific findings are incorporated into decision making processes; and how scientists and nonscientists deal with uncertainty.

**ENVIR 511 Environmental Management -- Keystone Project I (2)** Interdisciplinary project teams address regional environmental issues. May include working with external community partner agency. Environmental Management Certificate students only.

**ENVIR 512 Environmental Management -- Keystone Project II (3)** Interdisciplinary project teams address regional environmental issues. May include working with external community partner agency. Continuation of projects from autumn quarter. Prerequisite: ENVIR 511.

**ENVIR 513 Environmental Management -- Keystone Project III (3)** Interdisciplinary project teams address regional environmental issues. May include working with external community partner agency. Continuation of projects from winter quarter. Prerequisite: ENVIR 512.

**ENVIR 535 Foresight in Science and Technology: Choices and Consequences (3)** Examination of the foresight (or lack of it) with which we practice science and use technology. Contrasts potential risks of various choices with potential benefits. Credit/no credit only. Offered: jointly with PHYS 535/PHIL 501.

**ENVIR 550 Global Commercialization of Environmental Technologies (4)** Students work on faculty-supervised interdisciplinary teams (with students from business, sciences/engineering, and public policy) developing

business plans for commercializing environmentally friendly technologies around the world. The projects involve collaborating with the 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/ESS/SMA 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.

## Interschool or Intercollege Programs

### Bioengineering

**BIOEN 201 Bioengineering Tools (2)** *Thomas* Introduction to bioengineering; laboratory safety, acquisition and analysis, presentation tools for biomedical applications. Prerequisite: MATH 126; PHYS 121; corequisite: CSE 142; PHYS 122. Offered: W.

**BIOEN 299 Introduction to Bioengineering (1)** *Verdugo* Lectures on the various aspects of bioengineering; orientation in bioengineering studies and practice. Credit/no credit only. Offered: ASp.

**BIOEN 301 Bioengineering Systems Analysis (4)** *Lewis, Neils, Pun* Investigates static and dynamic problems that are found in medicine and biology. Exposes real biomedical applications of first- and second-order differential equations. Analyzes current bioengineering and biomedical problems and make measurements of the systems that present those problems. Weekly laboratories. Prerequisite: BIOEN 201; either BIOL 180 or BIOL 201; CSE 142; PHYS 122; corequisite: either BIOL 200 or BIOL 202; MATH 307. Offered: Sp.

**BIOEN 302 Introduction to Biomedical Instrumentation (4)** *Folch, Neils* Introduces the theory of measurement and the practicalities of measurement of biological variables. Basic amplifier theory, discussion of noise in physical systems and its reduction. Uses actuators to test biomedical systems. Prerequisite: BIOEN 301; CSE 142; E E 215. Offered: A.

**BIOEN 303 Bioengineering Signal Processing (4)** *Gao, Li, Neils* Introduction of signal processing techniques necessary to record and analyze medical and biological data. Uses transform calculus to analyze differential equations and develop approximations to functions. Introduces sampling and applies it to biological data. Prerequisite: BIOEN 302; BIOEN 304. Offered: W.

**BIOEN 304 Introduction to the Bioengineering Analysis of Physiology I (4)** *Sauro* Introduction of engineering analysis of physiological systems. Course covers cellular function through its control by the central nervous system. Prerequisite: BIOEN 301; CSE 142. Offered: A

**BIOEN 305 Introduction to the Bioengineering Analysis of Physiology II (4)** *Regnier* Introduction to the cardiovascular system. Explores the cardiovascular system as an engineering system in which the heart is a pump, and the load and distribution of blood to organs on the heart depend on the demands of the system. Introduces principles of fluid transport.

Prerequisite: BIOEN 302; BIOEN 304; co-requisite: either STAT 390 or IND E 315. Offered: W

**BIOEN 357 Introduction to Molecular Bioengineering (4)** *Bryers* Introduces molecular bioengineering. Molecules as building blocks to engineer surfaces. Molecular therapeutics, drug delivery, diagnosis and biomaterials. Examines design principles for biomedical materials and devices. Prerequisite: either BIOL 200 or BIOL 202; BIOEN 303; BIOEN 305; recommended: either CHEM 223, CHEM 237, or CHEM 335. Offered: Sp.

**BIOEN 420 Medical Imaging (4)** *Yuan* Various medical imaging modalities (x-rays, CT, MRI, ultrasound, PET, SPECT, 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: BIOEN 303; MATH 308; CSE 143. Offered: A.

**BIOEN 440 Introduction to Biomechanics (4)** *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)** *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. Biweekly labs. Prerequisite: BIOEN 303. Offered: W.

**BIOEN 457 Advanced Molecular Bioengineering (4)** *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: BIOEN 357; BIOC 405. Offered: Sp.

**BIOEN 467 Biochemical Engineering (3)** *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: either CHEM 223 with CHEM E 340 or either CHEM 237 or CHEM 335; recommended: CHEM E 465. Offered: jointly with CHEM E 467; Sp.

**BIOEN 481 Bioengineering Design and Capstone Principles (4)** *Vaezy* Teaches design principles in bioengineering and guides the development of design-based senior capstone projects. Prerequisite: BIOEN 303; BIOEN 305. Offered: Sp.

**BIOEN 482 Bioengineering Capstone Project ([2-6]-, max. 8)** Independent senior design project. Prerequisite: BIOEN 357; BIOEN 481; corequisite: STAT 390. Offered: AWSpS.

**BIOEN 485 Computational Bioengineering (4)** *Thomas, Vicini* Introduction to computational, mathematical and statistical approaches to the analysis of biological systems, including systems and control theory, molecular models and bioinformatics. Lectures and laboratory sessions emphasize practical problems in kinetics, metabolism and genomics. Prerequisite: CSE 143; BIOEN 305; MATH 308. Offered: A.

**BIOEN 490 Engineering Materials for Biomedical Applications (3)** *Horbett* 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: Principles and Applications (3)** *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 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.

**BIOEN 499 Special Projects (2-6, max. 50)** Individual undergraduate bioengineering projects under the supervision of an instructor. In addition, classes on selected topics of current interests as announced. Offered: AWSpS.

**BIOEN 510 Bioengineering Seminars (1)** Introductory seminar for new graduate students; review of departmental research.

**BIOEN 511 Biomaterials Seminar (1)** *Hoffman, Horbett, Ratner* Presentation of student research results. Credit/no credit only. Prerequisite: permission of instructor. Offered: jointly with CHEM E 511.

**BIOEN 513 Current Topics in Cardiac Physiology (1, max. 3)** *Regnier* Current research in cardiac physiology. Student presentation and discussions of current research methodologies.

**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 Orthopedic Biomechanics (4)** *Ching* Mechanical engineering applied to musculoskeletal system with emphasis on techniques in orthopedic surgery. Measurement of mechanical properties of tissues. mechanics of bone, soft tissue, and muscle, mechanics of upper extremity, spine, and lower extremity. Engineering in surgery, gait analysis, joint replacement, fracture fixation. Prerequisite: BIOEN 440.

**BIOEN 522 Biomechanics of Soft Tissue (3)** *Sanders* Applies soft tissue biomechanics to medical research. Develops specific biomechanical questions and experiments to address those aims or hypotheses.

**BIOEN 540 Biosystem Identification (4)** *Vicini* Fundamentals of mathematical modeling in medicine and biology. Introduction to compartmental models: a priori, a priori identifiability. Data measurement error, parameter estimation. Maximum likelihood, least squares. Introduction to tracer-tracee models, pharmacokinetics, pharmacodynamics. Models to test hypotheses. Hands-on computer experience. Prerequisite: ordinary differential equations, introductory statistics, or permission of instructor.

**BIOEN 542 Computer Simulation in Biology (3)** *Bassingthwaighte, Graham* Introduction to mathematical modeling of biological phenomena. Tutorial text explains how to derive equations for simple models and apply them to generate simulation data. Application topics include kinetics of biomolecular reactions and enzyme saturation, membrane transport, organismal predation, competition and growth, compartmental and spatially distributed models, physiological control systems, probabilistic models. Prerequisite: P BIO 405 and P BIO 406 or equivalent or permission of instructor.

**BIOEN 555 Cellular and Molecular Biomechanics and Cell Function (3)** *Pollack*

Examines basic mechanisms of cell function with emphasis on motion. Includes principles of physics and chemistry, building to organelle structure and function; gel-like nature of cell and critical role of cell water; streaming, motility, contraction, mitosis, transport, and other cell basics.

**BIOEN 560 Ultrasound in Bioengineering (4)** *Vaezy* Fundamentals of ultrasonic generation, formation, reception, and treatment of absorption, scattering, and transmission. Conventional and new methodology. (A, B, T-M mode, imaging, Doppler, tissue characterization, and nonlinear effects.) Prerequisite: E/E/M E 525 for nonbioengineering students or permission of instructor.

**BIOEN 561 Biomedical Optics (4)** Advanced theories of optical and spectroscopic measurement with emphasis on biomedical laser applications. Laser principles, instrumentation, and current practice in various biomedical uses, covering such areas as medicine, surgery, and biology. Prerequisite: BIOEN 302 or equivalent, or permission of instructor.

**BIOEN 565 Nuclear Magnetic Resonance in Biomedicine (2)** Basic physics of nuclear magnetic resonance (NMR) imaging and spectroscopy are presented. Research applications of NMR in physiology and biochemistry are reviewed with emphasis on the brain. Grade based on written tests and small research paper. Prerequisite: permission of instructor. Offered: jointly with RADGY 550.

**BIOEN 568 Image-Processing Computer Systems (4)** *Kim* Components of digital processing computer systems. Two-dimensional filtering and optimal filter design as well as basic image-processing operations. Selected advanced image-processing topics introduced. Individual student project. Prerequisite: permission of instructor. Offered: jointly with E E 568.

**BIOEN 571 Polymeric Materials (3)** *B. Ratner* Relationships between configuration, conformation, molecular order, microstructure, properties of polymeric materials. Concepts relevant to tailoring polymer molecules and microstructures for specific applications. Interactions between polymers and their in-service environment. Characterization and processing techniques relevant to polymeric materials. Prerequisite: one semester or two quarters of organic chemistry. Offered: jointly with MSE 571.

**BIOEN 573 Biosensors and Biomedical Sensing (3)** *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. Prerequisite: BIOEN 436 or permission of instructor.

**BIOEN 576 Laboratory Techniques in Protein Engineering (4)** *Stayton* 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 consent of instructor.

**BIOEN 577 Cell and Protein Reaction with Foreign Materials (3)** *Horbett* Study of ways in which cell and protein interactions with foreign materials affect the biocompatibility of biomaterials. Description of the 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)** *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)** *Giachelli* 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 584 Computational and Integrative Bioengineering (4)** *Vicini* Advanced computational, mathematical, and statistical approaches to the analysis of biological systems, including molecular models, time series, fractal systems, population kinetic analysis, and stochastic simulation. Lectures and laboratory sessions emphasize practical problems in kinetic analysis, metabolism, and genomics. Final project, written and oral reports. Prerequisite: BIOEN 485.

**BIOEN 586 Tissue Engineering (3)** *Giachelli, Horbett* Explores methods to restore or replace function in the cardiovascular, epithelial, urinary, nervous, skeletal, and other systems in the human body by use of constructs that contain living cells. Presents scaffold preparation, angiogenesis, and use of stem cells.

**BIOEN 590 Advanced Topics in Biomaterials (3)** *Horbett* 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 CHEM E 590.

**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 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. 15)** 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 (\*)** Credit/no credit only. Offered: AWWSpS.

**BIOEN 700 Master's Thesis (\*)** Credit/no credit only. Offered: AWWSpS.

**BIOEN 800 Doctoral Dissertation (\*)** Credit/no credit only. Offered: AWWSpS.

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## Global Health

**G H 201 Newly Emerging Diseases in Public Health (2) NW** *White* Newly recognized and emerging disease pose a major problem for public health. AIDS, hantavirus infections, Ebola virus infections, and the role of bacterial infection in the causation of stomach ulcers are examples of problems to be studied. Other timely diseases are presented in this lecture discussion course. Offered: A.

**G H 401 Introduction to Global Health (1)** *Wade* Addresses a variety of themes in global health which serve as a base for an introductory-level understanding of the field. Emphasizes the diverse, disciplinary perspectives on global health. Credit/no credit only. Offered: A.

**G H 402 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 500 Global Health Seminar (1, max. 6)** Explores issues relevant to global health; themes vary by quarter. Required course for Global Health MPH and Global Health Certificate students. Credit/no credit only. Offered: AWWSpS.

**G H 501 Introduction to Global Health (1)** *Wade* Addresses a variety of themes in global health which serve as a base for an introductory-level understanding of the field. Emphasizes the diverse, disciplinary perspectives on global health. Offered: A.

**G H 502 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)** *Kimball* Prepares health profession students for work in developing countries. Includes health care 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; Sp.

**G H 511 Problems in International Health (4)** *Gloyd* Explores social, political, economic,

environmental determinants of developing countries' health; traces development of societal responses to problems. Includes: origins of primary health care; 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 Population Health (3)** *Bezručka* Looks at determinants of population health in different countries, to learn about the constraints of typical public health and development paradigms. Topics include colonialism, development and underdevelopment, political economy, culture, health behaviors, hierarchy, health care and medical harm. Offered: Sp.

**G H 521 International Program Management and Evaluation (3)** *Downer, O'Malley* Overview of the program planning cycle as applied to international program management. Uses case studies and application exercises to develop skills in designing assessment activities for program planning; developing, testing, and implementing programmatic interventions; managing resources and people, monitoring activities; and evaluating program outcomes. Offered: W.

**G H 531 Research Methods in Developing Countries (3/4)** *Gloyd, Mock* Simple, practical methodologies to obtain and validate information regarding health status and health services in developing countries. Usefulness, validity, limitation of vital records, health reports, household (and cluster) surveys, nutritional anthropometry, and qualitative methods discussed. Lectures, computer lab, and student participation in community-based survey. Offered: jointly with EPI 539; W.

**G H 532 Responsible Conduct of International Research (3)** *Farquhar* Prepares international and U.S. students to develop research proposals, conduct international field research, and present scholarly work. Topics include proposal writing, human subjects protection, data management, peer review, scholarly integrity, responsible authorship, and grants and budget management. Open to graduate and non-matriculated students. Credit/no credit only. Offered: jointly with EPI 586; A.

**G H 544 Maternal and Child Health in Developing Countries (3)** *Mercer* 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 553 Reproductive Health, Population and Development (2)** *Povey* Provides students with an introduction to demographic conditions in Third World countries and an understanding of the consequences of rapid population growth on health and the environment. The context and effectiveness of family planning programs is a major focus. Offered: A.

**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.

**G H 561 Tropical Medicine (1)** *Buckner, 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)** *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 health care and prospects for prevention and control. Credit/no credit only. Offered: jointly with EPI 530/MED 530; A.

**G H 565 Diseases of Public Health Importance and Strategies for their Control (3)** Public Health perspective of major disease of national and global importance. Discussion of origins, establishment, progression, and pathogenesis of diseases. Importance of immunological, intercellular and external factors, and strategies of disease prevention. Requires a grounding in cellular and molecular biology, microbiology, and immunology. Prerequisite: permission of instructor. Offered: Jointly with PABIO 550.

**G H 566 Biochemistry and Genetics of Pathogens and Their Hosts (4)** Provides a strong foundation in biochemistry, molecular biology, and genetics for students interested in disease. Principles will be illustrated through examples focusing on pathogens, and infectious and non-infectious disease. Prerequisite: undergraduate level course work in molecular biology or biochemistry or permission of instructor. Offered: Jointly with PABIO 551.

**G H 590 Selected Topics in Global Health (1-4, max. 12)** Focuses on topics relevant to global health. Offered: AWWSpS.

**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. Offered: AWWSp.

**G H 593 MPH Thesis Workshop (1)** *Hagopian* 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: AWWSp

**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. Credit/no credit only. Prerequisite: permission of faculty advisor. Offered: AWWSpS.

**G H 600 Independent Study or Research (\*)** Prerequisite: permission of instructor. Offered: AWWSpS.

**G H 700 Master's Thesis (\*)** Prerequisite: permission of instructor. Offered: AWSpS.

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## Quantitative Science

**Q SCI 210 Introduction to Environmental Modeling (5) NW, QSR** Introduction to the use of computer modeling software in environmental policy and decision making. In weekly computer lab meetings, students use established programs to analyze the outcomes of management strategies and policy decisions relating to topics such as conservation of endangered species, climate change, and deforestation. Offered: jointly with ENVIR 210.

**Q SCI 291 Analysis for Biologists I (5) NW, QSR** 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, a minimum score of 2 on advanced placement test, or a minimum score of 67% on MATHPC placement test. Not available for credit to students who have completed MATH 124 with a 2.0 or higher. Offered: AWSpS.

**Q SCI 292 Analysis for Biologists II (5) NW, QSR** *Gallucci, Greulich, 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 Q SCI 291. 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** 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, MATH 144, or Q SCI 291, or a minimum score of 2 on advanced placement test, or a minimum score of 67% on MATHPC placement test. Offered: AWSpS.

**Q SCI 454 Ecological Modeling (5) NW** Examines concepts in ecological modeling focusing on the rational, interpretation, and motivation for modeling in ecological sciences. Explores individual, population, and ecosystem-based models. Excel-based computer exercises, model building and interpretation, readings. Recommended: prior coursework in ecology and statistics. Offered: jointly with FISH 454.

**Q SCI 458 Fisheries Stock Assessment (4) NW** *Hilborn* Emphasizes quantitative analysis of fisheries data to determine how the fishery would respond to alternative management actions. Major topics include production models, stocks and recruitment, catch at age analysis, and formulation of harvest strategies. Recommended: either Q SCI 456 or FISH 456. Offered: jointly with FISH 458; Sp.

**Q SCI 480 Sampling Theory for Biologists (3) NW** 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 STAT 480; 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** 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: either Q SCI 381 or Q SCI 482. Offered: W.

**Q SCI 486 Experimental Design (3) NW** Topics in analysis of variance and experimental designs: choice of designs, comparison of efficiency, power, sample size, pseudoreplication, factor structure. Prerequisite: Q SCI 482; recommended: Q SCI 483. Offered: jointly with STAT 486; 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)** 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.

**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.

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## University Conjoint

**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 Health Care Environment (1-2, max. 2) I&S** Introduction to the complexity of the issues surrounding culture and health, the interrelatedness of ethnic and cultural characteristics and health care access, health and health care concerns of specific communities, traditional and alternative health care practices, and community-based promotion and disease prevention programs.

**UCONJ 410 Health in the Context of Italian Culture (5)** While in Italy, participants study relationship between current health issues, contemporary Italian history, socio-cultural environment, and European Union; health status of vulnerable populations; characteristics of culture and health care system that promote healthy outcomes; differences between health behaviors and outcomes in Italy and US. Offered: A.

**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; economics, 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 443 Interdisciplinary Seminar on Aging (1-6, max. 15)** *Borgatta* Interdisciplinary examination of the contemporary theoretical literature on gerontology and long-term care. For upper-level undergraduate and graduate students with an interest in aging. Quarterly offerings available from the Institute on Aging.

**UCONJ 444 Interdisciplinary Collaborative Teams in Health Care (1-5, max. 10)** Course open to students in UW Health Sciences schools. Students function as an interdisciplinary learning group within a problem based learning framework. The primary goal of the course is to promote the development of interdisciplinary practice in the care of urban and rural underserved patient populations. Credit/no credit only.

**UCONJ 445 Bioterrorism Awareness for Health Professionals (1)** Provides content in bioterrorism awareness for students in the health professions. First in a two-course interdisciplinary sequence focusing on awareness level training designed to enhance recognition of an injury of illness potentially arising as a result of exposure to select chemical and biological agents. Credit/no credit.

**UCONJ 446 Bioterrorism Preparedness and Response for Health Professionals (2, max. 6)** Focuses on bioterrorism preparedness and response for health professionals. Includes planning, system, and policy issues with an emphasis on clinical relevance. Content compliments UCONJ 445 (not a prerequisite).

**UCONJ 450 Health Care in the Underserved Community (1)** Recommended for students who are working with underserved communities. Students learn about the underserved population served by the community health projects on campus with a focus on inter-professional patient care.

**UCONJ 490 Social Sensitivity in Health Care (3) I&S** Multidisciplinary course for health professions students. Health professionals' roles in dealing with social, cultural, and physical barriers to health care of low-income groups and ethnic people of color. Personal involvement through field experiences and faculty drawn from affected communities as well as health sciences, social work schools. Credit/no credit only.

**UCONJ 497 Health Care in a Rural Community (3)** Critical analysis built upon concepts relative to interdisciplinary health-care delivery in a rural community. Students develop an organizational model for rural health care and study innovative ways of mobilizing community resources and support for a comprehensive rural health-care system. Pharmacy students, nurses, and other health professionals study application of theory in an appropriate clinical setting within the conceptual framework of each student's professional field.

**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. Graduate School of Public Affairs. Offered: AWSp.

**UCONJ 503 International Health (1)** *Wade* Weekly seminar introduces students to issues and opportunities of participating in health care systems in other countries. Guest speakers bring many perspectives of international health care experiences. Class discussions help prepare students for international placements.

**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 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 505 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: professional student or permission of instructor.

**UNCONJ 510 Integrating Arts in the Classroom (4)** Prepares prospective elementary education teachers to understand and acquire arts literacy through a comprehensive approach to learning and teaching in and through the arts. Course is school and arts-site based, inclusive of multiple art forms. Based on comprehensive art principles, and project oriented. Credit/no credit only. Offered: Sp.

**UCONJ 511 Issues in Home Health Care Delivery (3)** Service delivery issues relevant to provision of health care services across the life span in the home setting. Home health care as an important component in health care system. Individual and multidisciplinary practice of health care disciplines. Emphasis on research literature. Prerequisite: graduate student standing, upper division with permission of instructor.

**UCONJ 513 Dynamics of Patient Management: Diabetes Mellitus (2)** Analysis of advanced knowledge related to interdisciplinary management of diabetes. Commonalities and differences in provider approaches, recent research and its effect on management practices, collaborative communication, knowledge application. Brief interactive presentations, decision-making opportunities, discussion. Credit/no credit only. Prerequisite: graduate standing in pharmacy, dietetics, nursing; third- or fourth-year medical student; or permission of instructor.

**UCONJ 515 Promoting Health Behavior for Individuals and Families (2/4, max. 4)** *Brandt, Jordan, Kieckhefer, Lewis, Solchany, Spieker* Practice-focused, evidence-based, theory-driven intervention strategies to promote healing and health behavior at selected points from birth to death. Relevant for clinicians from diverse health settings. Emphasis on clinical skill

development including decision-making and outcome management applicable for individuals and families. Prerequisite: permission of instructor. Offered: Sp.

**UCONJ 517 Interdisciplinary Clinical Research Methods Seminar (2)** *LeResche, Mitchell* Introduction to clinical research methods, including selection of research questions, study design, measurement, data analysis and practical aspects of conducting research in clinical settings. Offered: Only for students from Health Sciences schools who are conducting research under the Multidisciplinary Predoctoral Clinical Research Program; CR/NC; 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, Roelink, Rubel* 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. Credit/no credit only. Prerequisite: first-year graduate student in neurobiology.

**UCONJ 530 Issues in Indian Health (3)** Survey of 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. The goals are to promote personal well being, a healthy lifestyle, reduce burnout, and reduce academic difficulties. Credit/no credit only.

**UCONJ 540 Environmental Change and Human Health: The Role of the Health Professional (1/2, max. 2)** *Oberle, Rosenblatt* Explores the effect of environmental deterioration on human health, and presents tools to address the problem. Offered: Sp.

**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 555 Principles of STD/HIV Research (3)** 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.

**UCONJ 584 Plant Tumors (1, max. 9)** *Gordon* Discussion of the literature of plant tumors and current research work being carried on in this area at the University. Offered cooperatively by the departments of Biochemistry, Botany, and Microbiology and Immunology. Credit/no credit

only. Prerequisite: offered only to persons actively pursuing work in this area.

**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. Credit/no credit only. Prerequisite: UCONJ 517; permission of instructor. Offered:

## School of Law

### Law

**LAW 300 Introduction to Law (3-6, max. 5)** **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 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. Credit/no credit only. Open to nonlaw students 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. Credit/no credit only. Open to law and nonlaw students.

**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. Credit/no credit only.

**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 467 American Law and the American Indian (3)** **I&S** Relationship between Indians and the United States from 1789 to the present. Significant constitutional, legislative, and judicial actions. Legal events explored within their political, military, social, and cultural contexts. Comparisons with other minority-group experiences. Offered: jointly with HSTAA 416.

**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)** **I&S/VLPA** 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 health care and health care 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 Basic Legal Skills ([1-6]-, max. 6)**

**LAW A 507 Constitutional Law I: Constitutional Structures of Government ([3-6]-, max. 6)**

**LAW A 508 Payment Systems (3/4)**

**LAW A 509 Administrative Law (3-4, max. 4)**

**LAW A 510 Sales: A Comparative Perspective (3)**

**LAW A 511 Transmission of Wealth (5)**

**LAW A 512 Secured Transactions (3)**

**LAW A 513 Creditor-Debtor Law ([2-3]-)**

**LAW A 514 Corporations (3/4)**

**LAW A 515 Business Organizations (5)**

**LAW A 516 Legal Accounting (3)**

**LAW A 517 Securities Regulations (4)**

**LAW A 518 Restitution (3)**

**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 Private Land Development (3)**

**LAW A 525 Water Law (4)**

**LAW A 526 Copyrights and Trademarks (5)**

**LAW A 527 Environmental Law: Pollution Control (4)**

**LAW A 529 Public Land Law (3)**

**LAW A 530 Basic 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 535 Trademarks and Unfair Competition (2)**

**LAW A 538 Estate Planning Workshop (3-4)**

**LAW A 540 Land Use Planning (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 545 International Environmental Law (4)**

**LAW A 546 Patents ([2-4]-, max. 4)**

**LAW A 547 Critical Perspectives in Law (3-).** Involves close reading of texts in sociological and critical traditions of thinking about law, including work of such thinkers as Marx, Weber, Durkheim, Berger, Benjamin, Foucault, and Derrida; also work of thinkers who have written from a perspective informed by theories or experiences of politics, gender, race, and sexuality.

**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 Constitution and American Public Education (3-6) .**

**LAW A 552 Antitrust Law and Policy ([2-5]-, max. 5)**

**LAW A 553 Sex, Gender, Sexuality: Law and Theory (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 557 Foreign Affairs and the Constitution (3)**

**LAW A 558 Jurisprudence and Legal Philosophy ([2-4]-, max. 4)**

**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 (4)** Offered: jointly with PB AF 519.

**LAW A 562 Employment Law (4)** 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. Labor litigation covered in LAW A 554. Discrimination issues covered in depth in LAW A 556.

**LAW A 563 Urban Government (3)**

**LAW A 564 Legal History (1-4, max. 4)**

**LAW A 565 American Indian Law (4)**

**LAW A 566 Theories of Justice ([2-4]-, max. 4)**

**LAW A 567 Small Business Entities (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 Business Organizations. Offered: A.

**LAW A 574 International Law (2-4)**

**LAW A 576 International Criminal Law (3)** *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; recommended: LAW A 574. Offered: W.

**LAW A 577 Immigration Law (4)**

**LAW A 578 International Business Transactions ([1-4]-, max. 4)**

**LAW A 579 Child Advocacy (4)**

**LAW A 580 Family Law (4-5)**

**LAW A 581 Washington Constitutional Law Seminar ([1-4]-, max. 4)**

**LAW A 582 Bankruptcy (3)** Introduction to business and consumer bankruptcy law based on the bankruptcy code and recent cases. Covers transactions and litigation aspects of bankruptcy law and practice. Considers the impact of bankruptcy law on areas covered in other courses such as business organizations, commercial transactions, environmental law, family law, torts, and intellectual property.

**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 are a variety of substantive legal areas such as torts, property, contracts, administrative law, and fundamental rights. Offered: Sp.

**LAW A 585 Admiralty (4)**

**LAW A 586 Secured Transactions IV (4)**

**LAW A 588 Trade Security and Copyright Protection of Intellectual Property in High Tech Industry (3)**

**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: The Fourteenth and First Amendments - Equal Protection, Fundamental Rights, Due**

**Process of Law, Freedom of Expression and Religion ([2-8]-, max. 8)**

**LAW A 594 International Trademark and Copyright (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 or Law E 588.

**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. Prerequisite: law librarianship major or LIS 503 and LIS 530 which may be taken concurrently. Offered: jointly with LIS 591.

**LAW A 599 Legal Research II (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 (3)**

**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 510 Problems of Professional Responsibility (2-4, max. 4)**

**LAW B 511 Seminar on Problems in International Environmental Law ([1-4]-, max. 4)**

**LAW B 512 Legislation and the Formulation of Public Policy (3)**

**LAW B 513 Evidence IV (4)**

**LAW B 514 Street Law ([1-8]-, max. 8)**

**LAW B 515 Criminal Procedure (5)**

**LAW B 516 International Contracting ([2-4]-, max. 4)** Credit/no credit only.

**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)**

**LAW B 520 Trial Advocacy ([2-6]-, max. 6)** Credit/no credit only.

**LAW B 521 Trial Advocacy II (3-, max. 6)** *Howard* Addressed 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 of Disputes (3)** Credit/no credit only.

**LAW B 523 Negotiation (2-4, max. 4)** Credit/no credit only.

**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 Law Clinic (8)** Credit/no credit only.

**LAW B 528 Unemployment Clinic ([2-8]-, max. 8)** Credit/no credit only.

**LAW B 529 Advanced Environmental Law and Practice (1-4, max. 4)**

**LAW B 530 Judicial Externship (1-15, max. 15)**

**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. Credit/no credit only. Prerequisite: Clinical basis for continued work.

**LAW B 533 Interviewing and Counseling for Lawyers (2/3)** Credit/no credit only.

**LAW B 534 Affordable Housing Development Clinic ([1-12]-, max. 12)**

**LAW B 535 Legislative Externship (1-15, max. 15)** Credit/no credit only.

**LAW B 536 Drafting Basic 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 (1-15, max. 15)** Credit/no credit only.

**LAW B 539 Public Interest Law Externship ([1-15]-, max. 15)** 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 SISEA 540.

**LAW B 541 Law in East Asia: China (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 SISEA 543.

**LAW B 542 Korean Law (3)** *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 543 Intellectual Property Law in East Asia (3)**

**LAW B 544 Transnational Litigation: United States-Japan ([2-4]-, max. 4)**

**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 United States-Japanese Corporate Relations ([2-4]-, max. 4)**

**LAW B 549 Government Regulation of Business in Japan (3)** Offered: jointly with SISEA 549.

**LAW B 550 Legal Analysis and Research for Students Not Trained in the Common-Law System ([1-4]-, max. 4)**

**LAW B 551 Comparative Law Seminar ([2-6]-, max. 6)**

**LAW B 552 Tutorial in Comparative Law ([1-4]-, max. 4)**

**LAW B 553 Chinese Legal Tradition (3)** Offered: jointly with SISEA 553.

**LAW B 555 Roman Law (3)**

**LAW B 556 Islamic Law (3)** Selected topics in Islamic law that highlight major aspects of Islamic civilization. Offered: jointly with NEAR E 524.

**LAW B 557 Southeast Asian Law (2-4, max. 4)** Two or three countries in Southeast Asia are selected as case studies. Examines their legal and political histories; legal institutions and legal professions; commercial and investment laws; and compliance questions relating to labor standards, corruption, and human rights.

**LAW B 558 Doctoral Thesis Seminar (2)** Students draft thesis abstracts, tables of contents, preliminary chapters, and presents 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 (1-15, max. 15)** Credit/no credit only.

**LAW B 561 International Law of the Sea (3)** Offered: jointly with SMA 506.

**LAW B 562 Quantitative Methods (4)**

**LAW B 563 Ocean Policy and Resources Seminar (3-)** 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 565 U.S. Coastal and Ocean Law (4)** *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. Offered: jointly with SMA 515.

**LAW B 567 General Externship Perspectives Seminar (2)** Credit/no credit only.

**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 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 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 584 Indian Law Seminar ([2-6]-, max. 6)**

**LAW B 589 Intellectual Property Law Seminar ([1-4]-, max. 4)**

**LAW B 590 The United States Constitution: Past, Present, and Future (2)**

**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 596 International Protection of Human Rights ([2-4]-, max. 6)** *Stilt*

**LAW B 597 History of the Formation of the United States Constitution Seminar ([2-6]-, max. 6)**

**LAW B 598 Advanced Research and Writing Seminar ([1-4]-, max. 4)**

**LAW B 599 Special Topics (1-12, max. 12)**

## 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: AWPSP.

**LAW E 502 White Collar Crime (4)**

**LAW E 503 Analytic Writing (3)**

**LAW E 504 Emerging Issues in Urban Government Seminar (6)** Focuses on currently emerging issues in local government, such as municipal regulation of land use, the initiative process, technology and privacy, governmental responses to urban social problems and regional challenges. Production of publishable paper by student satisfies the advanced writing project requirement.

**LAW E 505 Frontiers of Tort Law (3)**

**LAW E 506 Asian Contract Law and Practice (3)** Examines how economic deregulation, financial restructuring and technological change affect contracts in Asia. Topics include licensing, franchise and e-commerce contract in Japan, China, and Taiwan; contract law and practice in Vietnam and Indonesia; cultural norms in contracting; convergence toward "global standards;" and the role of lawyers and other agents.

**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)** *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 and 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 (3)** 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 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 SIS 562.

**LAW E 514 The Law of Nonprofit Organizations (2-4, max. 4)** Examines laws generally applicable to nonprofit corporations and legal issue relating to cooperatives, credit unions, and thrift/mutual associations. Attention given to the Washington Nonprofit Corporations Act with comparable statutes and model legislation.

**LAW E 515 Criminal Justice (3)**

**LAW E 516 Advanced Criminal Procedure (5)** 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 assistance of counsel, discovery, and disclosure, criminal trials appeals, and collateral post conviction remedies. Prerequisite: LAW A 505; LAW B 515.

**LAW E 517 Foreign Trade and Investment Law of the People's Republic of China (1-4, max. 4)** Introduction to the regulatory regime governing foreign trade and investment in China and in-depth coverage of key aspects of the regime, with focus on issues faced by U.S. businesses. Covers specific regulations, their implementation in practice, as well as the political and economic background. Offered: jointly with SISEA 517.

**LAW E 518 Torts II (4)** *Wolcher* Covers practical and theoretical dimensions of tort law's response to non-physical harms, including defamation, invasion of privacy, intentional infliction of mental distress, misuse of legal proceedings, misrepresentation, interference with prospective advantage, nuisance, 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 521 Advanced Trial Advocacy (3)**

**LAW E 522 Gay Rights and the Constitution (1-4, max. 4)** *Nicolas* Examines questions regarding sexual orientation and gender identity as they relate to the areas of criminal, constitutional, employment, tort, and family law. Topics include equal protection, freedom of association, public and private employment discrimination, same-sex marriage and non-marital alternative to marriage, parenting, hate crimes legislation, sodomy laws, and the legal profession. Offered: S.

**LAW E 523 Entrepreneurial Law Clinic (3)** Prerequisite: LAW A 526, LAW E 547, or LAW A 546. Offered: S.

**LAW E 524 Child Advocacy Clinic ([4-12]-, max. 12)** Credit/no credit only.

**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 Automobile Impoundment Defense Clinic (3/4)** Clinical training protecting

rights of low-income people who stand to lose their vehicles under Seattle's Driving While License Suspended (DWLS) car impoundment law (akin to a forfeiture program) without having been convicted of DWLS. Counsel walk-up clients at Seattle Municipal Court, conduct legal research on possible challenges to vehicle seizure.

**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 Criminal Defense Clinic (4-, max. 12)** Offers clinical training in substantive areas of law implicated in representation of Native American defendants in tribal court criminal proceedings. Open to third year students in the JD program. Recommended: American Indian Law, Evidence, Criminal Procedure, Trial Advocacy. Offered: AWPSP.

**LAW E 531 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 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 536 Practical and Professional Responsibility Issues in the Small or Solo Law Practice (3-4, max. 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 International Civil Litigation in U.S. Courts (4)** Examines the special procedural and substantive law governing both private as well as semi-public disputes in U.S. Courts and arising out of transnational transactions. Explores international arbitration and considers comparative aspects.

**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 Legal Issues of Internet Law (3)** 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 E 541 Electronic Commerce and Information Technology (3)** Introduction to legal and policy issues raised by electronic commerce and other emerging information technologies. Topics vary and may include intellectual property and contract issues raised by establishing an online commercial presence, rights and obligations of users of network services including constitutional rights, information privacy, electronic contracts, electronic payments, etc.

**LAW E 543 Crime, Privacy, and Accountability on the Internet (2)** An exploration of criminal activity on the Internet and issues that arise in investigating it. Examines the tension between privacy rights and the need for accountability. Includes substantive criminal statutes, constitutional rights and procedural laws that implement privacy and protections, and the practicalities of Internet crime investigations.

**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 546 International Commercial Arbitration (2)** 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 Legal Protection for Computer Software (3)**

**LAW E 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. Substantive legal issues will be taught in conjunction with procedural and strategic considerations. Prerequisite: LAW A 546.

**LAW E 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. Recommended: engineering or science background. Prerequisite: LAW A 546.

**LAW E 551 Representing Start-ups (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 Strategic Technology Licensing (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.

**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. 10)** 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. Credit/no credit only. Prerequisite: LAW E 553, which may be taken concurrently.

**LAW E 555 Advising Privately-Owned Businesses (3)** The role of lawyers as advisors to privately-owned businesses. Uses case studies to examine a broad range of structural planning issues, with emphasis on tax and business considerations, tax traps, and creative planning strategies. Analyzes, compares, and contrasts different business types. Prerequisite: LAW A 530.

**LAW E 558 Law of Democracy: Voting Rights and Election Law (3)** Examines the Law that governs the American system of democracy and considers the legality and desirability of competing models for structural reform. Considers various methods of voting and representation, the right to vote, and the Voting Rights Act.

**LAW E 566 Innocence Project Northwest Clinic (3-4, max. 10)** 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 Survey of Intellectual Property (2-4, max. 4)** *O'Connor* Intended for both law students who are only interested in a general overview of intellectual property and non-law students who are seeding a certificate in intellectual property law and policy. Designed as an alternative to Patents, Trademark and Unfair Competition Law, and Copyrights. 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 575 Telecommunications Law and Policy (2)** Survey basic policy principles underlying our nation's telecommunications laws. Focus on administrative and statutory law,

paying special attention to the design and implementation of the Telecommunications Act of 1996. Addresses the role played by antitrust, economic regulation and constitutional law (particularly the First Amendment) in shaping our nation's telecommunications landscape.

**LAW E 577 Drafting Technology Contracts (3)** An advanced course in drafting and negotiating representative technology business agreements. Surveys such documents as a technology development agreement, a technology license agreement, an employee agreement, a web site development, a web commerce agreement, a source code agreement, and a technology evaluation agreement.

**LAW E 579 International and Foreign Law Research (2)** Overview of international law materials. Examine 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 Sexual Violence and the Law (3)** 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 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 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 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 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 593 Environmental Law Litigation and Practice (4-, max. 12)** Survey of environmental litigation and practice regarding various environmental issues. Examines information-gathering (Freedom of Information Act), formal discovery, case selection, document control, and presentation in complex litigation, represen-

tation of groups, professional responsibility issues, working with scientists/presenting scientific evidence, and trial techniques. Prerequisite: LAW A 527, which may be taken concurrently.

**LAW E 594 Environmental Law Clinic (4-, max 12)** Examines applicable environmental law and procedure, skills training, and professional responsibility concerns. Participation in a carefully supervised practice experience representing clients in cases involving environmental issues. Students must be Rule 9 qualified. Credit/no credit only. Prerequisite: LAW A 527; LAW E 593, which may be taken concurrently.

## Health Law

**LAW H 501 Fundamentals of Health Law (4)**

**LAW H 502 Medical Malpractice (3/4)**

**LAW H 503 Medical Ethics and Jurisprudence (3-)**

**LAW H 504 Legal, Ethical, and Social Issues in Public Health Genetics (3)** *Kuszler, Mastroianni* 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 health care delivery efforts. Prerequisite: GENET 371 or equivalent. Offered: jointly with PHG 512/MHE 514.

**LAW H 507 Law, Medicine, and Ethics in the Context of Pain Management (2)** Reviews the problem of physicians failing to relieve pain of the patients in the dying process and the legal and ethical issues they face as well as the 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 512 Health Law (2)** *Kuszler* Analysis of law, the legal system and current legal problems as they related to the financing and delivery of health care services. Offered: jointly with HSERV 551; A.

**LAW H 520 Genetics and the Law (2)** *Kuszler* Considers the legal issues arising from new genetic technologies and information. Statutes, regulations, and cases used to demonstrate the constitutional, contract, and tort law complications resulting from dissemination of these technological advances. Prerequisite: LAW E 562/MHE 514/PHG 512 or permission of instructor. Offered: jointly with PHG 523.

**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 Criminal Law and Procedure (3)** Provides an understanding of U.S. criminal law and criminal procedure. Explores basic principles of liability, defenses, and basic constitutional principles governing interactions between police and suspects. Open to forensic nursing students and graduate law students, but not JD students.

**LAW H 530 Disability Law (3)** 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 health care.

**LAW H 531 Disability Clinic (4-, max. 12)** Clinical training in disability law issues, including access to Medicaid and other public benefits, assistive technology issues, transit accessibility, and low-wage worker accommodation issues, among other possible issues. Students represent clients at Columbia Legal Services under supervision of CLS attorneys. Prerequisite: LAW H 530.

**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 principles and concepts and U.S. laws related to (1) research conducted with animals, (2) research on humans, and (3) the responsible conduct of research Required for graduate students in the Department of Medical History and Ethics, School of Medicine. Offered: jointly with MHE 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.

**LAW H 570 Biotechnology and the Law (3)**

**LAW H 580 Advanced Health Law (3)** Considers the impact of antitrust law, fraud, and abuse prohibitions, the corporate practice of medicine doctrine, tax law and other state and federal laws upon emerging health care entities. Focuses on integrated health care delivery systems. Prerequisite: LAW H 501.

## Intellectual Property Law

**LAW P 501 Intellectual Property Law Core (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 interrelate. Open to J.D. students with permission of

instructor. Not open to students who have taken LAW A 522, LAW A 546, or LAW E 588.

**LAW P 503 Introduction to Legal Systems and Skills for Intellectual Property Law (2-3, max. 3)** Introduction to 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.

**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. Recommended: economics. Offered: W.

**LAW P 509 Intellectual Property and Unfair Competition (2-3)** *Bangasser* Examines in-depth application of competition law and policy to the creation and exploration of the Intellectual property. Offered: Sp.

**LAW P 510 Advanced Writing Seminar in Intellectual Property Law and Policy (2-, max. 4)** *Gomulkiewicz* Develops advanced research and writing skills under the direction of an advisor. Students present a substantial research paper on copyright, patent, trademark, or unfair competition, for the Intellectual Property Law and Policy LL.M. Offered: WSp.

**LAW P 528 LL.M. 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 539 Law, Technology, and Economic Development (2-3, max. 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 545 Advanced Patent Law Seminar (3)** *Taylor* Study of 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. Students write and present a research paper on a topic related to patent law and policy. Prerequisite: LAW A 546. Offered: W.

**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, max. 3)**

**LAW T 504 Property Dispositions and Transactions (3)**

**LAW T 505 Introduction to Income Taxation (2)** Addresses a number of fundamental income tax concepts, including the computation of individual tax liability, statutory exclusions, deductions, and gains. Also deals with issues related to character and timing.

**LAW T 506 Tax Practice and Skills (1)** 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.

**LAW T 507 Federal Tax Policy Seminar (2-, 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 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 Tax Ethics (2)** Considers the role of ethics in tax practice and its application to specific problems faced by tax professionals. Explores substantive rules governing tax. Addresses ethical problems of tax professionals in connection with structuring transactions, resolving tax controversies with and presenting cases to the IRS, and representing litigants in tax controversies.

**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 advisor 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 528 Graduate Tax Practicum (2)**

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 530 Corporate Reorganizations and Acquisitions (2-3, max. 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 Corporate 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, max. 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 (4)**

**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 541 Limited Liability Companies (2)**

**LAW T 543 Advanced Partnership Tax (2)**

Builds on the material covered in the basic course, Taxation of Partners and Partnership. It 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 (20)**

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. Recommended: LAW T 506.

# School of Medicine

## Anesthesiology

**ANEST 498 Undergraduate Thesis (\*)** *Sivarajan*  
By special arrangement. Time and credit to be arranged. Offered: AWSpS.

**ANEST 499 Undergraduate Research (\*)**  
*Sivarajan* Specific research problems relating to pulmonary, cardiovascular, renal, obstetric, and central nervous system functions, and their alteration by anesthetic techniques and agents. (Six weeks, full-time. Limit: two students.) Offered: AWSpS.

**ANEST 501 P-Preceptorship in Anesthesiology (1)** *Sivarajan* An opportunity for first- and second-year medical students to gain experience with medical practice situations by observing clinical faculty members in their offices. Prerequisite: permission of instructor. Offered: AWSpS.

**ANEST 680 P-Basic Anesthesia Clerkship (4)** *Sivarajan* 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. Prerequisite: third- or fourth-year student. (Two weeks, full-time. Limit: three to five students each two-week period.) Affiliated hospitals. Offered: AWSpS.

**ANEST 681 P-Advanced Clerkship in Anesthesiology (8)** *Sivarajan* 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. (Four weeks, full-time. Limit: two students per period.) Affiliated hospitals. Offered: AWSpS.

**ANEST 697 P-Anesthesiology Special Electives (\*, max. 24)** *Sivarajan* 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. Prerequisite: permission of instructor. (Four to twelve weeks, full-time.) Offered: AWSpS.

**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

**BIOC 405 Introduction to Biochemistry (3)** *NW Brockerhoff, Daum, Hol*, 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: either BIOL 200, BIOL 201, or both BIOL 101 and GENET 371; either CHEM 223, CHEM 237, or CHEM 335. Offered: A.

**BIOC 406 Introduction to Biochemistry (3)** *NW Hurley, Merz* 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 Chung, Petra* 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 Bosch, Klevit* Biochemistry and molecular biology (with quiz sections) for undergraduate students in molecular and cellular biology, for biochemistry majors, and graduate students in other science departments. Prerequisite: 2.5 in either BIOL 201 or 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 Parson, Young* Biochemistry and molecular biology (with quiz sections) for undergraduate students in molecular and cellular biology, for biochemistry majors, and graduate students in other science departments. Prerequisite: 2.2 in BIOC 440. Offered: W.

**BIOC 442 Biochemistry (4)** *NW Kimelman, Palmer* Biochemistry and molecular biology (with quiz sections) 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 496 Research Seminar for Undergraduates (1, max. 2)** *NW* formal presentations of student research. One credit applies to research component of a relevant major. Credit/no credit only. Offered: jointly with CHEM 496; Sp.

**BIOC 499 Undergraduate Research (\*)**  
Investigative work on enzymes, proteins, lipids, molecular biology, developmental biology, intermediary metabolism, physical biochemistry, and related fields. Credit/no credit only. Offered: AWSpS.

**BIOC 515-519** (For description, see listing for "Current Literature Conferences" at the end of this section.)

**BIOC 520 Seminar (1)** Seminar dealing with timely topics in the field of biochemistry. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**BIOC 525-529** (For description, see listing for "Current Literature Conferences" at the end of this section.)

**BIOC 530 Introduction to Structural Biology (3)** *Baker, Gelb, Hol, Klevit, Stenkamp, Stoddard*

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. Offered: AWSpS.

**BIOC 534 Topics In Molecular Biophysics (1.5)** 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: AWSpS.

**BIOC 535-539** (For description, see listing for "Current Literature Conferences" at the end of this section.)

**BIOC 540 Literature Review (2)** *Parson* Emphasizes critical evaluation of original articles in the literature. For first-year graduate students in biochemistry and students of other science departments, with permission. Offered: jointly with BMSD 540 A.

**BIOC 541 Literature Review (2)** *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. Offered: W.

**BIOC 542 Literature Review (2)** *Morris* Emphasizes critical evaluation of original articles in the literature. For first-year graduate students in biochemistry and students of other science departments, with permission. Offered: Sp.

**BIOC 546-548** (For description, see listing for "Current Literature Conferences" at the end of this section.)

**BIOC 555-559** (For description, see listing for "Current Research Conferences" at the end of this section.)

**BIOC 565-569** (For description, see listing for "Current Research Conferences" at the end of this section.)

**BIOC 575-579** (For description, see listing for "Current Research Conferences" at the end of this section.)

**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. Credit/no credit only. Prerequisite: graduate standing in biochemistry or permission of instructor. Offered: AWSpS.

**BIOC 586-588** (For description, see listing for "Current Research Conferences" at the end of this section.)



**BIOC 600 Independent Study or Research (\*)** Offered: AWSpS.

**BIOC 700 Master's Thesis (\*)** Offered: AWSpS.

**BIOC 800 Doctoral Dissertation (\*)** Offered: AWSpS.

#### <4>Current Literature Conferences

**BIOC 515- 519, 525- 529, 535- 539, 546- 548 Current Literature Conference in Biochemistry** Weekly literature reviews of topics pertinent to ongoing research in biochemistry. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: permission of instructor. (Only 25 credits may be counted toward degree.)

**BIOC 515 Matrix Macromolecules in Morphogenesis and Development (1, max. 30)**

**BIOC 516 Molecular Mechanisms of Blood Clotting (1, max. 30)** *Davie* Offered: AWSpS.

**BIOC 517 Protein Structure (1, max. 30)** *Baker* Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**BIOC 518 Signaling in Development (1, max. 30)** *Ruohola-Baker* Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**BIOC 525 Phytoremediation (1, max. 4)** Literature survey of phytoremediation topics. Discussion of latest techniques for the use of plants to concentrate heavy metals in the soil and of plants and plant-bacteria combinations to detoxify various organic contaminants. Credit/no credit only.

**BIOC 526 Control of Growth and Differentiation During Development (1, max. 30)** *Hauschka* Credit/no credit only. Offered: AWSpS.

**BIOC 528 Signal Transduction (1, max. 30)** *Hurley* Credit/no credit only. Offered: AWSpS.

**BIOC 529 Molecular Biology of Early Development (1, max. 30)** *Kimelman* Offered: AWSpS.

**BIOC 535 Macromolecular Structure (1, max. 30)** *Klevit* Offered: AWSpS.

**BIOC 536 Control of Cell Growth (1, max. 30)** *Morris* Offered: AWSpS.

**BIOC 537 Regulation of Gene Expression (1, max. 30)** *Palmiter* Offered: AWSpS.

#### <4>Current Research Conferences

**BIOC 555- 559, 565-569, 575-579, 586- 588 Current Research Conferences in Biochemistry** Weekly group conferences concerning ongoing graduate student and postdoctoral research in biochemistry. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: permission of instructor. (Only 25 credits may be counted toward degree.)

**BIOC 555 Cell and Molecular Biology of Connective Tissue Proteins (1, max. 30)** *Bornstein* Offered: AWSpS.

**BIOC 556 Enzymatic and Genetic Aspects of Blood Clotting (1, max. 30)** *Davie* Offered: AWSpS.

**BIOC 557 Growth Regulation by Calcium Binding Proteins (1, max. 30)** *Davis* Offered: AWSpS.

**BIOC 559 Membrane Biochemistry and Cell Growth (1, max. 30)** *Glomset* Offered: AWSpS.

**BIOC 560 Protein Folding (1, max. 30)** *Baker* Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**BIOC 561 Origin of Polarity (1, max. 30)** *Ruohola-Baker* Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**BIOC 565 Plant Molecular Genetics (1, max. 30)**

**BIOC 566 Growth and Differentiation of Skeletal and Cardiac Muscle (1, max. 30)** *Hauschka* Offered: AWSpS.

**BIOC 568 Molecular and Genetic Aspects of G Protein Signal Transduction (1, max. 30)** *Hurley* Offered: AWSpS.

**BIOC 569 Inductive Events in Early Development (1, max. 30)** *Kimelman* Offered: AWSpS.

**BIOC 575 NMR Analysis of Proteins and Nucleic Acids (1, max. 30)** *Klevit* Offered: AWSpS.

**BIOC 576 Sequential Analysis of Growth Regulation (1, max. 30)** *Morris* Offered: AWSpS.

**BIOC 577 Gene Regulation in Transgenic Mice (1, max. 30)** *Palmiter* Offered: AWSpS.

**BIOC 578 Electron Transport in Photosynthesis (1, max. 30)** *Parson* Offered: AWSpS.

**BIOC 588 Molecular Biology of Yeast Gene Regulation (1, max. 30)** *Young* Offered: AWSpS.

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## Biological Structure

**B STR 301 General Anatomy (4) NW Pittack** 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.

**CONJ 401, 402, 403 Human Anatomy and Physiology (4, 4, 4)** See Conjoint Courses.

**B STR 431 Introduction to Neuroanatomy (4) NW Broderson, Mulligan, Westrum** Survey of the anatomy and functional organization of the human central nervous system, with clinical applications. Prerequisite: admission to the School of Dentistry. Offered: W.

**CONJ 480 Neuroscience and Rehabilitation Professionals (5)** See Conjoint Courses.

**B STR 498 Undergraduate Thesis (\*)** Individual research projects under the supervision of an

instructor. For senior medical students. Offered: AWSpS.

**B STR 499 Undergraduate Research (\*)**

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 Gross Anatomy and Embryology (1-13, max. 13)** *Clark* Lecture and laboratory dissection course in regional anatomy: thorax, abdomen, pelvis, perineum. Prerequisite: permission of instructor. Offered: A.

**B STR 502 Gross Anatomy (1-5, max. 5)** *Graney* Lecture and laboratory dissection course in regional anatomy: upper and lower extremities. Prerequisite: permission of instructor. Offered: W.

**B STR 510 Seminar in Anatomy (1)** *Graney* Scientific and historical basis of selected studies in biological structure, anatomy, and human development. Original literature used as basis for textbook descriptions is reviewed. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**B STR 512 Human Microanatomy (4)** *Muller* Lectures and laboratory 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 applications to biological systems. Prerequisite: permission of instructor. Offered: W.

**B STR 519 Current Problems in Macromolecular Structure (2, max. 10)** *Stenkamp* A discussion of 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.

**CONJ 520 Anatomy and Autopsy (1/2, max. 2)** *Fligner* See Conjoint Courses.

**B STR 520 Structure Based Design of Drugs (3)** *Hol, Verlinde* Lecture and discussion on research papers illustrating protein structure based design of new drugs. Review of methods and extensive discussion of all known mechanisms of drug resistance. Offered: even years; W.

**B STR 521 Advanced Biomacromolecular Crystallography (3)** *Hol, Merriitt, Stenkamp* Aspects of protein crystallography ranging from crystal growth, phase determination methods, density averaging to refinement, fiber diffraction of DNA and proteins. Offered: odd years; Sp.

**CONJ 524 Structural Basis of Neural Transduction (1.5)** See Conjoint Courses.

**UCONJ 524 Developmental Neurobiology (3)** *Raible, Reh, Roelink, Rubel* See University Conjoint Courses.

**B STR 530 P-Gross Anatomy and Embryology for Dental Students (8/13, max. 13)** *Broderson, Clark* Normal anatomy of the thorax, abdomen,

pelvis, and perineum are discussed and dissected employing cadavers. The development of the organ systems is presented and related to definitive adult structure. Developmental anomalies and diagnostic anatomy are also discussed. 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 (4)** *Muller* Lecture and laboratory work in microscopic anatomy. For dental students taking HUBIO 510; others by permission of instructor. Offered: A.

**CONJ 542 Development (1.5)** See Conjoint Courses.

**CONJ 545 Molecular Interactions and Medicine (1.5)** See Conjoint Courses.

**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)** *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. Credit/no credit only. Prerequisite: graduate standing in biological structure or biochemistry and permission of instructor. 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)** *Birmingham-McDonogh* Discussion of current research on process by which neurons are generated in the nervous system. Offered: AWSpS.

**CONJ 585 Surgical Anatomy (1-3, max. 12)** *Graney* See Conjoint Courses.

**B STR 591 X-Ray and NMR Analysis of Macromolecular Structure (1, max. 9)** *Hol* Weekly discussion of current topics in research on molecular structure, usually emphasizing techniques of x-ray crystallography. Credit/no credit only. Prerequisite: permission of instructor. 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. Credit/no credit

only. Prerequisite: permission of instructor. 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.

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## Comparative Medicine

**C MED 407 Principles of Animal Experimentation: The Mouse (3)** *Brabb, Grossmann, Treuting* Focus on biology and care of mice used in medical research, and the experimental design and ethics of animal research. Includes lectures and problem-based learning. For graduate and advanced undergraduate students. Prerequisite: permission of instructor. Offered: AWSpS.

**C MED 499 Undergraduate Laboratory Research (1-6, max. 6)** *Ladiges, Price* Specific problems in comparative medicine. Credit/no credit only. Offered: AWSpS.

**C MED 512 Introduction to the Anatomical Analysis of Animal Disease (2)** *Brabb, Iritani, 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 Conference (1, max. 6)** *Liggit, 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 underlie them. Prerequisite: PATH 500 or equivalent and permission of instructor. Credit/no credit only. Offered: AWSpS.

**C MED 516 Current Literature in Laboratory Animal Medicine (1, max. 12)** *Liggit* Critical evaluation of recent articles on laboratory animal medicine and science. Emphasis on literature dealing with spontaneous diseases of laboratory animals, biology and husbandry, zoonotic diseases, and animal models of human disease. Experimental design, use of animals in research, and methods of reviewing manuscripts. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**C MED 518 Clinical Conference Seminar (1, max. 12)** *Price* Clinical reports of cases of spontaneous and induced diseases, animal models of human disease, and zoonotic diseases discussed. Disease prevalence and preventive medicine measures. Diagnostic exercises. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**C MED 520 Biology of Laboratory Animals (1)** *Brabb, Frevert, Iritani, 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 man. Husbandry, genetics, behavior, and nutrition. Prerequisite: permission of instructor. Offered: A.

**C MED 521 Biology of Laboratory Animals (1)** *Brabb, Iritani, 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 man. Husbandry, genetics, behavior, and nutrition. Prerequisite: permission of instructor. Offered: W.

**C MED 526 Epidemiology of Diseases Communicable from Nature (3)** *DiGiacomo, Rausch, Weigler* Explores the public health aspects of zoonotic diseases, their epidemiology and approaches to control. Focuses on the major viral, rickettsial, bacterial, protozoal, helminthic, and fungal diseases transmitted from wild and domesticated animals to humans. Prerequisite: C MED 511, C MED 512, or C MED 520 or permission of instructor. Offered: jointly with EPI 526; Sp.

**C MED 530 Diseases of Laboratory Animals (1)** *Brabb, Iritani, 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)** *Brabb, Iritani, 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 (1)** *Brabb, Iritani, Treuting* Naturally occurring and experimentally induced analogs of human diseases in animals with emphasis on diseases in search of animal models, and approaches to identifying new models. Animal models of categorical disease (e.g., cancer, atherosclerosis, gerontology) discussed. Prerequisite: permission of instructor. Offered: Sp.

**C MED 590 Selected Topics in Animal Medicine (2-5, max. 10)** *Brabb, Frevert, Iritani, 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 the expertise of the annual visiting professor. Prerequisite: permission of instructor. Offered: AWSpS.

**C MED 600 Independent Study or Research (\*)** Credit/no credit only. Offered: AWSpS.

**C MED 601 Internship Rotation — Laboratory Animal Medicine (1-)** Credit/no credit only. Prerequisite: DVM degree. Offered: AWSpS.

**C MED 700 Master's Thesis (\*)** Credit/no credit only. Offered: AWSpS.

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## Conjoint (Medicine)

**CONJ 401 Human Anatomy and Physiology (4)** *Linder, Melby* An integrated course on the 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: either BIOL 201, BIOL 202, and BIOL 203, or BIOL 220; either CHEM 155, CHEM 160, or CHEM 162. Offered: A.

**CONJ 402 Human Anatomy and Physiology (4)** *Linder, Melby* An integrated course on the 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)** *Linder, Melby* An integrated course on the 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* A lecture course for medical students in the allied health sciences in any year that will cover 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, Slimp* Survey of the 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)** *Monnat* 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: Sp.

**CONJ 505 P-Pain Clinic Preceptorship (1)** One morning a week for a total of 30 hours per quarter spent observing patient care in either inpatient or outpatient settings at University of Washington Medical Center; associated readings. Prerequisite: first- or second-year medical student standing. Coordinator: Pain Center.

**CONJ 513 Clinical Medical and Human Genetics (4)** 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 4 students per quarter. Offered: AWSpS.

**CONJ 514 Molecular Medicine (3)** *Rosen* Graduate-level introduction to the interplay of basic science and clinical medicine. Covers inflammation, vascular disease, metabolic disorders, cancer biology, and molecular-, gene-, and cell-based therapies. Each topic introduced with a patient history. 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. Demographics, economics, community structure, culture, and professional/personal issues are addressed. Prerequisite: major standing in a health or human services profession. Credit/no credit only. Offered: W.

**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 520 Anatomy and Autopsy (1/2, max. 2)** *Fligner* Students attend autopsies at UWMC affiliated hospitals for demonstration of normal anatomic relationships and gross pathological changes in various diseases. Offered as elective concurrent with HUBIO 520P. Prerequisite: HUBIO 510P or equivalent, permission of instructor, and orientation. Offered: WSp.

**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 530 Directing Stem Cells Toward Regenerative Medical (1.5)** *GE* An introduction to the rapidly developing field of human embryonic stem cells in regenerative medicine crossing all medical disciplines including ethics. A strong background in biological sciences is required. Offered: Sp.

**CONJ 531 Signaling Mechanisms in Excitable Cells (1.5)** *Hille* Membrane electricity. Structure and roles of voltage-gated and ligand-gated ion channels in electrical signaling. Calcium as a second messenger. Exocytosis and its regulation. Phototransduction in photoreceptors. 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 535 RNA Structure and Biological Function (1.5)** *Ferre-D'Amaré, Stoddard* Survey of the diversity of cell-biological roles played by RNA with emphasis on structural principles and structure-function relationships. Readings from the current literature to cover both, methods for the study of RNA, and examples of the function of this nucleic acid as part of the machinery for gene expression. Offered: W.

**CONJ 536 Experimental Design in Cell Biology (1.5)** Focuses on experimental design in cell biology. A topic of current research interest is covered in depth in order to follow a line of investigation and critically evaluate the strengths and limitations of various experimental strategies. Offered: jointly with BIOL 546.

**CONJ 537 Mechanism of Transcriptional Regulations (1.5)** *Tsukiyama* Focuses on biochemical mechanisms of gene transcription covering a broad range of transcriptional regulation, including mechanisms of transcriptional initiation, elongation and termination. Discusses 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 Biological Basis of Neoplasia (1.5)** *Kemp, Zarbi* Lecture/discussion on cellular and molecular mechanisms underlying phenotypes associated with cancer, including genetic predisposition, injury, and instability; alteration in control of cell division and cell death; failure of differentiation; tumor angiogenesis and metastasis. Molecular biology of tractable model systems is emphasized. Prerequisite: introductory biochemistry and cell biology. Offered: S.

**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)** *Raible, Roelink* 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 computro 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* Provides a 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* Focuses on the 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* Provides 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. Focuses on the technologies involved for protein structure modeling. Prerequisite: familiarity with Linux/Unix operating systems and protein structure from a biochemical/biophysical perspective. 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: even years; Sp.

**CONJ 550 P-Clinical Infectious Diseases (3)** *Spach* 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. Offered: W.

**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)** Focuses on 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 and STIs (3)** Through weekly seminars and a web-based curriculum, provides in-depth case-based training on the diagnosis and clinical management of HIV and other STIs. Interactive course with speakers who have experience in both resource-rich and resource-limited settings.

**CONJ 554 Fundamentals of Hypnosis (1)** *McCann, Schneeweiss* Examines phenomena associated with hypnosis, as well as its safe use in clinical practice. Offered: Sp.

**CONJ 556 Drug Addiction: Mechanisms, Prevention, and Treatment (2)** *Chavkin* Presents the 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 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 677 P-Clinical Allergy and Immunology (\*, max. 12)** *Callanan (Boise Veterans Affairs Hospital), Henderson (University of Washington Medical Center)* 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. Prerequisite: MED 665 or basic clerkships in Departments of Family Medicine or Pediatrics. (Four weeks, full-time.) Offered: AWSpS.

**CONJ 678 P-Pain Clinic Clerkship (8)** Full-time, four-week clerkship emphasizing

comprehensive care of patients with chronic pain from benign diseases and cancer. Faculty members from multiple departments provide student with didactic and bedside experiences; student member of treatment team. Involves both inpatient and outpatient activities. Prerequisite: completion of human biology series, MED 665.

**CONJ 680 P-Detoxification and Rehabilitation Program for Alcoholism and Drug Abuse (\*, max. 16)** *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: PBSCI 664, PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668.

**CONJ 690 P-Clerkship in Chronic Care (8)** Exposure to four areas: Rehab Medicine, Geriatrics, Pain, and Palliative Care. While students choose one focus area; weekly group didactic sessions expose students to all areas through lectures, group discussions, standardized patients, and case scenarios. Offered: AWSpS.

**CONJ 691 P-Clerkship in Chronic Care - Boise (8)** Required clerkship for 4<sup>th</sup> Year Medical students, concentrating on geriatrics, palliative care, and rehab medicine using lectures, group discussions, standardized patients, and case scenarios.

**CONJ 696 P-WRITE Clinical Electives (\*, max. 24)** Clinical electives for WRITE program. Offered: AWSpS.

**CONJ 697 International Exchange Clerkship (12)** *Hunt* Participation in health care 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 health care 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)**

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## Family Medicine

**FAMED 499 Undergraduate Research (\*)** Research activities arranged with University or community-based physicians in diversified areas relating to family medicine. Prerequisite: permission of course coordinator. Offered: AWSpS.

**FAMED 501 P-Introduction to Family Medicine: Preceptorship (2.5)** 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 505 P-Rural/Urban Preceptorship (\*, max. 12)** Opportunity to work in a variety of

underserved medical settings in rural and urban areas of Washington, Wyoming, Alaska, Idaho, and Montana. Prerequisite: permission of course coordinator. Offered: AWSpS.

**FAMED 545 Preclinical Geriatric Elective (2)** Covers disease and disability prevention, health promotion, and positive attitudes that can contribute to successful aging. Emphasis on optimum aging, site visits, and extensive contact with diverse older people. Prerequisite: permission of course faculty.

**FAMED 546 Preclinical Hospice Volunteer Training Elective (3)** Using lectures, small groups, role play, and readings, covers the basic knowledge, skills and attitudes that need to be mastered as a hospice volunteer. Students participate as hospice volunteers as part of their field experience. Offered: jointly with MHE 517.

**FAMED 547 Spirituality in Health Care (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 MHE 518/SOC W 587.

**FAMED 555 P-Wilderness Medicine (1/2)** Elective provides didactic and field experience for third-year medical students in types of medical emergencies and clinical problems unique to rural and wilderness communities, including trauma, survival hypothermia, altitude, frostbite, heat illness, lightning, and river rescue. Credit/no credit only. Prerequisite: permission of course coordinator.

**FAMED 556 Spanish for Health Professionals (1)** Instruction in interviewing Spanish-speaking patient. Credit/no credit only. Prerequisite: permission of course faculty or coordinator.

**FAMED 557 Hispanic Health and Health Care 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.

**FAMED 560 P-Indian Health Problem-Based Learning Cases (1)** Presents common Indian health problems via problem-based learning cases. Prerequisite: permission of course coordinator.

**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 640 P-Clinical Clerkship in Family Medicine — Boise (12)** Stresses ambulatory primary care with emphasis on comprehensive, integrated care to patients of both genders and all ages. 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 641 P-Clinical Clerkship in Family Medicine — Spokane (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 642 P-Clinical Clerkship in Family Medicine — Madigan (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 643 P-Clinical Clerkship in Family Medicine — Tacoma (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 644 P-Clinical Clerkship in Family Medicine — University of Washington Medical Center (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 645 P-Clinical Clerkship in Family Medicine — Group Health (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 646 P-Clinical Clerkship in Family Medicine — Swedish First Hill (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 647 P-Clinical Clerkship in Family Medicine — Swedish Cherry Hill (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 648 P-Clinical Clerkship in Family Medicine — Renton Valley (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 649 P-Clinical Clerkship in Family Medicine — Olympia (12)** For description and prerequisites, see 640. Offered: AWSpS.

**FAMED 650 P-Clinical Clerkship in Family Medicine — Anacortes (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 651 P-Clinical Clerkship in Family Medicine — Omak (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 652 P-Clinical Clerkship in Family Medicine — Spokane Valley (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 653 P-Clinical Clerkship in Family Medicine — Anchorage (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 655 P-Clinical Clerkship in Family Medicine — Havre (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 656 P-Clinical Clerkship in Family Medicine — Whitefish (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 657 P-Clinical Clerkship in Family Medicine — Pocatello (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 658 P-Clinical Clerkship in Family Medicine — Sea Mar Clinic (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 659 P-Clinical Clerkship in Family Medicine — Country Doctor (12)** For description and prerequisite, see 640. Offered: AWSpS.

**FAMED 660 P-Clinical Clerkship in Family Medicine — Yakima (12)** For description and prerequisites, see 640. Offered: AWSpS.

**FAMED 661 P-Clinical Clerkship in Family Medicine — Bremerton (12)** For description and prerequisites, see 640. Offered: AWSpS.

**FAMED 662 Clinical Clerkship in Family Medicine - Buffalo (12)** For description and prerequisites, see 640. Offered: AWSpS.

**FAMED 663 Clinical Clerkship in Family Medicine - Petersburg (12)** For description and prerequisites, see 640. Offered: AWSpS.

**FAMED 664 P-Clinical Clerkship in Family Medicine - Billings (12)** Stresses ambulatory primary care with emphasis on comprehensive, integrated care to patients of both genders and all ages. Student functions a clerk in community/residency site. Participates in care of assigned patients, using office, hospital, home, community resources. Prerequisite: third- or fourth-year medical student. Offered: AWSpS.

**FAMED 665 P-Clinical Clerkship in Family Medicine — Missoula (12)** Stresses ambulatory primary care with emphasis on comprehensive, integrated care to patients of both genders and all ages. Student functions a clerk in community/residency site. Participates in care of assigned patients, using office, hospital, home, community resources. Prerequisite: third- or fourth-year medical student. Offered: AWSpS.

**FAMED 666 P-Clinical Clerkship in Family Medicine — Torrington (12)** Stresses ambulatory primary care with emphasis on comprehensive, integrated care to patients of both genders and all ages. Student functions a clerk in community/residency site. Participates in care of assigned patients, using office, hospital, home, community resources. Prerequisite: third- or fourth-year medical student. Offered: AWSpS.

**FAMED 670 P-Advanced Preceptorship in Underserved WWAMI Area (\*, max. 24)** Students gain experience, knowledge, and skills needed to care for rural, specific ethnic or underserved populations in Washington, Wyoming, Alaska, Montana, and Idaho. Prerequisite: third- or fourth-year medical students, permission of course coordinator. Offered: AWSpS.

**FAMED 671 P-Advanced Preceptorship in United States (\*, max. 24)** Supplemental experience in rural/urban practice or a family medicine department in a setting not already established through the family medicine curriculum. 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 health care delivery. Prerequisite: third- or fourth-year medical students, permission of course coordinator. Offered: AWSpS.

**FAMED 673 P-Advanced Preceptorship at WWAMI Clinical Centers (\*, max. 12)** Supplemental experience in Family Medicine for late third- or fourth-year students at selected WWAMI clinical centers. Prerequisite: completion of basic 6-week clerkship in Family Medicine; permission of course coordinator. Offered: AWSpS.

**FAMED 674 Advanced Interviewing in Primary Care (8)** Emphasizes developing competency in patient-centered interviewing, interview organization and time management and will be introduced to primary care counseling skills and methods of health behavior change. Prerequisite: permission of course faculty.

**FAMED 675 P-Clinical Elective in Complementary and Alternative Medicine (8)** Clinical elective for students interested in a better understanding of CAM. Includes four different weekly clinical placements with selected CAM providers in the community: naturopathic physician, chiropractor, acupuncturist, and massage therapist. Also includes a weekly two-hour seminar discussing the evidence supporting the use of alternative treatments. Prerequisite: permission of course faculty.

**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 or faculty. Offered: AWSpS.

**FAMED 681 P-Indian Health Care 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 or faculty. Offered: AWSpS.

**FAMED 688 P-Family Medicine Subinternship (8)** 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 student has the same call as R-1 on service.

**FAMED 698 P-Clinical Clerkship in Family Medicine, Away (12)** For description and prerequisites, see 640. 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

**GENOME 261 Genomes and Society (4) NW Schivell** 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. Offered: W.

**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. Offered: W.

**GENOME 371 Introductory Genetics (5) NW** Covers gene transmission, including chromo-

some mapping, genetic pathways; mutational analysis 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 1.5 in BIOL 180; minimum grade of 1.5 in either BIOL 200 or BIOL 201; may not be repeated. Offered: AWSpS.

**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. Prerequisite: GENOME 371. Offered: W.

**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. Requires basic programming skills.

**GENOME 411 Gene Action (5) NW** Molecular genetics: description of fundamental genetics processes such as mutation, repair, genetic exchange, recombination, and gene expression. Use of genetic strategies to analyze complex biological processes. Focus is on prokaryotic organisms. Prerequisite: BIOL 201; either CHEM 223, CHEM 237, or CHEM 335. Offered: jointly with MICROM 411; W.

**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. Emphasis on experimental data and observation, rather than mathematical theory. Prerequisite: either GENOME 371 or GENOME 372.

**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 to other species to analysis

of human genes. Prerequisite: GENOME 371; either GENOME 372 or BIOC 440. 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 371 or GENOME 372. Offered: odd years.

**GENOME 475 Debates in Genetics (3)** 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 GENET 371 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: AWSpS.

**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. Credit/no credit only. Prerequisite: GENOME 371.

**GENOME 499 Undergraduate Research (\*, max. 30)** Credit/no credit only. Offered: AWSpS.

**GENOME 501 Introduction to Research Materials (1-10)** The student undertakes a research project in one of the research groups within the department for a quarter at a time. Credit/no credit only. Prerequisite: graduate standing in the Department of Genome Sciences or permission of graduate program coordinator. 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.

**GENOME 520 Seminar (1, max. 15)** Credit/no credit only. Prerequisite: graduate standing in the Department of Genome Sciences or permission of graduate program coordinator. Offered: AWP.

**GENOME 522 Journal Club (1)** Presentation and discussion of current scientific literature. For Genome Sciences graduate students only. Credit/No credit only. Offered: AWP.

**GENOME 523 Research Reports (1)** *Thomas* Presentation and discussion of current student research. For Genome Sciences grad students only. Credit/No credit only. Offered: AWP.

**GENOME 525 Current Literature in Human Genetics (1)** Topics from current literature in human genetics. Students and faculty each present one topic per quarter. Credit/no credit only. Prerequisite: graduate or postdoctoral status. Offered: AWP.

**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. Prerequisite: GENOME 540 or permission of instructor. 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.

**GENOME 549 Molecular Basis of Neurodegenerative Disease (2)** *La Spada, Muchowski, Pallanck* Introduces a broad range of neurodegenerative diseases, focusing upon the approaches that have led to recent discoveries and emphasizing the elucidation of mechanisms and pathways of disease pathogenesis. Offered: jointly with NEUBEH 549/PHCOL 549; W.

**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 Mechanisms of Gene Regulation in Prokaryotes and Eukaryotes (1.5) I&S** A detailed examination of the mechanisms of transcription and translation in prokaryotes and

eukaryotes 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 complex 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. Prerequisite: BIOC 440; GENOME 551; GENOME 552; GENOME 553; GENOME 554.

**GENOME 556 Developmental Genetics (1.5)** Genetic control of early development in a range of organisms, emphasizing systems in which cellular, genetic, and molecular approaches have combined to make significant contributions to understanding. Prerequisite: permission of instructor. Offered: W.

**GENOME 557 Meiosis (1.5)** A comprehensive consideration of meiotic mechanisms emerging from genetic and molecular analysis of model organisms focuses on the molecular basis of chromosomal synapsis, homologous recombination, and meiotic disjunction. The relationship of these mechanisms to the structure of the human genome and the analysis of complex traits are also considered.

**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: alternate years; W.

**GENOME 565 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 to other species to analysis of human genes. Prerequisite: GENOME 371; either GENOME 372 or BIOC 440. 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: alternate years; W.

**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.

**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: AWP.

**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. Offered: AWP.

**GENOME 583 Seminar in Molecular Cytology (1)** *Byers* Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of spindle behavior in the mitotic cell cycle of budding yeast. Credit/no credit only. Offered: AWP.

**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: AWP.

**GENOME 585 Seminar in Bacterial Genetics (1)** *Manoil* 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. Offered: AWP.

**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. Offered: AWP.

**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. Offered: AWSp.

**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. Credit/no credit only. Prerequisite: GENOME 562 or permission of instructor.

**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.

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## Human Biology

**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 (\*)** *MacLaren* 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 (1)** 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)** *Farr* 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-Gross Anatomy and Embryology (8/13, max. 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-)** *Goldstein* 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* Classical molecular and cellular biochemistry, cellular physiology and molecular genetics. Metabolic interrelationships as they occur in the individual stressed and related to disturbances in disease states. Offered: A.

**HUBIO 516 P-Systems of Human Behavior I-A (3-)** *Murray, Walker* 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 520 P- Molecular and Cellular Basis of Disease (6)** *Norwood* Patterns of cell and tissue response to injury. Mechanisms of cell injury, the inflammatory process, immunology, immunopathology, thrombosis, normal and abnormal growth, neoplasia, clinicopathological correlation. Offered: W.

**HUBIO 522 P-Introduction to Clinical Medicine (-4-)** *Goldstein* 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)** *Wilson* 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). Offered: W.

**HUBIO 524 P-Biochemistry I-B (-4)** *Maizels* Classical molecular and cellular biochemistry, cellular physiology and molecular genetics. Metabolic interrelationships as they occur in the individual stressed and related to disturbances in disease states. Offered: W.

**HUBIO 526 P-Systems of Human Behavior I-B (-2)** *Johnston, Walker* 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: 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 diagnostic 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)** *Goldstein* 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* 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-)** *Goldstein* 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)** *Vincenzi* Includes general principles of pharmacology and the specific pharmacology of major drugs acting on the autonomic and cardiovascular systems. Offered: A.

**HUBIO 544 P-Endocrine System (3)** *Anawalt* Normal, gross, and microscopic anatomy and physiology of the endocrine system. Illustrations examining the clinical relevance of homeostasis, feedback, and other controlling mechanisms previously learned. Endocrine integration of metabolism. Clinically important endocrine pathophysiology. Offered: A.



**HUBIO 546 P-Systemic Pathology (4)** *Schmidt* Multidisciplinary approach to some diseases that affect more than one organ system (nervous, cardiovascular, respiratory) and that are caused by different mechanisms (congenital, inflammatory, vascular, traumatic, metabolic, neoplastic). Offered: Sp.

**HUBIO 550 P-Introduction to Clinical Medicine (-4-)** *Goldstein* 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)** *Saunders* 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)** *Becker* 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)** *Horwitz* 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)** *Harris* Interdisciplinary introduction to health services designed for future health care practitioners. Examines the history, organization, and effectiveness of the U.S. health care system. Stresses the student's ability to adopt a broad perspective across health care disciplines and traditional boundaries. Offered: W.

**HUBIO 559 P-Problem Based Learning (3)** *Teitz* 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 health care team by including medical, nursing, and physician assistant students in each group. Offered: W.

**HUBIO 560 P-Introduction to Clinical Medicine (-5)** *Goldstein* Introduction to clinical and laboratory diagnosis. Offered: Sp.

**HUBIO 562 P-Urinary System (4)** *Ryan* 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 563 P-Brain and Behavior (3)** *Pascualy* Major psychiatric disorders are defined and described, and a systematic approach to differential diagnosis is presented. Conceptual development, pathogenesis, epidemiology, nomenclature, and the terminology used in psychiatry are discussed. Offered: Sp.

**HUBIO 564 P-Principles of Pharmacology II (3)** *Chavkin* Lectures and conferences on drugs that act on the central nervous system. Emphasis on physiological and biochemical mechanisms, with consideration of therapeutic and adverse effects. 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 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 568 Clinical Nutrition (1)** *Lipkin* Principles and practice of clinical nutrition, including role of nutrients in normal growth and development, pathogenesis of chronic disease, and nutrition in the management of certain disease states. 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 596 P-WWAMI Non-Clinical Selectives II (\*)**

**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 (\*)** Courses offered at WWAMI university sites designed to satisfy the non-clinical selective graduation requirement for medical students. Offered: AWSp.

**HUBIO 599 P-Independent Study in Medical Science (6)** *Marshall* Independent research with faculty sponsor and completion of paper as partial fulfillment of non-clinical selective graduation requirement. Offered: Sp.

**HUBIO 600 PA-Capstone Course: Preparation for Residency (2)** *Norris* 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.

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## Immunology

**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: either BIOL 220 or BIOL 202; may not be repeated; recommended: GENET 371, GENET 372, BIOC 405, or BIOC 440. Offered: jointly with MICROM 441; 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 Advanced Immunology (4)** *Weinmann* Examines the molecular and cellular basis of immune function. Students must have completed a baccalaureate degree in a biological specialty and be conversant with molecular genetics. Topics include: hematopoiesis, antigen receptor structure, lymphocyte development, antigen presentation, and cytokines. Prerequisite: graduate standing in Immunology; other graduate students with permission of instructor. Offered: W.

**IMMUN 533 Host Defense to Cancer (2)** *Clark* Addresses the mechanisms of cellular homeostasis, balancing cells of immune system, programmed cell death, immune surveillance, cancer immunotherapy. Companion course with IMMUN 535. Prerequisite: graduate standing in immunology; other graduate students with permission of instructor. Offered: odd years, Sp, weeks 1-5.

**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 535 Host Defense to Infection (2)** *Clark* Addresses the mechanisms protecting against pathogens that infect patients with cancers; immune regulation; new developments in vaccines. Companion course with IMMUN 533. Prerequisite: graduate standing in Immunology; other graduate students with permission of instructor. Offered: even years, Sp, weeks 1-5.

**Current Research Conferences** Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter.

**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. Credit/no credit

only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 552 Immunogenetics and Autoimmunity (1, max. 30)** Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 555 Research Conference in Model of Autoimmune Disease and Their Regulation (1, max. 30)** *Goverman* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 557 Research Conference in Thymic Environment (1, max. 30)** *Farr* Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 559 Cytokine Gene Regulation (1, max. 30)** Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 560 Research Conference in Progress in T Cell Research (1, max. 30)** *Bevan, Fink, Goverman, Kaja, Rudensky* Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 562 Research Conference in Developmental Regulation of T Cell Function (1, max. 30)** *Wilson* Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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 placed on understanding virus and host regulation of innate immune processes. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 566 Research Conference in Role of Innate Mechanisms in Generation and Maintenance of Protective Immune Memory (1, max. 30)** *Kaja* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 567 Research Conference in Antigen Processing and Presentation (1, max. 30)** *Rudensky* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 569 Genetics of Diabetes (1, max. 30)** *Lernmark* Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 570 Cytokine Signaling in Lymphocytes (1, max. 30)** Credit/no credit only. Prerequisite: graduate standing in Immunology.

**IMMUN 571 Research Conference in Development and Activation of B Cells (1, max. 30)** *Rawlings* Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 572 Research Conference in Signal Transduction in B-Cells (1 max. 30)** *Scharenberg* Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**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. Credit/no credit only. Prerequisite: graduate standing in Immunology; other graduate students with firm background in Immunology and permission of instructor. Offered: AWP.

**IMMUN 574 Research Conference in Kaposi's Sarcoma-Associated Herpesvirus: Interactions with B-Cells and Endothelial Cells (1, max. 30)** *Lagunoff* Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 575 Research Conference in Infection and Immunity (1, max. 30)** *Bevan* Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 576 Research Conference in Transcriptional Regulation in the Immune System (1, max. 30)** *Weinmann* Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWP.

**IMMUN 577 Research Conference in Lymphocyte Homing and Function (1, max. 30)** *Campbell* Weekly group conferences

concerning ongoing graduate student and postdoctoral research in immunology. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

**IMMUN 578 Research Conference in Immunology and the Pathogenesis of Tuberculosis (1, max. 30)** *Ramakrishnan* Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

**IMMUN 579 Research Conference in Costimulation and Autoimmune Disease (1, max. 30)** *Latchman* Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

**IMMUN 599 Introduction to Immunology Research (1-7, max. 7)** Current problems in immunological research. Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

**IMMUN 600 Independent Study or Research (\*)** Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

**IMMUN 700 Master's Thesis (\*)** Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

**IMMUN 800 Doctoral Dissertation (\*)** Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

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## Laboratory Medicine

**LAB M 321 Medical Technology: Introductory Clinical Hematology (6)** *Calvo* 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. Offered: W.

**LAB M 322 Medical Technology: Introductory Clinical Chemistry (5)** *Chen-Levy* Lecture and laboratory covering the theoretical and practical concepts associated with testing procedures performed in clinical chemistry. Offered: A.

**LAB M 418 Topics in Clinical Chemistry (5)** *Chen-Levy* Continuation of LAB M 322. Lecture and laboratory exercises covering fundamentals of instrumentation and methodology in the clinical chemistry laboratory. Offered: Sp.

**LAB M 419 Clinical Coagulation (4)** *Calvo* 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. Offered: S.

**LAB M 420 Laboratory Analysis of Urine and Body Fluids (3)** *Lampe* Lecture and laboratory covering urinalysis testing procedures and associated disease entities. Analysis of other body fluids. Methods of microscopic examina-

tion by use of bright-field, phase, and polarizing microscopy. Offered: S.

**LAB M 421 Medical Microbiology (1/6, max. 6)** *Lampe* Lecture and laboratory coverage of human infections and diagnostic procedures used for isolation, identification, and antimicrobial susceptibility testing of the microorganisms associated with disease. Offered: S.

**LAB M 423 Clinical Chemistry (\*-, max. 24)** *Chen-Levy* 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. Offered: AWSpS.

**LAB M 424 Clinical Microbiology (\*-, max. 24)** *Lampe* Techniques used in the diagnostic microbiology laboratory, including quality control, specimen evaluation, identification of pathogenic microorganisms, and antimicrobial susceptibility testing. Offered: AWSpS.

**LAB M 425 Clinical Hematology (\*-, max. 24)** *Calvo* 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. Offered: AWSpS.

**LAB M 426 Clinical Immunohematology (1-7, max. 7)** *Nestor* 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. Offered: W.

**LAB M 427 Selected Studies in Laboratory Medicine (\*-, max. 24)** *Lampe* Selected clinical study in the major scientific disciplines of laboratory medicine, to include molecular diagnostics, or pursuance of a clinical research study. Credit/no credit only. Offered: AWSpS.

**LAB M 499 Undergraduate Research (\*)** Specific project in clinical laboratory investigation. Offered: AWSpS.

**LAB M 502 Laboratory Medicine Grand Rounds (1, max. 6)** *Fine* Grand rounds are concerned with current topics in the field of laboratory medicine. Credit/no credit only. Offered: AWSpS.

**LAB M 510 Laboratory Medicine Research Conference (1, max. 6)** *Tait* 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. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**LAB M 520 Seminar in Organization and Management in Laboratory Medicine (3)** *Chandler* Core course for the Master of Science degree in laboratory medicine. Prerequisite: graduate student standing in laboratory medicine or permission of instructor. Offered: odd years; Sp.

**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: AWSpS.

**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; even years; W.

**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 596 Clinical Chemistry Seminar (2)** *Rainey* Theory and practice of clinical chemistry. For postdoctoral and graduate students in clinical chemistry. Prerequisite: permission of instructor. Offered: AWSpS.

**LAB M 601 Internship (3-9, max. 9)** Credit/no credit only. Prerequisite: graduate standing in laboratory medicine. Offered: AWSpS.

**LAB M 680 P-Clinical Laboratory Testing: Methods and Interpretation (\*)** *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)** *Ashton* Clinical case presentations and discussions aimed at test selection, disease-induced alterations, efficient algorithms, factors confounding interpretation, testing economics. Prerequisite: completion of required clerkships. (Four weeks half-time) Offered: A.

**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.

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## MEDEX Northwest

**MEDEX 450 Basic Science in Clinical Medicine (6)** Review of important basic science concepts that include relevant topics for a health care clinician. Prerequisite: permission of the MEDEX Program. Offered: WS.

**MEDEX 451 Anatomy and Physiology for the MEDEX Practitioner (6)** Anatomy and physiology of the following organ systems:

HEENT, respiratory, cardiovascular, gastrointestinal, reproductive, renal, musculoskeletal, and neurologic. Required for entering students to the MEDEX program who have not satisfied program prerequisites in anatomy and physiology. Offered: S.

**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 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 health care 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, health care quality, interdisciplinary relationships, diverse populations and the health care environment. Offered: A.

**MEDEX 471 Professional Role Development (1)** Explores professional role development, health access issues, licensing issues, health care quality, interdisciplinary relationships, diverse populations and the health care environment. Offered: W.

**MEDEX 472 Professional Role Development (1)** Explores professional role development, health access issues, licensing issues, health care quality, interdisciplinary relationships, diverse populations and the health care 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.

**MEBI 510 Topics in Medical Education Research (1/3, max. 12)** Selected research topics in medical education. Development of skills in critical analysis and production of original research. Optional: 1 additional credit for seminar focusing on application of issues in education practice. Credit/no credit only. Offered: AWSp.

**MEBI 511 Current Issues in Medical Education (2)** Addresses current issues in medical education in the context of historic and contemporary developments. Topics include curriculum development, teaching, and learning, clinical knowledge and reasoning, assessment, professional development, program evaluation, and certification. Offered: A.

**MEBI 512 Leadership in Academic Medicine (1)** Explores the theoretical and practical aspects of leadership in academic medicine. Topics include qualities of effective leadership, leadership styles, and impact of institutional organization and culture on leadership. Prerequisite: permission of instructor. Offered: S.

**MEBI 520 Teaching Methods in Medical Education (2)** *Ambroz* 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: W.

**MEBI 521 Evaluation of Learning in the Health Sciences (3)** *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. Recommended: MEBI 520. Offered: Sp.

**MEBI 522 Research in Medical Education (2)** *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.

**MEBI 530 Medical Informatics (3)** *Tarczy-Hornoch* 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.

**MEBI 531 Life and Death Computing (3)** *Kalet* Computing and programming concepts and methods underlying the solution of safety-critical and complex problems in biology, medicine, and health for both research and practice. Includes an introduction to programming in Common Lisp, network programming, and bioinformatics. Prerequisite: CSE 142 or equivalent. Offered: A.

**MEBI 532 Computing Concepts for Medical Informatics II (3)** *Kalet* Continuation of topics begun in MEBI 531: multiprogramming and operating system principles, client-server,

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## Medical Education

**MEBI 499 Undergraduate Research (\*, max. 12)** Investigative research or directed readings in medical education and in biomedical and health informatics. Prerequisite: permission of instructor.

network programming with sockets, macros, higher level languages, software engineering. Prerequisite: MEBI 531 or equivalent. Offered: W.

**MEBI 533 Public Health and Informatics (3)** 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 MEBI 530 or permission of instructor. Offered: jointly with HSERV 509; Sp.

**MEBI 534 Biology and Informaticists (3)** *Brinkley* A computing and information oriented treatment of the core concepts of human biology, addressing structure and function at three levels or organization: organism, cell, and gene. Each level includes examples of key anatomic and physiologic concepts, presented from a computational perspective and with the use of electronic resources. Offered: A.

**MEBI 535 Clinical Topics for Informaticists (3)** *Masuda* Builds on Biology for Informaticists and introduces the student to a variety of clinical disciplines, representative clinical problems from these disciplines, and informatics issues and applications within these disciplines. Lecturers include faculty from the Schools of Medicine, Nursing, Pharmacy, and Dentistry. Prerequisite: MEBI 530, MEBI 531, MEBI 534. Offered: W.

**MEBI 536 Bioinformatics and Gene Sequence Analysis (3)** *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.

**MEBI 537 Informatics Research and Evaluation Methods (4)** *Gennari* 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: A.

**MEBI 540 Critically Appraising and Applying Evidence in Health Care (3)** *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.

**MEBI 541 Introduction to Systematic Reviews and Meta-analysis of Evidence (2)** *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: introductory level courses in statistics, epidemiology or biostatistics. Prerequisite: permission of instructor. Offered: jointly with HSERV 529/EPI 541; Sp.

**MEBI 550 Knowledge Representation and Applications (3)** *Kalet* A readings class in knowledge representation, as described in the primary artificial intelligence and biomedical informatics literature. Topics may include: frame-based systems, description logics, theorem proving, complexity vs. tractability, ontologies, rule-based systems, and biomedical domain applications. Prerequisite: any artificial intelligence course (e.g., CSE 415 or better), or permission of instructor.

**MEBI 552 Clinical Decision Support (3)** *Doctor* Provides foundation in clinical decision making and support (including decision analysis, Bayesian analysis, belief networks, artificial intelligence, neural networks) presented in the context of local and national decision support systems and the movement to decrease errors in healthcare. Prerequisite: MED 530, MED 531, MED 535, MED 537, CSE 415 or permission of instructor. Offered: W.

**MEBI 554 Biomedical Information Interactions and Design (3)** *Demiris, Pratt* 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.

**MEBI 570 Health Sciences Information Needs, Resources, and Environment (3)** *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.

**MEBI 580 Computing Fundamentals for Health Providers (3)** Enables health professionals to solve work/practice challenges using existing features of desktop computers. Emphasizes productivity concepts. Introduces extended features of common software packages, as well as basic concepts/methods of small system management and support. Prerequisite: admission to Health Informatics Certificate Program or by instructor permission. Offered: jointly with NURS 521;W.

**MEBI 590 Selected Topics in 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. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSp.

**MEBI 591 Biomedical Health Informatics Research Colloquium (1)** 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.

**MEBI 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. Offered: AWSpS.

**MEBI 599 Independent Study or Research (\*, max. 12)** .

**MEBI 600 Independent Study/Research (1-10)** Individual readings or study, including independent study in preparation for doctoral examinations, research, etc. Prerequisite: permission of instructor.

**MEBI 700 Master's s Thesis (1-15)** Prerequisite: permission of instructor. Offered: AWSpS.

**MEBI 800 Doctoral Dissertation (1-10)**

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## Medical History and Ethics

**MHE 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 18th century to the present. Medical background not required. Recommended: prior courses in sciences and/or history.

**MHE 402 Ethical Theory (5) I&S** *Jecker* Reviews the principal theories for normative ethical discourse, such as utilitarianism and deontology, and major metaethical commentary on those theories. Illustrated by classical and modern authors. Recommended: one basic course in ethics. Offered: jointly with PHIL 412.

**MHE 404 Metaethical Theory (5) I&S** *Jecker* Study of major ethical writings in the twentieth century, with principal emphasis on the Anglo-American tradition. Recommended: one introductory philosophy course. Offered: jointly with PHIL 413.

**MHE 411 Introduction to Bioethics (3) I&S** *Jecker* Basic concepts, principles, and methods of analysis, with application to some major issues in the field of bioethics. Case studies utilized to illustrate nature of questions arising in bioethics and to provide students with opportunity to develop skills in ethical analysis.

**MHE 417 Disease in History (3) I&S** *Whorton* Study of Western civilization's experience with epidemic disease, the growth of understanding of the causes of disease, the formation of a philosophy of prevention, and the development of programs to protect the public health. Emphasis on the last two centuries. Medical background not required.

**MHE 440 Philosophy of Medicine (5) I&S** *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 PHIL 459.

**MHE 474 Justice in Health Care (5) I&S/VLPA** *Jecker* Examination of the ethical problem of allocating scarce medical resources. Emphasis on fundamental principles of justice that support

alternative health policies. Recommended: prior courses in philosophy or medical ethics. Offered: jointly with PHIL 411.

**MHE 481 The Pursuit of Health in American Society (3) I&S Berryman, 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.

**MHE 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.

**MHE 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.

**MHE 497 Medical History and Ethics Special Electives (\*-)**

**MHE 498 Undergraduate Thesis (\*)**

**MHE 499 Undergraduate Research (\*, max. 5)** Investigative work in biomedical ethics or history of the biomedical sciences.

**MHE 501 Alternative Approaches to Healing (2) Schneeweiss** Philosophies and practices of the major alternative approaches to healing. Historical characterization of alternative medicine accompanied by presentations by practitioners of chiropractic, naturopathic, homeopathic, and traditional Chinese medicine. Credit/no credit only.

**MHE 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.

**MHE 506 Professional Seminar II (2)** Capstone course for M.A. in Bioethics. Includes conducting research in ethics, writing, giving oral presentations, facilitating seminars, developing curriculum vitae, and career planning.

**MHE 511 P-Medical Ethics (2)** Ethics course designed especially for first- and second-year medical students. Study of ethical problems arising in clinical setting of medicine, introducing students to philosophical analysis and argument in practical contexts. Seminar-discussion format with readings from contemporary authors. Credit/no credit only.

**MHE 512 P-The Human Face of Medicine (2)** Foundation of human values undergirding medical practice. Images of physician —

motivations for medicine, empathy *versus* detachment in doctor-patient relationship, health for the health-professional — the art of coping, limits of power — when medicine fails to cure, uses/abuses of technology, physician's role in public health issues, the healing process.

**MHE 513 P-Ethical Responsibilities of Medical Practice (2)** 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. Offered: one-week intensive; S.

**MHE 514 Legal, Ethical, and Social Issues in Public Health Genetics (3) Kuszler, Mastroianni** 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 health care delivery efforts. Prerequisite: GENET 371 or equivalent. Offered: jointly with LAW H 504/PHG 512.

**MHE 515 Public Commentary on Ethical Issues in Health Genetics (3)** Explores issues in public health genetics through academic commentary, personal narratives, science fiction, and film using ethical frameworks from narrative ethics, feminist ethics, and principlism. Includes cloning, assisted reproduction, prenatal genetic testing presymptomatic genetic testing, gene therapies, scientific responsibility, and GMOs. Graduate students only. Offered: jointly with PHG 525.

**MHE 516 Ethical Frameworks for Public Health Genetics (2) Mastroianni** Case-based application of ethical principles in genetic medicine to range of problems arising in genetics practice, policy, research. Examination of traditional problems including eugenics and testing/screening for genetic disease, as well as emerging problems in population and environmental genetics. Prerequisite: MHE 514/PHG 512. Offered: jointly with PHG 522.

**MHE 517 Preclinical Hospice Volunteer Training Elective (3) Farber, McCormick** Using lectures, small groups, role play, and readings, covers the basic knowledge, skills and attitudes that need to be mastered as a hospice volunteer. Students participate as hospice volunteers as part of their field experience. Offered: jointly with FAMED 546.

**MHE 518 Spirituality in Health Care (2) Farber, McCormick** 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.

**MHE 521 The Ethical Challenges of Modern Medicine (3) McCormick** Case-study approach to contemporary ethical issues in medicine, utilizing techniques of ethical analysis and argument in examining actual cases arising in our pluralistic culture, where values are often in conflict. Open to graduate and professional students and others with appropriate background.

**MHE 522 Ethical Problems Surrounding Death (3) McCormick** Issues arising in care and treatment of dying patients and their families, including truthful disclosure, use of life-supports, "euthanasia," coping with death and grief. Intersection of patient and professional values

related to care in terminal phase of illness. Open to graduate and professional students and others with appropriate background.

**MHE 523 Biomedical Ethics (3) McCormick** Selected topics in medical ethics emphasizing methods of ethical reasoning about moral dilemmas and contributions of philosophical theories and principles to practical problems of medicine. Students provided with opportunities to test their value assumptions and analytical skills. Open to graduate and professional students and others with appropriate background.

**MHE 530 Genetic Discovery in Medicine and Public Health (3) Burke** Addresses the clinical and societal implications of genetic knowledge, with an emphasis on the ethical and policy issues surrounding the use of genetic technology in medicine and public health from 1900 to the present. Offered: jointly with PHG 542.

**MHE 536 Research Ethics and Regulation (3) Mastroianni** Explores the ethical principles and concepts and U.S. laws related to (1) research conducted with animals, (2) research on humans, and (3) the responsible conduct of research. Required for graduate students in the Department of Medical History and Ethics, School of Medicine. Offered: jointly with LAW H 536.

**MHE 541 Exercise in Modern Medicine (1) Berryman** Survey of role and place of exercise in modern medicine. Historical and contemporary analysis of physical activity and sports medicine in the American health system. Presentations by clinicians about their experiences in: orthopaedics, exercise physiology, sports nutrition, sports psychology, pediatric sports medicine, special issues of female athletes, environmental medicine.

**MHE 542 Legal and Ethical Issues in Advanced Practice Nursing (3) Shannon** Reviews selected ethical issues in health care and legal guidelines relevant to health care decision-making. Explores bioethics as a type of applied ethics. Focuses on preparing students for ethical challenges in advanced nursing roles. Offered: jointly with NURS 522.

**MHE 548 Introduction to Clinical Ethics (5) Burke** Introduction to history, practice, and research methods in clinical ethics. Case-based examination of methods including principlism, casuistry, narrative methods, virtue ethics. Prerequisite: permission of instructor.

**MHE 549 Current Topics in Clinical Ethics I (3) Dudzinski** Analysis of complex ethical cases from UWSOM clinical departments, literature, and media. Case discussion focuses on implications for delivery of medical care. Prerequisite: MHE 548 or permission of instructor.

**MHE 550 Current Topics in Clinical Ethics II (3) Fryer-Edwards** Analysis of complex ethical cases from UWSOM clinical departments, literature, and media. Case discussion focuses on public policy implications. Prerequisite: MHE 548 or permission of instructor.

**MHE 551 Human Genomics: Science, Ethics, and Society (4) Fullerton** Places recent advances in human molecular genetics and genomics in ethical and social context. Focuses on the rise of population-based approaches to complex trait mapping and their impact on societal understandings of community, ancestry, and public health. Prerequisite: GENOME 371;

GENOME 372; PHG 512; or instructor permission. Offered: jointly with PHG 551; A.

**MHE 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.

**MHE 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. Credit/no credit only. Prerequisite: by permission of instructor.

**MHE 596 Masters Research Project ([1-12], max. 12)** Research project culminating in a scholarly paper suitable for publication in a peer-reviewed journal. Credit/no credit only. Majors only.

**MHE 597 Special Topics in Medical Ethics (1-, max 15)** Various special topics in medical ethics. Offered: AWSpS.

**MHE 600 Independent Study or Research (\*)**

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## Medicine

**MED 498 Undergraduate Thesis (\*)** *Paauw*  
Offered: AWSpS.

**MED 499 Undergraduate Research (\*)** *Paauw*  
Case studies, with laboratory research. Available to undergraduates and medical students. Offered: AWSpS.

**MED 505 P-Preceptorship in Medicine (1)**  
*Paauw* 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. Credit/no credit only. Prerequisite: permission of department. Offered: AWSpS.

**MED 506 P-Emergency Medicine Preceptorship (1)** *Jobe, Richling* 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. Credit/no credit only. Prerequisite: permission of instructor. Offered AWSpS.

**MED 510 Health Issues of Sexual Minorities (1)** *Greenberg* Introduction to the special health care issues and barriers confronting persons identified as bisexual, gay, lesbian, or transgendered. Includes lectures, panels, and case presentations by faculty and community experts. Offered: Sp.

**MED 530 AIDS: A Multidisciplinary Approach (2)** *Hawes* 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 health care and prospects for prevention and control. Credit/no credit only. Offered: jointly with EPI 530/GLOBLH 570; A.

**MED 531 P-Human Genetics (\*)**  
*Stamatoyannopoulos* 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. Offered: AWSp.

**MED 533 P-Clinical Endocrinology (2)**  
*Cummings* Emphasis on the most major and dependable symptoms, signs, laboratory tests, and therapy for clinical endocrinopathies. Patient illustrated. Limited to second-year medical students. Offered: W.

**MED 534 Wilderness Medicine (1)** *Dickema*  
Provides training in medical emergencies and clinical situations unique to wilderness settings where access to medical care is limited. Experience gained in patient assessment and the management of common wilderness situations including altitude illness, burns, trauma, diving injuries, hypo- and hyperthermia, and toxin exposures.

**MED 546 Clinical Applications of Gene Therapy (2)** *Lieber* Overview of the current status of gene therapy. Discusses its role in the future practice of medicine. Lecture and literature reviews. Offered: S.

**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. Offered: AWSp.

**MED 550 P-An Introduction to Emergency Medicine (1)** *Mengert* 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. Offered: Sp.

**CONJ 550 P-Clinical Infectious Diseases (3)**  
*Spach* See Conjoint Courses.

**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.

**UCONJ 555 Principles of STD/HIV Research (3)** *Lukehart* See University Conjoint Courses.

**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.

**MED 560 P-Advanced Global Health (2)** *Kimball*  
Prepares health profession students for work in developing countries. Includes health care 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: Sp.

**MED 561 Tropical Medicine (1)** 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.

**MED 565 P-The Healer's Art: Awakening the Heart of Medicine (1)** *Wicks* 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 the capacity for awe. Offered: W.

**MED 599 P-Transfusion Machine (3)** *Reiner*  
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 604 P-Clinical Preceptorship in Internal Medicine (8)** *Shima (Forks)* Working closely with primary-care physicians, the student is exposed to the private practice of internal medicine in a small community. Operating on a one-to-one basis with an internist, the student evaluates and manages inpatients and outpatients on a primary care, consultative, and emergency basis. Prerequisite: MED 665. (Four weeks, full-time.) Offered: AWSpS.

**MED 630 P-WRITE Medicine 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.

**MED 640 P-Dermatology Clinic (\*, max. 5)**  
*Olerud* Students attend dermatology clinic on Monday mornings and Thursday afternoons for twelve weeks. Two half-days per week. Prerequisite: MED 665. Offered: AWSpS.

**MED 642 P-Clinical Oncology (8)** *Stewart (Fred Hutchinson Cancer Research Center)* Students functioning as primary physicians are responsible for the workups and daily care of patients receiving marrow transplants, high-dose chemotherapy or immunotherapy on an intensive-care research ward. Emphasis is on the management and supportive care of patients with pancytopenia and immunosuppression, transplantation biology, cancer chemotherapy, and infectious disease problems. Prerequisite: MED 665. (Four weeks.) Offered: AWSpS.

**MED 644 P-Management of Sexually Transmitted Diseases (2)** *Golden, Handsfield*

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. Prerequisite: MED 665, SURG 665, and OB GYN 665. Offered: AWPSP.

**MED 650 P-Advanced Medical Genetics (\*, max. 5)** *Jarvik, Horwitz, Stamatoyannopoulos* Summer course intended for third-year students who would like to increase their background in specific areas of medical genetics. Involves seeing patients with the instructor, reviewing the literature, analyzing clinical information, and writing a review on a selected topic. Prerequisite: HUBIO 554. Offered: S.

**MED 655 P-Clinical HIV Care (8)** *Harrington* 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. Prerequisite: MED 665.

**MED 656 P-Clinical Nutrition (8)** *Bruemmer, Purnell, Weigle* 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. Prerequisite: HUBIO 568; MED 665.

**MED 660 P-Emergency Medicine Clerkship (\*, max. 16)** *Copass, Strote* Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Requirement can be met at either HMC or UWMC Emergency Departments. Prerequisite: FAMED; MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

**MED 661 Emergency Medicine Elective (8)** Basics of emergency medicine, including the primary survey, secondary survey, and approach to the critically ill patient. Students supervised by emergency boarded staff physicians at Madigan Army Medical Center Emergency Department. Prerequisite: basic clerkship in medicine, surgery, obstetrics, or pediatrics.

**MED 665 P-Clinical Clerkship (\*, 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: AWPSP.

**MED 666 P-Advanced Clinical Clerkship in Internal Medicine-WWAMI (12)** *Paauw* Advanced clinical clerkship in internal medicine in three small urban communities. Supervised, structured experience in dealing with situations commonly encountered by the practicing internist. Continuity of care and the relationship between care given in the ambulatory setting and in the hospital, as well as by other community health services, is emphasized. Prerequisite: MED 665. (Six weeks, full time. Limit: six students.) Offered: AWPSP.

**CONJ 677 P-Clinical Allergy and Immunology (\*, max. 12)** *Henderson* See Conjoint Courses.

**MED 678 P-Clinical Dermatology (8)** *Olerud* Participation in dermatology clinics and inpatient consultations at University of Washington Medical Center; Harborview Medical Center; Children's Hospital Medical Center; Seattle V.A. Hospital; Meridian, Idaho; Casper, Wyoming; and Bellingham, Washington. Journal club and clinical conferences each week with entire staff. A continuing series of teaching seminars and weekly dermatopathology conferences. Prerequisite: MED 665. (Four weeks.) Offered: AWPSP.

**MED 679 P-Clinical Gastroenterology (8)** *Lee, Novan (Sacred Heart Spokane)* Participation in consulting ward rounds, procedures, conferences, and selected clinics with full-time divisional staff at University and Veterans Administration hospitals, and at Pacific and Harborview medical centers, plus directed tutorial work. Prerequisite: MED 665. (Four weeks, full-time.) Offered: AWPSP.

**MED 680 P-Rheumatology (8)** *Elkon* 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. Prerequisite: MED 665. Offered: AWPSP.

**MED 681 P- Dermatologic Surgery (8)** Dermatologic surgery elective for senior medical students. Instruction in Mohs surgery, conventional skin surgery, cosmetic procedures, wound healing and closure, and intraoperative and postoperative patient management. Prerequisite: MED 665.

**MED 682 P-Clinical Cardiology and Electrocardiography (8)** *Caldwell (Seattle V.A. Hospital), Corson (Harborview Medical Center), Herzog (Anchorage Veterans Administration Hospital), Mascette (Madigan Hospital Medical Center), Novan (Sacred Heart, Spokane), Otto (University of Washington Medical Center)* Clerkship in clinical cardiology-combined inpatient-outpatient assignments, ECG interpretation. Prerequisite: MED 665. (Four weeks.) Offered: AWPSP.

**MED 683 P-Clinical Respiratory Disease and Critical Care Medicine (8)** *Lakshminahrayan (Seattle V.A. Hospital), Pierson (Harborview Medical Center), Roth (Madigan) Thompson (Boise Veterans Administration Medical Center), Tonelli (University of Washington Medical Center)* 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. Prerequisite: MED 665. (Four weeks.) Offered: AWPSP.

**MED 684 P-Clinical Hematology/Oncology (8)** *Abkowitz (University of Washington Medical Center), Broudy (Harborview Medical Center), Collins (Boise Veterans Administration Medical Center), Roth (Seattle V.A. Hospital), Zuckerman (Boise Veterans Administration Medical Center)* Outpatient and inpatient experience with

hematologic/oncologic disorders. The elective includes teaching rounds, conferences, and evaluation of laboratory work. Prerequisite: MED 665. (Four weeks.) Offered: AWPSP.

**MED 685 P-Clinical Genetics (\*, max. 24)** *Bird, Byers, Motulsky, Stamatoyannopoulos* Full-time clinical clerkship in medical genetics. Provides extensive exposure to variety of genetic diseases and genetic counseling. Students work in three clinics (Monday, Tuesday, Thursday), response to in-house consultation requests, attend rounds at Children's Hospital and Medical Center and University of Washington Medical Center and seminars at University of Washington Medical Center (Wednesday, Friday). Prerequisite: MED 665. Offered: AWPSP.

**MED 686 Medical Consultation (8)** *Hamlin* 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. Prerequisite: MED 665. Offered: AWPSP.

**MED 688 P-Ward Medicine Subinternship (\*, max. 24)** *Harvey (Anchorage), R. Jones (Madigan Hospital Medical Center), McGee (Veterans Administration Medical Center), Paauw (University of Washington Medical Center), Schoene (Providence), Sheffield (Harborview Medical Center)* 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. Prerequisite: MED 665. (Four or six weeks.) Offered: AWPSP.

**MED 689 P-Clinical Infectious Diseases (8)** *Stamm (University of Washington Medical Center)* Students participate in the consulting service throughout the hospital, attend daily plate rounds, conferences, and seminars. (Four weeks.) *Corey (Fred Hutchinson Cancer Research Center), Holmes (Harborview Medical Center), Miller (Seattle V.A. Hospital), Morris (Madigan Army Medical Center), Novan (Spokane), Stevens (Boise Veterans Administration Hospital)*. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. Prerequisite: MED 665. (Four weeks.) Offered: AWPSP.

**MED 690 P-Cardiology Subinternship (8)** *Otto (University of Washington Medical Center)* Students act in the capacity of interns on the cardiology service under the supervision of house officer. Prerequisite: MED 665. (Four weeks.) Offered: AWPSP.

**MED 691 P-Primary Care (8/12)** *Paauw* Six-week, full-time ambulatory care block in primary care internal medicine. Students participate in several clinics at University of Washington Medical Center following a panel of patients in medicine, rheumatology, and virology clinics. Prerequisite: MED 665 and permission of instructor. Offered: AWPSP.

**MED 692 P-Clinical Endocrinology and Metabolism (\*, max. 12)** *Weigle (Seattle-based program); Bunner (Madigan)* Clerkship in clinical endocrinology and metabolism combined inpatient and outpatient assignments at selected hospitals. Prerequisite: MED 665. Offered: AWPSP.



**MED 693 P-Nephrology and Fluid Balance (8)**  
*Couser (University of Washington Medical Center), Narasimhan (Boise Veterans Administration Hospital), Novan (Spokane Sacred Heart), Sherrard (Seattle V.A. Hospital), Zager (Harborview Medical Center)* 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. Prerequisite: MED 665. (Four weeks.) Offered: AWSpS.

**MED 694 P-Harborview Evening Clinic (2)**  
*Assefi* 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 are strongly encouraged to participate for four quarters. Prerequisite: MED 665 and permission of instructor. Offered: AWSpS.

**MED 695 P-Clinical Aspects of Aging (8)**  
*Abrass, Hazzard (Harborview Long Term Care Service, Harborview Medical Center, and Seattle V.A. Medical Center), Cusak (Boise V.A. Medical Center)* Work with elderly patients as subintern with Senior Care Program. Inpatient and ambulatory setting in nursing homes and patients' homes. Interdisciplinary approach. Prerequisite: MED 665. Offered: AWSpS.

**MED 697 P-Medicine Special Electives (\*, max. 24)** *Paauw* Special clerkship, externship, or research opportunities that can at times be made available at institutions other than University of Washington. Faculty can advise students of opportunities. Students wishing to elect this course should obtain from Dean's office a special assignment form at least three months before preregistration. Prerequisite: permission of department. (Two, four, six, or twelve weeks.) Offered: AWSpS.

**MED 699 P-WWAMI 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.

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## Microbiology

**MICROM 101 Microbes and Society (5) NW**  
*Anderson, Brill* 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. Offered: W.

**MICROM 301 General Microbiology (3) NW**  
*Anderson, Lara, Nester* 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; recommended: biology; organic chemistry. Offered: ASpS.

**MICROM 302 General Microbiology Laboratory (2) NW**  
*Anderson, Chandler, Gray* Laboratory course primarily for students taking 301. Covers a variety of microbiological techniques, with experiments designed to illustrate major concepts of bacteriology, virology, and immunology. No auditors. Recommended: MICROM 301 which may be taken concurrently. Offered: ASpS.

**MICROM 402 Fundamentals of General Microbiology Laboratory (3) NW**  
*Fulton, Gray* Isolation of a broad range of nonpathogenic 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: either BIOL 200 or BIOL 201; recommended: MICROM 410 which may be taken concurrently. Offered: ASp.

**MICROM 410 Fundamentals of General Microbiology I (3) NW**  
*Lara, 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: either BIOL 200 or BIOL 201; either CHEM 223, CHEM 237, or CHEM 335. Offered: A.

**MICROM 411 Gene Action (5) NW**  
*Gray, Libby, Manoil* 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: either BIOL 200 or BIOL 201; either CHEM 223, CHEM 237, or CHEM 335. Offered: jointly with GENOME 411; W.

**MICROM 412 Fundamentals of General Microbiology III (3) NW**  
*Leigh* Structure, biochemical properties, and genetics of the major groups of prokaryotes. Prerequisite: either BIOL 200, BIOL 201, or BIOL 203; recommended: either CHEM 223, CHEM 237, or CHEM 335; MICROM 410. Offered: Sp.

**MICROM 431 Prokaryotic Recombinant DNA Techniques (3) NW**  
*Anderson, 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, BIOL 201, or MICROM 301. Offered: W.

**MICROM 435 Microbial Ecology (3) NW**  
*Staley* 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: either BIOL 180, BIOL 201, or BIOL 203. Offered: even years; Sp.

**MICROM 440 Introductory Bacteriology for Medical Technologists (1) NW**  
*Anderson* Limited introduction to basic microbiology, with focus on structure, metabolism, and genetics of medically important organisms. Open only to medical technology students. Credit/no credit only. Offered: A.

**MICROM 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: either BIOL 220 or BIOL 202; recommended: either GENET 371, GENET 372, BIOC 405, or BIOC 440. Offered: jointly with IMMUN 441; A.

**MICROM 442 Medical Bacteriology (3) NW**  
*Cookson, Fulton* 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 443 coordinates. Prerequisite: either BIOL 200 or BIOL 201; recommended: MICROM 410; MICROM 441. Offered: W.

**MICROM 443 Medical Microbiology Laboratory (3) NW**  
*Anderson, Chandler, Fulton* 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: either BIOL 200 or BIOL 201; recommended: MICROM 410. Offered: AW.

**MICROM 444 Medical Mycology and Parasitology (4) NW**  
*Anderson, Fulton, Schmer, White* 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: either BIOL 200 or BIOL 201; recommended: immunology. Offered: Sp.

**MICROM 445 Medical Virology (2) NW**  
*Lagunoff* An introductory course emphasizing basic understanding of medical virology and viral pathogenesis. The biochemical, replication, host-parasite relationships and pathogenesis of animal viruses are examined. Prerequisite: either BIOL 180, BIOL 200, or BIOL 201; 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: either BIOL 200 or BIOL 201; recommended: MICROM 410, MICROM 411, GENET 371, or GENET 372. Offered: W.

**MICROM 482 Peer Teaching Assistants in Microbiology (1-5, max. 10)** Direct experience in teaching a microbiology laboratory class. Peer TAs 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. CR/NC only. Prerequisite: MICROM 402; MICROM 410. Offered: AWSpS.

**MICROM 490 Aquatic Microbiology (3/5) NW**  
*Herwig* Basic principles of aquatic microbiology and aquatic microbial ecology: role and identity of aquatic microorganisms; introduction to modern methodologies for research. Laboratory work with local freshwater and marine samples for those enrolled in the five-credit section.

Recommended: 15 credits of biological science, 10 credits of chemistry. Offered: jointly with FISH 490; Sp, odd years.

**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 (\*)** *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. Credit/no credit only. Prerequisite: graduate standing in microbiology or permission of instructor. Offered: AWSpS.

**MICROM 510 Physiology of Bacteria (3)** *Harwood* Topics of current interest concerning the molecular biology and physiology of bacteria. Prerequisite: MICROM 410 and BIOC 440, 441, and 442, or permission of instructor. Offered: odd years; W.

**MICROM 520 Seminar (1)** *Leigh* Credit/no credit only. Offered: AWSpS.

**MICROM 522 Current Research in Microbiology (1)** *Champoux* Weekly student and faculty seminar presentations based on the current literature. Credit/no credit only. Prerequisite: graduate standing in microbiology. Offered: AWSpS.

**MICROM 526 Research of Cell Surface Problems (1)** *Traxler* Weekly research seminar and discussion of scientific literature pertaining to the process of membrane protein biogenesis. Credit/no credit only. Prerequisite: permission of instructor.

**MICROM 529 Mechanisms of Bacterial Pathogenesis (1)** *Fang* Student and faculty seminar presentations based on current research pertaining to mechanisms of bacterial pathogenesis at the molecular and cellular levels. Credit/no credit only. Prerequisite: graduate standing in microbiology. Offered: AWSpS.

**MICROM 530 Evolution of Prokaryotic Diversity (3)** *Leigh* Evolution, diversity, and genomics of prokaryotic microorganisms. Lectures, discussions, and reading of current literature. Open to graduate students in the biological sciences and advanced undergraduates with permission of instructor. Offered: even years; W.

**MICROM 531 Prokaryotic Diversity and Evolution Laboratory (2)** *Leigh* Enrichment, isolation, and molecular phylogenetic characterization of selected prokaryotic organisms. Prerequisite: permission of instructor. Offered: even years; W.

**MICROM 532 Seminar in General Microbiology (1, max. 15)** *Leigh* Weekly seminar concerning research topics in the genetics and biochemistry of selected bacteria. Credit/no credit only. Prerequisite: MICROM 410, permission of instructor. Offered: AWSpS.

**MICROM 533 Herpesvirus Research Meeting (1)** *Lagunoff* Weekly research seminar and discussion of scientific literature pertaining to the study of molecular virology of Kaposi's Sarcoma-associated herpesvirus. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**MICROM 534 Research Seminar in Salmonella Pathogenesis (1)** *Fang* Provides a formal group setting for discussion and evaluation of a student's research progress. Credit/no credit only. Offered: AWSpS.

**MICROM 553 Molecular Mechanisms of Bacterial Pathogenesis (3)** *Collins* 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: odd years; A.

**MICROM 554 Seminar in Molecular and Medical Microbiology (1, max. 15)** *Collins, 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. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**MICROM 555 Advanced Clinical Microbiology (2.5)** *Limaye* 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. Credit/no credit only. Prerequisite: MICROM 443 and permission of instructor. Offered: AWSpS.

**MICROM 560 Research and Journal Club in Retrovirology (1)** *Linial* Weekly research seminar and discussion of literature in areas of retroviral replication and transformation. Prerequisite: graduate or permission of instructor. Offered: AWSpS.

**MICROM 562 Oncogene and Retrovirus Research Seminar (1)** *Linial, Overbaugh* Weekly discussions of ongoing research related to retroviral replication, retroviral oncogeneses and pathology. Prerequisite: graduate standing or permission of instructor. Offered: AWSpS.

**MICROM 563 Research Seminar in Mycobacterial Pathogenesis (1)** *Ramakrishnan* . Discussion of research topics in the study of the pathogenesis of tuberculosis and the microbial and host factors contributing to this complex infection. Credit/no credit only. Offered: AWSpS.

**MICROM 585 Research in Cell and Molecular Biology (1, max. 15)** *Champoux* Weekly research seminar. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**MICROM 588 Research in Applied Microbiology (1)** *Lidstrom* Weekly research seminar and discussion of scientific literature pertaining to applied microbiology. Credit/no credit only. Prerequisite: permission of instructor. 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.

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## Molecular Medicine

**MOLMED 514 Molecular Medicine (3)** *Rosen* Graduate-level introduction to the interplay of basic science and clinical medicine. Covers inflammation, vascular disease, metabolic disorders, cancer biology, and molecular-, gene-, and cell-based therapies. Each topic introduced with a patient history. Offered: jointly with CONJ 514; W.

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## Neurological Surgery

**NEUR S 498 Undergraduate Thesis (\*)** *Avellino, Bobola, D'Ambrosio, Ellenbogen, Horner, Moroud, Morrison, Rostomily, Silber* Offered: AWSpS.

**NEUR S 499 Undergraduate Research (\*)** *Avellino, Bobola, D'Ambrosio, Ellenbogen, Horner, Moroud, Morrison, 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)** *Avellino, Britz, Ellenbogen, Goodkin, Kliot, J. Ojemann, Rostomily, Sekar, Silbergeld* 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 542 Clinical and Basic Research Correlates of Epilepsy (2)** *Avellino, G. Ojemann, J. Ojemann, Silbergeld* Clinical symptoms and treatment of epilepsy; related basic research in neuroanatomy, neurophysiology, neuropsychology, and neuropharmacology of epilepsy. Prerequisite: HUBIO 532 for medical students; permission of instructor for others.

**NEUR S 680 P-Neurological Surgery Clerkship (\*, max. 8)** *Avellino, Ellenbogen* 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. Prerequisite: HUBIO 563. (Four weeks.) Offered: AWSpS.

**NEUR S 697 P-Neurological Surgery Special Electives (\*, max. 24)** *Avellino, Ellenbogen* By specific arrangement, for qualified students, special clerkship, externship, or research opportunities can be made available at institutions other than the University of Washington. Students wishing to elect this course should 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)** Avellino, 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.

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## Neurology

**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)** *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. Offered: S.

**NEURL 555 Frontiers in Neuroimmunology (1)** *Moeller* Current concepts and developments in neuroimmunology. Credit/no credit only. Prerequisite: either NBIO 301 or IMMUN 441. Offered: AWSpS.

**NEURL 559 Neurobiology of Disease (3)** *Garden, Moeller, Neumaier, Weiss* 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 NEUBEH 559/P BIO 559.

**NEURL 634 P-Introduction to Neurology -- Anchorage (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 -- Neurology Associates, Billings (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 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 -- Dr. Vincent, Idaho Falls (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 -- Dr. Garland, Idaho Falls (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 -- Dr. Lindholm, Boise (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 -- Dr. Coats, 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 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 -- Dr. Clark, Spokane (8)** Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. J. Robert Clark in Spokane, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

**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 -- Dr. Sloop, 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 -- Neurology and Neurosurgery Associates, Tacoma (8)** Provides the medical student with a general understanding of basic clinical neurology at Neurology and Neurosurgery Associates in Tacoma and Puyallup, Washington. Students will 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 Hospital 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 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 (\*, max. 12)** *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 P-Advanced Clinical Clerkship in Child Neurology (\*, 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 P-Neurology Special Electives (\*, max. 24)** By special arrangement for qualified students, special clerkships or externships may be available at institutions outside the WWAMI region. Students should obtain special assignment form from the Dean's Office at least one month prior to preregistration. Prerequisite: permission of department advisor. Offered: AWSpS.

**NEURL 699 P-WWAMI Neurology 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 advisor. Offered: AWSpS.

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## Obstetrics and Gynecology

**OB GYN 498 Undergraduate Thesis (\*)** By arrangement.

**OB GYN 499 Undergraduate Research (\*)** .

**OB GYN 550 P-Voluntary Pregnancy Termination: An Overview of Medical and Social Issues (2)** *Easterling, Miller* 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 590 HIV and STIs in Women and Children (3)** Examines the emerging global public health crisis and the plight of women and children with HIV/STIs. Reviews targeted approaches pertaining to women and children and their vulnerability to HIV/STIs. Prerequisite: EPI 511 or EPI 512-513. Offered: jointly with EPI 507; Sp.

**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 health-care agencies for women. Rotations occur at UWMC and Harborview Medical Center. Prerequisite: HUBIO 565. (Six weeks. Limit: four students.)

**OB GYN 666 P-Introduction to Obstetrics and Gynecology, Boise (\*, max. 12)** Clerkship equivalent to 665 offered at Boise, Idaho (WWAMI). Includes experience in several private physician offices. Prerequisite: HUBIO 565. (Six

weeks. Limit: one student. Not offered summer quarter.)

**OB GYN 667 P-Introduction to Obstetrics and Gynecology, Madigan (\*, max. 12)** Clerkship equivalent to 665 offered at Madigan Army Medical Center, Tacoma. Prerequisite: HUBIO 565. (Six weeks. Limit: three students.)

**OB GYN 668 P-Introduction to Obstetrics and Gynecology, Spokane (12)** Clerkship equivalent to 665 offered at Spokane (WWAMI). Includes experience in several private physicians' offices. Prerequisite: HUBIO 565. (Six weeks. Limit: two students.)

**OB GYN 669 P-Introduction to Obstetrics and Gynecology, Swedish (12)** Clerkship equivalent to 665 offered at Swedish Hospital Medical Center. Prerequisite: HUBIO 565. (Six weeks. Limit: one student.) Not offered summer quarter.

**OB GYN 670 P-Introduction to Obstetrics and Gynecology, GH-Central (12)** Clerkship equivalent to 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. Prerequisite: HUBIO 565. (Six weeks. Limit: two students.)

**OB GYN 671 P-Introduction to Obstetrics and Gynecology, Anchorage (12)** Clerkship equivalent to 665 offered at Anchorage, Alaska (WWAMI). Includes experience in several private physicians' offices as well as Providence Hospital. Prerequisite: HUBIO 565. (Six weeks. Limit: four students.)

**OB GYN 672 P-Introduction to Obstetrics and Gynecology, GH-East (12)** Clerkship equivalent to 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. Prerequisite: HUBIO 565. (Six weeks. Limit: one student.)

**OB GYN 673 P-Introduction to Obstetrics and Gynecology, Military, Madigan (12)** Clerkship equivalent to 665 offered at Madigan Army Medical Center. Students spend time in delivery room, surgery, and clinic, and have a specific preceptor assigned. Prerequisite: HUBIO 565. (Six weeks. Limit: two students.)

**OB GYN 676 P-Introduction to Obstetrics and Gynecology, Missoula (12)** Clerkship equivalent to 665 offered in Missoula, Montana. Students spend time in delivery room, surgery, and clinic, and have a specific preceptor assigned. Prerequisite: HUBIO 565. (Six weeks. Limit: one student.)

**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 at Spokane (WWAMI). Includes experience in several private physicians' offices. Prerequisite: HUBIO 565. (Six weeks. Limit: one student.)

**OB GYN 679 P-Introduction to Obstetrics and Gynecology, Cheyenne (\*, max. 12)** Clerkship

equivalent to OB GYN 665 offered at Spokane (WWAMI). Includes experience in several private physicians' offices. Prerequisite: HUBIO 565. (Six weeks. Limit: one student).

**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. Prerequisite: basic OB GYN Clerkship; permission of departmental. (Limit: two students each four weeks.)

**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. Prerequisite: permission of departmental. (Limit: two students each four weeks.)

**OB GYN 685 P-Obstetrics and Gynecology Elective (\*, max. 8)** Close working relationship with a physician or physicians in the practice of obstetrics and gynecology. May include clinics, hospital rounds, surgery, deliveries, and business aspects of practice.

**OB GYN 686 P-Introduction to Obstetrics and Gynecology, Yakima (\*, max. 12)** Clerkship equivalent to OB GYN 665 offered at Spokane (WWAMI). Includes experience in several private physicians' offices. Prerequisite: HUBIO 565. (Six weeks. Limit: one student).

**OB GYN 687 P-Introduction to Obstetrics and Gynecology, Fairbanks (\*, max. 12)** Clerkship equivalent to OB GYN 665 offered at Spokane (WWAMI). Includes experience in several private physicians' offices. Prerequisite: HUBIO 565. (Six weeks. Limit: one student).

**OB GYN 688 P-Introduction to Obstetrics and Gynecology, Caldwell (\*, max. 12)** Clerkship equivalent to OB GYN 665 offered at Spokane (WWAMI). Includes experience in several private physicians' offices. Prerequisite: HUBIO 565. (Six weeks. Limit: one student).

**OB GYN 689 P-Introduction to Obstetrics and Gynecology, Havre (\*, max. 12)** Clerkship equivalent to OB GYN 665 offered at Spokane (WWAMI). Includes experience in several private physicians' offices. Prerequisite: HUBIO 565. (Six weeks. Limit: one student).

**OB GYN 690 P-Introduction to Obstetrics and Gynecology, Sandpoint (\*, max. 12)** Clerkship equivalent to OB GYN 665 offered at Spokane (WWAMI). Includes experience in several private physicians' offices. Prerequisite: HUBIO 565. (Six weeks. Limit: one student).

**OB GYN 691 P-Introduction to Obstetrics and Gynecology, Tacoma (\*, max. 12)** Clerkship equivalent to OB GYN 665 offered at Spokane (WWAMI). Includes experience in several private physicians' offices. Prerequisite: HUBIO 565. (Six weeks. Limit: one student).

**OB GYN 692 P-Introduction to Obstetrics and Gynecology, Bozeman (\*, max. 12)** Clerkship equivalent to 665 offered at Boise, Idaho (WWAMI). Includes experience in several private

physician offices. Prerequisite: HUBIO 565. (Six weeks. Limit: one student).

**OB GYN 697 P-Obstetrics and Gynecology Special Electives (\*, max. 24)** By arrangement, for qualified students, special clerkship or research opportunities can sometimes be made available at other institutions. Students wishing this course should 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 available at institutions other than the University of Washington located outside the WWAMI region. A special assignment form must be obtained one month in advance of preregistration. Prerequisite: permission of department.

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## Ophthalmology

**OPHTH 498 Undergraduate Thesis (\*)** *Kinyoun (University of Washington Medical Center)* Thesis-based research in vision and ophthalmology. Elective. Offered: AWSpS.

**OPHTH 499 Undergraduate Research (\*)** *Kinyoun (University of Washington Medical Center)* 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)** *Kinyoun* 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 (4)** *Sires (Harborview Medical Center)* 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. (Limit: one student.) Offered: AWSpS.

**OPHTH 683 P-Pediatric Ophthalmology Clerkship (4)** *Weiss (Children's Hospital and Regional Medical Center)* Student examines and observes treatment of children with ocular diseases and learns to differentiate trivial from potentially blinding disorders. Programmed text in general ophthalmology furnished. Prerequisite: University of Washington student and completion of human biology series. (Two weeks, full-time. Limit: one student.) Offered: WS.

**OPHTH 685 P-Ophthalmology Clerkship (4)** *Orcutt (VA. Puget Sound Health Care System)* Participation in diagnosis and treatment of medical and surgical ocular disease. Outpatient examinations, inpatient surgery, as well as neuro-ophthalmologic, retinal, and glaucoma consultations. Basic techniques involved in tonometry, ophthalmoscopy, and biomicroscopy of eye. Prerequisite: completion of human biology series. (Limit: one student.) Offered: AWSpS.

**OPHTH 686 P-Ophthalmology Clerkship (4)** *Gorman (Group Health Central)* Diagnosis and treatment of ocular diseases in outpatients. Weekly assignment to Group Health ophthalmologist responsible for the care of walk-in and urgent patients, which may demonstrate findings pertinent to the future practice of primary-care physicians. Examination techniques, including tonometry, ophthalmoscopy, and biomicroscopy. Prerequisite: completion of human biology series. (Limit: one student.) Offered: AWSpS.

**OPHTH 687 P-Ophthalmology Clerkship (4)** *Kinyoun (University of Washington Medical Center)* Diagnosis and management of commonly seen eye diseases. Subspecialty clinics include cornea, retina, neuro-ophthalmology, glaucoma, contact lenses, and strabismus. Student attends regularly scheduled conferences in ophthalmic basic and clinical science. Prerequisite: completion of human biology series. (Limit: one student.) Offered: AWSpS.

**OPHTH 688 P-Ophthalmology Clerkship (8)** *Kinyoun, Werner* 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 697 P-Ophthalmology Special Electives (\*, max. 24)** *Kinyoun* By specific arrangement, for qualified students, special clerkship, externship, or research opportunities can at times be made available at institutions or clinics other than the UW. Students wishing to elect this course should 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.

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## Orthopaedics

**ORTHP 498 Undergraduate Thesis (\*)** *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 (\*)** *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)** 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 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 orthopaedic practice. Prerequisite: SURG 665 or HUBIO 553 and permission of department. (Two weeks, full-time.) Offered: AWSpS.

**ORTHP 676 P-Pediatric Orthopaedics (\*, max. 8)** *Conrad, Mosca, Schmale, Song, 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 Children's Hospital and Medical Center, and correlative anatomy and pathology. Prerequisite: SURG 665 or HUBIO 553. (Four weeks, full-time.) Offered: AWSpS.

**ORTHP 677 P-Musculoskeletal Trauma (\*, max. 8)** *Allan, Barei, Beingessner, Bellabarba, Benirschke, Bransford, Chapman, Dunbar, Hanel, Hansen, Henley, Katolik, Mirza* 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. Prerequisite: SURG 665, HUBIO 553. (Four weeks, full-time.) Offered: AWSpS.

**ORTHP 678 P-Musculoskeletal Oncology (8/12)** *Conrad, Weisstein* 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 (\*, max. 8)** *Bransford, Chansky* Veteran's 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, OfKane, Kadel, Teitz, Wahl* 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)** 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 Disorders of the Spine (8)** *Chapman, Lee, 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)** 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. 12)** 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.

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## Otolaryngology—Head and Neck Surgery

**OTOHN 498 Undergraduate Thesis (\*)** *Rubel, Weymuller* 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 (\*)** *Rubel, Weymuller* 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)** *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 680 Otolaryngology — Head and Neck Surgery Clerkship UW (4/8, max. 24)** *Futran, Hillel, Manning, 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, have an opportunity to go to operating room. Rotations at UWMC, VAH, HMC, CHMC, Swedish. Prerequisite: human biology series; recommended: MED 665 or SURG 665. Offered: AWSpS.

**OTOHN 683 P-Otolaryngology — Head and Neck Surgery Clerkship Madigan (\*, max. 8)** *(Madigan Army Medical Center)* 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. Prerequisite: completion of human biology series. (Two or four weeks, full-time.); recommended: MED or SURG 665. Offered: AWSpS.

**OTOHN 686 P-Otolaryngology — Head and Neck Surgery Clerkship Greater Seattle Private Practice (\*, max. 4)** *Weymuller* Clinical in-depth study for the student whose interest lies in pathology of the head and neck. Reasonable flexibility to arrange course content that provides exposure to all aspects of patient care. Prerequisite: permission of chairman; recommended: MED 665 or SURG 665. Offered: AWSpS.

**OTOHN 697 P-Otolaryngology — Head and Neck Surgery Away Externship (8)** *Weymuller* By specific arrangement. Special clerkship, externship, 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 preregistration. Prerequisite: permission of chairman. 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.

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## Pathology

**PATH 450 Cell Biology of Aging (3)** *Martin, Rabinovitch, Wolf* Pathophysiology of aging at cell and tissue levels (cell replication limits, telomere shortening, accrual of oxidative damage, caloric restriction effects, loss of postreplicative cells, longevity assurance genes). Proseminar based on student participation. Undergraduate honors students, graduate students with biology, zoology, genetics or

medical sciences background. Prerequisite: permission of instructor. Offered: W.

**PATH 498 Undergraduate Thesis (\*)** Elective.

**PATH 499 Undergraduate Research (\*)** Elective.

**PATH 500 Molecular Basis of Disease (3)** *Parks* Designed for first and second-year graduate students to introduce the concepts of general pathology at the cellular and molecular levels. Offered: W.

**PATH 501 Pathology Proseminars (1)** 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. Credit/no credit only. Prerequisite: permission of instructor. Offered: even years.

**PATH 507 Introduction to Pathology Research (2)** *Bornfeldt, Swisshelm* 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. Credit/no credit only. Prerequisite: permission of instructor. Offered: A.

**PATH 510 Introduction to Pathology Methods (3)** *Bowen-Pope* Laboratory course designed to introduce graduate students to the fundamentals of image analysis, histology, histopathology, 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. Offered: Sp.

**PATH 511 Topics in Experimental Pathology (1-2, max. 10)** *Bornfeldt* Focus on areas of research relevant to experimental pathology. Prerequisite: permission of instructor. Offered: AWSpS.

**C MED 512 Introduction to the Anatomical Analysis of Animal Disease (5, max. 10)** See Comparative Medicine courses.

**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.

**C MED 514 Comparative Pathology Conference (1, max. 6)** See Comparative Medicine courses.

**PATH 515 Molecular Basis of Disease: Atherosclerosis and Myocardial Infarction (1.5)** *Bornfeldt, Bowen-Pope, Clowes, Dichek, Murry, Raines, Schwartz, Wight* Introduces medically important diseases and experimental approaches to understanding the basis for diseases and their treatments. Covers atherosclerosis, including lipids, extracellular matrix, cell signaling, inflammation, and downstream complications such as myocardial infarction and arrhythmias. Offered: Sp.

**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)** *Wolf* 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.

**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)** *Sabath* 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: even years.

**PATH 544 General and Systemic Pathology ([2-3]-, max. 5)** *Narayanan* 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 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: permission of instructor.

**PATH 552 Contemporary Anatomic Pathology (2-5, max. 30)** *Schwartz* Study of recent developments in anatomic pathology. Subject includes areas of basic science and review of systemic pathology. Recent developments and interpretation of these findings are stressed. For pathology residents, fellows, and trainees. Credit/no credit only. Prerequisite: permission of instructor.

**PATH 555 Environmental Pathology (3)** *Monnat, Rhim* 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; recommended: ENV H 514 and ENV H 515. Offered: alternate years.

**CONJ 560, 561 Tumor Biology (3, 2)** See Conjoint Courses.

**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. Offered: AWSp.

**PATH 562 P-Cardiovascular Pathology Conference (\*)** *Reichenbach* Course consists of two parts: a laboratory review of gross and microscopic cardiovascular pathology of selected autopsied cases followed by a combined clinical (medical and/or surgical) and pathology conference discussing these cases. Prerequisite: HUBIO 540 and permission of instructor.

**PATH 600 Independent Study or Research (\*)** Credit/no credit only.

**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 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 student standing.

**PATH 681 P-Diagnostic Pathology Clerkship**  
— Harborview Medical Center (\*, max. 24)  
*Deubner*.

**PATH 682 P-Diagnostic Pathology Clerkship**  
— Veterans Administration Hospital (\*, max. 24)  
*Thorning*.

**PATH 683 P-Diagnostic Pathology Clerkship**  
— Medical Examiner's Office (\*, max. 24)  
*Raven*.

**PATH 687 P-Diagnostic Pathology Clerkship**  
— Children's Hospital and Medical Center (\*, max. 24)  
*Patterson*.

**PATH 688 P-Diagnostic Pathology Clerkship**  
— Madigan Army Medical Center (\*, max. 24).

**PATH 690 P-Diagnostic Pathology Clerkship**  
— Northwest Medical Center (\*, max. 24)  
*Patton*.

**PATH 691 P-Diagnostic Pathology Clerkship**  
— General Hospital of Everett (\*, max. 24).

**PATH 697 P-Pathology Special Electives (\*, max. 24)** By specific arrangement, students can have clerkships, externships, or research opportunities at institutions other than the University of Washington. Students who wish to elect this course should 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 (\*)**

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## Pediatrics

**PEDS 498 Undergraduate Thesis (\*)** *Bennett*  
For medical students. Offered: AWSpS.

**PEDS 499 Undergraduate Research (\*)**  
*Bennett* 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: AWSpS.

**PEDS 505 P-Preceptorship in Pediatrics (1)**  
*Bennett* 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. Prerequisite: permission of instructor. Enrollment limited. Coordinator: Department of Pediatrics. Credit/no credit only. Offered: AWSpS.

**PEDS 530 P- Homeless Youth and Their Medical Care (1)** *Bonnar, Breuner* Clinic-based setting for seminar and interview practice with adolescents; 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 City Doc FREE-TEEN Clinic (\*, max. 24)** *Breuner, Giesel* 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. Offered: AWSpS.

**PEDS 625 Pediatric Emergency Medicine (8)**  
Elective in Pediatric Emergency Department at Children's Hospital and Regional Medical Center. 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: 4<sup>th</sup> year medical students who have completed their core pediatrics rotation. Offered: AWSpS.

**PEDS 630 P-WRITE Pediatrics 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.

**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.

**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.

**PEDS 659 Pediatric General Clerkship -- Billings, MT (\*, max. 24)** *Kummer, Starr* 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. Offered: AWSpS.

**PEDS 660 Pediatric General Clerkship -- Cheyenne, WY (\*, max 24)** *Horam* Introductory inpatient and outpatient pediatric clerkship that exposes students to environments in settings where children receive medical and health services. The 6-week experience takes place primarily in an active pediatric group practice with appropriate outpatient and inpatient opportunities. Offered: AWSpS.

**PEDS 661 P-Pediatric General Clerkship -- Anchorage (\*, max. 24)** *McArthur* 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. Prerequisite: HUBIO 563. (Six weeks, full time. Limit: twenty-four students.) Offered: AWSpS.

**PEDS 662 P-Pediatric General Clerkship (\*, max. 24)** *Newman* 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. Prerequisite: HUBIO 563. (Six weeks, full time. Limit: twenty-four students.) Offered: AWSpS.

**PEDS 663 P-Pediatric General Clerkship -- Mary Bridge (\*, max. 24)** *Kodama* 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. Prerequisite: HUBIO 563. (Six weeks, full time. Limit: twenty-four students.) Offered: AWSpS.

**PEDS 664 P-Pediatric General Clerkship -- Pocatello, ID (\*, max. 24)** *Denton* 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. Prerequisite: HUBIO 563. (Six weeks, full time. Limit: twenty-four students.) Offered: AWSpS.

**PEDS 665 P-Pediatric General Clerkship -- Seattle, WA (\*, max. 24)** *Bennett* 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. Prerequisite: HUBIO 563. (Six weeks, full time. Limit: twenty-four students.) Offered: AWSpS.

**PEDS 666 P-Pediatric General Clerkship -- Great Falls, MT (\*, max. 24)** *Marron* 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. Prerequisite: HUBIO 563. (Six weeks, full time. Limit: twenty-four students.) Offered: AWSpS.

**PEDS 667 P-Pediatric General Clerkship -- Madigan (\*, max. 24)** *Newman* 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. Prerequisite: HUBIO 563. (Six weeks, full time. Limit: twenty-four students.) Offered: AWSpS.

**PEDS 668 P-Pediatric General Clerkship -- Spokane, WA (\*, max. 24)** *Maixner* 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. Prerequisite: HUBIO 563. (Six weeks, full time. Limit: twenty-four students.) Offered: AWSpS.

**PEDS 669 P-Neonatal Pediatrics-Clerkship (\*, max. 24)** *Loren* 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. Prerequisite: PEDS and OB GYN core clerkships. (Limit: two students.) Offered: AWSpS.

**PEDS 670 P-Pediatric Infectious Diseases (\*, max. 24)** *Smith* 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. Prerequisite: PEDS and MED core clerkships; third- or fourth-year medical student standing. (Limit: one student.) Offered: AWSpS.

**PEDS 671 Pediatric Endocrinology (\*, max. 24)** *Fechner* 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 Children's Hospital and Regional Medical Center.

**PEDS 673 P-Office Practice (\*, max. 12)** *Bennett* 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. Prerequisite: PEDS 665. Offered: AWSpS.

**CONJ 677 P-Clinical Allergy and Immunology (\*, max. 12)** See Conjoint Courses.

**PEDS 679 P-Clinical Problems in Developmental Disabilities (\*, max. 12)** *Bennett* 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. Prerequisite: PEDS 665. (Limit: one students.) Offered: AWSpS.

**PEDS 680 P-Pediatric Clinics (\*, max. 24)** *Bennett* One to ten half-day sessions may be elected each week for four weeks in the following areas: general pediatrics, endocrinology, neurology, immunology, arthritis, cardiology, congenital defects and retardation, well-child, teratology, adolescent medicine, allergy, cystic fibrosis, hematology, prematurity, neonatology, and poison control. Enrollment limited. Prerequisite: PEDS 665.

**PEDS 681 P-Pediatric Genetics (\*, max. 24)** *Raff* 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. Prerequisite: PEDS 665. (Two, four, six, or twelve weeks. Limit: one student.) Offered: AWSpS.

**PEDS 683 P-Pediatric Nephrology (8)** *Symons* Four-week elective clerkship at Children's Hospital and Medical Center. 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. Prerequisite: third- or fourth-year medical student, PEDS 665, and MED 665 or equivalent. (Limit: two students.) Offered: AWSpS.

**PEDS 684 P-Pediatric Pulmonary Medicine (8)** *Redding* 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. Prerequisite: PEDS 665, fourth-year medical student standing. (Limit: one student.) Offered: AWSpS.

**PEDS 685 P-Pediatric Hematology and Oncology (\*, max. 24)** *Geyer* 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. Prerequisite: PEDS 665. (Two, four, six, or twelve weeks, full-time.) (Limit: one student.) Offered: AWSpS.

**PEDS 686 P-Pediatric Cardiology (\*, max. 24)** *Johnston* 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. Prerequisite: PEDS 665. (Limit: one student.) Offered: AWSpS.

**PEDS 691 P-Advanced Pediatric Clerkship (\*, max. 24)** *Bennett* Inpatient and/or outpatient experience with responsibilities comparable to intern for patient workup, diagnosis, and care. Available at any one, or combination, of affiliated hospitals, including WWAMI units in Alaska, Idaho, Montana, or Washington. Students interested in this option should make arrangements well in advance of registration. Prerequisite: PEDS 665. (Limit: two students.) Offered: AWSpS.

**PEDS 697 P-Pediatric Special Electives (\*, max. 24)** *Bennett* 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 Dean's office at least one month before preregistration. Prerequisite: permission of instructor at away site. Offered: AWSpS.

**PEDS 699 P-WWAMI Pediatrics Special Electives (\*, max. 24)** *Bennett* 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 at away site.

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## Pharmacology

**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. Recommend: background in biology, biochemistry, and introductory physiology. 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, Watson* 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 (\*)** Offered: A.

**PHCOL 499 Undergraduate Research (\*)** Participation in departmental research projects. Offered: AWSpS.

**PHCOL 507 Pharmacology Seminar (1)** 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: AWSpS.

**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 research. Prerequisite: organic chemistry, biochemistry, 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. Recommended: organic chemistry, biochemistry, introductory anatomy, and physiology. 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, introductory anatomy, and physiology. Offered: Sp.

**PHCOL 514 Current Topics in Pharmacology (1)** *McKnight* 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 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: odd years; A.

**PHCOL 530 Neuronal Signaling Pathways (2)** *Beavo, Pham, 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: even years; W.

**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: odd years; Sp.

**PHCOL 534 Molecular Basis of Addictive Drug Action (2)** *Chavkin, Mackie, 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: even years; A.

**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: even years; Sp.

**PHCOL 550 An Overview of Faculty Research (1)** *Wang* Reviews research topics currently being studied in pharmacology. Student reads articles published on each topic. Credit/no credit only. Prerequisite: first-year student standing in pharmacology. 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. Credit/no credit only. Prerequisite: permission of instructor. 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. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**PHCOL 562 Regulation of Synaptic Physiology (1)** *Chavkin* Discussion of research strategies and methodologies involved in the regulation of signal transduction and synaptic physiology. Emphasis on practical problem solving, data analysis, and presentation methods important to modern scientific work. Credit/no credit only. Prerequisite: permission of instructor. 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. Credit/no credit only. Prerequisite: permission of instructor. 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. Credit/no credit only. Prerequisite: permission of instructor. 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. Credit/no credit only. Prerequisite: permission of instructor. 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. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**PHCOL 567 Mechanisms of Carcinogenesis (2)** *Xia* 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.

**PHCOL 568 Pharmacology of Free Radicals (1)** *Vincenzi* Advanced considerations of current literature and experimental design, implementation and interpretation of research dealing with the effects of reactive oxygen species and free radicals on cell membranes and cells. Discussion of the relationships of such phenomena to human disease and the effects of drugs thereon. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**PHCOL 569 Molecular Genetics of Potassium Channel Function (1)** *Tempel* 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. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**PHCOL 571 Molecular Mechanisms of Neurosecretion (1)** *Bajjaleh* 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. Credit/no credit only. Prerequisite: permission of instructor.

**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. Credit/no credit only. Prerequisite: permission of instructor.

**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: A, W, Sp, S.

**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. Credit/no credit only. Prerequisite: permission of instructor. 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 600 Independent Study or Research (\*)** Pharmacology graduate students only. Offered: AWSpS.

**PHCOL 700 Master's Thesis (\*)** Pharmacology graduate students only. Offered: AWSpS.

**PHCOL 800 Doctoral Dissertation (\*)** Pharmacology graduate students only. Offered: AWSpS.

## Physiology and Biophysics

**CONJ 401, 402, 403 Human Anatomy and Physiology (4, 4, 4)** *Linder, Melby* See Conjoint Courses.

**P BIO 424 Vision and Its Physiological Basis (5) NW** *Teller* Behavioral neurobiology of human vision: color vision, acuity and spatial vision, light and dark adaptation, visual development. Correlation of visual functioning with known optical, biochemical, physiological, and anatomical substrates. Prerequisite: 2.0 in either PSYCH 333, NBIO 302, or PHIL 160. Offered: jointly with PSYCH 424; W.

**P BIO 498 Undergraduate Thesis (\*)** Offered: AWSpS.

**P BIO 499 Undergraduate Research (\*)** Offered: AWSpS.

**P BIO 505 Human Physiology (4-)** *Wordeman* Intensive coverage of physiology across the life span through lectures, conference. Includes excitable tissue, neurophysiology, skeletal muscle; spinal reflex; autonomic nervous system; temperature regulation, neuroendocrinology, and reproductive physiology. Required for dental, graduate nursing, and bioengineering students. Also offered for graduate students. Offered: A.

**P BIO 506 Human Physiology (-4)** *Hlastala* Intensive coverage of physiology across the life span through lectures, conference. Includes cardiovascular, respiratory physiology renal, body fluids; gastrointestinal, and acid base balance. Required for dental, graduate nursing, and bioengineering students. Also offered for graduate students. Offered: W.

**P BIO 507 Cardiovascular and Respiratory Physiology (3)** Cardiovascular physiology: the heart, microcirculation, hemodynamics, regional circulation, and reflex integration. Respiratory physiology: the lung, pulmonary circulation, alveolar ventilation, gas exchange, control of breathing, acid-base regulation, exercise. Offered: W.

**P BIO 508 Introduction to Laboratory Research in Physiology (2-5)** 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 NEUBEH 541; W, odd years only.

**P BIO 510 Physiology Survey (2)** Reading and discussion of the research literature in cellular, molecular, and systems physiology. Students write a critical evaluation of each paper in the manner of a peer review. All three quarters are required for second-year P BIO students. Prerequisite: completion of one year of P BIO graduate study. Offered: A.

**P BIO 511 Physiology Survey (2)** Reading and discussion of the research literature in cellular, molecular, and systems physiology. Students write a critical evaluation of each paper in the manner of a peer review. All three quarters are required for second-year P BIO students. Prerequisite: completion of one year of P BIO graduate study. Offered: W.

**P BIO 512 Physiology Survey (2)** Reading and discussion of the research literature in cellular, molecular, and systems physiology. Students write a critical evaluation of each paper in the manner of a peer review. All three quarters are required for second-year P BIO students. Prerequisite: completion of one year of P BIO graduate study. Offered: Sp.

**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 516 Physiological Proseminar (7)** *Hlastala* Guided survey of the experimental literature in cardiovascular and respiratory physiology. Course conducted as seminar with oral analysis of assigned papers and topics. Prerequisite: permission of instructor. Offered: A.

**P BIO 518 Research Topics in Cardiovascular Physiology (1)** *Feigl* Graduate students and faculty members present and discuss current literature and research. Prerequisite: permission of instructor.

**P BIO 519 Membrane and Muscle Biophysics Seminar (1)** *Hille* Lectures on current research topics in cell membrane function and muscle contraction. Credit/no credit only. Prerequisite: permission of instructor. 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.

**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.

**CONJ 531 Signaling Mechanisms in Excitable Cells (1.5)** See Conjoint Courses.

**P BIO 532 Discussion in Cell Signaling and Molecular Physiology (2)** Discusses fundamental issues in cell excitability and molecular and cellular physiology. Focuses on problem solving and reading from original literature. Emphasizes student participation. Prerequisite: first-year graduate students in neurobiology or physiology and biophysics. Offered: jointly with NEUBEH 532; W

**P BIO 541 Motor Systems I: Peripheral, Spinal, and Cortical Mechanisms (3)** *Binder, Fetz* Discussion of research papers on the physiology of the motor unit and the spinal and cortical neurons that control motor unit activity. Prerequisite: NEUBEH 501-503 or permission of instructor.

**P BIO 542 Motor Systems II: Brainstem Mechanisms (3)** *Anderson, Fuchs* Critical discussion of research papers and resulting concepts regarding the roles of various brainstem systems in controlling somatic and ocular movements. Each student is responsible for leading the discussion of one topic. Prerequisite: NEUBEH 502 and NEUBEH 503 or equivalent and permission of instructor.

**P BIO 545 Quantitative Methods in Neuroscience (3)** *Rieke, Shadlen* 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, 502, 503, or by permission of instructor. Offered: jointly with NEUBEH 545;W; odd years.

**P BIO 547 Readings in Cell Physiology (2/3, max. 15)** *Hille* Reading and discussion of research literature on excitable cells. Emphasis on membrane excitability, transport, contractility, growth factors, and extracellular matrix. Topics vary. Prerequisite: CONJ 501 or equivalent. Offered: W.

**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 NEUBEH 550; Sp.

**P BIO 551 Mouse Models (1)** Illustrates the use of transgenic and targeted-gene disruption technologies for developing mouse models of the disease. Introduces the methodology of producing transgenic and knock out mice. Discusses several examples of disease models using the most recent primary literature as a source. Offered: jointly with NEUBEH 551.

**P BIO 552 Synaptic Integration (1)** *Binder, Powers* Discussion of recent papers on how neurons in the central nervous system integrate concurrent synaptic inputs. Includes: effects of driving force on synaptic currents, effects of conductances on dendritic properties, transfer of currents from dendrites to soma, and transformation of currents into spike train outputs. Offered: jointly with NEUBEH 552.

**P BIO 553 Learning and Memory: Synapses and Systems (2)** *Jagadeesh, Sullivan* Five-week mini-course evaluates the current state of knowledge on the mechanisms that allow people to learn and remember. After introductory overviews of the cellular and molecular mechanisms underlying long-term synaptic plasticity and the multiple systems existing for learning and memory, students choose specific topics for discussion. Offered: jointly with NEUBEH 553.

**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 NEUBEH 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 NEUBEH 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 NEUBEH 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 NEUBEH 557.

**P BIO 558 Concepts and Mechanisms in Mitosis (2)** *Ashbury, 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, Moeller, Neumaier, Weiss* 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/NEUBEH 559.

**P BIO 594 Neurological Study Unit (0.5)** Faculty and student discussion of neurological topics illustrated with clinical cases or demonstrations include the following: physiology, neuroanatomy, neurology, neuropathology, neurosurgery, and psychiatry. Credit/no credit only. Prerequisite for medical students: HUBIO 532. Offered: AW.

**P BIO 600 Independent Study or Research (\*)** Offered: AWSp.

**P BIO 700 Master's Thesis (\*)** Offered: AWSpS.

**P BIO 800 Doctoral Dissertation (\*)** Offered: AWSpS.

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## Psychiatry and Behavioral Sciences

**CONJ 475 Alcoholism: A Course for Medical Students in the Allied Health Sciences (2)** See Conjoint Courses.

**PBSCI 498 Undergraduate Thesis (\*)** Opportunity to complete work on psychiatric research projects or to pursue a specific psychiatric topic in depth, for instance, through library research.

**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.

**PBSCI 505 P-Psychiatry Preceptorship (1)** *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 515 War and Mental Health (1)** Examines the impact of war on mental health in both military and civilian populations. Focuses on posttraumatic stress disorder, including assessment, treatment, epidemiology, and neurobiology. Addresses other psychiatric disorders, substance abuse, brain injury, and psychosocial effects. Credit no credit only.

**PBSCI 525 P-Psychiatry and the Law (3)** *Goldenberg* Concentration on major issues in psychiatry and law. Outside speakers from legal, judicial, and psychiatric communities. Lectures on assessment in forensic settings, competence to stand trial, and criminal responsibility. Discussions on personality disorders and correctional environments. For psychiatric residents and graduate psychology, psychosocial nursing, social work, and law students.

**PBSCI 530 P-Developmental Psychoanalytic Psychotherapy (2)** *Schimmelbusch* Examines how failures of psychological development lead to disorders of regulation of affects and cognition, and how psychoanalytic treatment reinstitutes normal development. Treatment process viewed from a psychoanalytic and psychobiological perspective. Clinical case discussion integrates theoretical concepts.

**PBSCI 535 Modern Concepts of Psychoanalysis (2)** *Schimmelbusch* Examines childhood developmental stages in light of inborn and environmental determinants. Correlates developmental phases with adult personality functioning. Views emotional development from a psychoanalytic and psychobiological point of view. Clinical case discussion integrates theoretical concepts.

**PBSCI 546 Psychiatric Epidemiology (3)** *Vander Stoep* Applies epidemiological methods to the study of mental illnesses. Topics include historical studies; distribution of mental illness, classification and measurement; epidemiology of depression; genetic and environmental etiological factors; developmental epidemiology. Prerequisite: either EPI 511, EPI 512, HSERV 591, or permission of instructor. Offered: Sp.

**PBSCI 548 P-Aging and Adult Development (1-3, max. 3)** Aging in Western technologically advanced societies frequently involves losses in status, stamina, and economic and social supports. Consideration given to losses among the aged. Students select projects in the area of aging and work at their own levels of expertise and sophistication. Seminar format with guided reading.

**PBSCI 560 P-Psychological Interventions for Primary Care Physicians (1)** *Kent* Focuses on the integration of primary care and mental health issues. Reading, lectures, videos, and role plays are utilized to review evidenced-based psychological interventions which can be employed in an outpatient primary care setting. Emphasizes issues of somatization, depression, anxiety, and health behavior change.

**PBSCI 591 P-Seminars and Conferences in Psychiatry: Seminar in Clinical Neuropsychology (\*)** Introduction to neuropsychological studies of brain-behavior relationships. Exposure to neuropsychological assessment procedures and manifestation of neurocognitive deficits in selected mental and medical disorders, e.g., epilepsy, AIDS, sleep disorders, trauma, toxin exposure, vascular disorders, psychiatric disorders. Develop knowledge of neuropsychology.

logical assessment procedures and applications to diverse medical conditions. Prerequisite: psychological assessment experience.

**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. Offered: .

**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 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 will 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 St. Patrick Hospital with adult and adolescent inpatients and in the emergency room for emergent care exposure. Students will 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 665 P-Basic Clinical Clerkship (12)**

*Dagadakis, McCreery, Mehta* 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)**

*Kletti* 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. Prerequisite: HUBIO 563. (Limit: three students.)

**PBSCI 667 P-Basic Psychiatry Clerkship, Boise (12)**

*Hines* 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)**

*Bakker* 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. Prerequisite: completion of HUBIO series; third and fourth-year medical students.

**PBSCI 669 Basic Psychiatry Clerkship, 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 UMMC (\*, max. 24)**

*Walker* 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; four weeks.) Prerequisite: HUBIO 563; either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668.

**PBSCI 671 P-Clerkship in Consultation/ Liaison Psychiatry HMC (\*, max. 24)**

*Elliott* Prerequisite: either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668. (Limit: two students.)

**PBSCI 672 P-Elective Clerkship in Primary Care Psychiatry at Boise VAMC (8/12)**

*Blackburn, Leone, Marsh* 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: either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668. (Four to six weeks; UW students only.)

**PBSCI 673 P-Outpatient Psychiatry Elective (\*, max. 24)**

*Foster* 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. Prerequisite: either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668. (Four to six weeks, full-time.)

**PBSCI 676 P-Inpatient Clerkship in Psychiatry at American Lake VA (8/12)**

*Chandran* 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. Prerequisite: either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668. (Four to six weeks, full-time.)

**PBSCI 677 P-Alcohol and Drug Treatment Clerkship at 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: either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668. (Four to six weeks, full-time.)

**PBSCI 678 P-Clerkship in Psychiatric Long-Term Care and Rehabilitation (\*, max. 12)**

*Chandran* 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; either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668.

**PBSCI 680 P-Clerkship in Emergency Psychiatry (\*, max. 24)**

*Gardiner* 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. Prerequisite: either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668. (Four or six weeks, full-time.)

**PBSCI 685 P-Geriatric Psychiatry Clerkship (\*, max. 12)**

*Pascualy* 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: either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668.

**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. Prerequisite: either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668; permission of instructor. (Four or six weeks, full-time.)

**PBSCI 696 P-Advanced Clerkship in Child Psychiatry (\*, max. 24)**

*Varley* Provides students an opportunity to participate in evaluation and treatment. Experiences in specialized clinics are also available. It is suggested that the student contact the instructor prior to enrollment. Prerequisite: either PBSCI 665, PBSCI 666, PBSCI 667, or PBSCI 668. (Four or six weeks, full-time. Limit: two students.)

**PBSCI 697 P-Psychiatry Special Electives (\*, max. 24)**

By special arrangement, clerkships, externships, and research opportunities can be made available at the University and other institutions. Students obtain permission from Dr. Hunt before obtaining a special assignment form from 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.

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## Radiation Oncology

**R ONC 499 Undergraduate Research (\*, max. 24)** *Douglas, Kalet, Kane, Kelly, Koh, Laramore, Liao, Patel, Phillips, Russell, Schwartz, Wang, Wilbur, Yas* 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 695 P-Clinical Cancer Management (\*, max. 8)** *Douglas* 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: MED 665 or permission of instructor.

**R ONC 697 P-Radiation Oncology Special Elective (\*, max. 24)** *Douglas* By specific arrangement for qualified students, special clerkship, externship or research opportunities can be made at institutions other than the University of Washington. Students should 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)** *Douglas* 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.

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## Radiology

**RADGY 498 Undergraduate Thesis(\*)** Supervised clinical and/or laboratory research in the broad field of medical imaging, culminating in a thesis. Offered: AWWSpS.

**RADGY 499 Undergraduate Research (\*)** Opportunity to gain research experience and direct participation in either clinical or basic sciences investigation in diagnostic and/or nuclear medicine. Offered: AWWSpS.

**RADGY 505 P-Preceptorship in Nuclear Medicine (1, max. 24)** *Eary (University of Washington Medical Center)* Opportunity for first- and second-year medical students to gain experience with faculty in clinical and academic environments. Students observe general aspects of the Nuclear Medicine Division, including clinical problems, the different relationships in the clinic between physician and patient, and several research aspects of the division. Prerequisite: permission of instructor. Offered: AWWSpS.

**RADGY 508 Physical Aspects of Medical Imaging (4)** *Stewart* 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. Offered: jointly with BIOEN 508/ENV H 528.

**RADGY 550 Nuclear Magnetic Resonance in Biomedicine (2)** *Hayes, Kushmerick, Richards, Yuan* Basic physics of nuclear magnetic resonance (NMR) imaging and spectroscopy are presented. Research applications of NMR in physiology and biochemistry are reviewed with emphasis on the brain. Grade based on written tests and small research paper. Prerequisite: permission of instructor. Offered: jointly with BIOEN 565; odd years; Sp.

**RADGY 580 P-Nuclear Medicine Technique, Physics, and Instrumentation (2.5)** *Lewellen* Provides familiarization with basic nuclear phenomena and with the instrumentation used in the practice of nuclear medicine. There are discussions and laboratory exercises. Practical experience in instrument operation and sample counting are provided. Prerequisite: permission of instructor. Offered: S.

**RADGY 693 P-Introduction to Diagnostic Radiology (4)** *Schulte* 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: AWWSpS.

**RADGY 694 P-Advanced Clinical Clerkship (8)** *Schulte* 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 Radiology 693. For those with a special interest in diagnostic radiology. Prerequisite: permission of instructor and departmental education coordinator. Offered: AWWSpS.

**RADGY 695 P-Radiology Sub-specialty Elective (\*, max. 8)** *Schulte* 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: AWWSpS.

**RADGY 696 P-Nuclear Medicine Clerkship (\*, max. 12)** *Eary* 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 preplanned in areas such as pulmonary, cardiovascular, renal, bone, computer analysis. Prerequisite: permission of instructor. Offered: AWWSpS.

**RADGY 697 P-Radiology Special Electives (\*, max. 24)** *Schulte* 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: AWWSpS.

**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.

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## Rehabilitation Medicine

**REHAB 300 Introduction to Occupational Therapy (1)** *Rollinger* Introduction to occupational therapy profession. Provides historical perspectives, theoretical foundations, and clinical case studies in various practice arenas. Credit/no credit only. Offered: ASP.

**REHAB 340 Spinal Orthotics (5)** *Yamane* Instruction and review of anatomy and biomechanics of the spine, patient evaluation, and prescription considerations as related to spinal orthotics. Lectures provide background knowledge of orthotic treatment principles for spinal pathologies. Laboratory experience includes patient evaluation, impression and measurement techniques, fabrication methods, and fitting criteria. Required for prosthetics and orthotics majors.

**REHAB 341 Upper Extremity Prosthetics I (4)** *Okumura* Principles of upper extremity prosthetic management and prescription considerations: functional evaluation, preprosthetic care, use of prosthetic components and materials, fabrication, harnessing, prosthetic training, documentation, and billing. Incorporates anatomy, biomechanics, and pathomechanics with clinical experience as they pertain to upper extremity prosthetics. Required for prosthetics and orthotics majors.

**REHAB 342 Upper Extremity Prosthetics II (4)** *Okumura* Principles of upper extremity prosthetic management and prescription considerations: functional evaluation, preprosthetic care, use of prosthetic components and materials, fabrication, harnessing, prosthetic training, documentation, and billing. Incorporates anatomy, biomechanics, and pathomechanics as they pertain to upper extremity prosthetics. Required for prosthetics and orthotics majors. Prerequisite: REHAB 341.

**REHAB 343 Upper Extremity Orthotics (2-4, max. 4)** *Yamane* Lecture and laboratory instruction in patient evaluation, prescription considerations, componentry, and fabrication procedures for upper extremity orthoses. Required for prosthetics and orthotics majors.

**REHAB 400 Medical Science (4)** Lectures in fields related to: general surgery, obstetrics and gynecology, internal medicine, neurology, rehabilitation medicine, orthopaedics, psychiatry and behavioral sciences, rheumatology, and pediatrics. Required for occupational therapy, prosthetics and orthotics, and physical therapy students. Credit/no credit only.

**REHAB 401 Medical Science (4)** Lectures in fields related to: general surgery, obstetrics and gynecology, internal medicine, neurology, rehabilitation medicine, orthopaedics, psychiatry and behavioral sciences, rheumatology, and pediatrics. Required for occupational therapy, prosthetics and orthotics, and physical therapy students. Credit/no credit only.

**REHAB 402 Medical Science Laboratory (1, max. 2)** To introduce students to the role of allied

health professionals in the treatment of pathologies presented in 400, 401 lectures. Credit/no credit only.

**REHAB 403 Physiological Principles for Rehabilitation Professionals (2)** *Slimp* Normal and pathological physiology of the cardiovascular, respiratory, and musculoskeletal systems as a basis for evaluation and intervention in occupational therapy, physical therapy, and prosthetics/orthotics. Required for majors.

**REHAB 413 Special Studies in Physical Therapy (1-15, max. 24)** Theory and practice in specialized areas of physical therapy. Credit/no credit only.

**REHAB 414 Psychological Aspects of Rehabilitation (2)** *I&S Patterson* Psychological processes underlying adjustment to disability; application of behavioral/analysis systems in patient therapy management; effects of cognitive or personality deficits on patient performance and treatment strategies. Credit/no credit only.

**REHAB 416 Principles of Physical Therapy Administration (2, max. 4)** *Guthrie* The nature of administration, economic trends, operational policy, aspects of supervision, ethical and legal influences applicable to a physical therapy department. Required for physical therapy students. Credit/no credit only.

**REHAB 420 Lower Extremity Prosthetics I (8)** *Abrahamson* Instruction in patient evaluation, casting, cast modification, socket fabrication, static and dynamic alignment, alignment duplication, suspension systems, and documentation for transtibial amputation. Required for prosthetics and orthotics majors; others by permission of instructor.

**REHAB 421 Lower Extremity Prosthetics II (11)** *Abrahamson* Instruction in transfemoral patient evaluation, casting, cast modification, socket fabrication, static and dynamic alignment, alignment duplication, suspension systems, and documentation. Methods of fitting through knee and hip disarticulation levels demonstrated. Required for prosthetics and orthotics majors; others by permission of instructor.

**REHAB 423 Lower Extremity Orthotics I (6)** *Yamane* Patient evaluation and prescription considerations for orthotic management of the lower extremity. Lectures provide instruction in the biomechanics of the lower extremity during ambulation, clinical indications and fitting criteria for a variety of orthotic devices. Laboratory sessions provide experience in fabrication principles, and impression and measurement techniques. Required for prosthetics and orthotics majors.

**REHAB 424 Lower Extremity Orthotics II (8)** *Yamane* Orthotic treatment of pathological conditions that affect the knee and hip addressed. Focus is placed on development of prescription recommendation, fabrication, fitting, and follow-up of orthoses that support, assist, or stabilize the knee and hip. Required for prosthetics and orthotics majors; others by permission of instructor.

**REHAB 427 Applied Prosthetics and Orthotics I (1-, max. 4)** *Halner* Presentation and discussion of current clinical practice using research and journal articles and case presentations. Required for prosthetics and

orthotics majors; others by permission of instructor. Credit/no credit only.

**REHAB 428 Applied Prosthetics and Orthotics II (1-4, max. 13)** Experience in patient management under the preceptorship of certified practitioners at clinical affiliation sites. Required for prosthetics and orthotics majors.

**REHAB 430 Engineering Concepts (2)** *Okumura* Principles of mechanics and strength of materials, force analysis, and hydraulic control in relationship to orthotics and prosthetics design. Required for prosthetics and orthotics majors.

**REHAB 442 Applied Kinesiology (4)** *Guthrie* Study of joint motion and muscle function in relation to both the normal and abnormal state, emphasizing gait. Specific techniques employed in the field of rehabilitation medicine are analyzed. Required for Department of Rehabilitation Medicine students; others by permission.

**REHAB 444 Functional Musculoskeletal Anatomy (4-)** *Guthrie* Functions of musculoskeletal system as applied to patterns of motion. Anatomy of peripheral-vascular and peripheral-nervous system. Required for occupational therapy students, prosthetics and orthotics students, and physical therapy students; others by permission of instructor.

**REHAB 445 Functional Musculoskeletal Anatomy (-4)** *Guthrie* Functions of musculoskeletal system as applied to patterns of motion. Anatomy of peripheral-vascular and peripheral-nervous system. Required for occupational therapy students, prosthetics and orthotics students, and physical therapy students; others by permission of instructor.

**REHAB 448 Applied Kinesiology Laboratory (1)** *Guthrie, Okumura, Powell, Robinson, Rollinger* Instruction and laboratory focus on practical experience and clinical problem solving in kinesiology. Potential topics include muscle and joint motion testing, sensory/perceptual assessment, prosthetic and orthotic devices, wheelchair use, gait training.

**REHAB 451 Functional Anatomy Laboratory (1)** *Bennett, Rollinger* Study of musculoskeletal, peripheral-vascular, and peripheral-nervous systems from prosected material. Required for physical therapy, occupational therapy, and prosthetic/orthotic students.

**REHAB 452 Functional Anatomy Laboratory (1)** *Bennett, Rollinger* Study of musculoskeletal, peripheral-vascular, and peripheral-nervous systems from prosected material. Required for physical therapy, occupational therapy, and prosthetic/orthotic students.

**REHAB 476 Prosthetic and Orthotic Evaluation and Use (2)** *Okumura* Instruction in mechanical component substitution for functional losses. Emphasis is on biomechanical principles, prosthetic-orthotic components, and alignment and fitting techniques. Credit/no credit only. Required for physical therapy students.

**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 (\*)** .

**REHAB 499 Undergraduate Research (\*)** 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 bioengineering.

**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)** *McCoy* 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 Physical Therapy Procedures I: Assessment (2)** *Maitland* Development of clinical competence in patient assessment techniques from a neuromusculoskeletal perspective. Special emphasis on upper quadrant anatomy, posture evaluation and medical record documentation.

**REHAB 505 Introduction to Pharmacology (2)** *Guthrie* 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. Credit/no credit only.

**REHAB 506 Physical Therapy Procedures II: Assessment (2)** Development of clinical competence in patient assessment techniques from a neuromusculoskeletal perspective. Discussion of normal and pathological findings. Special emphasis on lower quadrant anatomy, posture evaluation, and medical record documentation skills. Lecture and laboratory format.

**REHAB 507 Physical Therapy Procedures III: Modalities (3-4)** Principles and practice of physical therapy clinical treatment procedures utilizing therapeutic modalities. Lecture and laboratory format.

**REHAB 508 Principles of Therapeutic Exercise (4)** *McQuade* 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)** *Pepping* Processes and management methods for assimilation of disability, enhancing patient participation in rehabilitation process, and for helping in maintenance of performance; behavioral management and case conference strategies; rehearsal of contingency management techniques. Required for residents; others by permission of instructor.

**REHAB 511 Musculoskeletal IV: Clinical Management (5)** 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 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 (2-3, max. 21)** *Kartin* Group seminar format focused on physical therapy topics pertaining to transcurricular and professional practice issues. Credit/no credit only.

**REHAB 519 P-Preceptorship in Rehab Medicine (1)** *Hays* 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: AWWSpS.

**REHAB 520 Seminar (1-5, max. 5)** 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 522 Neurophysiological Topics in Rehabilitation Medicine (2)** *Anderson* Review

of traditional neurophysiological concepts and an exposition of recent advances in neurophysiological research related to the practice of rehabilitation medicine. Prerequisite: resident standing in rehabilitation medicine or permission of instructor.

**REHAB 523 Neuroscience III: Applied Neurology (4)** *Kelly* 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 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 care-givers. 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)** *Guthrie* 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 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 536 Patient Evaluation and Clinical Decision Making (1-2, max 8)** 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)** *Matsuda* 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 544 Functional Anatomy for Physiatrists (2-)** *Goldstein* Lectures and demonstrations to illustrate functional anatomy as applied by physicians in the practice of clinical rehabilitation. Intended to enhance functional assessments and to improve neuro/musculo/skeletal diagnosis and treatment through greater understanding of the underlying anatomy. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor.

**REHAB 545 Functional Anatomy for Physiatrists (-2)** *Goldstein* Lectures and demonstrations to illustrate functional anatomy as applied by physicians in the practice of clinical rehabilitation. Intended to enhance functional assessments and to improve neuro/musculo/skeletal diagnosis and treatment through greater understanding of the underlying anatomy. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor.

**REHAB 546 Teaching Practicum in Rehabilitation (1-3, max. 3)** Integration of knowledge and skills in teaching through teaching in the classroom or presentation of a minicourse, workshop, or in-service training series. Prerequisite: MEDED 520 and permission of instructor.

**REHAB 550 Neuropsychology in Rehabilitation (2)** *Bombardier, Ehde* 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 555 P-Neuromuscular Electrodagnosis (2.5)** *Kraft* Demonstration of fundamentals of electromyography and peripheral nerve stimulation followed by participation in clinical electrodagnosis examinations. Develops awareness of knowing when such procedures are indicated for patients and interpreting results rather than developing proficiency in performing these examinations. Prerequisite: HUBIO 560 and permission of instructor.

**REHAB 556 Foundations of Rehabilitation Science (3)** *Johnson, Yorkston* Overview of



rehabilitation science and social constructs of disability emphasizing bio-psycho-social-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: graduate student, instructor permission.

**REHAB 557 Qualitative and Quantitative Research in Rehabilitation (3)** *Ciol, Dudgeon* 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: Instructor permission. Offered: W.

**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 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. Offered: A.

**REHAB 571 Occupational Performance through the Life Span (4)** *Stewart* 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 will be placed on environmental influences, activity, and occupational roles, tasks, and component behaviors as they relate to individuals in different ages and stages. Offered: W.

**REHAB 572 Occupational Therapy Theory and Practice in Psychosocial Dysfunction I (1-7, max. 7)** *Engel* 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. Offered: SpS.

**REHAB 573 Occupational Therapy in Community Practice (4)** *Engel* Bodies of knowledge in occupational performance as they

relate to the emerging area of community-based practice. Includes traditional and evidence based practice in the realms of health promotion, prevention, evaluation, and intervention. Lectures, assigned readings, class discussions, role playing, site visits, films, laboratory exercises, and problem-based learning tutorials. Offered: Sp.

**REHAB 574 Occupational Therapy Theory and Practice in Physical Disabilities I (6)** *Dudgeon* 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. Offered: A.

**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. Offered: W.

**REHAB 576 Occupational Therapy Theory and Practice in Pediatrics (1-7, max. 7)** 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. Offered: W.

**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. Offered: Sp.

**REHAB 578 Occupational Performance Analysis (3)** *Kanny* 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, psychosocial, psychological), temporal aspects (chronological, developmental), and environmental aspects (physical, social, cultural). Offered: S.

**REHAB 579 Therapeutic Communication (3)** *Kanny* 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. Offered: Sp.

**REHAB 580 Introduction to Research in Rehabilitation (3)** *Dudgeon* Evaluation of rehabilitation research literature and design of research studies relevant to rehabilitation. Offered: S.

**REHAB 581 Application of Measurement Systems (3)** *Deitz* 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. Offered: A.

**REHAB 582 Assistive Technology in Rehabilitation (3)** *Dudgeon* 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. Offered: W.

**REHAB 584 Health-Care Trends and Issues (3)** *Kanny* Overview of the health services system in the United States and current trends and issues facing occupational therapists within this system. Content includes: health service providers, reimbursement of health care services, regulation, personnel and role delineation, and health policy and advocacy. Offered: A.

**REHAB 585 Leadership: Administration and Management (4)** *Kanny* Provides student with knowledge and skills needed for leadership positions in occupational therapy practice. Focuses on administration and management functions including strategic planning, program planning, marketing, fiscal management, program evaluation, and personnel management. Offered: W.

**REHAB 587 Industrial Rehabilitation (3)** *Dudgeon* Provides knowledge and skills related to vocational assessment and industrial rehabilitation for individuals with medical or psychosocial problems. Emphasizes worker characteristics, job analysis, and accommodation in business and industrial settings. Clinical simulation components provide applications to specific diagnostic, impairment, or disability conditions. Offered: Sp.

**REHAB 591 Graduate Project (1-4, max. 7)** Graduate project focused on research, administration, education, practice, policy, or other scholarly or creative work. Required of graduate, entry-level occupational therapy and physical therapy students. Offered: AWSpS.

**REHAB 592 Principles of Orthotic Use in Rehabilitation (2)** *Chang* 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 (1)** *Czerniecki* 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. 20)** *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 setting reflective of current practice. Students must complete a minimum of two 12-week placements. Credit/no credit only. Offered: AWSpS.

**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.

**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.

**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.

**REHAB 600 Independent Study or Research (\*)** Credit/no credit only.

**REHAB 685 P-Chronic Disease and Disability (4)** *Cox, Hays* Meets chronic-care requirement for medical students. Structured clinical experience on rehabilitation medicine services. Differences between acute and chronic medicine, identification of disability problems, and therapeutic techniques for removing disability. Hospitals are within University system, local area, and WWAMI area. Prerequisite: third-year medical student standing.

**REHAB 686 P-Rehabilitation Medicine Clerkship — Pediatrics (8/12)** *Hays, Jaffe, Massagli* Meets chronic-care requirement for medical students. Incorporates material of 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)** *Hays* Meets chronic-care requirement for medical students. Incorporates material of 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)** *Little* 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 695 P-Rural Rehabilitation Medicine Clerkship (8)** *Hays* Structured clinical experience in identification and treatment of disability problems in rural (nonmajor urban) communities. Satisfies chronic care/rehabilitation medical graduation requirements. Prerequisite: completion of at least six months of clinical clerkships, permission of instructor.

**REHAB 697 P-Rehabilitation Medicine Special Elective (\*, max. 24)** Equivalent to 686, 687, or 688. Satisfies requirements in rehabilitation medicine/chronic care. Student arranges with another university, using the "Special Assignment Form." Students can qualify after review, similar experience at another university. Prerequisite: permission of instructor.

**REHAB 700 Master's Thesis (\*)** Credit/no credit only.

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## Surgery

**SURG 498 Undergraduate Thesis (\*)** *Langdale* Offered to those students who have engaged in undergraduate research in general surgery. (Full- or part-time.)

**SURG 499 Undergraduate Research (\*)** *Langdale* 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)** *Langdale* 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 (\*)** *Langdale*

**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 665 P-Clinical Clerkship (\*, max. 12)** *Langdale (Harborview Medical Center, Providence Medical Center, University of Washington Medical Center, Veterans Affairs Medical Center, Virginia Mason Medical Center)* 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. Prerequisite: HUBIO 563. (Six weeks. Limit: twenty students.)

**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. Prerequisite: completion of HUBIO series. (Six weeks. Limit: two students.)

**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. Prerequisite: completion of HUBIO series.

**SURG 668 P-Clinical Clerkship Casper (12)** Text Offered: . 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. Prerequisite: HUBIO 563.

**SURG 669 P-Clinical Clerkship Billings (12)** *faculty* 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. Prerequisite: HUBIO 563.

**SURG 670 P-Clinical Clerkship Missoula (12)** *faculty* 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. Prerequisite: HUBIO 563.

**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. Prerequisite: HUBIO 563.

**SURG 681 P-Peripheral Vascular Disease (4/8, max. 8)** *Clowes (Veterans Affairs Medical Center)* 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: SURG 665, HUBIO 563. (Two or four weeks. Limit: one student.)

**SURG 682 P-Clinical Burn Care (\*, max. 12)** *Heimbach (Harborview Medical Center)* 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: SURG 665. (Four or six weeks. Limit: two students.)

**SURG 683 P-Pediatric Surgery Externship (8/12)** *Tapner (Children's Hospital and Regional Medical Center)* Surgical conditions peculiar to the particular age group with a preponderance of

congenital and neoplastic conditions that are amenable to surgical treatment. A reasonable background of knowledge in human embryology and genetics is recommended. Prerequisite: SURG 665. (Four or six weeks. Limit: two students.)

**SURG 685 P-Cardiothoracic Surgery Externship (\*, max. 12)** *Verrier (University of Washington Medical Center)* 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. (Four or six weeks. Limit: two students.)

**SURG 686 P-Plastic Surgery Clerkship and Preceptorship (\*, max. 12)** *Vedder (University of Washington affiliated hospitals)* 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: SURG 665; MED 665. MS III only, two weeks, 4 credits, limit 2; MS III/MS IV four/six weeks (recommended), 8/12 credits, limit 4.

**SURG 687 P-Transplantation Surgery Clerkship (8)** *Perkins (University of Washington Medical Center)* 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: SURG 665 and MED 665. (Four weeks. Limit: two students.)

**SURG 688 P-Subinternship in General Surgery (\*, max. 16)** *Langdale (Veterans Affairs Medical Center, Harborview Medical Center, Providence Medical Center, University of Washington Medical Center)* 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: SURG 665. (Four or six weeks. Limit: six students.)

**SURG 689 P-Community Surgery Clerkship (8)** *Langdale* Designed to supplement basics learned in 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. (Four weeks. Longview. Limit: one student. Coeur d'Alene. Limit: one student.)

**SURG 690 P-Alaska Native Medical Center Surgery Sub-Internship (8/12)** *Langdale* Designed to supplement basics learned in 665. Excellent opportunity to participate in general, thoracic, vascular, and plastic surgery in a specialized population of patients. Recommended for students entering primary care.

Prerequisite: SURG 665 and permission of department. (Four or six weeks. Alaska Native Medical Center, Anchorage. Limit: one student.)

**SURG 691 P-Surgical Intensive Care Unit Sub-Internship (8)** *Langdale* Designed to augment experience gained in 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: SURG 665. (Harborview Medical Center. Limit: two students. Veterans Affairs Medical Center. Limit: one student.)

**SURG 692 P-Ambulatory Surgery Clerkship (4)** *Waldhausen* 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: SURG 665, permission of department. (Four weeks. Buffalo. Limit: one student.)

**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: SURG 665, permission of department. (Four weeks. Riverton. Limit: one student.)

**SURG 697 P-Surgery Special Electives (\*, max. 24)** *Langdale* Special clerkship, externship, 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 from the Dean's office a special assignment form at least one month before preregistration. Prerequisite: SURG 665 and departmental permission. (Four, six, or twelve weeks.)

**SURG 698 P-Clinical Clerkship Away (\*, max. 24)** Clerkship equivalent to SURG 665, at sites outside the Seattle metropolitan area.

**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.

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## Urology

**UROL 498 Undergraduate Thesis (\*)** Provides an opportunity for medical students to write in the area of urology.

**UROL 499 Undergraduate Research (\*)** 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)** 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. Prerequisite: UROL 680, HUBIO 562. (Two or four weeks.)

**UROL 680 P-Urology Clerkship (\*, max. 8)** *Berger, Ellis, Grady, Krieger, Lange, Mayo, J. Miller, L. Miller, Mitchell, Penson, Porter, Takayama, Wessells* Full activities of clinical service. Basic principles of urology emphasized. Prerequisite: HUBIO 562. (Two or four weeks.)

**UROL 681 P-Female Urology (4)** *J. Miller, L. 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 685 P-Urology Subinternship (\*, max. 12)** *Berger, Ellis, Grady, Krieger, Lange, Mayo, J. Miller, L. Miller, Mitchell, Penson, Porter, Takayama, Wessells* Subintern is responsible for patient workups and for preoperative 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. Students can spend time with one attending at University of Washington Medical Center, Harborview Medical Center, Children's Hospital and Medical Center, 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 can at times be made available at institutions other than the University of Washington. Students wishing to elect this course should obtain from the Dean's office a special assignment form at least one month before preregistration. Prerequisite: permission of instructor. (Six or twelve weeks.)

**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

## Nursing

**NURS 200 Critical Approach to Women's Health (3)** Interdisciplinary examination of women's health from a critical social-political approach. Discusses issues of gender, race, class, heterosexism, etc. in relation to women's health policies.

**NURS 201 Growth and Development Through the Life Span (5) I&S** Focuses on processes of human growth and development from prenatal life to old age. Emphasizes influence of growth and development on achievement of health, and how awareness of growth and development theory and research helps guide health promotional efforts directed toward persons of various ages and life styles. Open to nonmajors.

**NURS 202 Difference and Identity on University Campus (5)** *Allen* Novels, autobiographies, films, and music are used to explore how American who are seen as white are characterized by people who are seen as non-white. Since many freshmen find campus life more socially diverse than their home communities, the focus is on young adults and college environments.

**NURS 203 Health Care Terminology for Nursing (2)** Designed to improve reading, writing, listening, and comprehension skills with respect to health care terminology. Offered: SpS.

**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 health care, and the U.S. health care 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 2-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 theoretical and practical information about basic and complex concepts and issues relevant to the nursing care of older people across the continuum of care.

**NURS 405 Care in Illness II (5)** Continuation of 401, further examining selected psychopathologic and pathophysiologic alterations in health of individuals in context of families across life span. Emphasizes assessing functioning in psychosocial, cultural, person-environment relationships, and health care 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 health care needs of multicultural societies through non-discriminatory and culturally appropriate nursing care practice. Offered: Sp.

**NURS 408 Nursing Care with Families in the Community (3)** Application of biopsychosocial and social environmental theories and assessments to diagnose alterations in health/mental health of families, small groups in community settings. Emphasizes interpersonal and clinical therapies; coordination of community resources, evaluating effectiveness of changes; characteristics of nursing care in home visiting.

**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 health care analyzed using specific moral-ethical perspectives. Offered: AW.

**NURS 412 Health Care Systems (3)** Introduction to analysis of health care 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 health care systems. Offered: Sp.

**NURS 413 Health in a Developing Nation: Study Abroad (5)** *Dorrenbos* Experimental learning opportunity in a developing resource-poor county. Explores the country's health challenges and health care system, including

policies and interventions aimed to reduce inequalities in health. Addresses socio-cultural, environmental, economic, political, and ecological factors.

**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 430 Interpersonal Relationships in Nursing (3)** Theory, current research, and practice in communication to develop and maintain interpersonal relationships with clients and health care colleagues. Lecture/discussion and laboratory learning opportunities include concepts of relationship development and disorder, interpersonal and group therapeutic communication processes, health care interviewing, and social support.

**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 health care emphasized.

**NURS 450 Study Abroad Preparation: International Nursing in Context (1-,max 4)** *Carr, Kennedy, Lindenberg, Muecke* Introduction to the language (if other than English), history and culture of the host country, and examination of international health issues pertinent to the country. Required course for students taking a Study Abroad quarter. Course may be taken as distance learning. Offered: AWWSpS.

**NURS 466 Continuing Education in Nursing (3)** Planning, developing, and evaluating continuing education programs in various institutions and agencies. Includes the application of adult learning principles to a variety of situations, such as workshops, in-service and staff development programs.

**NURS 488 Youth at High Risk for Drug Abuse, Suicide Behaviors, Aggression, and Depression (3)** Study of adolescent problem behaviors: causes, connections, and contexts. Two central themes are understanding vulnerability to drug abuse, suicide behaviors, and other related behaviors within social network contexts and exploring implications for prevention and early intervention programming.

**NURS 489 Alcohol Problems in Family and Society (3)** Analysis of family problems associated with alcoholism. Emphasis on

psychological, cultural, and social implications; examination of various counseling practices employed and theories of prevention.

**NURS 492 Anthropology of Refugees (3) I&S**

The refugee phenomenon, its emergence in postcolonial world, and structure of life history of refugees. Ethnic change, involuntary deculturation, and acculturation as they occur in refugee life histories. Prerequisite: one 200-level ANTH course or LING 203. Offered: jointly with ANTH 492.

**NURS 495 Child Rearing, Culture, and Health (3) I&S** Cross-cultural study of the child-rearing practices, cultural norms, and health behavior of children and adolescents in different societies. Comparative approaches, diverse theoretical postures, and empirical research findings are used. Offered: jointly with ANTH 440.

**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. Offered: AWSpS.

**NURS 500 Children and Adolescents with Special Health Needs, Their Families and Communities (3/4, max. 4)** *Acker, Brandt, Kieckhefer, Jolley, Magyary* Includes advanced health care approached for providers of children and adolescents with chronic physical, neurobiological, developmental, or psychosocial problems. Emphasizes evidence based, culturally competent, and comprehensive assessment, referral and management strategies. Describes exemplars of leadership processes related to policy, care coordination, family centered, and multidisciplinary approaches. Prerequisite: permission of instructor. Offered: A.

**NURS 501 Advanced Mental Health Interventions with Children (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. Prerequisite: NURS 500.

**NURS 502 Human Responses in Health and Illness I (3)** Survey of selected human responses to environmental demands in health and illness as expressed at physiologic, pathophysiologic, experiential, and behavioral levels. Such concepts as host defenses, ventilation, circulation, elimination, and nutrition are discussed. Prerequisite: graduate standing.

**NURS 503 Human Responses in Health and Illness II (3)** Survey of selected human responses to environmental demands in health and illness at physiologic, pathophysiologic, experiential, and behavioral levels. Such concepts as immune response, stress response, circadian rhythms, pain, sleep, cognition, and consciousness. Prerequisite: graduate standing.

**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 health care.

**NURS 506 Role and Context of Advanced Practice Psychiatric Mental Health Nursing (3)** Introduction to advanced practice roles in Psychiatric Mental Health Nursing. Diverse populations, practice settings, health care systems, standards of practice, certification, and licensing criteria relevant to the advanced practice role examined within the context of a broad range of ethical, clinical, and educational issues. Examines future directions. Credit/no credit only.

**NURS 507 Mental Health of Older Adults (3)** 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 508 Seminar in Group Treatment (2)** 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.

**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. Course is 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 510 Primary Care Foundations: Diagnosis and Management of Common Health Concerns (1-3, max. 9)** Focus on diagnosis and management of common primary care problems of adolescents and adults, including older adults, within advanced nursing practice. Emphasizes individual and family responses and nursing strategies including differential diagnosis, treatment, patient education, and follow-up. Content focus changes each quarter. Prerequisite: permission of instructor; recommended: concurrent field work.

**NURS 511 Seminar in Neonatal Nursing (3)** Neonatal neurobehavioral and physiologic adaptation within context of physical and social environment. Neonatal responses to alterations in growth and illness. Assessment modalities and therapeutic strategies used during the neonatal period. Prerequisite: NURS 514 or permission of instructor.

**NURS 512 Critical and Interdisciplinary Approaches to Women's Health (3)** Critical examination of the historical, socio-political, and scientific influences on women's health.

Issues of sexism, racism, and heterosexism discussed from the perspective of different disciplines. Offered: jointly with WOMEN 512.

**NURS 513 Seminar in Contemporary Women's Health Issues (1-5, max. 12)** Critical analysis of contemporary and historical literature relevant to health care for women across the life span. Synthesis of a holistic view of women's health to guide research and practice. Offered: jointly with WOMEN 513.

**NURS 514 Physiologic Adaptations in Women and Children: Physiologic Adaptations During Pregnancy and Postpartum (1-6, max. 6)** *Blackburn* Analyzes the developmental physiologic adaptations in four units: women/reproductive processes, pregnancy/postpartum, fetus/neonate, and infancy through adolescence. Emphasis on implications for nursing practice. Examination of evidence-base for selected intervention strategies.

**NURS 515 Common Adolescent Health Problems (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 516 Pediatric Pulmonary Anatomy and Physiology: Clinical Applications (2)** Examines evidenced-based approach to pediatric pulmonary conditions. Includes lung structure and function from infancy through adolescence with detailed analysis of the components parts of the pulmonary system, i.e., neurological control, upper and lower airways, parenchyma, and chest wall.

**NURS 517 Pediatric Pulmonary Pathophysiology: Clinical Applications (2)** Evidence-based approach to pediatric pulmonary pathophysiology and current treatment. Critical analysis and application of interdisciplinary management and long-term follow-up for children with pulmonary special health care needs. Emphasizes family centered care and professional leadership role of the advanced practice nurse. Prerequisite: permission of instructor.

**NURS 518 Advanced Practice Pediatric Primary Care Management (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 519 Curriculum Development in Nursing Education (3)** Theoretical rationale for curriculum development, study of curricular problems in nursing in relation to the elements of the curriculum as described in a curricular design. Prerequisite: graduate standing.

**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 521 Computing Fundamentals for Health Providers (3)** Enables health professionals to solve work/practice challenges using existing features of desktop computers. Emphasizes productivity concepts. Introduces extended features of common software packages, as well as basic concepts/methods of small system management and support. Prerequisite: admission to Health Informatics Certificate Program or by instructor permission. Offered: jointly with MEDED 580;W.

**NURS 522 Legal and Ethical Issues in Advanced Practice Nursing (3)** *Shannon* Reviews selected ethical issues in health care and legal guidelines relevant to health care decision-making. Explores bioethics as a type of applied ethics. Focuses on preparing students for ethical challenges in advanced nursing roles. Offered: jointly with MHE 542; Sp.

**NURS 523 Communities, Populations, and Systems: Theoretical Foundations (3)** Focus on construction and analysis of research-based philosophies and theories related to nursing practice at the community, population, and systems levels. Synthesize and apply knowledge about social and environmental justice, determinants of health, and human health responses to populations and communities. Examine and evaluate leadership roles for nurses in community settings.

**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. Prerequisite: NURS 524 or permission of instructor.

**NURS 526 Managing Organizational Effectiveness Within Care Systems (3)** Analysis of management strategies for attaining effective and efficient organizational structures and processes within health care systems. Prerequisite: NURS 524 or permission of instructor.

**NURS 527 Managing Effective Access and Utilization Within Care Systems (3-4)** In-depth inquiry into health care 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 528 Implications of Human Embryology and Genetics for Clinical Practice (3)** Normal development of the human embryo and fetus and principles of human genetics. Alterations in development leading to common anomalies and implications for clinical practice. Prerequisite: graduate standing or permission of instructor.

**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 530 Conceptual Frameworks for Parent-Child Nursing (3)** Designed to assist graduate students in exploration, criticism, and analysis of selected concepts, frameworks, and models relevant to parent-child nursing practice. Group seminar work focuses on the discussion of issues influencing the roles and practice of clinical nurse specialists in parent-child nursing. Skills necessary for developing a conceptual framework for practice.

**NURS 531 Selected Topics in Family and Child Nursing (1-6, max. 12)** In-depth examination of the literature pertinent to major theoretical issues in parent and child nursing. Seminar with analysis and discussion of selected topics and readings. Implications for research, prevention, and health care stressed. Prerequisite: permission of instructor.

**NURS 532 Professional Issues in Advanced Parent and Child Nursing (2-5, max. 5)** History and current issues in advanced parent and child nursing practice and interface with health care systems. Advanced practice roles in provision, implementation, and evaluation of health care services for women, children, and families. Opportunity for application to specific advanced practice roles. Prerequisite: permission of instructor.

**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 Seminar in Nursing in Gerontology (3)** Gerontological research findings applied to complex nursing problems in maintenance of health and maximum functioning in the aged.

**NURS 535 Seminar in Neuroscience Nursing (3)** Guided survey of clinical and experimental literatures regarding selected concepts of human functioning mediated by the nervous system: consciousness, mentation, movement, sensation, integrated regulation, coping with disability. Clinical and research measurement, current research and implications for further research, clinical applications.

**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 advance 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 540 Special Topics in Biobehavioral Nursing and Health Systems (3-6, max. 9)** Guided survey of the experimental literature of major topics in physiological nursing, including cardiopulmonary, biology of aging, neuromuscular, cancer, and endocrine. Course conducted as a seminar with analysis and discussion of selected topics and readings. Implications for future research and health care are emphasized.

**NURS 541 Women's s Health Care: Diagnosis and Management (1-6, max. 6)** Examines advanced practice women's health care 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 (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 health care system. Prerequisite: NURS 541.

**NURS 543 Theoretical Foundations of Advanced Practice Nursing: Childbearing II (1-4, max. 4)** 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 health care system. Offered: W.

**NURS 544 Psychosocial Adaptations of Individuals and Families during the Perinatal Period (3)** Adaptation of individuals and families during the perinatal period, with emphasis on psychosocial adaptation, consumer education, transition to parenthood, parent-infant interaction and community based support. Prerequisite: permission of instructor.

**NURS 545 Care of the Neonate and Infant (2-3, max. 3)** Adaptation of neonate to the extrauterine environment and continuum of care to promote the health of infants within the context of family, community, and other environments. Prerequisite: NURS 514, NURS 528, or permission of instructor.

**NURS 546 Interpersonal Aspects of Behavior (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 Biologic Aspects of Psychosocial Disabilities (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 Introduction to Infant Mental Health (3)** Reviews the basics of infant mental health (IMH) and development from a development interdisciplinary perspective. Special attention on brain development, sensory integration, early communication, emotion regulation. Emphasizes history of infant mental health field, incorporating IMH into policies, systems, and various treatment approaches.

**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 550 White Privilege and Racism in Health and Human Services (3)** Explores relationships among the psychosocial health of people of color, American cultural patterns of intersecting forms of oppression (e.g., gender, race, and class) and the role of health professionals in defining, ameliorating and/or aggravating psychosocial distress. Credit/no credit only. Offered: jointly with WOMEN 550.

**NURS 551 Theoretical Foundations of Primary Care (1-3, max. 4)** Presentation and interpretation of theoretical basis of advanced nursing practice in primary care. Provides students with conceptual foundation upon which to base their development as nurse practitioners. Prerequisite: graduate standing; permission of instructor.

**NURS 552 Health Promotion (2-3)** Emphasis on evidence for health promotion, risk reduction, screening, and disease prevention through the lifespan in primary care. Examines issues, including cultural diversity, impacting individual, family, and population health; evidence supporting risk assessment and behavior change; factors contributing to health disparities; and barriers to health at micro and macro levels. Prerequisite: permission of instructor; recommended: nurse practitioner students take fieldwork concurrently.

**NURS 553 The Mentally Ill Offender in Correctional and Community Settings (3)** Survey of social, political, economic, legal, and moral problems posed by individuals with mental disorders who commit crimes. Covers historical antecedents and current responses of correctional and mental health systems to mentally ill offenders, prevalence and correlates of incarceration, and roles of professionals in correctional mental health field. Credit/no credit only. Offered: W.

**NURS 554 Psychosocial Interventions in Nursing (3)** Course focuses on conceptual foundations and interpersonal skills for therapeutic interventions to promote personal change and effective adaptation. Emphasizes forming and maintaining a therapeutic alliance and utilizing a client-centered approach to define problems and select appropriate therapeutic interventions. Examines traditional, non-traditional, and multicultural therapeutic perspectives.

**NURS 555 Psychopathology, Assessment, and Diagnostics of Children 3 and Under (2-, max. 4)** Psychopathology, mental health assessment, and diagnostics in children aged 3 and under, framed by the Diagnostic Classification for Developmental and Mental Health Disorders (DC:0-3). Develops skills and techniques necessary in infant mental health. Prerequisite: acceptance into Infant Mental Health Certificate program or permission of instructor. Offered: WSP.

**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)** A theory and skills class concerning development of personal and organizational cultural competence in community-based participatory research. Core concepts of cultural competence are considered as they are practiced in community settings. Fieldwork required. Offered: jointly with HSERV 576.

**NURS 558 Infancy: The Context of Relationships (3)** Overview of the parent-child relationship from an ecological framework. Topics include infant regulatory behaviors, parent-child interaction, attachment theory, and prevention in primary care.

**NURS 559 Theories of Psychiatric Disabilities (3)** Theories from psychosocial nursing, psychiatry, and behavioral sciences explanatory of psychiatric disabilities provide basis for identifying psychosocial problems. Structure and functions of mental health organizations and social networks analyzed. Prerequisite: NURS 547 or permission of instructor.

**NURS 560 Dynamics of Community Health Practice (3/5)** Examination of and experience with principles of clinical practice in community settings. Included are family as community constituent, populations at risk, community assessment, and community development. Prerequisite: graduate standing or permission. 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 health-care systems. Seminar with analysis and discussion of selected topics and readings. Implications for research and health care stressed.

**NURS 562 Clinically Applied Anthropology (3)** Anthropology as it relates to interdisciplinary delivery of culturally relevant health care.

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 563 Advanced Community Health Nursing (3)** Systematic inquiry into the nature and foundations of community health nursing. Analytic and theoretical perspectives on health risk assessment and nursing interventions in the community. Implications for community health nursing services. Prerequisite: permission of instructor and graduate standing.

**NURS 564 Biopharmacological Management in Psychosocial Nursing (3)** 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 565 Self-Management Strategies and Techniques in Patient Care (3)** Theories underlying cognitive/behavioral self-management strategies and techniques in patient care. Evaluation of the clinical appropriateness and utility for nursing. Application to such clinical problems as abstinence in the recovering alcoholic, depression, and eating disorders. Prerequisite: graduate standing or permission of faculty.

**NURS 566 Occupational Stress and Stress Management (3)** Relationships between occupational stressors and worker's health, well-being, productivity. Analyzes models of occupational stress. Investigates similarities, differences between job-related stressors and stress responses in various occupations. Explores elements of worksite stress management programs. Prerequisite: graduate standing in nursing or allied health discipline; advanced undergraduates with permission of instructor. Offered: jointly with ENVH 565.

**NURS 567 Theoretical Basis of Management of Stress Response (3)** Theories of physiologic responses linked to theories of cognitive/affective and behavioral responses to stressors. Conceptual basis of self-management techniques. Research findings relevant to these theories and techniques examined and analyzed. Prerequisite: course in human physiology or physiologic psychology, permission of instructor.

**NURS 568 Health Politics and Policy (3)** Analyzes the formal and informal political context of health care delivery, professionals, and institutions in the United States. Addresses medical coverage and public persuasion, as well as policy analysis. Special attention is paid to women's political resources and participation. Credit/no credit only.

**NURS 569 Observation and Assessment of Relationships (3)** *Spieker* Recognizing patterns of behavior in interactions between young children and their caregivers. Assessment of relationships in the early years. Students learn to incorporate an attachment theory approach and observation tools from research into the work of their own discipline or field. Offered: Sp.

**NURS 570 Family Concepts: Health and Illness (3)** Emphasizes the family as unit of care across the life span. Predominant themes: factors influencing family health promotion, including resilience, vulnerability, risk reduction, and health policy; continuity, change and transition; and promotion of family health during acute and chronic illness episodes.

**NURS 571 Advanced Interpersonal Therapeutics with Families (3)** Models and research on therapeutic relationships and interpersonal processes evaluated and applied to group interactions among family members, among professionals, and between the family, professionals, and macrosystems. Partnership building emphasized. Individual and group characteristics examined across the life span in social, cultural, and health contexts. Prerequisite: permission of instructor.

**NURS 573 Professional Issues for Nurse Practitioners (2)** Presentation and analysis of current health care trends and key professional issues influencing nurse practitioner practice. The NP's leadership role, role in influencing health policy, accountability to the profession/public, marketability, and legal dimensions of practice are stressed. Prerequisite: NP student nearing program completion or permission.

**NURS 574 Family Interpretation and Management of Disordered Behavior across Cultures (3)** Examines interpretation and management of disordered behavior from the perspective of families — intergenerational and across cultures. Critically reviews selected theoretical frameworks for understanding families. Emphasizes theory, cultural perspective, and family assessment skills to plan relevant family interventions to assist families in managing disordered behaviors of family members.

**NURS 575 Grief and Loss in Clinical Practice (2-4, max. 4)** Analysis and study of social, cultural, and psychological conditions that influence human loss, grief, and death in modern society. Research findings, selected readings, and direct experience provide direction for examination of philosophic, theoretical, and pragmatic issues underlying choices and decisions in clinical practice. Open to graduate students with permission of instructor. (Limit: sixteen students.)

**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 577 Seminar in Infant Mental Health Intervention Models, Consultation, and Leadership (1-, max. 3)** Capstone course in Infant Mental Health Certificate Program. Explores intervention models, role of consultation and leadership in the field. Field work in Infant Mental Health Program serves as context for exploring consultation and leadership roles. Synthesis and reflection of personal preparation and role encouraged. Offered: AWS.

**NURS 578 Social Determinants of Health (3)** Analyze the distribution and causes of health disparities in populations and communities, including but not limited to social, psychological, biological and environmental factors, to assess social determinants of health problems and their remedies. BSN senior with permission of instructor.

**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)** *Kaufman* 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 health care providers.

**NURS 582 Culture, Society, and Genomics (3)** 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.

**NURS 583 Emotions and Mental Health: From Adversity to Adaptation (3)** *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 585 Introduction to Forensic Nursing and Health Care (3)** *Baker* Examination of the practice, roles, functions, and evolution of the forensic nurse specialty; its relationship to other disciplines and professions; its roles working with victims of crime, violence and abuse, along with offender populations. Introduction to ethical issues in forensic health services.

**NURS 586 Forensic Nursing and Health Care for Vulnerable Populations (3)** *Baker* Focuses on the roles of forensic nurses and other working with populations at risk for violence, assault, and abuse; emphasizing issues related to age, race/ethnicity and gender. Examines concepts of vulnerability, dependence, and victimization;

interactions with criminal justice and health care systems.

**NURS 587 Role Transition Seminar (2)** Emphasis on 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, 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)** Focus on the pluralistic constructions of health as related to different environments. Personal and biological characteristics vary, interact with, and transform the person and the environment. Emphasis on nursing as a social construction which is interactive with the human's experience of health and healing.

**NURS 591 Advanced Seminar in Nursing Science (3, max. 15)** In-depth analysis and evaluation of literature in focused areas of research. Synthesis of literature related to selected fields of nursing science. Oral analysis of assigned papers and topics. Prerequisite: graduate standing or permission of instructor.

**NURS 592 The Science of Nursing Therapeutics (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.

**NURS 593 Preventive Therapeutics (3)** Examines literature in the field of health promotion and illness prevention with the purpose of students developing their individual model of health promotion and illness prevention in their own foci of interest considering the social and political forces prevailing.

**NURS 594 Advanced Seminar on Healing (3)** Advanced seminar to critically analyze current thinking and practice applications that fall under the heading of "healing."

**NURS 595 Synthesis of Nursing Science (3)** Provides a forum for critical analysis, integration, and synthesis of core content provided during the initial year of the Ph.D. in



Nurse Scientist Program and further planning of program of study. Prerequisite: completion of first year required courses of doctoral program. Credit/no credit only.

**NURS 596 Colloquium, Scientific Conduct, and Dissertation Seminar (2, max. 12)** Focuses on group discussion of issues pertinent to research conduct. Scientific conduct issues include guidelines relevant to designing, conducting, and disseminating research; risk management in reference to scientific misconduct and negligence; and collaborative and peer-review skills relevant to intra- and interdisciplinary research.

**NURS 599 Selected Readings in Nursing Science (1-3, max. 18)** Analysis of synthesis of selected readings with faculty mentor. Credit/no credit only. Prerequisite: permission of instructor.

## Nursing

**NSG 501 Teacher Practice Essentials-Models of Teaching & Learning (3)** Integrative approach to understanding teaching learning that explores how various educational models and principles frame the processes of teaching and learning. Focus toward advanced practice nurses interested in teaching. Prerequisite: permission of instructor and graduate student status.

**NSG 502 Advanced Teacher Practice Essentials-Expertise in Teaching (3)** Critical analysis of how educational models and principles frame teaching to promote expertise in practice. Aimed toward advance practice nurses interested in teaching. Builds and expands content of NSG 501. Prerequisite: NSG 501 and graduate student status.

**NSG 503 Advanced Teacher Practice Essentials-Diverse Learners (3)** Focus on relevance and inclusiveness of addressing diversity of learners within teaching and learning activities. Aimed toward advance practice nurses interested in teaching. Further expands content of NSG 501 and NSG 502. Prerequisite: NURS 501 and graduate student status.

**NSG 504 Advanced Teacher Practice-Challenges in Teaching (3)** Focus on challenges facing educator during teaching encounters. Addresses influence of belief structures on learner's motivation for change. For advance practice nurses interested in teaching. Prerequisite: NSG 501 and graduate student status.

**NSG 505 Applied Occupational Health and Safety (3)** *Camp, Johnson* 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 ENVH 559 and IND E 567. Offered: Sp.

**NSG 506 Organizing and Administering Industrial Safety and Health Programs (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; A.

**NSG 507 Technical Aspects of Safety and Health (3)** Explores specific hazards associated with major industries, as well as hazards common to all industries. Covers machine guarding, electrical safety, systems safety analysis, materials handling, and working at heights. 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 509 Pathophysiology for Advanced Practice Nursing (1)** Synchronous Web pathophysiology class addresses immune and inflammatory responses with related content on infections and atherosclerosis. Focus on understanding the physiologic/pathophysiologic basis for disease processes and the relationship of various treatment modalities to these concepts. Prerequisite: Recent (within 5 yrs.) upper division anatomy/physiology course or permission of instructor.

**NSG 510 Assessment and Management of Neonatal Problems (5)** Focus on pathophysiology of disease processes, assessment, diagnosis, and management of common health problems experienced by term and preterm neonates in neonatal intensive care settings. Includes foundations for clinical decision making for neonatal nurse practitioners and examination of interdisciplinary roles. Prerequisite: NURS 514.

**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 USA 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 prescribing for children and adolescents. Offered: S.

**NSG 514 Integrating Health Care and Culture (2-3, max. 3)** *Lenart* Prepares clinicians to integrate experience and knowledge with creative approaches and evidence-based strategies to

improve cross-cultural health care, including complementary and alternative medicine/healthcare (CAM) practices. Focuses on relationships between clinicians, clients, and families emphasizing discovery of commonalities among cultures to enhance collaboration. Offered: Sp.

**NSG 515 Issues in Men's Health (2)** *Berry* Studies selected issues in men's health. Focuses on significant issues particular to men's health. Includes discussion of basic management of selected men's health issues. Credit/no credit only. Offered: S.

**NSG 517 Integrating Assessment and Knowledge of CAM into Allopathic Care (3)** *Schwenka* Explores strategies to assess and evaluate CAM use into conventional healthcare across the lifespan. Cultural, ethical, legal, and professional issues related to referral and collaboration within an integrative healthcare system. Challenges healthcare specialists to incorporate integrative principles into their practices. Offered: Sp.

**NSG 518 Botanical Medicines and Dietary Supplements (2-3)** *Kiefer, De Pasquale* Exploration of commonly used herbs and evaluation of their evidence base, treating frequently occurring acute and chronic health conditions. Optional laboratory experiences at Bastyr University herb garden and medicine-making laboratory. Field trip to identify Pacific Northwest botanicals.

**NSG 519 Qi Gong and Reflexology (1)** *Marazita* Focuses on history, evidence, and self-practice of traditional Chinese medicine's Qi gong and reflexology. Examines how Qi gong combines movement, meditation, and breathing regulation to enhance qi energy flow. Explores how foot reflexology re-education, re-patterns, and re-conditions neurological reflexes in the soles of the feet to maximize health. Offered: S.

**NSG 521 Infectious Disease and Infection Control (2)** Critical analysis of factors that influence infectious disease control including delivery of therapeutics, and the role of nursing and other health disciplines in health care and public health system responses, with a population-based perspective of infectious disease prevention, control, and management.

**NSG 522 Life Span Physiology and Pathophysiology for Advanced Practice (3)** Analysis of normal and abnormal human responses in major organ systems in individuals across the life span. Examination of normal physiology, evidence based and selected disorders pertaining to each system.

**NSG 525 Privilege, Oppression, and Social Justice in Health Care (3-4, max. 4)** *Allen, Schroeder, Ward* Focuses on professional development skills that challenge white privilege, racism, and other oppressions in health care. Analysis of racism and privilege, application of that analysis to other oppressions such as gender, class, heterosexism, ableism, etc. Overall goal to enable health care professionals create more socially just health care system. Credit/no credit only.

**NSG 530 Professional Identity and Leadership Processes in Nursing (2-4, max. 4)** Analysis of professional identity and effective leadership processes. Clarification and advancement of professional identity; analysis of self as leader; critical examination of

perspectives of leadership and change; development and application of skills in leadership, conflict management, and collaboration to advance the profession and improve health outcomes. Offered: AS.

**NSG 597 Synthesis of Advanced Practice Nursing (3)** Synthesize new or higher levels of knowledge and skills of advanced practice nursing specialty, practice inquiry, and leadership to demonstrate competency of doctoral essentials and program objectives. Recommend concurrent clinical practicum. Prerequisite: doctoral candidacy or supervisory committee permission.

## 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. Credit/no credit only. 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. Credit/no credit only. Prerequisite: NCLIN 302, which may be taken concurrently.

**NCLIN 402 Practicum: Care in Illness I (4)** Provides supervised nursing care to individuals/families with acute/ chronic illness across the lifespan. Emphasizes beginning skills in systematic assessment, including person/environment fit, developing competency in selected nursing therapies, and developing role as care agent for persons of all ages. Credit/no credit only. Prerequisite: NCLIN 401, which may be taken concurrently.

**NCLIN 406 Practicum: Care in Illness II (1-10, max. 10)** Provides supervised nursing care to individuals and families with acute and chronic illness. Emphasis on increasing skill in systematic assessment, developing competency in selected nursing therapies, and developing role as caring agent for persons of all ages. Credit/no credit only.

**NCLIN 409 Partnerships in Community Health (6)** 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/promotion of health/prevention of injury and disease.

**NCLIN 411 Transition to Professional Practice (8-12)** Emphasis on mastering theoretical concepts, applying theory and research findings, improving skill competency, and developing leadership capabilities. Recommended: completion of first five quarters in the BSN program.

**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. Credit/no credit only. Prerequisite: NURS 415, which may be taken concurrently. 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. Credit/no credit only. Prerequisite: NURS 417, which may be taken concurrently. Offered: AW.

**NCLIN 490 Special Laboratory Elective (1-4, max. 4)** *Altman* Provides supervised laboratory experience to enhance and document clinical skills and decision making. Prerequisite: permission of instructor.

**NCLIN 500 Comprehensive Health Assessment (3)** Provides framework for systematic collection, interpretation, and communication of data to determine health status of individuals. Develops beginning advanced practice competence in history-taking and screening physical examination of adolescents and adults. Analysis of multiple health indicators to determine health status. Credit/no credit only. Prerequisite: permission of instructor.

**NCLIN 501 Diagnostic Health Assessment (1-5, max. 5)** Provides framework for learning symptom analysis, selection/performance of examination techniques, and selection/interpretation of common diagnostic procedures. Develops beginning competence in focused history-taking and directed physical exam to evaluate common health problems in adolescents and adults. Credit/no credit only. Prerequisite: NCLIN 500, which may be taken concurrently.

**NCLIN 502 Pediatric Health Assessment and Promotion (1-5, max. 5)** Gives experience in obtaining a health history and performing a physical assessment of infants, children, and adolescents. Interviewing techniques, problem-oriented charting, and a systems approach to the physical examination. Emphasis on screening principles, health promotion, and wellness care for children/families. Credit/no credit only. Prerequisite: permission of instructor.

**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 Testing and Monitoring in Serious Illness (2)** Lecture, discussion, and laboratory sessions to develop students' assessment, diagnostic, and monitoring expertise in the care of acutely ill individuals. Students refine clinical decision-making skills, apply specialized assessments, gain insight into clinical experts' critical thinking, and refine assessment knowledge for a specific patient population. Prerequisite: NCLIN 501 or equivalent.

**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 509 Teaching Methods and Practicum in Nursing Education (2-10, max. 10)** Guided experience in selected teaching-learning situations in nursing, in both classroom and clinical situations. Identification, analysis, and solution of teaching-learning problems in clinical nursing. Minimum of seven hours of guided experience weekly.

**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 Parent and Child Nursing I (2-12, max. 25)** Clinical seminar and practicum provide opportunities to develop advanced nursing practice competencies in the care of women, parents, children, and/or adolescents. Application of theory and principles to direct care, consultation, education and/or care coordinator roles with individuals and/or groups.

**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 515 Health Assessment for Advanced Practice Neonatal Nursing (1 or 3)** Develops knowledge and skills to obtain and evaluate health histories and perform systematic physical assessment on newborns and young infants using a diagnosis reasoning process and evidence-based approach. Analyses data to develop differential diagnoses and management plans. Prerequisites: Required for NNP, NCNS, NM students; others with permission of instructor. Credit/no credit only.

**NCLIN 526 Managing Organizational Effectiveness Within Care Systems (1)** Analysis of management strategies for attaining effective and efficient organizational structures and processes within health care systems. Prerequisite: NURS 524 or permission of instructor.

**NCLIN 531 Nursing Process in Parent-Child Nursing (4)** Includes lecture, seminar, and laboratory instruction designed to assist the student with knowledge and skill acquisition related to nursing care of individuals and families with regard to childbearing and childrearing. Prerequisite: NURS 530.

**NCLIN 540 Infant Mental Health Practice: Parent Child Relationships and Intervention (3-6, max. 15)** Through interaction with young children and their families in treatment settings, examines children's development in relationships with primary caregivers and relationship-based interventions for relationship problems in

the early years. Includes written observations, seminar presentations, and an individual's professional development plan. Credit/no credit only. Offered: AWSpS.

**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: Related sciences (CNS, NE, APGN, ID-CNS, IC-APN), or NURS 509 and NURS 585; or permission of instructor.

**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. Credit/no credit only. Prerequisite: NCLIN 541.

**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. Credit/no credit only. Prerequisite: NCLIN 542.

**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. Credit/no credit only. Prerequisite: NCLIN 543.

**NCLIN 546 Management of Acute and Chronic Wounds (2-3)** Evaluation and treatment of acute and chronic wounds. Includes wound healing physiology, pathophysiology, patient evaluation, evaluation of environmental and systemic factors related to risk of impaired healing, methods for assessing wound progress, and evidenced based treatment options. Optional one credit clinical and lab experience. Prerequisite: graduate standing or permission of instructor.

**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. Credit/no credit only. Prerequisite: permission of instructor, or NCLIN 501 or equivalent.

**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. Credit/no credit only. Prerequisite: NCLIN 549 or permission of instructor.

**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. Credit/no credit only. Prerequisite: NCLIN 550 or permission of instructor.

**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. Credit/no credit only. Prerequisite: NCLIN 551.

**NCLIN 553 Seminar in Primary Care I: Health Promotion (2/3, max. 3)** Clinical application of major theories of health promotion, risk assessment, health behavior change, and disease prevention across the age span. Emphasizes an evidence-based approach, with consideration of cultural, socio-economic, and diversity factors. Includes clinical practicum. Prerequisite: NURS 552, which may be taken concurrently; permission of instructor.

**NCLIN 554 Occupational Health Nursing: Practice Issues (2-6, max. 6)** In-depth overview of occupational health and safety. Includes discussion of American workforce, work environments, regulations, and political issues; identifies trends which affect practice; introduces prevalent health disorders which result from occupational exposure; examines and applies nursing theory to the prevention and control of occupational injuries and illnesses.

**NCLIN 556 Seminar in Primary Care II: Evidence Based Management of Common Health Concerns (3)** Examines clinical application of theories of illness management across the age span. Emphasizes an evidence-based approach to assessment, differential diagnosis, and management with consideration of cultural, socio-economic and diversity factors. Utilizes technology to support clinical decision-making. Includes clinical practicum. Taught in conjunction with NURS 510 and NURS 518. Credit/no credit only. Prerequisite: graduate standing and permission of instructor.

**NCLIN 557 Seminar in Primary Care III: Evidence Based Management of Common Health Concerns (3)** Examines clinical application of theories of illness management across the age span. Emphasizes an evidence-based approach to assessment, differential diagnosis, and management with consideration of cultural, socio-economic and diversity factors. Utilizes technology to support clinical decision-making. Identifies opportunities for leadership and inquiry in clinical practice. Taught in conjunction with NURS 510. Credit/no credit only. Prerequisite: graduate standing and permission of instructor.

**NCLIN 558 Occupational Health Nursing: Program Development (2-6, max. 6)** In-depth examination of occupational health and safety programs including organizational analyses, budgeting, marketing, case management, and workers' compensation; also political, economic, legal, and ethical issues. Focuses on development, implementation, and evaluation of programs including health promotion, EAP, and health surveillance. Applies public health and nursing sciences to selected work-related problems.

**NCLIN 559 Seminar in Primary Care IV: Management of Common Health Concerns (3-5)** Focus on research questions, patient presentations, and group discussions drawn from field study. Supervised clinical field study within selected primary care settings and weekly seminar discussions related to theory presented in NURS 510. Credit/no credit only. Prerequisite: permission of instructor; nurse practitioner students register for NURS 510 concurrently.

**NCLIN 560 Seminar in Primary Care V: Complex Clinical Decision Making ([1-11]-, max. 11)** Seminar with associated field study. Synthesis of advanced knowledge base and clinical family nurse practitioner skills with effective management of complex clinical problems. No grade given until 11 total credits completed. Credit/no credit only. Prerequisite: graduate standing and permission of instructor.

**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. Credit/no credit only. Prerequisite: NURS 570, NURS 564, one theory course, or permission of instructor.

**NCLIN 570 Practicum in Adult Psychosocial Assessment (2)** Under supervision of faculty/preceptors from clinical agencies, students use evidence-based practice criteria to assess individuals, groups, and families. Students gain skills in psychosocial interviewing, mental status examinations, and assessing psychosocial variables by standardized instruments and clinical interview. Credit/no credit only. Prerequisite: NURS 549 or permission of instructor.

**NCLIN 572 Practicum in Physical Assessment (2)** Physical health assessment in practicum with the opportunity to refine skills in taking a complete health history and in performing physical examinations in a clinical setting. Credit/no credit only. Prerequisite: either NURS 510 modules ABC, or NURS 510 modules HI; NCLIN 500; 501, or permission of instructor.

**NCLIN 573 Advanced Field Study in Family Nursing (2-9, max. 9)** Advanced practice development in direct care, consultation, and/or care coordination with individual families or groups of families across the life span. Opportunities provided to strengthen interpersonal therapeutic process skills, family nursing approaches relevant to family health promotion, problematic family health patterns. Prerequisite: concurrent registration in NURS 572, NCLIN 574; recommended: NURS 571.

**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 student or post-masters student, and permission of academic adviser and instructor. Offered: AWSpS.

## 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 499 Undergraduate Research (1-5, max. 12)** Supervised individual scholarly inquiry on a specific nursing problem.

**NMETH 515 Sociobehavioral and Prevention Research Methods for HIV and STI (3)** *Kurth* Focuses on prevention methods for controlling HIV/STI epidemics, identifying a range of alternatives along the prevention continuum as most appropriate and feasible for settings and populations, and solutions to increase HIV/STI prevention agenda in public health and clinical policy and practice. Offered: jointly with EPI 549; Sp.

**NMETH 520 Scholarly Inquiry for Nursing Practice (4)** *Killien, Schepp, Simpson* Analyzes conceptual, theoretical, and empirical knowledge as a basis for evidence-based practice. Examines methodological approaches to scholarly inquiry and research applied to nursing practice. Evaluates role of advanced practice nurses in research. Offered: AWS.

**NMETH 521 Methods of Research in Nursing (2)** Continuation of 520, with emphasis on methods of research applied to the solution of problems in all fields of nursing.

**NMETH 522 Data Management for Research Professionals (4)** Surveys industrial strength data management, using techniques applicable to multi-center, longitudinal research 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 (PMBOK) 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 Her systems, IT leadership in health care organizations, informatics change management, including key user roles evaluating Her 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 eh 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. Analyses database applications used in clinical environments. Introduces knowledge bases and data warehouses. Prerequisite: NMETH 528. Offered: Sp.

**NMETH 530 Scholarly Proposal Development (2)** *Jarret, Killien, Schepp, Simpson* Focuses on the application of methods of inquiry to develop a scholarly proposal through faculty-guided small group discussion and individual composition. Prerequisite: NMETH 520. Offered: AWSpS.

**NMETH 532 Developing an Evidence Base for Complementary and Alternative Medicine Practices (2/3)** *Berry, Booth-LaForce, Brandt, Magyary* Focuses on skill enhancement for evaluation CAM-related evidence and the implications for translating evidence to practice. Examines the challenges of CAM studies and describes strategies for improvement. Examines factors such as environment, culture, provider-patient relationship, and personal characteristics influencing research. Prerequisite: NMETH 520 or equivalent. Offered: W.

**NMETH 533 Appraising Evidence for Clinical Practice (4)** Teaches skills for evaluating and appraising health related evidence for clinical practice. Develops advanced competency in searching and evaluating literature. Examines the merits of different types and levels of evidence; analyzing the generalizability and implications for clinical practice. Prerequisite: basic statistics course, NMETH 520, or equivalent. Offered: AWSpS.

**NMETH 534 Translating Evidence to Clinical Practice: Conceptual, Methodological and Clinical Issues (4)** Examines conceptual, methodological, clinical and policy issues associated with translating evidence to practice. Translation of best evidence, including clinical guidelines, evaluated for impact on quality improvement, safety, accessibility, cost effectiveness, health status and quality of life. Addresses contextual challenges. Prerequisite: permission of instructor; either basic statistics

course, NMETH 520, or NMETH 533. Offered: AWSpS.

**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 580 Methodological Perspectives in Nursing Inquiry (5)** Allows students to translate philosophical and theoretical perspectives into research methodologies. Foci will include: the relationship of theoretical perspectives to methodologies; the methodological issues among and between varying schools of thought (including contemporary empiricist, interpretive, and critical/postmodern); and how the methodologies influence choices of research design and methods.

**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 Clinical Outcome Research I (4)** Examination of philosophical, analytical, and methodological decisions and processes in evaluating the effectiveness of interventions and programs designed to enhance health outcomes. Alternative designs are addressed in

consideration of underlying assumptions about prevention/causation research; clinical human phenomena; design sensitivity; and threats to validity. Theory development emphasized. Prerequisite: 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 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. Credit/no credit only. Prerequisite: NMETH 520 or permission of instructor.

**NMETH 600 Independent Study or Research (\*)** Credit/no credit only.

**NMETH 700 Master's Thesis (\*)** Credit/no credit only.

**NMETH 799 Capstone Clinical Investigative Project ([1-12]-, max. 28)** Capstone project reflects culmination practice inquiry knowledge and competencies. Students collaborate with clinicians, consumers, faculty or fellow students to examine clinical questions which involve translating evidence to practice, and ultimately informs and influences care and enhances health outcomes. Credit/no credit only. Prerequisite: permission of supervisory committee. Offered: AWSpS.

**NMETH 800 Doctoral Dissertation (\*)** Credit/no credit only. Prerequisite: permission of Supervisory Committee chairperson or graduate program adviser.

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## College of Ocean and Fishery Sciences

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### Fisheries

**FISH 101 The Living Aquatic World (5) I&S/ NW** Freshwater and marine biodiversity, population, biology, ecosystem structure and function, evolution, conservation genetics, physiology, aquaculture, environmental effects of human activities, role of law, government, and human communities in resource conflicts management. Three case studies. Suitable for non-majors.

**FISH 210 Methods in Fisheries and Aquatic Sciences: Theory and Applications (5) NW** Comprehensive survey of the theory and techniques of field research in aquatic sciences. Topics emphasize sampling design, data collection, and interpretation across a broad suite of topics and approaches. Field trips and laboratory sections are mandatory.

**FISH 221 Ecology and Evolution of the Microbe (5) NW** Explores microbial diversity, hands-on methods, microbes as agents of disease, where microbes fit in the ecosystem, extreme environments and microbes, and microbes as the start of life.

**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/ OCEAN 250.

**FISH 296 Study Abroad: Aquatic and Fishery Sciences (0) 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 297 Special Topics in Fisheries (1-5, max. 5) NW** Selected topics in aquatic science and fisheries.

**FISH 310 Biology of Shellfishes (5) NW** Commercially important mollusks, crustaceans, and other harvested invertebrates highlighted with respect to systematics, anatomy, reproductive strategies, feeding, and growth. Examples of species that demonstrate variability in recruitment and complex life cycles. Laboratories, field trips. Recommended: 10 credits biological science.

**FISH 311 Biology of Fishes (3/5) NW** Lecture and laboratory, of the morphological, physiological, behavioral, and ecological diversity of fishes of the world; designed to provide a basic foundation for advanced courses in all areas of finfish fisheries. 3-credit option does not include laboratory. Recommended: 10 credits biological science. 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: either BIOL 162 or 220; recommended: FISH 210; FISH 311. Offered: Sp.

**FISH 323 Conservation and Management of Aquatic Resources (5) NW** Topics include population growth rates, extinction risk, dynamics of populations at low densities, metapopulations, marine reserves, endangered species classification, 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.

**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: either BIOL 161 or BIOL 220.

**FISH 328 Forestry-Fisheries Interactions (4) NW** Characteristics of forestry-fisheries interactions in terrestrial and aquatic landscapes. Effects of changes in landforms on forest and aquatic communities. River basin and watershed features. Forest stand dynamics, forest hydrology, fish and wildlife histories and behavior. Resource conflicts and resolution. Offered: jointly with ESRM 328; even years; Sp.

**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.

**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. Offered: jointly with BIOL 340. Prerequisite: either BIOL 102, BIOL 162, or BIOL 200.

**FISH 350 Marine Ecology of Coastal Systems (3)** Explores the ecological relationships of marine organisms in coastal systems, including kelp forests and coral reefs, the physical forces that shape these systems, and the impacts of environmental change. Recommended: BIOL 250/FISH 250/OCEAN 250. Offered: jointly with SMA 350.

**FISH 351 Field Investigations in Marine Biology (5)** Evaluates the relationships between man and marine systems in a field-oriented class. Case studies directly investigate marine biology. Studies include human activities and our effects on marine species and communities. Multiple field trips, lectures, and labs. Prerequisite: FISH 350/OCEAN 350. Offered: jointly with OCEAN 351; 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. Recommended: 10 credits biological science.

**FISH 420 Ecology of Marine Fishes (4) NW** Focuses on the unique ecological challenges facing marine fishes, including individual, population, community, and ecosystem-scale processes. Prerequisite: either FISH 311 or FISH 312.

**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)** 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. Lecture and lab.

**FISH 428 Restoration of Fish Communities and Habitats in River Ecosystems (5) NW** Examines opportunities to encourage recovery through natural developmental processes that enhance the complexity of habitats and connectivity between habitats in the river basin. Class discussion and participation on field trips focuses on current restoration concepts for ecosystems, designs of projects, and case studies. Recommended: fish ecology and hydrology courses. Offered: odd years; Sp.

**FISH 437 Fisheries Oceanography (4) NW** 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.

**FISH 439 Attaining a Sustainable Society (1/3, max. 3) I&S/NW Karr** 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: jointly with ENVIR 439.

**FISH 444 Conservation Genetics (5) NW** Advanced genetic concepts and methods related to aquatic species' conservation and management. Includes genetic diversity, small populations and fragmentation, genetic viability, management of wild and captive populations (including aquaculture), reintroductions, hatchery-wild interactions and forensics. Labs include molecular techniques. Recommended: GENET 371.

**FISH 447 Watershed Ecology and Management (3) NW** Explores fundamental ecological processes at the watershed scale, identifies human-induced changes to ecological systems, and discusses approaches to improve watershed management. Includes lectures, field trips, and discussions with organizations and agencies about how they are addressing ways to improve watershed management. Offered: W.

**FISH 450 Salmonid Behavior and Life History (3/5) NW** Marine distribution, homing migration, and spawning behavior of adult salmon: incubation, emergence, migration, and residence of fry; fingerling distribution and residence with reference to species interaction and population evolution. Recommended: FISH 311. Offered: A.

**FISH 453 Spatial Information Technologies in Ecosystem Sciences (3) NW Logsdon** Introduction to the use of GPS, GIS, and Remote Sensing in the ecosystem sciences. Integrates these technologies in an applied research setting. Two overnight weekend field trips required. Offered: jointly with OCEAN 452.

**FISH 454 Ecological Modeling (5) NW** Examines concepts in ecological modeling focusing on the rational, interpretation, and motivation for modeling in ecological sciences. Explores individual, population, and ecosystem-based models. Excel-based computer exercises, model building and interpretation, readings. Recommended: prior coursework in ecology and statistics. Offered: jointly with Q SCI 454.

**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 Fisheries Stock Assessment (4) NW Francis** Emphasizes quantitative analysis of fisheries data to determine how the fishery would respond to alternative management actions. Major topics include production models, stock and recruitment, catch at age analysis, and formulation of harvest strategies. Recommended: either Q SCI 456 or FISH 456. Offered: jointly with Q SCI 458; Sp.

**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: either BIOL 102, BIOL 162, BIOL 18 0, or BIOL 203. Offered: jointly with BIOL 473.

**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: BIOL473/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. Recommended: 15 credits of biological science, vertebrate anatomy, and physiology, for laboratory sections.

**FISH 478 Topics in Sustainable Fisheries (3, max. 9) Parrish** Seminar series featuring local, national and internationally known speakers in fisheries management and conservation. Case studies. Conservation/restoration in practice. Pre-seminar discussion section focusing on select readings. Final paper. 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/ENVIR 478.

**FISH 480 Marine Resource Conservation and Management (3) I&S/NW Gallucci, Miller** 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 ENVIR 480/SMA 480.

**FISH 490 Aquatic Microbiology (3/5) NW** Basic principles of aquatic microbiology and aquatic microbial ecology: role and identity of aquatic microorganisms; introduction to modern methodologies for research. Laboratory work with local freshwater and marine samples for those enrolled in 5-credit section. Offered: jointly with MICROM 490; Sp, odd years. Recommended 15 credits of biological science, 10 credits of chemistry.

**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.

**FISH 492 Friday Harbor Labs 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. Course location: Friday Harbor Laboratories.

**FISH 493 Capstone Preparation (1)** Includes defining a capstone research question, choosing a faculty advisor, conducting a literature review, preparing a project proposal and budget, and attending/critiquing the quarterly capstone symposium.

**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: FISH 210; FISH 493; Q SCI 381.

**FISH 495 Capstone Project II (-3)** 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.

**FISH 507 Special Topics in Fisheries (1-15, max. 15)** Recommended: permission of instructor.

**FISH 510 Current Topics in Genetics and Physiology (1-5, max. 15)** Contemporary problems and issues in genetics and physiology as they relate to fisheries and aquatic 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 fisheries and aquatic sciences.

**FISH 512 Current Topics in Quantitative Science (1-5, max. 15)** Contemporary problems and issues in quantitative science as they relate to fisheries and aquatic 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 fisheries and aquatic 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 fisheries and aquatic sciences.

**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 other's efforts.

**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, 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. Recommended: upper division ecology, limnology, or oceanography.

**FISH 529 Water Center Seminar (1)** *Steinmann* Weekly seminars covering water resources and watershed topics with lectures from scientists on and off campus. Credit/no credit only. Offered: jointly with CFR 529/PB AF 521; AWSp.

**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. Recommended: regression course.

**FISH 535 Aquatic Toxicology (3)** Principles of toxicology applied to aquatic organisms. Recognition of physiological and biochemical responses of organisms to toxins and practical application of toxicity testing methods to identification of pollution and toxins in aquatic environment. Toxicity test design, interpretation, and data analysis. Recommended: organic or biochemistry and physiology or equivalent or permission of instructor.

**FISH 537 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.

**FISH 542 Principles and Applications of Molecular Methods (3)** Applications of molecular techniques to questions in ecology, evolution, and natural resource management, with emphasis on advanced genome-enabled technologies and the analysis and interpretation of genetic data. Includes weekly discussion of empirical papers, and preparation/peer-review of a proposal. Prerequisite: permission of instructor. Offered: jointly with OCEAN 574; A.

**FISH 543 Molecular Techniques (4)** Laboratory on DNA methods. Experiments analyzing genetic variation at the intra- and interspecific level, including one experiment of student's own design. Techniques include DNA extraction and quantitation, PCR, DNA sequencing, RFLP analysis and cloning. Prerequisite: FISH 542 or OCEAN 574 or permission of instructor. Offered: jointly with OCEAN 575.

**FISH 547 Stream and River Ecology (5)** Characterizations of stream and river ecosystems

from a watershed perspective. Emphasis on fundamental processes affecting the structure and dynamics of aquatic communities and the riparian zone. Resource conflicts, new technologies, field trips, and class projects. Offered: jointly with CFR 547; Sp.

**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. Recommended: probability theory and Q SCI 292 and 483.

**FISH 558 Advanced Analysis in Fisheries Stock Assessment (3)** Deterministic and stochastic representations of age-dependent and size-dependent models for stock assessment; analysis of multi-species models; risk analysis and uncertainty in fisheries management strategies; analysis of population data on computers. Recommended: 456, 458, 557, or permission of instructor.

**FISH 560 Applied Multivariate Statistics for Ecologists (4)** GE 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 565 Marine Fish Biology (9)** Taxonomy, ecology, and life history of the fishes of the San Juan Islands and northeast Pacific Ocean. Prerequisite: permission of instructor. Offered: Friday Harbor Laboratories.

**FISH 578 Graduate Topics in Sustainable Fisheries (2, max. 6)** *Parrish* 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.

**FISH 581 Fishery Management: Case Studies (3)** Examination of historical case studies chosen to illustrate specific fishery management problem areas. Faculty presentations occupy first half of quarter, student presentations the second half. Prerequisite: FISH 580. Offered: jointly with SMA 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.

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## School of Marine Affairs

**SMA 103 Society and the Oceans (5) I&S/NW** Explores the social and policy dimensions of the ocean environment and ocean management policy. 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 SIS 103

**SMA 433 Environmental Degradation in the Tropics (5) I&S/NW** 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 SIS 433/SMA 433.

**SMA 455 Marine Business Environment in Russia and Eastern Europe (3) I&S** *Kaczynski* International marine business environment of Russia and the maritime nations of East Europe; their transition process from communist to free market economic systems. Covers aspects of doing business in marine-related fields such as shipping, fisheries, shipbuilding, ports, and land infrastructures, marine tourism, and water sports. Offered: jointly with SISRE 455.

**SMA 476 Introduction to Environmental Law and Process (3) I&S** *Bryant, Hershman* 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.

**SMA 480 Marine Resource Conservation and Management (3) I&S/NW** *Gallucci, Miller* 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/ENVIR 480.

**SMA 485 Pacific Recreation and Tourism Issues (3) I&S/NW** *Miller* Examines how marine tourism links people to one another and to the environment. Utilizes concepts from cultural anthropology, sociology, political science, and 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.

**SMA 499 Undergraduate Research (1-15, max. 15)** Research on assigned topics under the supervision of faculty members. Prerequisite: permission of instructor.

**SMA 500 Introduction to the Human Dimensions of Global Change (3) Hershman** 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 globalization and third world development, changes the use of coastal and ocean resources. Offered: A.

**SMA 501 Integrated Marine Affairs Practice (3)** Introduction to the practice of integrated assessment in marine affairs through the use of case studies and group analysis projects. Prerequisite: SMA 500 plus two of the following: SMA 519, SMA 536, SMA 591, or permission of instructor. Offered: A.

**SMA 506 International Law of the Sea (3)** Offered: jointly with LAW B 561.

**SMA 507 International Organizations and Ocean Management (3) Miles** 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: SMA 500 or permission of instructor. Offered: jointly with PB AF 538.

**SMA 508 National Marine Policy Processes (3) Miles** Comparative institutional dimensions of marine policy processes. Marine policy context at the national level and the dynamics that drive policy formulation and policy implementation.

**SMA 509 Integrated Coastal Management (3) Christie, Hershman** 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: SMA 500 or permission of instructor.

**SMA 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.

**SMA 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.

**SMA 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.

**SMA 515 U.S. Coastal and Ocean Law (4) Hershman** 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. Offered: jointly with LAW B 565.

**SMA 516 Seaport Management (3)** Role of port and harbor agencies in management of marine uses: cargo and trade, economic development, tourism and recreation, fisheries, environmental protection. Management functions of planning, marketing, finance, engineering, environmental assessment. Examples and guest speakers from Port of Seattle and other Puget Sound ports. Prerequisite: SMA 500 or permission of instructor.

**SMA 517 Marine Uses: Transportation and Commerce (3) Hershman** 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: SMA 500 or permission of instructor.

**SMA 519 Marine Policy Analysis (3) Leschine** 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.

**SMA 521 Governmental Responses to Global Climate Change (3) Miles** 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.

**SMA 523 International Science and Technology Policy (3) Miles** 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.

**SMA 525 Marine Protected Area Management and Science (3) Fluharty, Klinger** Examines management and scientific issues involved with the design, establishment, operation, and maintenance of MPAs. Offered: Sp.

**SMA 536 Applied Microeconomics for Marine Affairs (3) Huppert** 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.

**SMA 537 Economic Aspects of Marine Policy (3) Huppert** 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: SMA 500 or permission of instructor. Offered: jointly with ECON 537; W.

**SMA 538 Economics of Living Marine Resources (3) Huppert** 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.

**SMA 540 International Strategic Planning for Marine Resources (3) Kaczynski** Marine economies are affected by shrinking resources, population pressure, expanding economic globalization. Case studies from the third world and economies in transition illustrate strategic economic planning. Students research selected topics. Prerequisite: SMA 500 or permission of instructor. Offered: A.

**SMA 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.

**SMA 555 Comparative Marine Business in the North Pacific (3)** Strategies of Russian, Canadian, Japanese, and American enterprises and governments in promotion of marine business in the North Pacific. Socio-economic characteristics of the four powers; role of public and private sectors in foreign trade and investment; Russia's transition to free-market economic system; and business practices in the region. Offered: jointly with SISRE 555.

**SMA 570 Thesis Presentation (1)** *Fluharty* Completion of the thesis requirement for SMA. Prepare a professional presentation to a peer audience. Offered: AWSpS.

**SMA 581 Fishery Management: Case Studies (3)** *Huppert* Examination of historical case studies chosen to illustrate specific fishery management problem areas. Faculty presentations occupy first half of quarter, student presentations the second half. Prerequisite: SMA 580 or permission of instructor. Offered: jointly with FISH 581.

**SMA 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/ESS/ENVIR 585; Sp.

**SMA 591 Marine Science in the Coastal Zone (3)** *Klinger* 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.

**SMA 600 Independent Study or Research (\*)**

**SMA 700 Master's Thesis (\*)**

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## Oceanography

**OCEAN 100 Explore Oceanography at UW (1)** Explores the research and experiences of the Oceanography department's faculty, graduate students, and undergraduate students. Credit/no credit only. Offered: A.

**OCEAN 101 Survey of Oceanography (5) NW** Holistic view of fundamental principles of ocean science; the geography and geology of ocean basins; chemistry of sea water; physical dynamics of currents, waves, and tides; coastal processes; and the biology of diverse ecosystems such as deep sea vents, coral reefs, and estuaries. Intended for nonmajors.

**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** 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 ASTBIO/ASTR/ESS 115/BIOL 114.

**OCEAN 200 Introduction to Oceanography (3) NW** *Armbrust* 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 microscales in the ocean. Intended for science majors. Offered: Sp.

**OCEAN 210 Ocean Circulation (3) NW** The large-scale circulation of the ocean. Topics include temperature-salinity analysis; water mass identification; water, salt, and heat budgets; chemical tracer distributions; advection and diffusion. Prerequisite: either Ocean 101 or Ocean 200; recommended: either PHYS 114 or PHYS 121. Offered: A.

**OCEAN 220 Introduction to Field Oceanography (3/5) NW** Design and conduct a field study in oceanography. Field trip required (usually during Spring break). Focus on active learning, deployment of instruments, data collection, interpretation, and presentation. Honors section incorporates additional field experimentation and study in marine biology. Writing class. Prerequisite: either OCEAN 210 or OCEAN/ FISH/BIOL 250. Offered: Sp.

**OCEAN 230 Rivers and Beaches (3/5) NW** *Montgomery, Nittrouer* 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 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. Evening marine biology movies and weekend field trip. Honors section research project. Offered: jointly with BIOL/FISH 250.

**OCEAN 260 The Puget Sound Ecosystem (3/5) I&S/NW** Examines historical human impacts on the land/water ecosystem of the Puget Sound, roles of regional governance and citizen action, and prospects for ecological restoration. Computer labs and field trips for additional credit. Offered: jointly with ENVIR 260.

**OCEAN 300 Study Abroad Marine Sciences (1-12, max. 12)** *Robigou* For participants of Marine Language Exchange Scholarship Program. Specific content varies and must be individually evaluated. Credit does not apply to major requirements without approval. Offered: AWSpS.

**OCEAN 310 The Puget Sound Nearshore: Processes and Problems (3) I&S/NW** An introduction to the geology, ecology, and politics of Puget Sound beaches. Content focuses on beach formation and sediment dynamics, with application to nearshore ecology and shoreline management. Three field trips to local beaches complement topics discussed in class.

**OCEAN 351 Field Investigations in Marine Biology (5)** Evaluates the relationships between man and marine systems in a field-oriented class. Case studies directly investigate marine biology. Studies include human activities and our effects on marine species and communities. Multiple field trips, lectures, and labs. Prerequisite: FISH 350/OCEAN 350. Offered: jointly with FISH 351; Sp.

**OCEAN 360 Marine Field Research (10) NW,QSR** *Scott Veirs, Val Veirs* Intensive off-campus marine research experience. Includes 5 weeks designing a field experiment and a 5-week cruise aboard a sailing research vessel to implement it. Offered: jointly with OCEAN 365; ASp.

**OCEAN 365 Practicing Sustainability Science (8) I&S/NW** *Scott Veirs, Val Veirs* Intensive off-campus experience. Studies sustainability science, marine policy, and "clean" technologies. Includes interaction with community stakeholders for 5 weeks and experimentation with sustainable technologies and practices in the marine environment during a 5-week cruise aboard an energy-efficient sailing catamaran. Offered: jointly with OCEAN 360; ASp.

**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 410 Marine Geology and Geophysics (4) NW** Sedimentological and petrologic processes that determine the geologic record. Prerequisite: either ESS 101 or ESS 210. Offered: jointly with ESS 410; A.

**OCEAN 411 Special Topics in Marine Geology and Geophysics (3) NW .**

**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 116 or PHYS 123; either MATH 126, MATH 129, MATH 146, or Q SCI 381; OCEAN 210. Offered: W.

**OCEAN 421 Special Topics in Physical Oceanography (3) NW .**

**OCEAN 422 Ocean Dynamics (3) NW** Equations of motion governing flow of sea water. Conservation of mass, tracers, heat and momentum. Energy and vorticity balance. Buoyancy and rotational effects. Scale

analysis. Applications to upper ocean dynamics, surface and internal waves, and wind-driven currents in the ocean. Prerequisite: MATH 126; PHYS 123; OCEAN 420.

**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; either MATH 126 or MATH 129; OCEAN 410.

**OCEAN 430 Biological Oceanography (4) NW** Marine organisms, their quantitative distribution in time and space and their interactions with the ocean. Prerequisite: either BIOL 162, or BIOL 220; OCEAN 210. Offered: A.

**OCEAN 431 Special Topics in Biological Oceanography (3) NW** .

**OCEAN 442 Oceanography of the Puget Sound (3) NW** Explores the role of oceanography in regional issues. Field opportunities and active investigation of applied oceanographic problems. Lectures, research trip, student co-teaching, discussion. Prerequisite: either CHEM 152, CHEM 221, BIOL 162, BIOL 220, ESS 101, or ESS 210.. Offered: A.

**OCEAN 443 Design of Oceanographic Field Experiments (3) NW** Case histories, presentations, and class exercises used to teach methods of formulating a research problem and proposal writing. Methods of data analysis, presentation, error estimation, library resource and data base use; web page implementation and design. Principles of cruise planning. Prerequisite: OCEAN 400; OCEAN 410; OCEAN 420; OCEAN 430. Offered: W.

**OCEAN 444 Advanced Field Oceanography (5) NW** Conduct field experiment (designed in OCEAN 443) during a week-long cruise aboard a research vessel. Analyze samples data and present results in a series of drafts and a final term paper. Results are presented at a two-day-long public research symposium and on the students' individual Web sites. Prerequisite: OCEAN 443. 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.

**OCEAN 451 Fluid Dynamics Laboratory (4) NW** Individual projects in experimental fluid dynamics with applications to practical problems. Experimental design, visualization, and measurement techniques applied to a problem selected by each student. Prerequisite: PHYS 123.

**OCEAN 452 Spatial information Technologies in Ecosystem Sciences (3) NW** *Logsdon* Introduction to the use of GPS, GIS, and Remote Sensing in the ecosystem sciences. Integrates these technologies in an applied research setting. Two overnight weekend field trips required. Offered: jointly with FISH 453; A.

**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: 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** *faculty* 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)** Research on assigned topics that may involve laboratory work, fieldwork, or literature surveys. Offered: AWSpS.

**OCEAN 500 Current Problems in Oceanography (1)** Discussion of research topics that are currently being investigated within the school. Credit/no credit only. Prerequisite: permission of instructor. Offered: AW.

**OCEAN 501 Estuarine Circulation and Mixing (3)** Observed patterns of currents, mixing, and stratification from deep fjords to shallow coastal plain estuaries. Physical understanding of basic processes, such as tides, wind stress, topographic effects on turbulence, sill hydraulics, and exchange flow. Vertical mixing and residence times important to biological and pollution studies. Prerequisite: permission of instructor.

**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 509 Seminar (1)** 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: AMATH 403 or permission of instructor. Offered: jointly with AMATH/ATM S 505; A.

**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/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 516 Ocean Circulation: Theories (3)** Hydrodynamic theories concerning origin and characteristics of major ocean currents. Prerequisite: OCEAN 512 or permission of instructor.

**OCEAN 517 Methods and Measurements in Physical Oceanography (2)** 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. Offered: alternate years.

**OCEAN 519 Seminar in Physical Oceanography (1, max. 9)** Discussion of selected problems of current interest in physical oceanography. Prerequisite: OCEAN 510 or permission of instructor.

**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 CHEM 523 and ATM S 508.

**OCEAN 524 Environmental Chemical**

**Modeling (3)** *Benjamin, Murray* 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 include acid mine drainage, acid deposition, and groundwater and lake water contamination. Offered: jointly with CEE 550.

**OCEAN 529 Seminar on Chemical Oceanography (\*, max. 9)** Lectures, discussions, and readings on selected problems of current interest. Prerequisite: permission of instructor. Offered: AWWSp.

**OCEAN 530 Biological Oceanography:**

**Bacteria and Protozoa (3)** Bacteria in the marine environment; fate of organic carbon in the ocean and the interrelationship of the carbon cycle with other biogeochemical cycles. Prerequisite: permission of instructor. Offered: W.

**OCEAN 531 Biological Oceanography:**

**Phytoplankton (3)** Phytoplankton in the marine environment: ecology, primary productivity, and physiology. Phytoplankton growth and photosynthetic patterns; spatial and temporal distributions of phytoplankton; methods for determining distributions and rates of production and growth. Prerequisite: permission of instructor. Offered: W.

**OCEAN 532 Biological Oceanography:**

**Zooplankton (3)** Distribution and abundance of pelagic animals in space and time; analysis of their interactions. Small-scale distributions and behavior, population dynamics and energetics, trophic structure and dynamics, pelagic community structure, models of populations and food chains, secondary production and biogeography. Prerequisite: permission of instructor. Offered: Sp.

**OCEAN 533 Biological Oceanography:**

**Benthos (3)** Analysis of marine benthic communities; new research questions and method; ecologically important physics of benthic boundary layer; theories, mechanics, and observations of deposit feeding; succession as consequence of physical processes and biological interactions. Environments include deep-sea, continental shelves, estuaries, and intertidal, focusing on soft substrata. Prerequisite: permission of instructor. Offered: Sp.

**OCEAN 534 Methods and Measurements in**

**Biological Oceanography (2)** Methods for bacteria, phytoplankton, and zooplankton population assessment. Rate measurements of phytoplankton, zooplankton, and bacterial production. Benthos measurements, including

deep-sea environments. Prerequisite: permission of instructor.

**OCEAN 535 Biological Oceanography: An**

**Overview (3)** Principles and practice of biological oceanography for students with strong background in physical sciences but little recent exposure to biology. Ecological principles at individual, population, and community levels; overview of discipline of biological oceanography; case studies of interdisciplinary problems shared with the physical sciences. Offered: W.

**OCEAN 536 Seminar in Geostatistics (1-3,**

**max. 3)** Lectures and discussions on selected problems in the applications of statistics in earth science.

**OCEAN 539 Seminar in Biological Oceanog-**

**raphy (\*, max. 9)** Lectures, discussions, and work on selected problems of current interest. Prerequisite: permission of instructor. Offered: AWWSp.

**OCEAN 540 Marine Geological Processes (3)**

*McDuff* Principles of thermodynamics, heat and mass transfer, fluid mechanics, continuum mechanics, and time-series analysis applied to marine geological and geophysical data with special applications to thermal balance of the oceanic lithosphere. 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 542 Sediment Dynamics and**

**Boundary-Layer Physics (4)** Theoretical descriptions of sediment transport processes constrained by laboratory demonstrations. The physics of boundary layers, initiation of motion, suspended load, bedload, bedforms, and continua transport (turbidity currents, debris flows, and suspensions) and its application to the geological record. Offered: jointly with ESS 526; W.

**OCEAN 545 Physics of the Oceanic Lithos-**

**phere (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 Sedimenta-**

**tion (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 527.

**OCEAN 549 Seminar in Geological and**

**Geophysical Oceanography (\*, max. 9)** Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite: permission of instructor. Offered: AWWSp.

**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. Offered: alternate years.

**OCEAN 551 Marine Seismology (3)**

Practical application of seismic techniques to the study of the ocean basins. Analysis of refraction data, multichannel reflection profiling, surface wave studies, and earthquake analysis. Prerequisite: GPHYS 502 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 558 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/OCEAN/ESS 587, ATM S 504 or ATM S 505. Offered: jointly with ATM S 559/ESS 559; Sp; alternate years.

**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. Credit/no credit only. Prerequisite: ATM S 509 or OCEAN 512. Offered: jointly with ATM S 560; alternate years; Sp.

**OCEAN 569 Topics in Physical Oceanography**

**(1-4, max. 9)** Lecture series on topics of major importance in physical oceanography. Offered: AWWSp.

**OCEAN 570 Marine Microbial Interactions (1-**

**3, max. 9)** Structure, function, and dynamics of natural mixed-species populations of marine bacteria and their interactions with higher organisms; mixed-species culture methods; synecological field methods; species assemblages in specialized environments; mutualisms; sites and patterns of genetic exchange. Prerequisite: OCEAN 530 or permission of instructor. Offered: alternate years.

**OCEAN 571 Marine Primary Productivity (1-3,**

**max. 9)** Patterns and mechanisms of marine phytoplankton primary production. Small-to-global-scale patterns of production; environmental regulation of production; absorption of electromagnetic radiation; fluorescence; carbon fixation; trophic interactions; remote sensing and other optical methods. Prerequisite: OCEAN 531 or permission of instructor. Offered: alternate years.

**OCEAN 572 Zooplankton Ecology (1-3, max. 9)**

Life history strategies, dynamics and production of populations, vertical migration, interspecific interactions and community structure, models of complex assemblages of zooplankton, sampling methods and analysis, spatial heterogeneity. Prerequisite: OCEAN 532 or permission of instructor. Offered: alternate years.

**OCEAN 573 Benthic Biological Processes (1-3, max. 9)**

Processes characteristic of soft-bottom benthic environments; areas and methods of rapid current progress; open research questions; deposit feeding; passive larval recruitment; physical, chemical, geological, and biological feedbacks in ecological succession; scaling of laboratory systems. Prerequisite: OCEAN 533 or permission of instructor. Offered: alternate years.

**OCEAN 574 Principles and Applications of Molecular Methods (3)**

Applications of molecular techniques to questions in ecology, evolution, and natural resource management, with emphasis on advanced genome-enabled technologies and the analysis and interpretation of genetic data. Includes weekly discussion of empirical papers, and preparation/peer-review of a proposal. Prerequisite: permission of instructor. Offered: jointly with FISH 542; A.

**OCEAN 575 Molecular Techniques (4)**

Laboratory on DNA methods. Experiments analyzing genetic variation at the intra- and interspecific level, including one experiment of student's own design. Techniques include DNA extraction and quantitation, PCR, DNA sequencing, RFLP analysis and cloning. Prerequisite: FISH 542 or OCEAN 574 or permission of instructor. Offered: jointly with FISH 543; W.

**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: CO<sub>2</sub> hydrolysis, Fe, Mn, and H<sub>2</sub>S oxidation, stable isotope fractionation, mineral dissolution; homogeneous, heterogeneous, microbial catalysis; reaction and transport at air-water, sediment-water, and O<sub>2</sub>/H<sub>2</sub>S interfaces. Prerequisite: permission of instructor.

**OCEAN 581 Geochemical Modeling (3)**

Background to modeling concepts frequently encountered in chemical oceanography: box

models, advection-diffusion problems, sediment diagenesis equations, and boundary layer (air-water and sediment-water interface) models. Problems requiring application of the models to chemical distributions in the ocean. 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. CaCO<sub>3</sub> 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 585 Paleooceanography (3)**

History of environmental changes on earth over the past 100 million years as reconstructed from records in deep-sea sediments, ice sheets, and other ocean/terrestrial substrates. Examination of isotopic, geochemical, micropaleontological, and dating techniques. Role of the ocean in climate change. Prerequisite: permission of instructor.

**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. Offered: jointly with ATM S 586/ESS 586.

**OCEAN 587 Climate Dynamics (3)**

*Hartman, Thompson* 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. Offered: A

**OCEAN 588 The Global Carbon Cycle and Climate (3)**

*Emerson* Oceanic and terrestrial biogeochemical processes controlling atmospheric CO<sub>2</sub> 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. Offered: W.

**OCEAN 589 Paleoclimatology: Data, Modeling and Theory (3)**

*Battisti, Emerson, Steig* 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. Offered: Sp.

**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)**

*Klinger* 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 SMA 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 600 Independent Study or Research (\*)**

Offered: AWSpS.

**OCEAN 700 Master's Thesis (\*)**

Offered: AWSpS.

**OCEAN 800 Doctoral Dissertation (\*)**

Offered: AWSpS.

# School of Pharmacy

## Medicinal Chemistry

**MEDCH 400 Fundamental Concepts in Medicinal Chemistry (3)** *W. 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. Credit/no credit only. Prerequisite: permission of instructor. 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 501 Advanced Medicinal Chemistry (4)** *S. Nelson* Advanced 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: permission of instructor. Offered: AWSpS.

**MEDCH 502 Advanced Medicinal Chemistry (4)** *W. Nelson, Rettie* Advanced 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: permission of instructor. Offered: AWSpS.

**MEDCH 503 Advanced Medicinal Chemistry (4)** *Atkins, W. Nelson* Advanced 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: permission of instructor. Offered: AWSpS.

**MEDCH 520 Seminar (1, max. 15)** 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; AWSpS.

**MEDCH 521 Advanced Medicinal Chemistry (3)** *Atkins, W. 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 525 Alternative and Complementary Medicines (2)** *Elmer* Study of popular alternative and complementary medicines used in the United States. Focus on herbal products with some coverage of homeopathic and other non-nutritional dietary supplements. Demonstration of resources for current objective information on these controversial medicines. Credit/no credit only. Offered: A.

**MEDCH 527 Drug Metabolism (4)** *Rettie, 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; odd years; W.

**MEDCH 530 Mass Spectrometry of Drugs, Toxicants, and Metabolites (3)** *Howald* Current approaches to the combination of liquid chromatography with mass spectrometry for small molecules. Mass spectrometry of drugs, toxicants, metabolites. Emphasis on interpretation skills, with problem sets each week. Introduction to LC/MS instrumentation. Ionization methods appropriate for small molecules. Capillary LC/MS and capillary electrophoresis. Offered: even years; Sp.

**MEDCH 541 Mass Spectrometry Based Proteomics (3)** *Goodlett* Covers basics of sample preparation, data generation, instrumentation, ionization, and data interpretation of peptide tandem mass spectra manually. Uses database search engines and bioinformatics in systems biology related proteomics. Prerequisite: MEDCH 530 or permission of instructor. Offered: odd years; Sp.

**MEDCH 550 Mechanistic Studies in Medicinal Chemistry (1)** *S. Nelson* Discussion of research strategies and methods used to carry out studies of mechanisms of drug action, metabolism, and toxicities. Emphasis is on problem solving through theoretical and experimental approaches and on data analysis and interpretation. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**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. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**MEDCH 552 Medicinal Chemistry Aspects of Drug Action and Drug Metabolism (1)** *W. 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. Credit/no credit only. Prerequisite: permission of instructor. 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. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**MEDCH 554 The Mechanism of Action and Pharmacokinetics of Biotherapeutic Agents and Other Natural Products (1)** *Elmer* Discussion of the literature, research possibilities, and questions that need to be addressed in the area of the application of microorganisms and other natural products for therapeutic purposes. Emphases on problem solving, research strategies, literature evaluation, and data analysis. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

**MEDCH 555 Current Topics in Biological Mass Spectrometry (1)** *Goodlett* Emphasis on applications in the area of protein toxins, bioactive peptides, and microbial diseases and on current developments in the use of small scale separations with mass spectrometry. Credit/no credit only. Prerequisite: permission of instructor. 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. Credit/no credit only. Prerequisite: permission of instructor. 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. Credit/no credit only. Prerequisite: permission of instructor. Offered: even years; AWSpS.

**MEDCH 559 Molecular Motors (1)** *Catalano* Discussion of molecular motors, particularly those associated with virus assembly pathways. Emphasizes kinetic, biochemical, and biophysical approaches to dissect the molecular mechanisms of motor function. Offered: AWSpS.

**MEDCH 561 P-Immunizing and Antimicrobial Agents (4)** *Elmer, Totah* Chemical and biologic properties of agents used to prevent or treat infectious diseases, including diagnostic, prophylactic, and therapeutic uses of immunizing biologicals and spectrum, action mechanisms, resistance patterns, toxicity, and therapeutic applications of antibiotics, antifungals, and antivirals. Prerequisite: MICROM 301, MICROM 302, MEDCH 570, or equivalent, PharmD major, or permission of instructor. Offered: Sp.

**MEDCH 562 P-Medicinal Chemistry (3)** *S. 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: A.

**MEDCH 563 P-Medicinal Chemistry (3)** *W. 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, W. 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 I (3)** *Catalano* Introduction to biochemistry for Pharm.D. students with an emphasis on those aspects of biochemistry which are particularly relevant to understanding human disease and therapeutic intervention strategies. Offered: W.

**MEDCH 571 P-Medicinal Biochemistry II (3)** *Kunze* Continuation of discussions of those aspects of biochemistry which are particularly relevant to understanding human disease and therapeutic intervention strategies. Offered: Sp.

**MEDCH 582 Topics in Medicinal Chemistry (1, max. 10)** Discussion of pertinent articles from current literature. Credit/no credit only. Offered: AWSp.

**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.

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## Pharmaceutics

**PCEUT 499 Undergraduate Research (1-6, max. 12)** Research problems in drug disposition, drug targeting, and drug development. Prerequisite: Cumulative GPA of 2.5 and permission of the instructor.

**PCEUT 501 Advanced Pharmacokinetics I (5)** *Ho, Shen, Unadkat* Drug absorption, distribution, excretion, metabolism, and effects in mammalian systems. Compartmental model and model-independent approaches examined. Drug disposition studied in a physiologically realistic context taking nonlinear events into account. Aimed at development of innovative methods for data analysis and evaluation in biological systems. Prerequisite: PCEUT 506 or PCEUT 532, or permission of instructor.

**PCEUT 502 Pharmacokinetics of Drug Metabolism (4)** *Kunze, Levy, Thummel* Advanced study of drug metabolism pharmacokinetics. Topics emphasize linear and nonlinear metabolic clearance kinetics, metabolite kinetics, in vitro-in vivo predictions, and drug-drug interaction kinetics. Prerequisite: PCEUT 506 or permission of instructor.

**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)** *Isoherranen* Covers the fundamentals of pharmacokinetics. Includes lectures and laboratory exercises on the key concepts in pharmacokinetics, including compartmental kinetics, clearance, protein binding, bioavailability, pharmacodynamics, clinical pharmacokinetics, and Michaelis-Menten kinetics.

**PCEUT 510 Pharmacokinetics of Drug Interactions (3)** *Levy, Shen, Thummel, Unadkat* Common pharmacokinetic mechanisms underlying the clinically important interactions between drugs. Interactions involving gastrointestinal absorption, serum drug protein binding, excretory and metabolic clearance processes are discussed. Prerequisite: PCEUT 532 or equivalent.

**PCEUT 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3)** *Eaton, Thummel* Addresses current DNA sequencing and genotyping approaches, and basic concepts of pharmacogenetics and toxicogenomics. Emphasis placed on applications of genomic technologies to the understanding of "gene-environment interactions" that cause diseases of public health importance, including cancer, chronic neurological diseases, and adverse drug reactions. Prerequisite: GENET 372 or equivalent. Offered: jointly with ENV H 513/PHG 513.

**PCEUT 520 Seminar (1, max. 15)** *Kelly* 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)** *Bloedow, Lee, Link, Mao* 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.

**PCEUT 532 P-Clinical Pharmacokinetics (5)** *Anderson, Levy, Isoherranen* 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 and Drug Delivery (3)** *Ho, Levy, Shen, Thummel* Basic principles of biopharmaceutics and drug delivery, and their application to therapeutics including oral and non-oral route of drug administration for traditional and biotechnology drugs. Fundamental principles related to assessment of bioavailability and bioequivalence, drug-drug and food-drug interactions for orally administered drugs. Prerequisite: PCEUT 532.

**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.

**PCEUT 583 Topics in Pharmaceutics (1, max. 15)** *Isoherranen* 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 Pharmaceutical Biotechnology (2/3, max. 3)** *Ho, Hu, 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 598 Independent Research (\*, max. 24)** Basic and clinical research problems in drug disposition and effect. Prerequisite: 2.5 GPA and permission of instructor.

**PCEUT 599 Cumulative Exams for Pharmaceutics (1)** *Isoherranen* Quarterly cumulative examinations for graduate students. Credit/no credit only.

**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.

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## Pharmacy

### Pharmacy

**PHARM 301 Self-Care Products and Practices (2)** *Dawson, Murphy* Addresses a broad range of health concerns including how to identify common conditions amenable to self-care, select appropriate treatment options ranging from non-prescription to non-drug therapies, prevent adverse effects from the use of medications, adopt strategies encouraging healthier lifestyle habits, and learn the rationale behind conventional and alternative/complementary therapies.

**PHARM 494 Principles of Pharmacokinetics (2)** *Bauer* basic pharmacokinetic concepts to the clinical application of drug dosing in patients and master the therapeutic drug monitoring techniques used to determine doses of drugs with narrow therapeutic indices.

**PHARM 497 Drug Therapy for the Elderly (3)** *Christiansen, Gray, Odegard* Clinical application of drug knowledge in the treatment of disease in older adults with multiple comorbidities. Application of age-related changes in pharmacokinetics and pharmacodynamics in the selection and monitoring of drug regimes of older adults. Emphasis on problem solving, using case examples. Prerequisite: nurse practitioner students or permission of instructor.

**PHARM 500P-Principles of Evidence Based Medicine I: Design and Conduct of Clinical Research (3)** *O'Sullivan* Provides instruction in approaches to and sources for identifying information on the benefits and risks of pharmaceuticals in humans. Additionally, discusses the science of conducting clinical research, including methods, study design, and interpreting study findings for clinical practices. Offered: A.

**PHARM 501 P-Profession of Pharmacy (3)** *Somani* Overview of the profession of pharmacy emphasizing practice opportunities and specialization. Introduction to clinical and ethics case evaluation techniques using the Pharmacist's Workup of Drug Therapy format. Off-site pharmacy visitation required. Credit/no credit only.

**PHARM 502 Neonatal Drug Therapy (3)** *Blackburn* Clinical applications of drugs used with acute and chronically ill preterm and term neonates. Review of neonatal pharmacotherapeutics. Examination of selected therapeutic agents in relation to indications, efficacy, therapeutic and adverse effects, monitoring parameters, and dosing principles in the neonate.

**PHARM 503 Senior Care Introductory Pharmacy Practice Experience (2)** *Dawson, Gray, Lakey, Lam, Morrissey, Murphy, Odegard, Plein* Under faculty supervision, provides clinical services for senior patients in various settings. Includes reviewing charts, interviewing patients, conferring with other health care providers, and making recommendations on medication therapies to providers and patients. Prerequisite: Successful completion of the first five quarters of Pharm. D. curriculum; permission. Credit/no credit only. Offered: Sp.

**PHARM 504 P-Pharmacy Practice (3)** *Hammer* Introduces students to principles of contemporary pharmacy practice and pharmaceutical care. Lecture topics include pharmacy practice issues and general knowledge of common medications. Laboratory activities include prescription processing and problem solving, patient education, sterile products preparation, physical assessment, and other patient care activities. Prerequisite: PHARM 500, PCEUT 531.

**PHARM 505 P-Foundations and Principles of Pharmacy Education (2)** *Dawson, Hammer* Teaches principles of education that student educators and pharmacists can use in a multitude of educational environments. Focuses on pharmacy education in general as well as instructional methods and teaching principles. Open to 2nd-4th-year Pharm.D. students.

**PHARM 506 Seminar in Pharmacy Education I (1)** *Murphy, Odegard* Discussion of scholarship and teaching in pharmacy education, focusing on the critical evaluation of educational research. Designed in a journal-club format, students participate in small group discussions and write an analysis paper. Prerequisite: PHARM 505 or permission of instructor. Credit/no credit only.

**PHARM 507 Seminar in Pharmacy Education II (2)** *Hammer, O'Sullivan* Students engage in weekly discussions and activities to prepare pharmacy-related presentations or faculty development workshops. Includes journal club sessions to discuss current topics in pharmacy education. Prerequisite: PHARM 505 or permission of instructor. Credit/no credit only.

**PHARM 508 P-Principles of Evidence Based Medicine II: Applying and Interpreting Biostatistics in Clinical Research (4)** *Blough* Introduction to basic biostatistical concepts in the field of pharmacy. Prerequisite: PHARM 500.

**PHARM 509 Medical Literature Evaluation (2)** *O'Sullivan* Provides an introduction to the processes of critically evaluation medical literature. Offered: A

**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 511 P-Community Outreach Service (2)** *Dawson* Work in assigned community services setting for a minimum of two hours per week to explore root causes of disability, cultural differences, professional values, community resources, and quality of life issues. Weekly seminars assist students in applying observations and experiences to pharmaceutical care. Credit/no credit only.

**PHARM 512 P-Human Behavior and Communication in Pharmacy (3)** *Dawson* Focuses on how human behavior and communication influence the pharmacist's activities in designing, delivering, and managing patient-focused care in pharmacy. Emphasizes listening, interviewing, writing, teaching, and critical thinking as applied to pharmacy practice. Prerequisite: PHARM 511.

**PHARM 513 P-Medical Devices for Home Health Care (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 (1-6, max. 6)** *Acker, Landis* Explores pharmacogenetics, pharmacokinetics, pharmacodynamics, pharmacotherapeutic issues, evidence-based efficacy studies, clinical case applications, 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 settings. Includes web-based pediatric component and specialty components.

**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* Analysis of pharmacotherapeutics 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 regimes, and identifying judicious pharmacotherapeutic plans.

**PHARM 520 P-Introduction to Pharmacoeconomics and Outcomes Research (2)** *Ramsey, 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)** *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 505. Offered: A/W/SpS.

**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 523 Survey of Biomedical Regulatory Affairs (3)** *Hazlet* Overview of the knowledge, terminology, and skills necessary to be an effective regulatory affairs or compliance specialist in the design, development, testing and production of drugs, biotechnology-derived therapeutics, and medical devices.

**PHARM 524 P-Institutional and Healthcare Systems Pharmacy Practice (2)** *Somani* Presentation of topics regarding current contemporary institutions pharmacy practice. Discussion of new systems technology, home care programs, managed care, computer applications, budgeting, formulary systems, drug information services, intravenous admixture programs, quality assurance process, and patient oriented services.

**PHARM 525 P-Advanced Compounding Skills (1)** *Hammer, 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. Credit/no credit only. Prerequisite: PCEUT 531.

**PHARM 526 P-Introductory Pharmacy Practicum (3)** *O'Sullivan* Preparation and dispensing of prescriptions at Rubenstein Memorial Pharmacy in Hall Health Center or other selected community pharmacies. Designed for Pharm.D. students with little or no experience in pharmacy. Under direct supervision of clinical faculty and other licensed pharmacy preceptors. Credit/no credit only.

**PHARM 527 P-Introductory Community Pharmacy Experience (4)** *O'Sullivan* Under faculty supervision, students gain experience working in the community pharmacy setting. Credit/no credit only. Prerequisite: PHARM 504.

**PHARM 528 P-Introductory Institutional Pharmacy Experience (3)** *O'Sullivan* Under faculty supervision students gain experience working in the institutional setting. Prerequisite: PHARM 504.

**PHARM 529 P-Experiential Learning (1-6, max. 12)** *O'Sullivan* Under faculty supervision, pharmacy students gain experience working on advanced practice projects, in a pharmacy practice setting, prior to the final year of the pharmacy program. Credit/no credit only. Prerequisite: satisfactory completion of the first quarter of pharmacy school.

**PHARM 530 P-Pharmacy and Women's Health (2)** *Anderson, Gardner* Participants gain an overview of the specific up-to-date knowledge of gender-based medicine; an understanding of the implications of gender-based biology and the opportunity to evaluate new research that has implications for the prevention and management of diseases and conditions in women. Credit/no credit only.

**PHARM 531 P-Pharmacy-Based Screening and Immunization Programs (1)** *Carpinito, Downing* Practical training in cholesterol, hypertension, bone density, and wellness assessment techniques, vaccine administration and management, and implementation of community-based public health programs. Following didactic and laboratory sessions students conduct screening and administer vaccines at community locations. Offered following the first professional year. Credit/no credit only. Prerequisite: MEDCH 401.

**PHARM 532 Methods in Pharmaceutical Policy Analysis (4)** *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: Graduate student or with permission. Offered: jointly with EPI 533; 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)** *Patrick* Concepts and methods for evaluating cost and outcomes of health and medical interventions with a focus on cost-effectiveness analysis, pharmacoeconomics, health and quality of life assessment, resource allocation, and medical decision-making. Prerequisite: permission of instructor. Offered: jointly with HSERV 584.

**PHARM 536 Principles of Publishing Clinical Evidence (2)** *Johnson, Olson* Explains advanced methodologic principles for improving the clarity of published clinical evidence. Students prepare and revise a 1000-word research letter for *The Lancet* using their own clinical evidence. Credit/no credit only. Prerequisite: permission of instructor. Offered: jointly with EPI 534.

**PHARM 537 P-Chemical Dependency Concepts (2)** *Kedzierski* Examines the development of therapeutic frame. 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 Pharm.D. professional students. Credit/no credit only.

**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. Credit/no credit only. Prerequisite: PHARM 537.

**PHARM 539 P-Principles of Professional Practice Management (2)** *Downing* 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 540 P-Pharmacy Ownership and Entrepreneurship (2)** *Gardner, Odegard* Discusses barriers to and benefits of independent pharmacy ownership. Describes the role, responsibilities and different management styles of the pharmacy owner. Evaluates differences with regard to purchasing an existing practice vs. starting a new practice. Explains legal considerations of ownership. Discusses how to create and the importance of a business plan.

**PHARM 541 Pharmacy, Health Care and Society (3)** *Sullivan* Introduction to health services and pharmacy practice designed for future health-care practitioners. Examines the history, organization, and effectiveness of the U.S. health-care system. Stresses the student's

ability to adopt a broad perspective across health-care 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 market, and provider relations. Class 2, 3, and 4.

**PHARM 543 Pharmacy Laws and Ethics (4)** *Hazlet* Studies the laws and regulations governing the practice of pharmacy, approaches to ethical dilemmas in the delivery of pharmaceutical care, and methods of regulatory and statutory 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. E-mail and web-access required. Open to 4th-year Pharm.D. students; non-matriculated students by permission only. Credit/no credit only.

**PHARM 545 P-Pharmacy Business Plan Development (1)** *Downing, Gardner* Develops a business plan for purchasing an independent pharmacy. Credit/no credit only. Prerequisite: PHARM 540.

**PHARM 546 P-Nonprescription Drug Therapeutics (3)** *Capoccia, 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 2nd Pharm.D. students.

**PHARM 547 P-Gerontological Communication Skills Seminar (2)** *Dawson* Addresses special communication needs of the elderly, ranging from individualized patient counseling to patient advocacy through development and provision of pharmacy services. Communication techniques applicable to teaching, developing innovative services, supervising, motivating, conflict resolution, and interdisciplinary interactions are explored in lecture and laboratory. Credit/no credit only.

**PHARM 548 P-Pharmaceutical Services for Long-Term Care (2)** *Lam* Scope of pharmaceutical services for long-term care (LTC) and systems for services. Responsibilities of the pharmacist for distributive, administrative, and clinical pharmacy services for nursing homes and other long-term-care facilities. Economic considerations in provision of LTC pharmaceutical services, role of the consultant pharmacist for home-health-care organizations. Pharmaceutical services for independently living elderly.

**PHARM 549 Pharmacotherapeutics for Older Adults (3)** *Gray, Odegard* Clinical application of drug knowledge in the treatment of disease in older adults with multiple comorbidities. Application of age-related changes in pharmacokinetics and pharmacodynamics in the selection and monitoring of drug regimens of older adults.



Emphasis on problem solving, using case examples. Prerequisite: PHARM 560; PHARM 561 or permission of instructor.

**PHARM 550 Current Topics in Geriatric Pharmacotherapy (1)** *Gray* Review primary medical literature to discuss contemporary issues related to geriatric pharmacotherapy. Credit/no credit only. Prerequisite: PHARM 509 or permission of instructor.

**PHARM 551 Infectious Disease Pharmacotherapy Module (1-2, max. 2)** *Black* Advanced concepts in infectious disease pharmacotherapy in a self-study and workshop format. Credit/no credit only.

**PHARM 552 Cardiovascular Disease Pharmacotherapy Module (1-2, max. 2)** *James* Advanced concepts in cardiovascular disease pharmacotherapy in a self-study and workshop format. Credit/no credit only.

**PHARM 553 Pulmonary Disease Pharmacotherapy Module (1-2, max. 2)** *Blanchard* Advanced concepts in pulmonary disease pharmacotherapy in a self-study and workshop format. Credit/no credit only.

**PHARM 554 Gastrointestinal Disease Pharmacotherapy Module (1-2, max. 2)** *Albertson* Advanced concepts in gastrointestinal disease pharmacotherapy in a self-study and workshop format. Credit/no credit only.

**PHARM 555 Neurological and Psychiatric Disease Pharmacotherapy Module (1-2, max. 2)** *Weber* Advanced concepts in neurological and psychiatric disease pharmacotherapy in a self-study and workshop format. Credit/no credit only.

**PHARM 556 Renal Disease Pharmacotherapy Module (1-2, max. 2)** *O'Sullivan* Advanced concepts in renal disease pharmacotherapy in a self-study and workshop format. Credit/no credit only.

**PHARM 557 Endocrine Disease Pharmacotherapy Module (1-2, max. 2)** *Wong* Advanced concepts in endocrine disease pharmacotherapy in a self-study and workshop format. Credit/no credit only.

**PHARM 558 Hematologic and Oncologic Disease Pharmacotherapy Module (1-2, max. 2)** *Kwok* Advanced concepts in hematologic and oncologic disease pharmacotherapy in a self-study and workshop format. Credit/no credit only.

**PHARM 559 Arthritic Disease Pharmacotherapy Module (1-2, max. 2)** *Setter* Advanced concepts in arthritic disease pharmacotherapy in a self-study and workshop format. Credit/no credit only.

**PHARM 560 Pharmacotherapeutics I (9)** *Black, McCune* Clinical application of drug knowledge in the treatment of disease. Emphasis on problem-solving, using case examples. Prerequisite: a minimum grade of .7 in all 1st and 2nd year core Pharm. D courses, a minimum grade of 2.0 in both PHARM 500 and 504, a minimum grade of 1.7 in PHARM 543; corequisite: PHARM 563.

**PHARM 561 Pharmacotherapeutics II (9)** *Bauer, Horn* Clinical application of drug knowledge in the treatment of disease. Emphasis on problem-solving, using case examples. Prerequisite: a minimum grade of 1.7 in PHARM 560; corequisite: PHARM 564.

**PHARM 562 Pharmacotherapeutics III (7)** *Gray, Wittkowsky* Clinical application of drug knowledge in the treatment of disease. Emphasis on problem-solving, using case examples. Prerequisite: a minimum grade of 1.7 in PHARM 561; corequisite: PHARM 565.

**PHARM 563 Applied Pharmacotherapeutics I (2)** *Capoccia* Develops a foundation of skills that enables a pharmacist to practice collaborative patient-specific care. Corequisite: PHARM 560.

**PHARM 564 Applied Pharmacotherapeutics II (2)** *Capoccia* Develops a foundation of skills that enables a pharmacist to practice collaborative patient-specific care. Prerequisite: PHARM 563; corequisite: PHARM 561.

**PHARM 565 Applied Pharmacotherapeutics III (2)** *Capoccia* Develops a foundation of skills that enables a pharmacist to practice collaborative patient-specific care. Prerequisite: PHARM 564; corequisite: PHARM 562.

**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)** *Kwok* Pharmacotherapy of cancer, covering supportive care (antibiotics, antiemetics, analgesics, nutrition) to the antineoplastic agents themselves. Specialists in each area serve as guest lecturers.

**PHARM 568 Healthcare of Cancer Survivors (2)** *McCune* Focuses on teaching the health science 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. Prerequisite: PHARM 561.

**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 micronutrient requirements, nutritional assessment, complications of PN and compounding and compatibility of PN solutions. Discusses consideration in special population (e.g., ICU).

**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: 3rd-year PharmD student, or approval by instructor.

**PHARM 571 P-Current Topics in Acute Care Pharmacotherapy (1)** *Chan* Increases understanding and stimulates discussion in the current topics related to acute care pharmacotherapy. Reviews the management of patients in the acute care setting through current cases presented by the instructors. May be taken alone or concurrently with PHARM 570.

**PHARM 572 P-Clinical Applications of Drug Interactions (2)** *Horn* Discussion of the clinical evaluation and management of drug-drug

interactions using patient situations. Focus on patient- and drug-related factors that predispose patients to adverse drug interactions, as well as clinical management of patients found to be at risk. Credit/no credit only. Prerequisite: 3rd- or 4th-year Pharm.D. student.

**PHARM 573 Laboratory and Functional Assessment: Geriatrics (1)** *Lam* Application of laboratory data and functional assessment in planning care for older adults. Case study/seminar format in which students recommend appropriate tests, interpret test results, and gain experience in performing tests of function. Recommended: MEDCH 535 or permission of instructor.

**PHARM 574 Clinical Introductory Practicum (1)** *O'Sullivan* Students spend three days in a patient care setting, under the guidance of preceptors or advanced students, as an introduction to the practicum experience. Credit/no credit only.

**PHARM 575 Institutional Clinical Practicum (5, max. 15)** *O'Sullivan* Under faculty supervision, fourth-year students provide pharmaceutical care in an inpatient environment. Credit/no credit only.

**PHARM 576 Ambulatory Care Clinical Practicum (5, max. 15)** *O'Sullivan* Under faculty supervision, fourth-year students provide pharmaceutical care in an outpatient environment. Credit/no credit only.

**PHARM 577 Advanced Practicum (5, max. 40)** *O'Sullivan* Under faculty supervision, fourth-year students gain experience in practice settings of their choice. Credit/no credit only.

**PHARM 578 Advanced Elective Practicum (1-10, max. 20)** *O'Sullivan* Faculty-supervised practicums either in areas of traditional practice or in innovative practice plans designed by faculty and student. Objectives, activities, schedules, and lengths are site- and preceptor-specific. Credit/no credit only.

**PHARM 579 Senior Care Practicum (1-6, max. 12)** Under faculty supervision, fourth-year pharmacy students gain experience working with drug therapy regimens in the elderly. Prerequisite: acceptance to the pharmacy school's Geriatric Certificate program.

**PHARM 580 P-Cases in Pharmaceutical Care (3, max. 9)** *Dawson* Small groups of students work with an instructor to review cases illustrating various aspects of specific diseases: pathophysiology, clinical features, psychosocial factors, therapeutic interventions with emphasis on drug therapies, and community resources. Analytic reasoning, self-study skills, and knowledge are emphasized.

**PHARM 581 P-Global Health Pharmacy: Medicines, Practice, and Policy (2)** *Garrison, Stergachis* Introduces the critical role of pharmaceutical in addressing the 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, pharmoeconomics, financing, intellectual property, and drug trade policies. Prerequisite: two credit enrollment requires 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)** *Garrison, Hazlet, Stergachis* 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 583 P-Overview of Contraceptive Management (2)** *Gardner* Didactic overview of contraceptive methods, fertility interventions, and medical abortions. Establishes forum for interactive discussion. Includes patient screening criteria and selection and monitoring outcomes of currently available barrier and hormonal methods of contraception and medical abortions. Open to all Pharm.D. students, as well as other health science professional students.

**PHARM 584 P-Pharmacy and Patient Advocacy (1/2, max. 3)** *Capoccia, Dawson, Downing, Gardner, Hazlet, Murphy, Odegard* Prepares Pharm D. students to become aware of and put into action their role as change agents in the advocacy of patients and the pharmacy profession. Prerequisite: two credit option requires satisfactory completion of the 1 credit lecture/discussion component.

**PHARM 587 P-Pharmacy Calculations (1)** *O'Sullivan* Covers basic calculations used in pharmacy practice. Offered: A.

**PHARM 588 Diabetes Care (2)** *Capoccia, 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. Credit/no credit only.

**PHARM 591 Community Collaborations in Healthcare Practicum (2, max. 8)** *Downing, Kedzierski* Faculty and students collaborate with representatives from the Salvation Army ARC and other community sites to improve health literacy and health outcomes of men and women residents/patients in addiction recovery. Credit/no credit only. Offered: ASp.

**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, Weber* Explores therapeutic topics pertinent in the pediatric population.

Emphasized ambulatory pediatrics. Prerequisite: third-year Pharm.D. student or permission of instructor.

**PHARM 597 Graduate Seminar (1)** *Blough, Gardner, Garrison, Hazlet, Sullivan, Veenstra* Interactive discussion of topical issues, methods, or analytic techniques. Topics vary. Credit/no credit only. Prerequisite: graduate program student.

**PHARM 598 Case Conference: Geriatrics (1)** *Plein* Students taking geriatric pharmacy clerkships in various clinical settings meet with faculty to present case studies of elderly patients requiring complex drug therapies. Credit/no credit only. Prerequisite: Pharm.D. fourth-year practicum in geriatrics or general medicine.

**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.

## Regulatory Affairs

**PHRMRA 524 Introduction to Clinical Trials (3)** *Jonlin, Hazlet, Hoffman* 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)** *Jonlin, Hazlet, Hoffman* Outlines the work of carrying out a clinical trial including, the complex work of study initiation, the issues of site and data managements, the 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)** *Jonlin, Hazlet, Hoffman* Address the business dimension of clinical trials. Addressed 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)** *Hazlet* Develops an understanding of international differences in the regulation of design, manufacture and post-marketing surveillance of medical products relative to US Food and Drug Administration Requirements. Prerequisite: PHARM 504. Offered: W.

**PHRMRA 528 Medical Risk Analysis and Management (3)** *Hazlet* Examines the principles and application of risk management methods in the design, manufacturing and marketing of medical products. Offered: Sp.

**PHRMRA 545 Statistical Basis of Quality Assurance (3)** *Hazlet* Applies statistical methods to medical products design, clinical evaluation, manufacturing and post-marketing surveillance. Prerequisite: introductory statistics. Offered: A.

**PHRMRA 546 Technical Writing for the Medical Products Industries (3)** *Hazlet* Presents up-to-date information and strategies for effective technical communication within the medical product industries. Addressed 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)** *Hazlet* 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: AWSp.

**PHRMRA 548 Biomedical Regulatory Affairs Practicum (1-9, max. 9)** *Hazlet* Provides a practical experience to ensure that participants are able to shepherd new medical products (drug, device, biologic) through regulator, clinical and quality assurance aspects. Includes a project and final report. Offered: AWSp.

**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.

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# Evans School of Public Affairs

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## Public Affairs

**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 500 General Seminar (1, max. 9)**

**PB AF 501 Legislative Relations (3)** 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 502 Political Management of Policy Process (3)** Analyzes the issues which public managers address when they seek to make and implement public policy and programs. Pays particular attention to the institutional and political constraints on policy making and the skills needed to address them.

**PB AF 503 Administrative and Executive Leadership (3)** 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 (3)** 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)** 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)** 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)** Examines how services can be delivered in a way that is responsive to the needs of those being served and maximizes the effective utilization of resources. Topics addressed include: needs assessment, process analysis, service strategy, sustaining the service organization, case management, and services integration.

**PB AF 509 Managing People in Public and Nonprofit Agencies (3)** 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 Public Service in American Democracy (1)** Discusses the role of public service in the United States through examination of historical and institutional foundations of the U.S. political regime. Pays special attention to the structures of government and constitutional values and conflicts at the heart of the political system. Offered: A.

**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. Offered: A.

**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. Offered: Sp.

**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. Offered: A.

**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 Microeconomic Policy Analysis (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. Offered: A.

**PB AF 517 Economics of the Public Sector (3)** Methods of analyzing effects of public expenditures and taxes on behavior of individuals and firms, on economic efficiency, and on equity and distribution of income. Theory and practice of intergovernmental fiscal

relations. Application of theory to formulation of public policy. Prerequisite: PB AF 516.

**PB AF 519 Law and Economics (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.

**PB AF 521 Water Center Seminar (1)** *Steinmann* Weekly seminars covering water resources and watershed topics with lectures from scientists on and off campus. Credit/no credit only. Offered: jointly with CFR 529/FISH 529; AWSp.

**PB AF 522 Public Budgeting and Financial Management (4)** Budgeting as a management process. Study of formulation and administration of government budgets, including role of budgeting in policy processes, approaches to budget formulation and analysis, development of the PPB approach, and aspects of budget administration, such as revenue estimating, allotment control, cost accounting. Prerequisite: PB AF 516 or permission of instructor. Offered: W.

**PB AF 523 Financial Management in the Public Sector (3)** Exploration of the managerial uses of accounting and other processes of financial management in the public sector. Topics covered include: financial planning and control, fund accounting, cost accounting, asset accounting, internal controls, auditing, financial analysis, and financial reporting. Prerequisite: permission of instructor.

**PB AF 526 Program Evaluation (3)** 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: background in quantitative methods.

**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. Offered: W.

**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. Offered: Sp.

**PB AF 529 Advanced Multivariate Analysis (3)** *Klawitter* Prepares students for advanced work with multivariate methods in program evaluation and policy analysis. Includes a data project what results in a professional quality product; reading examples of professional work and presentations of methods and results Offered: A.

**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 POL S/SIS 534.

**PB AF 531 Development Management in the 21st Century (3)** 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 Managing Policy in a Global Context (3)** 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)** 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 Rural Development: Economics and Policy (3)** *Fletschner* Survey of current microeconomic questions related to well-being of rural people in developing countries. Strengthens the ability to design appropriate policy tools for rural development by enhancing understanding of economic theory and its applications to rural households and by reviewing findings. Offered: W.

**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)** *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. Offered: Sp.

**PB AF 537 Topics in International Affairs (3, 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)** 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: SMA 500 or permission of instructor. Offered: jointly with SMA 507.

**PB AF 539 Values in International Development (3)** *Fletschner* 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. Offered: W.

**PB AF 540 Integrated Public Management Sequence (3)** Analyzes the institutional and political context of modern public management. Cases, readings, and discussion provide an integrated introduction to the major skills needed to successfully lead and manage government and nonprofit organizations. Offered: A.

**PB AF 541 Integrated Public Management Sequence (3)** Analyzes the institutional and political context of modern public management. Cases, readings, and discussion provide an integrated introduction to the major skills needed to successfully lead and manage government and nonprofit organizations. Prerequisite: PB AF 540. Offered: W.

**PB AF 542 Integrated Public Management Sequence (3)** Analyzes the institutional and political context of modern public management. Cases, readings, and discussion provide an integrated introduction to the major skills needed to successfully lead and manage government and nonprofit organizations. Prerequisite: 541. Offered: Sp.

**PB AF 543 Public Leadership Seminar (3)** Focus on the societal context of managerial life. Credit/no credit only. Prerequisite: permission of instructor. Prerequisite: graduate standing in Public Affairs Evening Degree Program. Offered: A.

**PB AF 544 Public Leadership Seminar (1-3, max. 3)** Integrated use of analytic and management concepts in the making of policy. Prerequisite: PB AF 543. Offered: W.

**PB AF 545 Public Leadership Seminars (3)** Provides a forum to reflect on the major dimensions of modern managerial leadership at the end of the program. Includes a team project working with outside clients or organizations. Prerequisite: PB AF 544.

**PB AF 550 Management of Not-for-Profit Organizations (3)** Focuses upon the roles played by not-for-profit 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 Public Management: Program Planning and Design (3)** Policy context of planning and programming, the institutionalization of purpose, the planning process, activity design, work scheduling and measurement, and program evaluation.

**PB AF 552 Public Arts Policy and Management (3)** Role of government in arts. Range of public support at federal, state, and local levels; reasons for its development and viability. Nature, evolution, functions of public arts agencies in implementing arts policy; relation of such agencies to their constituencies. Seattle, King County, and Washington State serve as case studies.

**PB AF 553 Financial Management in the Non-profit Sector (3)** *Breitner* 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. Offered: A.

**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.

**PB AF 555 Topics in Nonprofit Management (3, max. 12)** Examines various topics of public importance in nonprofit management. Integrates the political, managerial, and economic dimensions of these issues.

**PB AF 560 Urban Affairs (3)** 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 URB DP 560.

**PB AF 561 Urban Economics and Public Policy (3)** 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 URB DP 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 URB DP 562.

**PB AF 563 Seminar in Urban Planning and Policy (1)** Seminar for students in the MPA/MUP concurrent degree program. Explores topics that intersect urban planning and policy, through exchange with faculty and professionals working

in this arena. Focuses on developing thesis topics that explore this intersection. Offered: jointly with URBPD 563.

**PB AF 565 Topics in Urban Affairs (3, max. 12)** Examines various topics of public importance in urban policy. Integrates the political, managerial, and economic dimensions of these issues.

**PB AF 569 Race and Public Policy (3)** 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 Social Policy Analysis and Management (3)** Examines major institutions and programs in the human resources policy area: education, regulation of labor market, health care, income maintenance, social services. Discusses alternative policy instruments, analytic perspectives, intergovernmental issues, and management issues arising across policy areas. Explores challenges of linking services and clients across separate agencies.

**PB AF 571 Education, The Workforce, and Public Policy (3, max. 6)** 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 573 Topics in Education and Social Policy (3, 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 575 Public Policy Processes (5)** Political science frameworks, approaches, and theories concerning development and implementation of public policies within American political systems. Governmental behaviors and processes, including rational, political, and bureaucratic models of governmental decision making; agenda-building processes; and normative perspectives concerning role of governmental entities.

**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 News Media and Public Policy (3)** Explores impacts of news coverage on public policy. Exposure to journalists' approaches to coverage of public affairs, as well as to strategies used by leaders of public/non-profit agencies to attract favorable coverage and minimize damaging coverage. Students learn techniques for assessing impacts of news coverage.

**PB AF 585 Topics in Science, Technology, and Public Policy (3)** 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 589 Risk Assessment for Environmental Health Hazards (3/4)** Context, methodologies, types of data, uncertainties and institutional arrangements for risk assessment. Both qualitative and quantitative approaches to the identification, characterization, and control of environmental hazards to health emphasized through didactic and case studies. Offered: jointly with CEE 560/ENV H 577.

**PB AF 590 Environmental Policy Processes (3)** 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 CFR 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 College of Forest Resources. 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 CFR 591.

**PB AF 592 Resource Policy and Administration (5)** 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 CFR 571.

**PB AF 593 United States Energy Policy (3)** 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)** *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. Offered: W.

**PB AF 595 Topics in Environmental Policy and Management (1-3, 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)** *Zerbe* 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)** *Cullen, Shover* 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. Offered: Sp.

**PB AF 598 Administrative and Policy Skills Workshop (1-3, max. 3)** Teaches practical administrative, leadership, and analytic skills commonly required of managers and analysts in the public and non-profit sectors. The workshops emphasize hands-on problem resolution, simulations, and actual practice.

**PB AF 599 Special Topics (1-6, max. 6)** Study and analysis of special topics in public affairs. Topics vary each quarter depending on curricular needs and interests of students and faculty. Prerequisite: permission of instructor.

**PB AF 600 Independent Study or Research (\*)**

**PB AF 605 Degree Project ([1-6]-, max. 6)**

**PB AF 606 Public Service Clinic (3-)** *Carlson, Madison, Page* 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)** *Carlson, Madison, Page* 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.

## Public Policy Management

**PPM 500 Proseminar in Public Policy and Management (1)** *Waddell* Engages students with faculty to discuss research in public policy and management. Provides an effective means to become familiar with research agendas and opportunities in this field, and other aspects of socialization into the academic process, including teaching, grant writing, and publishing. Credit/no credit only. Offered: AWSp.

**PPM 502 Research Design (3)** *Khagram, Thomas* Provides a rigorous foundation for interdisciplinary research design. Introduces iconic types of theory (predictive, interpretive, and explanatory) and the philosophical

foundations underlying these. Reviews a range of methodological approaches to research: experimental and quasi-experimental, statistical and quasi-statistical, comparative case-study, ethnographic, and triangulation. Offered: A.

**PPM 504 Institutional Perspectives on Management (3)** *Page* Prepares doctoral students for careers in research and teaching public policy, management, and leadership. Examines essential responsibilities that policy makers, managers, and other kinds of leaders must address to succeed in public service through competing theories of institutional design and action. Offered: A.

**PPM 506 Advanced Microeconomics for Policy Analysis (3)** *Anderson* Reviews standard

individual choice models and newer perspectives from behavioral and institutional economics that inform public policy analysis. Topics include: models of individual choice, constrained and unconstrained optimization, information and uncertainty, intertemporal decision making, transaction costs and property rights, externalities, and public goods. Prerequisite: multivariate calculus; intermediate microeconomic theory. Offered: A.

**PPM 510 Public Policy Analysis (3)** *Zumeta* Reviews public policy analysis and evaluation building on prior study of microeconomics, policy processes, research design, and statistics. Covers theoretical and interdisciplinary frameworks and applications of empirical methods to policy problems and solutions, and considers regularities in incidence, and effects

of the use of alternative policy tools. Offered: S.

**PPM 512 Data Analysis Practicum (3)** *Long* Develops the methodological capacity to undertake independent research. Includes reading, critiquing, and replicating portions of selected empirical papers from a range of scholarly areas. Provides opportunities to deal with issues of research design, data limitations, measurement, model specification, and interpretation. Offered: A.

**PPM 599 Topics in Public Policy and Management (1-3, max. 12)** Examines various research topics of importance in public policy and management.

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## School of Public Health and Community Medicine

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### Biostatistics

**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. Contact instructor for information on which fields of applications emphasized. Credit/no credit only. Offered: jointly with STAT 111; Sp.

**BIOST 290 Introduction to Biomedical Research: Study Design and Interpretation (3)** *NW* Biostatistical concepts necessary for the interpretation, evaluation, and communication of biomedical research are introduced. Course topics include biomedical study design, randomization, graphical data displays, control of bias, variability, confounding, interaction, and ethics of human experimentation. Students participate in group and individual projects, group discussions, and oral presentations.

**BIOST 499 Undergraduate Research (\*)** Supervised reading programs; library and field research; special projects. Credit/no credit only.

**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. Examples in health sciences stressed. Offered: S.

**BIOST 503 Application of Statistics to Health Sciences (4)** 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: S.

**BIOST 509 Special Emphases in Biostatistics (3-5, max. 5)** Introduction to concepts and methods of descriptive and inferential statistics, with applications in specific disciplines emphasized. Topics include comparison of means and proportions, hypothesis testing, confidence intervals, nonparametric methods, linear regression and correlation. Different sections target specific student populations.

**BIOST 510 Biostatistics in Dentistry (3)** 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.

**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: AS.

**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)** Mathematically sophisticated presentation of principles and methods of data description; graphics; point, confidence interval estimation; hypothesis testing; relative risk; odds ratio; Mantel-Haenszel; chi-square test (matrix algebra required). 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)** Mathematically sophisticated 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 (matrix algebra required). 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 Topics in Epidemiologic Methods (3)** *Davis* Introduces advanced methodologic methods, including recursive partitioning, developing clinical prediction rules, analyses of community-level associations or interventions, case-crossover and case-only designs, propensity scores, two-stage sampling, and missing data imputation. Prerequisite: EPI 512; EPI 513. Offered: jointly with EPI 515. A.

**BIOST 521 Biostatistics for Experimentalists (4)** Statistical aspects of design, data analytic models appropriate to classes of experiments most commonly employed in biomedical sciences. One-, two-way analyses of variance; factorial, crossed, nested, repeated measures

designs. Clean, messy real-data sets analyzed using standard statistical computer packages. Prerequisite: either BIOST 511 and BIOST 512, or BIOST 517 and BIOST 518, or equivalent. Offered: alternate years; 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 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 533 Classical Theory of Linear Models (3)**

Introduction to one-, two-way analysis of variance; randomized blocks; fixed, random effects, multiple comparisons. Statistical distribution theory for quadratic forms of normal variables. Fitting of the general linear model by least squares. Prerequisite: BIOST 515, STAT 421 or STAT 423; and STAT 513; 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 535 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 535; A.

### **BIOST 536 Categorical Data Analysis in Epidemiology (4)**

Summary of univariate categorical data analysis; introduction to multivariate analysis of categorical epidemiologic data using multiplicative models. Experience at interpretation; familiarity with available programs gained by analysis of bona fide data, critiques of 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 studies. Familiarity with interpretation and available computer programs gained by analysis of bona fide sets of data and critiques of analyses appearing in the literature. Prerequisite: BIOST 536 or permission of instructor. Offered: jointly with EPI 537; W.

### **BIOST 538 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 538; 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 available programs gained by analysis of *bona fide* data; critiques of analyses appearing in literature. Prerequisite: Either BIOST 513, BIOST 515, BIOST 518, BIOST 536, or permission of instructor. Offered: Sp.

### **BIOST 550 Statistical Genetics I: Mendelian Traits (3)**

*Thompson* 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; A.

### **BIOST 551 Statistical Genetics II: Quantitative Traits (3)**

*Monks* 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; W.

### **BIOST 552 Statistical Genetics III: Design and Analysis (3)**

*Wijman* 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; GENET 371; or permission of instructor. Offered: jointly with STAT 552; Sp.

### **BIOST 555 Statistical Methods for Spatial Epidemiology (3)**

*Wakefield* 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.

### **BIOST 570 Advanced Applied Statistics and Linear Models (3)**

Generalized linear models, REML in mixed models for randomized blocks, split plots, longitudinal data. Generalized estimating equations, empirical model building, cross validation, recursive partitioning, generalized additive models, projection pursuit. Prerequisite: STAT 512, 513; BIOST/STAT 533 or

STAT 421 and STAT 423, and a course in matrix algebra. Offered: jointly with STAT 570.

### **BIOST 571 Advanced Applied Statistics and Linear Models (3)**

Generalized linear models, REML in mixed models for randomized blocks, split plots, longitudinal data. Generalized estimating equations, empirical model building, cross validation, recursive partitioning, generalized additive models, projection pursuit. Prerequisite: BIOST 570. Offered: jointly with STAT 571.

### **BIOST 572 Advanced Applied Statistics and Linear Models (3)**

Generalized linear models, REML in mixed models for randomized blocks, split plots, longitudinal data. Generalized estimating equations, empirical model building, cross validation, recursive partitioning, generalized additive models, projection pursuit. Prerequisite: BIOST 571. Offered: jointly with STAT 572.

### **BIOST 573 Statistical Methods for Categorical Data (3)**

Advanced topics in generalized linear models and the analysis of categorical data: overdispersion, quasilielihood, parameters in link and variance functions, exact conditional inference, random effects, saddlepoint approximations. Credit/no credit only. Prerequisite: BIOST 571 and STAT 582. Offered: jointly with STAT 573; alternate years; Sp.

### **BIOST 574 Multivariate Statistical Methods (3)**

Use of multivariate normal sampling theory, linear transformations of random variables, one- and two-sample tests, profile analysis, partial and multiple correlation, multivariate ANOVA and least squares, discriminant analysis, principal components, factor analysis, robustness, and some special topics. Some computer use included. Prerequisite: BIOST 570 or permission of instructor. Offered: jointly with STAT 574; alternate years.

### **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 577 Advanced Design and Analysis of Experiments (3)**

Concepts important in experimental design and analyzing data from planned experiments. Multi-way layouts, randomized block designs, incomplete block designs, Lating and Graeco-Latin squares, factorial and fractional designs, split-plot designs, optimal design theory, response surface experiments. Prerequisite: either BIOST 515, BIOSTAT 533, STAT 502, STAT 504, STAT 533, or permission of instructor. Offered: jointly with STAT 577.

### **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)**

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)** *Thompson, Weir, Wijsman* Presentations and discussion of special topics and research results in statistical genetics. Students, postdocs, 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: AWSp.

**BIOST 586 Martingales: Survival Analysis (3)** Theory of counting processes and martingales to provide unified study of survival analysis methods. Focus on survival distribution estimators, censored data rank statistics, regression methods with censored survival data. Development of small samples moments, asymptotic distributions, and efficiencies. Prerequisite: STAT 521 or STAT 583 or permission of instructor; recommended: STAT 576. Offered: jointly with STAT 586; alternate years; W.

**BIOST 590 Biostatistical Consulting (\*)** 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: AWSp.

**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: 514; 515; 536; 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: AWSp.

**BIOST 700 Master's Thesis (\*)** Offered: AWSp.

**BIOST 800 Doctoral Dissertation (\*)** Offered: AWSp.

## Environmental Health

**ENV H 111 Exploring Environment and Health Connections (3)** *I&S Camp, Keifer* 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 Film (2)** *I&S Fenske, Luchtel* Viewing and discussion of popular films that explore issues in environmental health. After viewing films, a discussion follows focusing on the ethical, legal, social, and scientific issues raised by the films. Intended for UW freshmen and sophomores from all backgrounds who may have an interest in majoring in Environmental Health. Offered: W.

**ENV H 311 Introduction to Environmental Health (3)** *NW Treser* 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 405 Toxic Chemicals and Human Health (3)** *Gallagher, Kavanagh* Basic principles governing the behavior and effects of toxic chemicals released into the environment; sources, distribution, and fate of toxic chemicals in the environment; chemicals and cancer; chemicals and birth defects; government regulation of chemical hazards. Focus on human health impacts of chemicals found in the workplace and general environment. Prerequisite: 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 Non-ionizing Radiation and Electrical Safety (2)** *Yost* Introduction to health hazards from UV, optical laser hazards, infrared radiation, radio-frequency radiation, heat stress, electrical shock, electric and magnetic fields. Application of current standards for these physical agents. Emphasis on occupational hazards with additional discussion of environmental exposures where appropriate. Offered: odd years; W.

**ENV H 431 Environmental and Occupational Sampling and Analysis I (3)** *NW Fenske, Yost* Laboratory and lecture on sampling. Field and laboratory analysis of chemical and physical agents found in the occupational and ambient environments. Prerequisite: CHEM 162; PHYS 116/119; ENV H 311. Offered: A.

**ENV H 432 Environmental and Occupational Sampling and Analysis II (4)** *NW Simpson* 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 Geogh,*

*Meschke, Shin* 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. Offered: Sp.

**ENV H 440 Water, Wastewater and Health (3)** *Meschke, Shin* 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. Prerequisite: ENV H 311. Offered: A.

**ENV H 441 Food Protection (3)** *Easterberg* 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 both CHEM 160 and CHEM 161, or 2.0 in CHEM 162; 2.0 in MICROM 302. Offered: W.

**ENV H 442 Vector Control (3)** *Treser* Study of the impact and control of rodents and arthropod vectors of disease, including consideration of economic poisons used, their regulation, and safety measures. Prerequisite: 2.0 in BIOL 203. Offered: Sp.

**ENV H 445 Solid Waste Management (3)** *Busch* 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: 2.0 in CHEM 155, 2.0 in CHEM 160, or 2.0 in CHEM 162; either 2.0 in MATH 124, 2.0 in MATH 127, 2.0 in MATH 134, or 2.0 in MATH 144; recommended: PHYS 115. Offered: Sp.

**ENV H 446 Hazardous Waste Management (3)** *Kissel* 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: either 2.0 in CHEM 155, 2.0 in CHEM 160, 2.0 in CHEM 162; either 2.0 in MATH 112, 2.0 in MATH 124, 2.0 in MATH 127, 2.0 in MATH 234, or 2.0 in MATH 144; recommended: MATH 125, CHEM 224, PHYS 115. Offered: W.

**ENV H 449 Health Effects of Air Pollution (2)** *Koenig* Structure and function of the respiratory system and the changes that may be produced by specific air pollutants, such as ozone, SO<sub>2</sub> and fine particles. Air quality criteria and the economic costs of disease are discussed. Several classroom demonstrations. Offered: even years; W.

**ENV H 451 Ecology of Environmentally Transmitted Microbiological Hazards (3)** *Butterfield, Meschke, Shin* 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)** *Meschke, Shin* 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. Provide coverage of engineered controls and disinfection/decontamination processes for infectious microorganisms. Recommended: ENV H 451. Offered: W.

**ENV H 453 Industrial Hygiene (3)** *Morgan* 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: either BIOL 200 or BIOL 202; CHEM 224; either PHYS 116 or PHYS 123. Offered: A.

**ENV H 457 Industrial and Environmental Noise (3)** *Neitzel, Seixas* Survey of industrial and community noise problems, including sources, effects, measurement, control, and legislation. Prerequisite: 2.0 in PHYS 115. Offered: even years: Sp.

**ENV H 460 Organization and Administering Industrial Safety and Health Programs (3)** *Gleason* 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: A.

**ENV H 461 Air Pollution Control (4)** *Pilat* Fundamental concepts of air pollution. Emission sources, atmospheric dispersion, ambient concentrations, adverse effects, governmental regulations, emission standards, air-quality standards, processes and equipment for controlling emissions. Offered: jointly with CEE 490; A.Sp

**ENV H 471 Environmental Health Regulation (3)** *Treser* Introduction to administrative regulation and process. Authority, jurisdiction, and structure of environmental control programs and agencies; the regulatory process; agency acquisition and retention of information; administrative actions; enforcement of environmental health laws; major statutes and cases affecting programs. Prerequisite: ENV H 482. Offered: W.

**ENV H 472 Environmental Risk and Society (3)** *Fenske* Examines scientific determinations of environmental risks and explores how such determinations are evaluated by affected 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: A.

**ENV H 473 Community Responses to Environmental Health Hazards (5) I&S/NW** *Osaki, Trsner* Explores the way various government programs are established, organized and operated to control environmental health risks in the United States. Discusses aspects of the law that impact regulation of environmental health hazards. Offered: W.

**ENV H 480 Environmental Health Problems (\*, max. 6)** *Treser* Individual projects involving library, laboratory, or field study of a specific environmental health problem. Offered: AWSpS.

**ENV H 482 Environmental Health Internship (2-15, max. 15)** *Treser* 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: 2.5 in ENV H 311. Credit/no credit only. Offered: AWSpS.

**ENV H 490 Community Air Pollution (3) NW** *Kalman, Vedal* Fundamental concepts of ambient and indoor air pollution, focusing on air quality issues affecting public health. Discusses sources of air pollution, building dynamics, microenvironments and activity patterns, biological air contaminants, community air pollution issues, management strategies, and monitoring and modeling skills. Offered: Sp.

**ENV H 497 Environmental Health Special Electives (\*)** Offered: AWSpS.

**ENV H 499 Undergraduate Research (\*)** 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 511 Environmental and Occupational Health (1-3, max. 3)** *Daniell* 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 512 Waste Management, Recycling, and Pollution Control (3)** *De Walle* Survey of selected technological components of environmental health infrastructure via lecture and weekly field trips to full facilities. Sites visited vary year to year, but may include paper and steel plants using reclaimed feedstock, cement kiln using waste as supplemental fuel, municipal wastewater treatment facility, and steam generation plant.

**ENV H 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3)** *Eaton, Thummel* Addresses current DNA sequencing and genotyping approaches, and basic concepts of pharmacogenetics and toxicogenomics. Emphasis placed on applications of genomic technologies to the understanding of "gene-environment interactions" that cause diseases of public health importance, including cancer, chronic neurological diseases, and adverse drug reactions. Prerequisite: GENET 372 or equivalent. Offered: jointly with PGH/PCEUT 513.

**ENV H 514 Environmental and Occupational Toxicology I (3)** *Xia* Major topical areas in human and environmental toxicology, including the biochemical, cellular, and physiological mechanisms by which chemicals produce toxic responses; the toxicology of the major classes of chemicals; principles of toxicity testing; interpretation of toxicological data. Prerequisite: BIOL 212, BIOC 440, or permission of instructor. Offered: A.

**ENV H 515 Environmental and Occupational Toxicology II (3)** *Kavanagh* Major topical areas

in human and environmental toxicology, including the biochemical, cellular, and physiological mechanisms by which chemicals produce toxic responses; the toxicology of the major classes of chemicals; principles of toxicity testing; interpretation of toxicological data. Prerequisite: BIOL 212, BIOC 440, or permission of instructor. Offered: W.

**ENV H 516 Environmental and Occupational Toxicology III (3)** *Costa* Major topical areas in human and environmental toxicology, including the biochemical, cellular, and physiological mechanisms by which chemicals produce toxic responses; the toxicology of the major classes of chemicals; principles of toxicity testing; interpretation of toxicological data. Prerequisite: BIOL 212, BIOC 440, or permission of instructor. Offered: Sp.

**ENV H 517 Children's Environmental Health (3)** *Burbacher* Discussion of environmental health issues as they pertain to children's health. Includes historical perspective of public health research and policies directed at protecting children's health and emerging scientific and public health issues such as childhood exposure to mercury and pesticides, childhood asthma, cancer, and environmental justice. Offered: Sp.

**ENV H 531 Neurotoxicology (3)** *Costa* 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: even years; W.

**ENV H 532 Reproductive and Developmental Toxicology (2)** *Faustman* 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: even years; S.

**ENV H 533 Molecular Toxicology (2)** *Gallagher* Advanced discussion of molecular mechanisms whereby chemical, physical, and biological agents produce their harmful effects on biological tissues. Prerequisite: permission of instructor. Offered: jointly with PHCOL 533; odd years; W.

**ENV H 535 Inhalation Toxicology (3)** *Koenig, Luchtel* Advanced course on the toxicology of air pollutants and the response of the respiratory system to inhaled gaseous and particulate toxicants. Issues and concepts covered include biology of the respiratory system, exposure technology, experimental design and methodological issues, health effects of air pollutants, and regulatory aspects. Prerequisite: ENV H 514-516, or ENV H 405 or permission of instructor. Offered: even years; A.

**ENV H 537 Introduction to Manufacturing Systems (3)** *Storch* 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 541 Ecology of Environmentally Transmitted Microbial Hazards (3)** *Meschke, Shin* 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)** *Meschke, Shin* 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)** *Kissel, Meschke, Shin* 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.

**ENV H 545 Water, Wastewater and Health (4)** *Meschke, Shin* Review of water supply water quality, and water/wastewater treatment as they related 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)** *Fenske, Keifer* 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: odd years; W.

**ENV H 550 Microscopy: Image Acquisition and Analysis (2)** *Luchtel* Sample preparation methods, principles and practical aspects of light microscopy (bright-field, phase, differential interference, polarizing, and confocal), electron microscopy (transmission, scanning, electron diffraction, and energy dispersive x-ray analysis), photographic and digital imaging, computerized image analysis techniques. Student research project required. Prerequisite: permission of instructor.

**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)** *Kalman, Liu* 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)** *Fenske, Morgan, Simpson* 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, soil and food, 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 555 Instrumental Methods for Industrial Hygiene Measurement: Laboratory (3)** *Morgan, Simpson, Yost* 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)** *Seixas* 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: odd years; W.

**ENV H 557 Exposure Controls (3/4)** *Yost* 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 biohazards controls, airflow measurements, and ventilation troubleshooting. Offered: even years, W.

**ENV H 559 Applied Occupational Health and Safety (3)** *Camp, Johnson* 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 and NSG 505. Offered: Sp.

**ENV H 560 Organizing and Administering Industrial Safety and Health Programs (4)** *Gleason* 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; A.

**ENV H 562 Technical Aspects of Safety and Health (3)** *Gleason* Explores specific hazards associated with major industries, as well as hazards common to all industries. Covers machine guarding, electrical safety, systems safety analysis, materials handling, and working at heights. Offered: jointly with NSG 507; W.

**ENV H 564 Recognition of Health and Safety Problems in Industry (4)** *Camp, Seixas*

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.

**ENV H 565 Occupational Stress and Management (3)** *Beaton* Relationships between occupational stressors and worker's health, well-being, productivity. Analyzes models of occupational stress. Investigates similarities, differences between job-related stressors and stress responses in various occupations. Explores elements of worksite stress management programs. Prerequisite: graduate standing in nursing or allied health discipline. Offered: jointly with NURS 566; even years; A.

**ENV H 566 Introduction to Ergonomics (3)** *Johnson, Stewart* 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)** *Xia* 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; even years, A.

**ENV H 568 Molecular Epidemiology of Infectious Diseases (2)** *r* Application of molecular typing techniques to study of microbial pathogens to increase understanding of epidemiology of infectious diseases. Brief review of molecular biology. Evaluation of methods used in outbreaks and epidemics reported in literature. Prerequisite: ENV H 511 or ENV H 512 or permission of instructor. Offered: jointly with EPI 568/PABIO 568; W.

**ENV H 569 Occupational Biomechanics (4)** *Johnson* 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; even years, Sp.

**ENV H 570 Occupational and Environmental Epidemiology (3)** *Checkoway, Daniell* 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)** *Kukull* Focus on neurologic diseases and etiology. Presenta-

tion 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. Recommended: EPI 511 or equivalent. Offered: jointly with EPI 571; odd years; W.

**ENV H 572 Clinical Occupational Medicine (2)** *Keifer* 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 573 Methods and Issues in Using Biological Measurements in Epidemiologic Research (3)** *Stewart* 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; W.

**ENV H 574 Probabilistic Exposure Analysis (3)** *Kissel* 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. Discusses current methods in laboratory research, and familiarizes the student with specific faculty research interests. Prerequisite: graduate standing and permission of program director. Offered: AWWSpS.

**ENV H 577 Risk Assessment for Environmental Health Hazards (3/4)** *Faustman* 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 594 Current Topics in Environmental Health (1, max. 2)**

**ENV H 596 Current Issues in Occupational and Environmental Medicine (2, max. 12)** *Kaufman* 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; AWWSpS.

**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 paper. Offered: AWWSpS.

**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: AWWSpS.

**ENV H 600 Independent Study or Research (\*)** Prerequisite: permission of departmental adviser. Offered: AWWSpS.

**ENV H 700 Master's Thesis (\*)** Prerequisite: permission of departmental adviser. Offered: AWWSpS.

**ENV H 800 Doctoral Dissertation (\*)** Credit/no credit only. Prerequisite: permission of departmental adviser. Offered: AWWSpS.

## Epidemiology

**EPI 405 Phys Activity in Health and Disease (3)** *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: BIOL 118. Offered: jointly with NUTR 405; Sp.

**EPI 420 Introduction to Epidemiology (3) 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. Offered: Sp.

**EPI 497 Epidemiology Special Electives (\*)** Off-campus course for medical students. Offered: AWWSpS.

**EPI 499 Undergraduate Research (\*)** Offered: AWWSpS.

**EPI 502 Phys Activity in Health and Disease (3)** *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: BIOL 118. Offered: jointly with NUTR 505; Sp.

**EPI 503 Public Health Informatics and Surveillance (3)** Covers collection and use of public health surveillance data in formulating policy and managing programs through lectures and real-world interactive exercises. Discusses surveillance for birth defects, environmental exposures, and hospital-acquired infections, and use of tools such as small area analysis and geographic information systems. Offered: jointly with HSERV 503.

**EPI 507 HIV and STIs in Women and Children (3)** *Stewart* Examines the emerging global public health crisis and the plight of women and children with HIV/STIs. Reviews targeted approaches pertaining to women and children and their vulnerability to HIV/STIs. Prerequisite: EPI 511 or EPI 512-513. Offered: jointly with OB GYN 590; Sp.

**EPI 510 Epidemiologic Data Analysis (2)** *Hawes, Winer* Intended for students planning to take 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. Credit/no credit only. Prerequisite: EPI 511 or EPI 512. Offered: W.

**EPI 511 Introduction to Epidemiology (4)** *Kukull* Epidemiologic methods for non-epidemiology majors. Focuses on research designs and methods to describe disease occurrence and risk factor associations; 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)** *Holt, Koepsell, Weiss* Principles and methods of epidemiology. Covers measures of disease frequency, measures of effect, causal inferences, descriptive epidemiology, study types, misclassification, and effect modification. Designed for students who want to take 513. Prerequisite: prior or concurrent enrollment in BIOST 511 or equivalent. Offered: A.

**EPI 513 Epidemiologic Methods II (4)** *Holt, Koepsell, Weiss* Continuation of 512. Considers how designs of epidemiologic studies may be constructed to maximize etiologic inferences. Covers confounding, randomized trials, cohort studies, case-control studies, and selected topics. Prerequisite: EPI 512. Offered: W.

**EPI 514 Application of Epidemiologic Methods (4)** *Hawes, Mueller, Schiff* Practical experience in analysis of data. Students analyze data sets currently on file using contemporary epidemiologic methods as taught in 512 and 513. Prerequisite: EPI 510 or experience in statistical programming; EPI 512, EPI 513 and epidemiology major. Offered: Sp.

**EPI 515 Topics in Epidemiologic Methods (3)** Introduces advanced methodologic methods, including recursive partitioning, developing clinical prediction rules, analyses of community-level associations or interventions, case-crossover and case-only designs, propensity scores, two-stage sampling, and missing data imputation. Prerequisite: EPI 512; EPI 513. Offered: jointly with BIOST 519; A.

**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)** *Austin* 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 GENET 371, or equivalent. Offered: jointly with PHG 511.

**EPI 518 Computer Demonstrations in Genetic Epidemiology (2-4, max. 4)** *Edwards* Demonstrations and use of computer programs designed specifically for analysis of genetic epidemiologic data, including heritability, segregation, and sib-pair linkage analysis.

Discussions focus on interpretation of results. Laboratory sections apply methods to data provided by instructor. Corequisite: EPI 517/PHG 511 or permission of instructor. Offered: jointly with PHG 518.

**EPI 519 Epidemiology of Cardiovascular Disease (3)** *Psaty, Siscovick* 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], max. 4)** *Williams* 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 522 Reproductive Epidemiology (3)** *Holt* Focuses on female reproductive system conditions and diseases, non-birth pregnancy outcomes, and impact of pregnancy on later health. Presentation of current epidemiologic knowledge and discussion of methodologic issues on topics including the menstrual cycle; contraception; infertility; spontaneous and induced abortion; and uterine and ovarian disease. Prerequisite: either EPI 511, both EPI 512 and EPI 513, or permission of instructor. Offered: even years; Sp.

**EPI 524 Epidemiologic Studies of Cancer Etiology and Prevention (3/4)** *Li, Rossing* 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 526 Epidemiology of Diseases Communicable from Nature (3)** *DiGiacomo, Rausch, Weigler* Explores the public health aspects of zoonotic diseases, their epidemiology and approaches to control. Focuses on the major viral, rickettsial, bacterial, protozoal, helminthic, and fungal diseases transmitted from wild and domesticated animals to humans. Prerequisite: EPI 511, EPI 512, or EPI 520 or permission of instructor. Offered: jointly with C MED 526; Sp.

**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. Prerequisite: either EPI 511, EPI 512, or EPI 513. Offered: A.

**EPI 528 Exposure Measurement in Epidemiology (3)** *White* 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. Credit/no credit only. Prerequisite: EPI 513. Offered: Sp.

**EPI 529 Emerging Infections of International Public Health Importance (3-, max. 3)** *Kimball* 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. Offered: jointly with HSERV 536; in residence, odd years; online, even years; W.

**EPI 530 AIDS: A Multidisciplinary Approach (2)** *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 health care and prospects for prevention and control. Credit/no credit only. Offered: jointly with MED 530/GLOBLH 570; A.

**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: odd years.

**EPI 533 Pharmacoepidemiology (3)** *Heckbert, Johnson* 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 or with permission. Offered: jointly with PHARM 533; even years; Sp.

**EPI 534 Principles of Publishing Clinical Evidence (2)** *Johnson, Olson* Explains advanced methodologic principles for improving the clarity of published clinical evidence. Students prepare and revise a 1000-word research letter for *The Lancet* using their own clinical evidence. Credit/no credit only. Prerequisite: permission of instructor. Offered: jointly with PHARM 536; Sp.

**EPI 536 Categorical Data Analysis in Epidemiology (4)** Summary of univariate categorical data analysis; introduction to multivariate analysis of categorical epidemiologic data using multiplicative models. Experience at interpretation; familiarity with available programs gained by analysis of bona fide data, critiques of 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 the multivariate analysis of survival data using multiplicative models. Application to epidemiologic studies. Familiarity with interpretation and available computer

programs gained by analysis of bona fide sets of data and critiques of analyses appearing in the literature. Prerequisite: EPI 536 or permission of instructor. Offered: jointly with BIOST 537; W.

**EPI 538 Nutritional Epidemiology (3)** *Beresford* Application of epidemiological methods to current studies of diet, nutrition, and chronic disease. A discussion of current issues and controversies enable students to plan studies in nutritional epidemiology and disease prevention. Prerequisite: EPI 511 or EPI 512 or permission of instructor. Offered: jointly with NUTR 538; A.

**EPI 539 Research Methods in Developing Countries (3/4)** *Gloyd, Mock* Simple, practical methodologies to obtain and validate information regarding health status and health services in developing countries. Usefulness, validity, limitation of vital records, health reports, household (and cluster) surveys, nutritional anthropometry, and qualitative methods discussed. Lectures, computer lab, and student participation in community-based survey. Offered: jointly with G H 531; W.

**EPI 540 Introduction to Cancer Biology (3)** *Ulrich* Provides a general understanding of cancer biology, covering the carcinogenic process and various biological causes of cancer. Integrates knowledge from different fields of cancer research, guiding students through diverse literature on cancer and carcinogenesis. Prerequisite: GENOME 371, BIOL 355, or permission of instructor. Offered: even years; Sp.

**EPI 541 Introduction to Systematic Reviews and Meta-analysis of Evidence (2)** *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: introductory-level courses in statistics, epidemiology, or biostatistics. Offered: jointly with MEBI 541/HSERV 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* Applies epidemiological methods to the study of mental illnesses. Topics include occurrence and distribution of mental illness, classification of psychiatric disorders; treatment-based vs. community-based studies; epidemiology of depression and schizophrenia; familial transmission; developmental epidemiology; mental illness and violence. Credit/no credit only. Prerequisite: either EPI 511, EPI 512, HSERV 591, or permission of instructor. Offered: jointly with PBSCI 546; 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. 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. Offered: jointly with HSERV 548; W.

**EPI 549 Sociobehavioral and Prevention Research Methods for HIV and STI (3)** *Kurth* Focuses on prevention methods for controlling HIV/STI epidemics, identifying a range of alternatives along the prevention continuum as most appropriate and feasible for settings and populations, and solutions to increase HIV/STI prevention agenda in public health and clinical policy and practice. Offered: jointly with NMETH 515; Sp.

**EPI 555 Statistical Methods for Spatial Epidemiology (3)** *Wakefield* 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.

**EPI 568 Molecular Epidemiology of Infectious Diseases (2)** *DiGiacomo, Roberts* Application of molecular typing techniques to study of microbial pathogens to increase understanding of epidemiology of infectious diseases. Brief review of molecular biology. Evaluation of methods used in outbreaks and epidemics reported in literature. Prerequisite: EPI 511 or EPI 512 or permission of instructor. Offered: jointly with ENV H 568/PABIO 568. Offered: W.

**EPI 570 Occupational and Environmental Epidemiology (3)** *Checkoway* Research methods for studying 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)** *Kukull* Focus 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. Recommended: EPI 511 or equivalent. Offered: jointly with ENV H 571; odd years; W.

**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.

**EPI 583 Epidemiology Seminar (1, max. 3)** Presentation of current epidemiologic research and application of epidemiologic research in the practice of public health. Offered: AWSpS.

**EPI 584 Doctoral Dissertation Seminar (1)** Davis, Holt 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: Epidemiology 512 and 513, admitted to the PhD program, passed the Preliminary Examination or 2nd year status.

**EPI 585 Principles of Injury Research and Prevention (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. Recommended: EPI 511. Offered: A.

**EPI 586 Responsible Conduct of International Research (3)** *Farquhar* Prepares international and U.S. students to develop research proposals, conduct international field research, and present scholarly work. Topics include proposal writing, human subjects protection, data management, peer review, scholarly integrity, responsible authorship, and grants and budget management. Open to graduate and non-matriculated students. Credit/no credit only. Offered: jointly with GLOBLH 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.

**EPI 588 Preparing and Writing Research Proposals (2)** *Kristal, Reiber* 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. Credit/no credit only. Prerequisite: second-year graduate student (PhD recommended), or PhD or MD in health-related field. Offered: odd years; A.

**EPI 590 Selected Topics in Epidemiology or International Health (1-6, max. 6)** Tutorials are 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 the department program adviser. Offered: AWSpS.

**EPI 591 Current Literature in Epidemiology (1)** 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. Credit/no credit only. Prerequisite: EPI 513. Offered: AWSpS.

**EPI 592 Program Seminars (1-6, max. 6)** 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)** *White* Research experience for pre- and postdoctoral students working on cancer prevention projects at the Fred Hutchinson Cancer Research Center. Credit/no credit only. 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. Credit/no credit only. Prerequisite: EPI 512 and BIOST 511 or equivalent and permission of instructor. Offered: AWSpS.

**EPI 600 Independent Study or Research (\*)** Credit/no credit only. Prerequisite: permission of departmental adviser and independent study supervisor. Offered: AWSpS.

**EPI 700 Master's Thesis (\*)** Credit/no credit only. Prerequisite: permission of thesis chair. Offered: AWSpS.

**EPI 800 Doctoral Dissertation (\*)** Credit/no credit only. Prerequisite: permission of dissertation chair. Offered: AWSpS.

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## Public Health Genetics

**PHG 511 Genetic Epidemiology (3)** *Austin, Edwards* 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 GENET 371, or equivalent. Offered: jointly with EPI 517.

**PHG 512 Legal, Ethical, and Social Issues in Public Health Genetics (3)** *Kuszler, Mastroianni* 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 health care delivery efforts. Prerequisite: GENET 371 or equivalent. Offered: jointly with LAW H 504/MHE 514; A.

**PHG 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3)** *Eaton, Thummel* Addresses current DNA sequencing and genotyping approaches, and basic concepts of pharmacogenetics and toxicogenomics. Emphasis placed on applications of genomic technologies to the understanding of "gene-environment interactions" that cause diseases of public health importance, including cancer, chronic neurological diseases, and adverse drug reactions. Prerequisite: GENET 372 or equivalent. Offered: jointly with ENV H 513/PCEUT 513; W.

**PHG 518 Computer Demonstrations in Genetic Epidemiology (2-4, max. 4)** *Edwards* Demonstrations and use of computer programs designed specifically for analysis of genetic epidemiologic data, including heritability, segregation, and sib-pair linkage analysis. Discussions focus on interpretation of results. Laboratory sections apply methods to data provided by instructor. Corequisite: EPI 517/

PHG 511 or permission of instructor. Offered: jointly with EPI 518; Sp.

**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 BOST 513 or BOST 518; PHG 511/EPI 517; or permission of instructor. Offered: jointly with BOST/EPI 516.

**PHG 521 Culture, Society, and Genomics (3)** *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/ANTH 574; Sp.

**PHG 522 Ethical Frameworks for Public Health Genetics (2)** *Mastroianni* Case-based application of ethical principles in genetic medicine to range of problems arising in genetics practice, policy, research. Examination of traditional problems including eugenics and testing/screening for genetic disease, as well as emerging problems in population and environmental genetics. Prerequisite: LAW H 504/MHE 514/PHG 512 or permission of instructor. Offered: jointly with MHE 516; Sp.

**PHG 523 Genetics and the Law (2)** *Kuszler* Considers the legal issues arising from new genetic technologies and information. Statutes, regulations, and cases used to demonstrate the constitutional, contract, and tort law complications resulting from dissemination of these technological advances. Prerequisite: LAW H 504/MHE 514/PHG 512 or permission of instructor. Offered: jointly with LAW H 520.

**PHG 525 Public Commentary on Ethical Issues in Health Genetics (3)** *Fryer-Edwards* Explores issues in public health genetics through academic commentary, personal narratives, science fiction, and film using ethical frameworks from narrative ethics, feminist ethics, and principlism. Includes cloning, assisted reproduction, prenatal genetic testing, presymptomatic genetic testing, gene therapies, scientific responsibility, and GMOs. Graduate students only. Offered: jointly with MHE 515; Sp.

**PHG 536 Bioinformatics and Gene Sequence Analysis (3)** *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/MEBI 536; Sp.

**PHG 537 Pharmacoeconomics, Genetics, and Health Care (2)** *Ramsey, Veenstra* Introduction to outcomes research and economic evaluation related to medical technologies, with a focus on methodologies and the use of economic evaluation in healthcare to affect policy decisions. Offered: A.

**PHG 541 Economic and Policy Issues for Genetic Technologies and Services (3)** Introduction to economic evaluation in healthcare. Students learn and apply economic principles to the political and policy issues surrounding genetic technologies and services.

Focus on formulation of facts and policy alternatives in several areas of public controversy with regard to genetic testing and treatment. Offered: A.

**PHG 542 Genetic Discovery in Medicine and Public Health (3)** *Burke* Addresses the clinical and societal implications of genetic knowledge, with an emphasis on the ethical and policy issues surrounding the use of genetic technology in medicine and public health from 1900 to the present. Offered: jointly with MHE 530; W.

**PHG 543 Social and Behavioral Methods in Public Health Research (3)** *Bowen, McGrath* Provides an overview of social and behavioral research design and methods. Reviews methods and findings in the social sciences relevant to public health applications, and using a problem-oriented approach, develops a research plan. Prerequisite: graduate standing in Public Health Genetics, or permission of instructor. Offered: Sp.

**PHG 551 Human Genomics: Science, Ethics, and Society (4)** *Fullerton* Places recent advances in human molecular genetics and genomics in ethical and social context. Focuses on the rise of population-based approaches to complex trait mapping and their impact on societal understandings of community, ancestry, and public health. Prerequisite: GENOME 371; GENOME 372; PHG 512; or instructor permission. Offered: jointly with MHE 551; A.

**PHG 580 Interactive Seminar (1, max. 6)** *Austin, Fullerton* Seminar series on topics related to public health genetics, including current bioethical, legal, medical, biotechnology, and public policy issues.

**PHG 581 Introduction to Bioinformatics and Genetics Services in Public Health Genetics (1)** *Austin, Doyle, Rose* Introduction to bioinformatics computer skills and genetic services related to public health genetics. Credit/no credit only. Offered: W.

**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 591 Public Health Genetics Journal Club (1)** Provides an interdisciplinary forum for the critique of current literature public health genetics and related disciplines. Credit/no credit only. Offered: A/W/Sp.

**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: EPI 517/PHG 511, LAW H 504/MHE 514/PHG 512, ENV H/PABIO/PCEUT/PHG 513, or permission of instructor.

**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.

## Health Services

### Health Informatics and Information Management

**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 Health Care Systems and Health Data Systems (6)** Covers current issues in health care; relationship of the health care 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, Vocabulary and Revenue Cycle Management (5)** Overview of clinical vocabularies and classifications, detailed instruction on International Classification of Diseases, ninth revision, clinical modification (ICD-9-CM) and Current Procedural Terminology (CPT) coding principles, and revenue cycle management. Prerequisite: HIHIM 409.

**HIHIM 420 Health Care 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 Health Care Managers (4)** Covers finance concepts applied to today's healthcare environment, financial management tools and budgeting.

**HIHIM 455 Professionalism and Leadership (5)** 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 health care, 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 health care facilities with campus and clinical faculty. Prerequisite: HIHIM 410

**HIHIM 462 Management Project II (3)** 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 (4)** Provides the tools and experiences useful at a management level for problem-solving and decision-making in health information administration.

**HIHIM 499 Independent Study (2-5)**

## Health Services

**HSERV 475 Perspectives in Medical Anthropology (5)** Introduction to medical anthropology. Explores the relationship 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 480 Issues in Public Health (1-3, max. 6)** Problems and issues in epidemiology, health services delivery and administration, environmental health, pathobiology, biostatistics, and related fields.

**HSERV 481 Issues in Public Health (2)** Introduction to public health taking an in depth look at local public health practice. Focuses on practical solutions for real life problems in local public health settings. Uses modified problem-based learning (PBL) format. Framework is 10 Essential Public Health Services. Student groups prepare for and explore new issues.

**HSERV 482 The Health of Populations (2)** Explores what makes a population healthy or unhealthy. Examines why the USA is less healthy than all the other rich countries, despite being one of the healthiest fifty years ago.

**HSERV 490 Undergraduate Special Topics (1-6, max. 12)** Collect and analyze literature related to historical and current public health issues, problems and programs; analyze information and develop written summaries to demonstrate increased knowledge and competencies as applied to public health. Prerequisite: HSERV 480.

**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 Public Health Informatics and Surveillance (3)** Covers collection and use of

public health surveillance data in formulating policy and managing programs through lectures and real-world interactive exercises. Discusses surveillance for birth defects, environmental exposures, and hospital-acquired infections, and use of tools such as small area analysis and geographic information systems. Offered: jointly with EPI 503.

**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 Communication for Health Promotion: Theory and Application (3)** Discuss and evaluate health communications theories and applications at the individual level (i.e., persuasion), interpersonal level (i.e. doctor/patient communication), and societal level (i.e., mass media). Investigate intercultural communication cutting across all levels of health communication. Examines the steps involved in the design of a health communication intervention.

**HSERV 508 Dynamics of Community Health Practice (3-5, max. 5)** Examination of and experience with basic principles of clinical practice in community settings. Includes family as community constituent, populations at risk, community assessment, and community development. Prerequisite: Graduate standing or permission of course faculty. Offered: jointly with NURS 560.

**HSERV 509 Public Health and Informatics (3)** 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 MEBI 530 or permission of instructor. Offered: jointly with MEBI 533; Sp.

**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 United States health care 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 U.S. Health and Health Care: Organization, Financing, and Delivery (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 U.S. Health and Health Care: Population Health, Social Determinants, 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, and permission of instructor; recommended: HSERV 512.

**HSERV 514 U.S. Health and Health Care: 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, and permission of instructor; recommended: HSERV 512/513.

**HSERV 516 Introduction to Health Services — Extended Degree(4)** Provides overview of health care 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 M.P.H. Degree program.

**HSERV 517 Provision of Health Services — Extended Degree (2)** Builds on material covered in 516 and provides students with tools used to evaluate alternative health delivery systems; exposes students to various international health delivery systems; encourages students to decide how to organize such a system. Prerequisite: HSERV 516, registration in Extended M.P.H. 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 520 Methods in Applied Community Research ([1-3]-, max 3)** Skills/knowledge necessary to conduct orderly investigation of specific problems in preparation for M.P.H. 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. Credit/no credit only. Prerequisite: registration in Extended M.P.H. Degree program.

**HSERV 521 Qualitative Methods in Health Services Research (3)** 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.

**HSERV 522 Health Program Evaluation (3-5)** 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 (4)** Examines how to apply research methods and addresses recurring issues in health services research. Covers statistical theory that motivates the methods and empirical work that demonstrates a method's use. Enrollment priority for Health Services PhD students. Prerequisite: either HSERV 511, BIOST 511/512/513, BIOST 517/518, or EPI 511/512, and permission of instructor.

**HSERV 524 Advanced Health Services Research Methods II (4)** Emphasizes the application of advanced biostatistical/econometric techniques in applied research. Examines a wide variety of posed research questions and demonstrates how to best obtain answers. Enrollment priority for Health Services PhD students. Prerequisite: either HSERV 511, BIOST 511/512/513, BIOST 517/518, or EPI 511/512, and permission of instructor.

**HSERV 525 Advanced Health Services Research Methods III (4)** Introduction to methods of handling data and conducting basic analyses in the broad and heterogeneous field of health services research. Examine concepts and conduct hands-on research using data sets selected by students. Enrollment priority for Health Services PhD students. Prerequisite: either HSERV 511, BIOST 511/512/513, BIOST 517/518, or EPI 511/512, and permission of instructor.

**HSERV 526 Qualitative Research Methods for Public Health (4)** Covers a range of qualitative, ethnographic tools for practical applications in public health. Methods covered include direct observation, informant interviews, focus groups, and formal methods. Covers Rapid Assessment Procedures and Participatory Action Research. Student teams investigate research questions using these techniques.

**HSERV 527 Survey Research Methods (4)** Provides students with skills in questionnaire development and survey methods. Develop a questionnaire and design a survey research proposal on a health-related or social topic. Prerequisite: either HSERV 511-513; BIOST 517/518; or EPI 512-513, which may be taken concurrently or permission of instructor is required, and students should have a survey project in mind. Offered: jointly with CS&SS 527.

**HSERV 528 Critically Appraising and Applying Evidence in Health Care (3)** 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 MEBI 540.

**HSERV 529 Introduction to Systematic Reviews and Meta-analysis of Evidence (2)** 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: introductory-level courses in statistics, epidemiology, or biostatistics. Offered: jointly with MEBI 541/EPI 541.

**HSERV 532 International Health-Introduction and Topics (4-, max. 8)** Encourages students to demonstrate their facility with concepts and readings by creating short essays on selected topics. Overview emphasizing assessment, assurance, policy development, and the future of global health.

**HSERV 536 Emerging Infections of International Public Health Importance (3-, max. 3)** 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. Offered: jointly with EPI 529; in residence, odd years; online, even years.

**HSERV 537 Economic Development and Health (1, max. 3)** Discusses issues of broad interest in the areas of economics, development, and health. Credit/no credit only.

**HSERV 540 Nutrition in Developing Countries (3)** 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.

**HSERV 541 Topics in Maternal and Child Health I (3-, max. 3)** Historic, legislative, organizational, and financial basis of health and social services for families and children in United States. Effects of changing family structure and norms; factors affecting health care needs of specific populations, including racially and ethnically diverse groups; impact of policies/programs on health and well-being of families and children.

**HSERV 542 Epidemiology of Maternal and Child Health Problems ([3-4]-, max. 4)** 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 511 or 512 or permission of instructor. Offered: jointly with EPI 521.

**HSERV 543 Topics in Maternal and Child Health III (3)** Provides an overview of contextually based frameworks for understanding growth and development. Identifies and describes the conceptual basis and theory of change that underlie successful preventive intervention efforts to promote the well being of children and reduce common MCH problems.

**HSERV 544 Maternal and Child Health in Developing Countries (3)** Mercer 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.

**HSERV 548 Social Determinants of Health Research Methods (3)** Explores study design, measurement and analytic issues applicable to research into the social determinants of health. 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. Offered: jointly with EPI 548.

**HSERV 550 Policy and Economics: Fundamentals and Applications (3)** Explores how values drive the structure of societies, economic systems, public policies, and ultimately, allocation and distribution of resources. Explores how science and community values intertwine in the development of health policy, and how ideology, culture, and history influence structure and change a nation's health system.

**HSERV 551 Health Law (2)** Analysis of law, the legal system and current legal problems as they relate to the financing and delivery of health care services. Offered: jointly with LAW H 512.

**HSERV 552 Health Policy Development (3-, max. 3)** Focuses on development of public policy concerning medical care and public health and the relationship between public decisions and the market place. Using contemporary policy issues as case studies, examines the role science, ideology, culture, and history play in influencing the structure of and changes to a nation's health system.

**HSERV 553 Politics of Health Care (3)** Understanding of health policy making within the context of American politics. Health policy making is examined in light of political leadership, the legislature, the initiative process, rule making, interest groups, and lobbying. Prerequisite: HSERV 551, a basic understanding of the American health care system, or permission of instructor.

**HSERV 554 Health Legislation Seminar (1)** Discussion of current state of health policy, topics with legislative staff and others involved with state health policy. In addition to four sessions on campus, course meets once in Olympia during legislative session. Credit/no credit only.

**HSERV 558 Tobacco and Public Health: Impact, Prevention, Treatment, and Policy (2-3)** Halperin Integrates multiple disciplinary perspectives to provide a comprehensive overview of the history, health effects, policy, prevention, and treatment of tobacco use. Utilized 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. Offered: Sp.

**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 and Planning (3)** Overview of behavior change theory and comprehensive approach to planning,



implementing, and evaluating health promotion interventions. Links theory to practice. Uses PRECEDE/PROCEED planning model by Green and Kreuter as framework. .

**HSERV 571 Cultural Competency for Public Health Practice (1-4, max. 4)** Application of cultural competency to clinical practice, health care 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. Offered: Sp.

**HSERV 572 Community Development for Health (4)** Learn the literature, theory, history, and accepted knowledge in the fields of community development, activism, and community organizing within a health systems context. Provides a forum for exploring approaches to community development and organizing. Gain specific skills and master techniques. Offered: W.

**HSERV 573 Community Development for Health Seminar (1)** Explores the importance of community as a determinant of health, and how public health workers can help strengthen communities. Companion course to HSERV 572. Meets Friday afternoons to hear community organizers and leaders in community development.

**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)** A theory and skills class concerning development of personal and organizational cultural competence in community-based participatory research. Core concepts of cultural competence are considered as they are practiced in community settings. Fieldwork required. Offered: jointly with NURS 557.

**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 health care services; and clinic and community based applications.

**HSERV 580 Society, Chronic Illness, and Disability (3)** Definition and assessment of chronic illness, disability, and health status. Analysis of chronic illness and disability using frameworks from social sciences and public health. Dimensions of disablement as they affect provision of health services. Research on effectiveness of services and approaches to improvement. Prerequisite: HSERV 511 or permission of instructor.

**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 582 Theoretical Perspectives on Health Behavior Change ([3-4, max. 4]-)** *Meischke* Overview of theoretical perspectives in health behavior at the individual, interpersonal, and community level. Focuses on increasing skills in describing, applying, and integrating these frameworks in the design and evaluation of health promotion interventions. Prerequisite: HSERV 511 or permission of instructor.

**HSERV 583 Economic Evaluation in Health and Medicine (3)** 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 Evaluating Cost and Outcomes in Health and Medicine 2 (3)** Concepts and methods for evaluating cost and outcomes of health and medical interventions with a focus on cost-effectiveness analysis., pharmacoeconomics, health and quality of life assessment, resource allocation, and medical decision-making. Prerequisite: permission of instructor. Offered: jointly with PHARM 535.

**HSERV 585 Seminar in Medical Geography (5, max. 10)** 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)** Geography of disease, consideration to health systems planning. 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 health care, including information, risk and insurance, industry organization, government regulation, and public health issues. Emphasizes policy implications of these applications.

**HSERV 588 Community Approaches to Health Promotion (3)** Provides opportunities to critically examine community-based health promotion interventions and the design, evaluation, and implementation issues they raise. A wide range of disciplinary perspectives is presented. Case studies and class projects are designed to give students the skills needed to critically assess community projects around health promotion.

**HSERV 590 Selected Topics in Health Services (\*-)** By individual arrangement, the student and faculty member(s) develop a program of reading and conference appropriate to the topic selected by the student. The topic chosen will be within the special competence of the faculty participating in the course, in the areas of health-care delivery and health-care administration. Also special summer format

presenting introductory material may be taken with ENV H 590 and/or EPI 590. For more information and permission, consult department program adviser.

**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 COPHP 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 paper on conclusions. Prerequisite: registration in extended MPH degree program and satisfactory completion of the first summer's course work.

**HSERV 599 Community Oriented Public Health Practice Capstone Masters Project ([1-9]-, max. 9)** 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 Services Management

**HSMGMT 500 Risk and Insurance Seminar (3)** Presents the principles and practices of health insurance and risk. Emphasizes health care financing arrangements in the United States, including both private and government-sponsored (public) programs. Discusses comparisons with other developed countries. HSERV 511 is strongly recommended, but not required as a prerequisite.

**HSMGMT 501 Epidemiology/Critical Evidence Appraisal (3-4)** 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 502 Evidence-Based Health Care Planning (3-4)** Applies the techniques of statistics, epidemiology, and critical evidence appraisal to the design and evaluation of population-based health care programs. It is the third course in a three-course sequence.

**HSMGMT 512 Introduction to Management in Health Services (3)** Overview of managerial roles, such as supervising and motivating, approaches to organizational and environmental assessment and change, and development of systems analysis skills. For students pursuing careers in research and teaching who are likely to have management responsibilities.

**HSMGMT 513 Seminar in Healthcare Finance(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 ACCTG 503 and HSMGMT 571, or the equivalent, are recommended prerequisites, but not required.

**HSMGMT 514 Health Economics (3/4)** Uses economic concepts and tools to examine range of issues pertaining to health care, delivery of health care 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 523 Informatics in Health Care 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 health care applications. Discussion of successes and failures in implementing information technology focuses on gaining leadership and management knowledge that embraces informatics.

**HSMGMT 543 Social and Behavioral Strategies for Improving Health (3)** Explores social dimensions of health and medical care. Learn to identify key social and cultural principles that guide appropriateness in health care. Introduced to tools used to influence social expectations and personal behavior in relation to illness, health, and demand for medical treatments.

**HSMGMT 545 Capstone Integrative Seminar (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 and team building exercises and field projects. Prerequisite: second-year MHA students.

**HSMGMT 546 Long-Term Care (3)** Learning experience for graduate students in health

services administration, planning, other graduate students to increase their ability to identify and solve problems related to long-term care they confront in their employment. Students are exposed to available knowledge in the field; effective problem-solving attitudes and techniques for organizing information and/or developing strategies, and agencies in the field. Prerequisite: HSERV 511 or permission of instructor.

**HSMGMT 560 Management Practice in Health Care 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 Health Care Organizations (3-4, max. 4)** Management of goals, strategy, and structure in health care 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 (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 M.P.H. Degree program or permission of instructor; non-business majors.

**HSMGMT 565 Quantitative Decision Making for Health Services Management (3)** Applications of various quantitative techniques for problem solving, monitoring, controlling, decision making in health services. Identifying problem area, communications with consultant, evaluation to the quality and applicability of analyst's work. Statistical, mathematical, operations research, industrial engineering techniques. Prerequisite: QMETH 500 or BIOST 509 or permission of instructor.

**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 503, or BIOST 511; registration in Extended M.P.H. Degree program; non-business majors.

**HSMGMT 571 Health Care Financial Management (4)** Third course in a three-course sequence dealing with the management of health services institutions and programs. Topics covered are: health services law, hospital and program policy decisions, financial planning, and hospital design and architecture; and the presentation of hospital survey and health services research project reports. Prerequisite: HSERV 511 and ACCTG 500 or ACCTG 501 or permission of instructor.

**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 M.P.H. Degree program or permission of instructor; non-business majors.

**HSMGMT 573 Seminar in Health-Care Finance (3)** Practical applications of corporate finance principles. Applies theoretical framework to health-care financial problems, including capital investment analysis, leasing vs. borrow-to-buy, debt capacity analysis, bond refunding, control of capital, joint venture. Prerequisite: either HSMGMT 514, HSMGMT 587; ECON 400, or ECON 500; ACCTG 503 (or equivalent); HSMGMT 571; or permission of instructor.

**HSMGMT 574 Financial Management I (3-4)** Prepares clinical professionals for participating intelligently in, and contributing to, financial decisions of health care organizations. Learn the language and fundamental concepts of accounting and finance, and become comfortable with what is required in formal financial analysis.

**HSMGMT 575 Financial Management II (4)** Second in a two part series, the emphasis of this financial management course is on preparing medical executives for managerial and leadership roles in health care organizations. Focus is on tools and analytic frameworks that health care managers use to make forward-looking decisions, including capital budgeting and risk analysis.

**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. The topic chosen is within the special competence of the faculty member participating in the course in the area of health services management.

**HSMGMT 592 Health Management Program Seminar (1-6, max. 6)**

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## Pathobiology

**PABIO 301 Prevention of Infectious Diseases (3) NW Kenny** Consideration of means of prevention of major classes of infectious diseases from the public-health view point. Classes of diseases are defined by site of infection (e.g. respiratory) or common mechanisms of spreading. Respiratory, sexually transmitted, water-borne, and tropical diseases. Prerequisite: either MICROM 301 or BIOL 201. Offered: Sp.

**UCONJ 420 Biological Safety Practices (1)** Kenny See University Conjoint courses.

**PABIO 498 Undergraduate Thesis (\*)**

**PABIO 499 Undergraduate Research (\*)**

**PABIO 500 Introduction to Pathobiology Research (3-9, max. 9)** Rotation through research laboratory. Credit/no credit only.

**PABIO 511 Pathobiological Frontiers (2)**

*Kenny* Molecular and immunological concepts of infectious and noninfectious diseases presented in format suitable for graduate students knowledgeable in health-related areas who are not in biology-oriented programs. Allergy, immune responses, nature of infectious agents, prevention of disease with emphasis on newly defined diseases and disease agents. Prerequisite: permission of instructor.

**PABIO 536 Bioinformatics and Gene**

**Sequence Analysis (3)** *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 MEBI 536/PHG 536; ASp.

**PABIO 540 Antibiotic Resistance Mechanisms and Their Impact on Public Health (3)**

*Roberts* Lectures covering resistance mechanisms against bacterial antibiotics, antiviral, antiparasitic, and cancer drugs. Topics also include the effects that resistant microorganisms have on therapy and cancer treatment and their impact on public health. Prerequisite: permission of instructor.

**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. Offered: even years; Sp.

**PABIO 550 Diseases of Public Health Importance and Strategies for their Control (3)**

Public Health perspective of major disease of national and global importance. Discussion of origins, establishment, progression, and pathogenesis of diseases. Importance of

immunological, intercellular and external factors, and strategies of disease prevention. Requires a grounding in cellular and molecular biology, microbiology, and immunology. Prerequisite: permission of instructor.

**PABIO 551 Biochemistry and Genetics of**

**Pathogens and Their Hosts (4)** . Provides a strong foundation in biochemistry, molecular biology, and genetics for students interested in disease. Principles will be illustrated through examples focusing on pathogens, and infectious and non-infectious disease. Prerequisite: undergraduate level course work in molecular biology or biochemistry or permission of instructor.

**PABIO 552 Cell Biology of Human Pathogens**

**and Disease (4)** Cell biology and immunology explored through diseases of public health importance with 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.

**PABIO 553 Survival Skills for Scientific**

**Research (2)** *Lukehart, Parsons* 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: Sp.

**PABIO 568 Molecular Epidemiology of**

**Infectious Diseases (2)** Application of molecular typing techniques to study of microbial pathogens to increase understanding of epidemiology of infectious diseases. Brief review of molecular biology. Evaluation of methods used in outbreaks and epidemics reported in literature. Prerequisite: PABIO 511 or

PABIO 512 or permission of instructor. Offered: jointly with ENV H 568/EPI 568; W.

**PABIO 580 Pathobiology Seminar (1, max. 15)**

Research from students, faculty members, and invited speakers is presented and discussed. Topics include immunochemistry, viruses, membranes, infectious diseases, immune response and other related topics.

**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)** *Lingappa* Analysis of issues, hypothesis and experimental design and testing. Credit/no credit only. Prerequisite: graduate standing in pathobiology. Offered: W.

**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. Credit/no credit only. Prerequisite: permission of instructor.

**PABIO 598 Didactic Pathobiology (\*, max. 12)**

Supervised teaching experience in pathobiology courses for Ph.D. candidates. Prerequisite: permission of instructor.

**PABIO 600 Independent Study or Research (\*)**

Credit/no credit only. Prerequisite: permission of graduate program adviser.

**PABIO 700 Master's Thesis (\*)**

Credit/no credit only. Prerequisite: permission of graduate program adviser.

**PABIO 800 Doctoral Dissertation (\*)**

Credit/no credit only. Prerequisite: permission of graduate program adviser.

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## Reserve Officers Training Corps Programs

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### Aerospace Studies

**A S 101 Foundations of the United States Air**

**Force I (1)** Focuses on the basic characteristics of air doctrine; US 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; US 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; US 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. 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. 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. Offered: Sp.

**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. 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. 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. 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. 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. 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. Offered: Sp.

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## Military Science

**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 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 fundamental 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. 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. 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. 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.

**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 advanced leadership development. 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. 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. Offered: Sp.

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## Naval Science

**N SCI 101 The Naval Service (3) Henderson** General introduction to the Navy, its organization, missions, roles, tasks, and operating methods. The relationship to the other services within the Department of Defense is emphasized. Offered: A.

**N SCI 102 History of U.S. Sea Power I (3) I&S Pochop** A comprehensive study of the role of sea power in the history of the United States, the current status of the various elements of the nation's sea power as they influence the development and implementation of national security policy. Offered: W.

**N SCI 103 History of U.S. Sea Power II (3) I&S Pochop** A comprehensive study of the role of sea power in the history of the United States, the current status of the various elements of the nation's sea power as they influence the development and implementation of national security policy. Offered: Sp.

**N SCI 201 Naval Leadership and Management (3) I&S Fitzpatrick** Introduction of the theory and techniques of naval leadership based on those principles of behavioral science that are 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. Offered: A.

**N SCI 202 Navigation I (3) NW Allen** 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. Offered: A.

**N SCI 203 Navigation II (3) NW** *Allen* 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: W.

**N SCI 301 Naval Ship Systems I (3) Webster** Study of fundamental principles of energy transfer and thermodynamics. An introduction to nuclear propulsion, gas turbines, and auxiliary power systems. Offered: Sp.

**N SCI 302 Naval Ship Systems II (3) Webster** 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. Offered: Sp.

**N SCI 303 Naval Weapon Systems (3) Webster** 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. Offered: A.

**N SCI 321 Evolution of Warfare I (3) I&S** *Crowe* Introduction to the art of war, the evolution of warfare from the earliest recorded battles to the present day. Offered: A.

**N SCI 322 Evolution of Warfare II (3) I&S** *Crowe* Introduction to the art of war, the evolution of warfare from the earliest recorded battles to the present day. Prerequisite: N SCI 321. Offered: W.

**N SCI 323 USMC Leadership and Administration of Justice I (3) Crowe** 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. Offered: Sp.

**N SCI 401 Naval Operations (3) Allen** Introduction to naval operations, the employment of naval forces, naval tactics, formulation of operations plans and orders, employment of detection equipment, and meteorology. Offered: Sp.

**N SCI 402 Naval Leadership and Ethics (3) I&S** *Fitzpatrick* 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) Henderson** Study of organization, systems, and techniques employed in the Navy for management of its human, material, and financial resources. Some of the work relates to the administration of discipline in the Navy under the Uniform Code of Military Justice. Emphasis is placed on the leadership and management role of the junior officer in the fleet. Offered: Sp.

**N SCI 421 Amphibious Warfare (3) I&S** *Crowe* Provide basic knowledge of evolution of amphibious warfare from premodern era to present. Strategic and tactical considerations in planning specific operations and amphibious landings. Offered: A.

**N SCI 423 USMC Leadership and Administration of Justice II (3) Crowe** Concepts, objectives, characteristic qualities, and practical techniques of leadership as exercised by the Marine Corps officer. Emphasizes the 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. Offered: Sp.

**SOC WF 405 Fieldwork Seminar (1-4, max. 9)** Integrates social work practicum experiences with prior and concurrent course work in social sciences, social work, and research. Includes discussion of class presentations and simulations or practice situations that combine

## School of Social Work

### 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, dialogue about ways to enhance the exchange of ideas between

research and practice communities, and explore implications for social policy.

**SOC WF 215 Intergroup Dialogues (3)** 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 310 Social Welfare Practice I (3)** 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 (3)** 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. Prerequisite: SOC WF 310. Offered: W.

**SOC WF 312 Social Welfare Practice III (3)** 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 the 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** First of two-quarter sequence focusing on understanding human development across the lifespan. Integrates biological, psychological, structural, environmental, political, global, and socio-cultural perspectives. Explores relationship between the person and the environment including families, groups, organizations, communities, and institutions.

**SOC WF 403 Human Behavior and Social Environment II (5) I&S** Continuation of SOC WF 402. Prerequisite: SOC WF 402.

**SOC WF 404 Cultural Diversity and Justice (5) I&S** History and culture of disadvantaged and oppressed groups served by Social Welfare generalist practitioners. Offered: Sp

knowledge and skill utilization. Student logs provide a basis for individual goal identification and achievement. Required of social welfare seniors. Offered: AWSp.

**SOC WF 409 Readings in Social Welfare (1-5, max. 15)** .

**SOC WF 415 Beginning Field Instruction (4-6, 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 419 Adult Development and Aging (3) I&S** Introduces the field of adult development. Interdisciplinary perspective stressing the interaction of psychological, social, and physiological factors affecting the aging process. Goals are to help the student understand the processes and diversity in the aging process that can assist one's own aging and help the learner work with older adults. Offered: Sp.

**SOC WF 421 Methods of Child Care and Treatment (3)** Focuses on an introduction to the continuum of child welfare services and presents practical approaches to working with children and adolescents in a wide variety of practice settings. Offered: alternate years; A.

**SOC WF 430 Child Care Work Practice (3)** Specialized practice with emotionally disturbed and delinquent children in group-care settings with focus on providing child-care staff with specific tools for teaching alternative behavior. Major topics include: etiology and diagnosis, observing and recording children's behavior, special problems of group living, life-space interviewing, token economies, activity programming, group interventions, parental involvement, organizational requisites and community linkages. Offered: alternate years; A.

**SOC WF 442 Building Competencies for Intergroup Dialogue Facilitation (5) VLPA/I&S** 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** 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 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 in both 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 490 Research in Social Welfare (1-3, max. 10)** 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 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.

## Social Welfare

**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 552. Offered: A.

**SOC WL 553 Globalization and International and National Social Welfare Issues and Politics (3)** Critical examination of globalization and its implications for the historic and contemporary development, formulation, and adoption of policies related to international and national social welfare. Emphasizes the development of conceptual frameworks that further understanding of the complex interplay of international and national issues and social welfare policies. Offered: A.

**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. Offered: Sp.

**SOC WL 558 Integrative Seminar (1-2, max. 2)** Topic-driven seminar that targets professional development of the first and second years (scholarship, research, teaching). Active participation expected in discussions and reflective papers. May require preparation for presentation or demonstration. Offered: A.

**SOC WL 559 Preparing to Teach: Instructional Theory and Practice (3)** Teaching conceptualized as professional practice. Focuses on the 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. Offered: W.

**SOC WL 577 Multidisciplinary Research Strategies for Prevention/Health Promotion (3)** *Nurius* 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. Offered: Sp.

**SOC WL 578 Seminar in Special Topics for NIMH Prevention Research Trainees (1, max. 9)** 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. Prerequisite: enrollment in Social Welfare Predoctoral Training Program in Prevention of Mental Health Problems and Disorders. Credit/no credit only. Offered: AWSp.

**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. Offered: A.

**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. Offered: W.

**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. Offered: Sp.

**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. 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 587 Fundamentals of Social Work Statistics I (4)** Descriptive and inferential statistics. Underlying logic of statistical inference. Statistical issues of special relevance in social work, including measurement, research design, and ethics in research. Prerequisite: concurrent registration in SOC WL 580. Offered: A.

**SOC WL 588 Fundamentals of Social Work Statistics II (4)** Issues in the use of descriptive and inferential statistics, especially the statistical control of extraneous variables. Applications of statistical inference in factorial design, and correlation and regression. Statistical issues of special relevance in social work. Ethics in the use of statistics. Prerequisite: concurrent registration in SOC WL 581. Offered: W.

**SOC WL 589 Multivariate Data Analysis for the Social Sciences (3, max. 6)** *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, 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.

**WL 591 Seminar on Topics in Social Welfare (1-3)** Focuses on special topics in social welfare and social welfare research relevant to students across a range of research and disciplines. Prerequisites: Doctoral student in social welfare or allied discipline; master's student by permission of instructor. Offered: AWSp.

**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. Offered: A.

**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 Ph.D. program or permission of instructor. Offered: A.

**SOC WL 600 Independent Study or Research (\*)** Prerequisite: approval of a well-specified plan by the instructor and program director. Includes a written product. Offered: AWSpS.

**SOC WL 800 Doctoral Dissertation (\*)** Offered: AWSpS.

## Social Work (MSW)

**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 503 Social Work for Social Justice: Developing a Personal-Professional Stance I (1-3, max. 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 504 Social Work for Social Justice: Developing a Personal-Professional Stance II (1-3, max. 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.

**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 514 Foundation Practice Skills (3)** Focus on the teaching of practice skills (micro, mezzo, and/or macro) associated with key contemporary themes in social work. Possible topics include social work with American Indian communities, adult interpersonal violence, and assessment and brief intervention in substance abuse and dependence. Offered: SpS.

**SOC W 520 Social and Economic Inequality (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.

**SOC W 523 Introduction to Practicum (0-1)** 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 knowledge, perspectives, and skills needed for practice with individuals, families, groups, organizations, and communities. Credit/no credit only. Prerequisite: social work major. Offered: AWSpS.

**SOC W 525 Advanced Practicum (1-10, max. 24)** Agency-based advanced practicum. Credit/no credit only. Prerequisite: SOC W 515 and foundation courses. Offered: AWSpS.

**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 will 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 Health Care Inequalities: Policy/Services Platform (3)** Examines the organization, policies, and services of U.S. health care system from a social justice framework. Topics include the U.S. health care system's historical development, differential access to health and health care, health care system reform, and the analysis of health care 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 Clinical and Contextual Practice (2/3)** Examination of current substantive topics in clinical and contextual practice. Content varies according to recent developments in the field and the interests of the instructor.

**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 Social Work Practice in Prevention, Primary Care, and Emergency Department Settings (3)** Teaches theory and strengths-based practice within multi-disciplinary medical clinics and emergency settings from bio-psychosocial, family systems, multi-cultural, contextual, and lifespan perspectives. Advances skills in conducting assessments and cognitive-behavioral, solution-focused, motivational and crisis interventions to support individuals and families experiencing pain and loss associated with trauma and acute or chronic illness.

**SOC W 541 Social Work Practice: Inpatient, Hospice, and Long-Term Care (3)** Health care theory and practice skills relevant to adults and children in secondary and tertiary care settings, using multicultural, family systems, contextual, and lifespan perspectives. Skills include biopsychosocial and mental status assessments, ethical decision making, discharge planning, crisis intervention, cross-cultural practice, and counseling regarding life-threatening illness.

**SOC W 542 Social Work Practice in Community Mental Health I (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, countertransference, 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 548 Advanced Generalist Practice I (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 Generalist Practice II (3)** Second quarter of a two-quarter sequence. Highlights program planning, supervision, and intervention across all levels of practice.

**SOC W 550 Leadership and Program Development in Human Services (3)** Focuses on tools and techniques for fulfilling functions of leadership, program planning, implementation, and change. Topics include strategic planning, gap and SWOT analyses, environmental scanning, logic modeling, workplace and job design, and diversity-promoting management. Lecture, discussion, and exercises. Required for SSW administration concentrators; open to others with permission of instructor.

**SOC W 551 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. Students demonstrate 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 555 Special Topics in Administration (2/3)** Examination of current substantive topics in administration and management. Content varies according to recent developments in the field and the interests of the instructor.

**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 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 Chemical Dependency — Drug Effects, Assessment, and Treatment Referral Issues (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)** 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, max. 3)** Focuses on involvement in the policy-making process. Students design projects to influence public policy: local level in the fall, state level in the winter, and federal level in the spring. Readings based on policy materials (proposed and final laws, regulations, budgets, advocacy documents). Credit/no credit only.

**SOC W 587 Spirituality in Health Care (2)**  
*Carrigan, McCormick* Examination of the beliefs, values, meanings, and spirituality of health professionals for the well-being of their patients as well as for themselves. Offered: jointly with FAMED 547/MHE 518; Sp.

**SOC W 588 School Social Work (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: Cognitive Behavioral Approaches (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 Women and Poverty(3)** Views women's poverty, domestically and internation-

ally, through a gender lens. Topics include measuring women's economic contribution, the feminization of poverty, demographic issues (marriage, single, and teen parenting), employment inequality (occupational segregation, discrimination, harassment), and "charity." Neighborhoods, social security, welfare reforms as causes/cures of women's poverty. Seminar/lecture, student-led discussions, presentations.

**SOC W 596 Statistics in Social Work (1-3max. 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 598 Integrative Seminar (1-5, max. 12)** Integrates specialized knowledge in social work settings. Offered: AWSp.

**SOC W 599 Readings in Social Work (\*)** Independent Studies. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSp.

**SOC W 600 Independent Study or Research (\*)**

**SOC W 700 Master's Thesis (\*)**

# Faculty

## College of Architecture and Urban Planning

### Architecture

ABRAMSON, DANIEL B \* Adjunct Assistant Professor, 2001; MArch, 1992, Massachusetts Institute of Technology, MCP, 1992, Massachusetts Institute of Technology, PhD, 1998, Tsinghua University (China); Comparative urban design, historic preservation and neighborhood planning

ALBRECHT, ROBERT G, Associate Professor Emeritus, 1960; MSCE, 1960, Massachusetts Institute of Technology

ANDERSON, ALEX THOMAS \* Associate Professor, 1998; MArch, 1990, University of Pennsylvania, MS, 1995, University of Pennsylvania, PhD, 1997, University of Pennsylvania; History and Theory of Architecture and Decorative Arts

BADANES, STEVEN P. \* Professor, 1988; MArch, 1971, Princeton University; Sustainable building technology; public art; community based design/build; architecture

BONSTEEL, DAVID, Professor Emeritus, 1964; MArch, 1964, University of Washington

BOSWORTH, THOMAS L, Professor Emeritus, 1968; MA, 1954, Oberlin College, MArch, 1960, Yale University

CLAUSEN, MEREDITH L \* Adjunct Professor, 1979; MA, 1972, University of California (Berkeley), PhD, 1975, University of California (Berkeley); twentieth-century architecture

COHAN, PETER SCOTT \* Assistant Professor, 1989; MFA, 1977, Northern Illinois University, MArch, 1984, University of Washington; Architectural design, tectonics, Scandinavian architecture and environmental control systems

DEE, JENNIFER, Lecturer, 1985; MArch, 1984, University of Washington

DEINES, KATRINA \* Associate Professor, 1978; MA, 1975, University of Minnesota, MArch, 1979, University of Washington; design theory and foreign studies, history

DONNETTE, JAMES J, Associate Professor Emeritus, 1966; MArch, 1969, University of Washington

EMERY, ASHLEY F \* Adjunct Professor, 1961; MS, 1958, University of California (Berkeley), PhD, 1961, University of

California (Berkeley); bioengineering, energy conservation in buildings and air conditioning

FINROW, JERRY V. \* Professor Emeritus, 1995; MArch, 1968, University of California (Berkeley); housing architecture

FRIEDMAN, DANIEL S \* Professor, 2006; MArch, 1981, University of Wisconsin (Milwaukee), MSC, 1993, University of Pennsylvania, PhD, 1999, University of Pennsylvania; Architecture: specifically health care design. Writes and lectures on professional ethics and education, public architecture and 20th century architectural theory

GOLDBLATT, STEVEN M, Adjunct Associate Professor, 1982; JD, 1977, Golden Gate University

HEERWAGEN, DEAN REESE \* Associate Professor, 1975; MS, 1967, Massachusetts Institute of Technology, MArch, 1971, Massachusetts Institute of Technology; environmental controls (passive and active)

HEERWAGEN, JUDITH, Affiliate Assistant Professor, 1982; PhD, 1982, University of Washington

HILDEBRAND, GRANT, Professor Emeritus, 1964; MArch, 1964, University of Michigan

HUBER, NICOLE \* Assistant Professor, 2005; MArch, 2001, Universität der Künste, Berlin; Specializes in architecture and urbanism

IAROCCHI, LOUISA M \* Assistant Professor, 2004; MA, 1992, Washington University, MA, 1994, Washington University, PhD, 2003, Boston University; Specializes in history and theory of architecture

INANICI, MEHLIKA \* Assistant Professor, 2005; MSC, 1995, Middle East Technical University (Turkey), MSC, 2002, University of Michigan, PhD, 2004, University of Michigan; Specializes in computational lighting analysis, building performance simulation, physically based rendering, and design computing

JACOBSON, PHILLIP L, Professor Emeritus, 1962; MArch, 1969, Finnish Institute of Technology

JOHNSON, BRIAN ROBERT \* Associate Professor, 1980; MArch, 1981, University of Washington; Computing in architectural

design, 3D modeling and rendering, web-based collaboration and communication

JOHNSON, JULIE M \* Adjunct Associate Professor, 1995; MCP, 1988, Massachusetts Institute of Technology; community design, urban parks, children's outdoor learning & play environments

JOHNSTON, NORMAN J, Professor Emeritus, 1960; PhD, 1964, University of Pennsylvania

JONES, SUSAN H., Affiliate Associate Professor, 1991; MArch, 1988, Harvard University

KIYAK, H ASUMAN \* Adjunct Professor, 1977; MA, 1974, Wayne State University, PhD, 1977, Wayne State University; geriatric dentistry, behavioral aspects of health care

KOLB, KEITH R, Professor Emeritus, 1952; MArch, 1950, Harvard University

LEBERT, EDGAR A, Associate Professor, 1967; MS, 1967, University of Washington

LOVELAND, JOEL E. \* Professor, 1980; MArch, 1980, University of California (Los Angeles); energy conservation, design, research

LOVETT, WENDELL H, Professor Emeritus, 1948; MArch, 1948, Massachusetts Institute of Technology

MCLAREN, BRIAN \* Assistant Professor, 2001; MSC, 1986, Columbia University, PhD, 2001, Massachusetts Institute of Technology; History/theory of architecture, modernism, fascism, postcolonial studies, Africa, Middle East

MERLINO, KATHRYN ROGERS \* Assistant Professor, 1999; MArch, 1999, University of Virginia

MILLER, DAVID E. \* Professor, 1985; MArch, 1972, University of Illinois; design development, design

MILLET, MARIETTA, Professor Emeritus, 1976; MArch, 1972, Massachusetts Institute of Technology

MINAH, GALEN F \* Associate Professor, 1970; MArch, 1968, University of Pennsylvania; design process, design, professional practice

MOHLER, RICHARD ERNEST J \* Associate Professor, 1986; MArch, 1984, University

of Pennsylvania; architecture and community, design of housing and urban public open space

MUGERAUER, ROBERT \* Professor, 2000; PhD, 1973, University of Texas (Austin); Sustainability; Impact of Information Technology; Values, Social and Cultural Factors in Design and Planning -Theory and Current Research Methods

NYBERG, FOLKE E, Professor Emeritus, 1969; MArch, 1960, Yale University

OCHSNER, JEFFREY K \* Professor, 1987; MArch, 1976, Rice University; history, preservation design, urban design

OSHIMA, KEN T \* Assistant Professor, 2005; MArch, 1993, University of California (Berkeley), MPhil, 1998, Columbia University, PhD, 2003, Columbia University; Transnational architectural design and history

PENA, ROBERT BERNARD \* Associate Professor, 2007; MArch, 1987, University of California (Berkeley); Expertise is in Sustainable Design and Building Performance Systems

PRAKASH, VIKRAMADITYA \* Professor, 1996; MA, 1989, Cornell University, PhD, 1994, Cornell University; Non-western, Asian, Indian Architecture; cultural and postcolonial studies; LeCorbusier; modernism

PYATOK, MICHAEL \* Professor, 1990; MArch, 1967, Harvard University; design of affordable housing for lower income communities - urban and suburban regions

ROLFE, GEORGE R \* Adjunct Associate Professor, 1984; MArch, 1968, University of Pennsylvania, MCP, 1968, University of Pennsylvania; urban development process, finance, feasibility and market analysis, urban design processes

ROTTLE, NANCY D \* Adjunct Associate Professor, 2001; MLA, 1987, University of Oregon; Cultural/Natural Landscape Preservation; Educational Landscapes; Ecological Planning, Design, and Construction

RYAN, DENNIS M \* Associate Professor, 1974; MCP, 1968, University of Pennsylvania, PhD, 1976, University of Pennsylvania; Educational democracy, theory and practice of interdisciplinary education; urban design and planning as communicative process; community and the socio-cultural dimensions of planning and place; issues associated with urban change and continuity

SASANOFF, ROBERT, Associate Professor Emeritus, 1963; MCP, 1968, University of California (Berkeley)

SELIGMANN, CLAUS, Professor Emeritus, 1964; DipArch, 1951, London Polytechnic (UK)

SMALL, ROBERT, Professor Emeritus, 1965; MArch, 1955, University of Oregon

STEVENS, ANNE HAYDEN, Lecturer, 1998; MA, 1997, University of California (Berkeley)

STRAUSS, DAVID M., Affiliate Assistant Professor, 1991; MArch, 1985, University of Washington, MS, 1992, University of Pennsylvania, PhD, 1999, University of Pennsylvania

STREISSGUTH, DANIEL M, Professor Emeritus, 1955; MArch, 1949, Massachusetts Institute of Technology

SUTTON, SHARON E. \* Professor, 1998; MArch, 1973, Columbia University, MPhil, 1981, City University of New York, PhD, 1982, City University of New York, MA, 1982, City University of New York; The effect of the environment on learning and community well-being

THIEL, PHILIP, Professor Emeritus, 1961; MS, 1948, University of Michigan

VERNEZ-MOUDON, ANNE \* Professor, 1980; DSc, 1987, Ecole Polytechnique Federale De Lausanne; urban design, city form and neighborhood studies, design research

WINTERBOTTOM, DANIEL M. \* Adjunct Associate Professor, 1993; MLA, 1988, Harvard University; urban landscape architecture, cultural landscapes, therapeutic and healing landscapes, landscape construction

ZARINA, ASTRA, Professor Emeritus, 1964; MArch, 1955, Massachusetts Institute of Technology

ZUBERBUHLER, DOUGLAS, Senior Lecturer, 1968; MArch, 1968, University of Washington

DANIALI, SAEED \* Professor, 1997; MSCE, 1972, Strasbourg School for Water and Environment Engineering (France), PhD, 1975, University of Lille (France); Fiber Reinforced Composites, Sustainable Construction Methods and Materials, Sustainable Built Environment. Application of Robots in Construction

DONNETTE, JAMES J, Associate Professor Emeritus, 1966; MArch, 1969, University of Washington

DOSSICK, CARRIE S \* Assistant Professor, 2005; MS, 1998, Columbia University, PhD, 2001, Columbia University; Application and impact of emerging technologies on the construction process

GOLDBLATT, STEVEN M, Associate Professor, 1982; JD, 1977, Golden Gate University

NEMATI, KAMRAN M. \* Associate Professor, 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); Civil engineering materials, concrete technology, mechanical behavior of concrete, fracture mechanics; concrete pavements

ROJAS, EDDY \* Associate Professor, 2001; MS, 1995, University of Colorado (Boulder), PhD, 1997, University of Colorado (Boulder), MA, 1997, University of Colorado (Boulder); Modeling, Simulation, and Visualization of Construction Engineering and Management Processes

SCHAUFELBERGER, JOHN E. \* Associate Professor, 1994; MSCE, 1970, University of Illinois, PhD, 1971, University of Illinois; Construction management, water resources management, and contract procurement and administration

TORRENCE, GERARD R, Associate Professor Emeritus, 1954; MS, 1950, Massachusetts Institute of Technology; American foreign and defense policy, science and public policy

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## Landscape Architecture

ABRAMSON, DANIEL B \* Adjunct Assistant Professor, 2001; MArch, 1992, Massachusetts Institute of Technology, MCP, 1992, Massachusetts Institute of Technology, PhD, 1998, Tsinghua University (China); Comparative urban design, historic preservation and neighborhood planning

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## Construction Management

ABDEL AZIZ, AHMED, Assistant Professor, 2002; MSC, 1992, Zagazig University (Egypt), PhD, 2000, University of British Columbia (Canada)

ADAMS, CAROLYN A., Affiliate Associate Professor, 1998; MS, 1979, Texas Technological University

ALBERTI, MARINA \* Adjunct Associate Professor, 1996; PhD, 1992, Massachusetts Institute of Technology; Environmental planning, urban ecology, impact assessment, geographic information systems, conflict management

BEYERS, WILLIAM B \* Adjunct Professor, 1966; PhD, 1967, University of Washington; regional science, economic geography, location theory, regional analysis, environment of the Pacific Northwest

BRADLEY, GORDON A \* Adjunct Professor, 1972; MLA, 1972, University of California (Berkeley), PhD, 1986, University of Michigan; Forest land use planning, Conservation area planning and design

BUCHANAN, ROBERT T, Professor Emeritus, 1970; MLA, 1956, Harvard University

CHALKER-SCOTT, LINDA \* Affiliate Associate Professor, 1997; MS, 1981, Oregon State University, PhD, 1988, Oregon State University; Environmental stress physiology of woody plants

DOLAN, SUSAN A, Affiliate Associate Professor, 2001; MLA, 1996, University of Oregon

EWING, KERN \* Adjunct Professor, 1990; MA, 1970, Texas Technological University, MS, 1978, University of Washington, PhD, 1982, University of Washington; wetland plant ecology, restoration ecology, ecosystem management

FRIEDMAN, DANIEL S \* Professor, 2006; MArch, 1981, University of Wisconsin (Milwaukee), MSC, 1993, University of Pennsylvania, PhD, 1999, University of Pennsylvania; Architecture: specifically health care design. Writes and lectures on professional ethics and education, public architecture and 20th century architectural theory

HAAG, RICHARD, Professor Emeritus, 1958; MLArch, 1952, Harvard University

HILL, KRISTINA, Affiliate Associate Professor, 1997; MLA, 1990, Harvard University, PhD, 1997, Harvard University

HORNER, RICHARD R. \* Research Associate Professor, 1981; MD, 1966, University of Pennsylvania, PhD, 1978, University of Washington; Effects of human activities on water resources in urban areas

HOU, JEFFREY \* Associate Professor,

2001; MLArch, 1993, University of Pennsylvania, MArch, 1994, University of California (Berkeley), PhD, 2001, University of California (Berkeley); Community design, cultural landscape, grassroots actions, environmental planning and activism

JOHNSON, JULIE M \* Associate Professor, 1995; MCP, 1988, Massachusetts Institute of Technology; community design, urban parks, children's outdoor learning & play environments

JOHNSTON, NORMAN J, Professor Emeritus, 1960; PhD, 1964, University of Pennsylvania

JONES, GRANT R, Affiliate Professor, 1970; MLA, 1966, Harvard University

LOVELAND, JOEL E. \* Adjunct Professor, 1980; MArch, 1980, University of California (Los Angeles); energy conservation, design, research

MANZO, LYNNE C \* Associate Professor, 2001; MA, 1988, City University of New York, PhD, 1994, City University of New York; Environment and behavior, place attachment, place identity, the politics of place

MERLINO, KATHRYN ROGERS \* Adjunct Assistant Professor, 1999; MArch, 1999, University of Virginia

MUGERAUER, ROBERT \* Adjunct Professor, 2000; PhD, 1973, University of Texas (Austin); Sustainability; Impact of Information Technology; Values, Social and Cultural Factors in Design and Planning -Theory and Current Research Methods

OCHSNER, JEFFREY K \* Adjunct Professor, 1987; MArch, 1976, Rice University; history, preservation design, urban design

REICHARD, SARAH E. \* Adjunct Associate Professor, 1995; MS, 1989, University of Washington, PhD, 1994, University of Washington; Biology of both introduced invasive and native rare species

ROBERTSON, IAIN M \* Associate Professor, 1982; MLA, 1975, University of Pennsylvania; designing with plants, planning and design of botanical gardens/arboreta

ROTTLE, NANCY D \* Associate Professor, 2001; MLA, 1987, University of Oregon; Cultural/Natural Landscape Preservation; Educational Landscapes; Ecological Planning, Design, and Construction

SCHAUMAN, SALLY, Professor Emeritus, 1979; MS, 1971, University of Michigan

SPENCER, BENJAMIN R, Assistant Professor, 2008; MLA, 2004, University of Virginia

STREATFIELD, DAVID C \* Professor Emeritus, 1971; DipArch, 1956, Brighton College of Arts, MLA, 1965, University of Pennsylvania; regional landscape planning, environmental history, landscape studies, historic landscape preservation, landscape theory

SUTTON, SHARON E. \* Adjunct Professor, 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; The effect of the environment on learning and community well-being

VERNEZ-MOUDON, ANNE \* Professor, 1980; DSc, 1987, Ecole Polytechnique Federale De Lausanne; urban design, city form and neighborhood studies, design research

WAGNER, FREDRICK W. \* Adjunct Research Professor, 2001; MS, 1970, University of Washington, PhD, 1974, University of Washington; Land use/legal aspects of urban planning; health policy across urban and rural communities in developed and developing countries

WAY, THAISA \* Assistant Professor, 2007; MArch, 1991, University of Virginia, PhD, 2005, Cornell University; Landscape History

WINTERBOTTOM, DANIEL M. \* Associate Professor, 1993; MLA, 1988, Harvard University; urban landscape architecture, cultural landscapes, therapeutic and healing landscapes, landscape construction

YOUNG, JOHN T \* Adjunct Professor, 1984; MFA, 1978, Rhode Island School of Design; sculpture, conceptual art

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## Urban Design and Planning

ABRAMSON, DANIEL B \* Assistant Professor, 2001; MArch, 1992, Massachusetts Institute of Technology, MCP, 1992, Massachusetts Institute of Technology, PhD, 1998, Tsinghua University (China); Comparative urban design, historic preservation and neighborhood planning

ALBERTI, MARINA \* Associate Professor, 1996; PhD, 1992, Massachusetts Institute of Technology; Environmental planning, urban ecology, impact assessment,

geographic information systems, conflict management

BAE, CHRISTINE \* Associate Professor, 1996; MRP, 1986, State University of New York (Albany), PhD, 1994, University of Southern California; Transportation; environmental planning; land use; planning methodologies; socioeconomic impact analysis

BELL, EARL J, Professor Emeritus, 1966; PhD, 1965, University of California (Berkeley)

BEYERS, WILLIAM B \* Adjunct Professor, 1966; PhD, 1967, University of Washington; regional science, economic geography, location theory, regional analysis, environment of the Pacific Northwest

BLANCO, HILDA J. \* Professor, 1996; MRP, 1984, University of California (Berkeley), PhD, 1989, University of California (Berkeley); Factors influencing urban sprawl; the implications of cognitive science and evolutionary theory for public policy and planning

BORN, BRANDEN M \* Assistant Professor, 2003; MS, 1998, University of Wisconsin (Madison), PhD, 2003, University of Wisconsin (Madison); Land use/regional planning, planning processes, social justice, food systems

BRADLEY, GORDON A \* Adjunct Professor, 1972; MLA, 1972, University of California (Berkeley), PhD, 1986, University of Michigan; Forest land use planning, Conservation area planning and design

CAMPBELL, CHRISTOPHER D \* Assistant Professor, 2000; MA, 1994, University of California (Los Angeles), PhD, 2002, University of California (Los Angeles)

CARLSON, DANIEL L., Adjunct Senior Lecturer, 1993; MCP, 1972, University of California (Berkeley)

CARRUTHERS, JOHN I, Affiliate Assistant Professor, 2003; MS, 1998, University of Arizona, PhD, 2001, University of Washington

CURRY, MARTY, Affiliate Assistant Professor, 2004; MUP, 1973, University of Washington

DELISLE, JAMES R \* Associate Professor, 2002; MS, 1976, University of Wisconsin (Madison), PhD, 1981, University of Wisconsin (Madison); Real estate decision-making and investment in a managed growth environment

FRIEDMAN, DANIEL S \* Adjunct Professor, 2006; MArch, 1981, University of Wisconsin (Milwaukee), MSC, 1993,

University of Pennsylvania, PhD, 1999, University of Pennsylvania; Architecture: specifically health care design. Writes and lectures on professional ethics and education, public architecture and 20th century architectural theory

GREY, ARTHUR L, Professor Emeritus, 1963; PhD, 1954, University of California (Berkeley)

HANCOCK, JOHN L, Professor Emeritus, 1969; MA, 1955, University of Minnesota, PhD, 1964, University of Pennsylvania

HERRANZ JR, JOAQUIN \* Adjunct Assistant Professor, 2004; MCP, 1989, University of California (Berkeley), PhD, 2004, Massachusetts Institute of Technology

JOHNSTON, NORMAN J, Professor Emeritus, 1960; PhD, 1964, University of Pennsylvania

KASPRISIN, RONALD J. \* Associate Professor, 1980; MUP, 1968, University of Washington; community design studios, town planning, planning/design communications, urban design principles

KLEIT, RACHEL G. \* Acting Associate Professor, 1999; MA, 1993, Tufts University, PhD, 1999, University of North Carolina, Chapel Hill; housing policy; urban and social policy; social networks and poverty

LABADIE, JOHN R, Affiliate Assistant Professor, 2005; MA, 1973, University of Washington, PhD, 1981, University of Washington

LUDWIG, RICHARD L, Professor Emeritus, 1971; MUP, 1965, University of Washington, PhD, 1971, University of Pittsburgh

MCCORMACK, EDWARD D \* Adjunct Research Asst Professor, 2005; MS, 1985, University of Washington, PhD, 1997, University of Washington; Freight Transportation; Transportation and Technology; Transportation Infrastructure Protection; Land Use Transportation

MILLER, DONALD H \* Professor, 1970; MCP, 1960, University of California (Berkeley), PhD, 1972, University of California (Berkeley); urbanization processes, urban spatial structure, planning theory and evaluation, public service planning, consumer behavior and demand for public services

MUGERAUER, ROBERT \* Professor, 2000; PhD, 1973, University of Texas (Austin); Sustainability; Impact of Information Technology; Values, Social and Cultural Factors in Design and Planning -Theory and Current Research Methods

OCHSNER, JEFFREY K \* Adjunct Professor, 1987; MArch, 1976, Rice University; history, preservation design, urban design

PURCELL, MARK H. \* Associate Professor, 1999; MA, 1995, University of California (Los Angeles), PhD, 1998, University of California (Los Angeles); Urban political economy, urban geography, democracy, citizenship

ROLFE, GEORGE R \* Associate Professor, 1984; MArch, 1968, University of Pennsylvania, MCP, 1968, University of Pennsylvania; urban development process, finance, feasibility and market analysis, urban design processes

RUTHERFORD, G SCOTT \* Adjunct Professor, 1980; MSCE, 1968, Washington State University, PhD, 1974, Northwestern University; transportation planning and engineering, transit planning, demand forecasting

RYAN, DENNIS M \* Associate Professor, 1974; MCP, 1968, University of Pennsylvania, PhD, 1976, University of Pennsylvania; Educational democracy, theory and practice of interdisciplinary education; urban design and planning as communicative process; community and the socio-cultural dimensions of planning and place; issues associated with urban change and continuity

SCHUESSLER, HERMAN ROBERT, Affiliate Associate Professor, 2003; MA, 1975, Fairfield University, MEd, 1982, Columbia University, PhD, 1983, Columbia University

SHERIDAN, FRANCES A., Affiliate Assistant Professor, 2001; MS, 1973, Oregon State University, MUP, 1994, University of Washington

SUTTON, SHARON E. \* Professor, 1998; MArch, 1973, Columbia University, MPhil, 1981, City University of New York, PhD, 1982, City University of New York, MA, 1982, City University of New York; The effect of the environment on learning and community well-being

UNTERMANN, RICHARD K, Professor Emeritus, 1971; MLA, 1967, Harvard University

VERNEZ-MOUDON, ANNE \* Professor, 1980; DSc, 1987, Ecole Polytechnique Federale De Lausanne; urban design, city form and neighborhood studies, design research

WADDELL, PAUL A \* Professor, 1997; MS, 1981, University of Texas (Houston), PhD, 1989, University of Texas (Dallas); urban policy, regional planning, growth management, land use, transportation, GIS

WAGNER, FREDRICK W. \* Research Professor, 2001; MS, 1970, University of Washington, PhD, 1974, University of Washington; Land use/legal aspects of urban planning; health policy across urban and rural communities in developed and developing countries

WESTERLUND, FRANK \* Associate Professor, 1974; MUP, 1971, University of Washington, PhD, 1977, University of Washington; Remote sensing applications, energy development and conservation, regional environmental planning

WOLFE, CHARLES R., Affiliate Associate Professor, 1994; MIH, 1982, Cornell University, JD, 1984, University of Oregon

WONG, SHAWN H \* Adjunct Professor, 1984; MA, 1974, San Francisco State; creative writing, Chinese-American area studies

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# College of Arts and Sciences

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## American Ethnic Studies

BONUS, ENRIQUE C. \* Associate Professor, 1998; MA, 1990, California State University, Fresno, PhD, 1997, University of California (San Diego); Race and ethnicity; communication, education and culture; Asian American studies

CAMP, STEPHANIE M. H. \* Adjunct Associate Professor, 1995; MA, 1992, Yale University, PhD, 1998, University of Pennsylvania; Nineteenth-century American slavery, with a special emphasis on women, gender, and culture

CAUCE, ANA MARI \* Professor, 1986; MS, 1979, Yale University, PhD, 1984, Yale University; at-risk children, adolescents, and families; normative development in ethnic minority youth; homeless youth, adolescent substance abuse; children's services research; community psychology & social policy

CHAN, ANTHONY B. \* Adjunct Associate Professor, 1990; MA, 1969, Bowling Green State University, MA, 1973, University of Arizona, PhD, 1980, York University (Canada); Chinese Communications, especially Information Technology, E-commerce, especially Dot-com Enterprises, Internet Journalism, Asian Media Systems, Race, Gender and Power in Asian American Media

CHRISMAN, LAURA H \* Adjunct Professor, 2005; DPhil, 1992, University of Oxford (UK); African and African Diaspora studies; Postcolonial Studies; British imperial literatures

CRUTCHFIELD, ROBERT D \* Adjunct Professor, 1979; MA, 1976, Vanderbilt University, PhD, 1980, Vanderbilt University; deviance, criminology, social control, stratification

FEARN-BANKS, KATHLEENA. \* Adjunct Associate Professor, 1990; MS, 1965, University of California (Los Angeles); Crisis communications; also press secretaries to U.S. presidents

FLORES, LAURO H \* Professor, 1980; PhD, 1980, University of California (San Diego); Chicano literature, contemporary Latin American literature (narrative)

GAMBOA, ERASMO \* Associate Professor, 1975; MA, 1973, University of Washington, PhD, 1984, University of Washington; history, Chicano experience, Pacific Northwest

GEORGE, WILLIAM H \* Adjunct Professor, 1991; PhD, 1982, University of Washington; alcohol use and sexual behavior, addiction issues, sexual assault issues, racism issues

GINORIO, ANGELA B \* Adjunct Associate Professor, 1981; MA, 1971, University of Puerto Rico, PhD, 1979, Fordham University; women and science, violence against women, sexual harassment, racial identity among Latino/as, educational access issues

GUERRA, JUAN C \* Adjunct Associate Professor, 1990; MA, 1983, University of Illinois, PhD, 1992, University of Illinois; Literacy, Ethnography, Composition, Pedagogy and Chicano Literature

JOSEPH, RALINA L \* Adjunct Assistant Professor, 2005; MA, 2001, University of California (San Diego), PhD, 2005, University of California (San Diego); Contemporary representations of mixed-race women in the United States

JUNG, MOON-HO \* Adjunct Associate Professor, 2001; MA, 1995, Cornell University, PhD, 2000, Cornell University; Race, labor, Asian American history

KASHIMA, TETSUDEN \* Professor, 1976; MA, 1968, San Francisco State, PhD, 1975, University of California (San Diego); sociology

MAULANA, SEYED M, Senior Lecturer, 1988; MUP, 1988, University of Washington

NOMURA, GAIL M. \* Associate Professor, 1999; MA, 1971, University of California (Berkeley), PhD, 1978, University of Hawaii; Asian/Pacific Islander American studies, Asian American history, race, ethnicity, and gender studies

PENA, DEVON G \* Professor, 1999; MA, 1978, University of Texas (Austin), PhD, 1983, University of Texas (Austin); Agroecosystems (Southwestern U.S.); environmental history; political ecology of complex systems; workplace politics (U.S.-Mexico border); postmodern theories of science and technology

RETMAN, SONNET H., Assistant Professor, 2002; PhD, 1997, University of California (Los Angeles)

SALAS, ELIZABETH, Associate Professor, 1987; MA, 1977, California State University, Los Angeles, PhD, 1987, University of California (Los Angeles)

SINGH, NIKHIL PAL \* Adjunct Associate Professor, 1998; MA, 1990, Yale University, MPhil, 1992, Yale University, PhD, 1995, Yale University; 20th-Century U.S. History and Theory with a focus on ethnicity, race and nationalism

SMALLWOOD, STEPHANIE E, Adjunct Associate Professor, 2006; PhD, 1999, Duke University

SO, CONNIE C., Senior Lecturer, 1990; MPA, 1989, Princeton University

SPIGNER, CLARENCE \* Adjunct Associate Professor, 1994; MPH, 1982, University of California (Berkeley), DPH, 1987, University of California (Berkeley); health of the disadvantaged; race/ethnic relations; societal behavior, popular culture

SUMIDA, STEPHEN H. \* Professor, 1998; MA, 1970, Columbia University, PhD, 1982, University of Washington; Asian American, multicultural, American literary and interdisciplinary studies

TAYLOR, QUINTARD \* Adjunct Professor, 1999; MA, 1971, University of Minnesota, PhD, 1977, University of Minnesota; African American history with a focus on blacks in the West

VU, THUY, Affiliate Assistant Professor, 1993; MA, 1972, Michigan State University, PhD, 1973, Michigan State University

WALTER, JOHN C, Professor Emeritus, 1988; MA, 1968, University of Bridgeport, PhD, 1971, University of Maine

YEE, SHIRLEY J. \* Adjunct Associate Professor, 1988; MA, 1983, Ohio State University, PhD, 1987, Ohio State University; U.S. women's history, African-American history, nineteenth-century U.S. social history

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## American Indian Studies

COLONNESE, TOM G \* Senior Lecturer, 1996; MA, 1974, University of Northern Iowa, PhD, 1981, Arizona State University; American Indian literature, film, and military history

COTE, CHARLOTTE, Assistant Professor, 2001; MA, 1996, University of California (Berkeley), PhD, 2002, University of California (Berkeley)



HARMON, ALEXANDRA J \* Associate Professor, 1995; JD, 1972, Yale University, MA, 1990, University of Washington, PhD, 1995, University of Washington; history of U.S. race and ethnic relations, especially involving American Indians

HART, DANIEL \* Professor, 1999; MFA, 1985, Temple University; The anthropology of visual communications, with an emphasis upon Indigenous media and documentary film

METOYER, CHERYL \* Adjunct Associate Professor, 2003; MA, 1969, Immaculate Heart College, Ca, PhD, 1976, Indiana University

MILLION, DIAN L., Assistant Professor, 2002; MA, 1998, University of California (Berkeley), PhD, 2004, University of California (Berkeley)

OLIVER, MARVIN E, Professor, 1974; MFA, 1973, University of Washington

ROSS, LUANA K. \* Adjunct Associate Professor, 1999; MSW, 1981, Portland State University, PhD, 1992, University of Oregon; Criminology/Deviance, Race/Ethnic Relations in North America, and issues of gender

WITHERSPOON, GARY J. \* Professor, 1987; MA, 1969, University of Chicago, PhD, 1970, University of Chicago; language, art and history of the Southwest

WRIGHT, MARY C, Senior Lecturer, 1997; MA, 1973, Portland State University, PhD, 1996, Rutgers University

WRIGHT, ROBIN K \* Adjunct Professor, 1985; MA, 1977, University of Washington, PhD, 1985, University of Washington; Native American art, Native art of the Pacific Northwest Coast, Haida art

## Anthropology

AMRUTE, SAREETA BIPIN, Assistant Professor, 2008; MA, 2001, University of Chicago, PhD, 2007, University of Chicago

ANAGNOST, ANN S. \* Professor, 1990; MA, 1977, University of Michigan, PhD, 1985, University of Michigan; ethnography of the state, ideology and popular culture, peasant society; China

ANDERSON, EUGENE N., Affiliate Professor, 2006; PhD, 1967, University of California (Berkeley)

BENTZ, MARILYN G, Senior Lecturer Emeritus, 1968; MSW, 1967, University of

Illinois, PhD, 1984, University of Washington

BILANIUK, LAADA M. \* Associate Professor, 1998; MA, 1991, University of Michigan, PhD, 1998, University of Michigan; Language politics, language ideology, ethnicity, nationalism, gender, Ukraine, former USSR

BREWER, DEVON, Affiliate Assistant Professor, 1997; MA, 1992, University of California (Irvine), PhD, 1994, University of California (Irvine)

CHAPMAN, RACHEL R \* Assistant Professor, 2004; MA, 1988, Yale University, MA, 1991, University of California (Los Angeles), PhD, 1998, University of California (Los Angeles); gender systems and reproductive health disparities in marginalized communities, urban U.S., South East Africa

CHRISMAN, NOEL \* Adjunct Professor, 1973; PhD, 1966, University of California (Berkeley), MPH, 1967, University of California (Berkeley); health beliefs and practices, social networks and social support

CLOSE, ANGELA E. \* Professor, 1995; MA, 1974, Cambridge University (UK), PhD, 1976, Cambridge University (UK); Archaeology; Lithic Analysis; Prehistory of North Africa; human origins

CROCKETT, CAROLYN M, Affiliate Assistant Professor, 1971; PhD, 1971, University of Washington

DUDLEY, SHANNON K. \* Adjunct Associate Professor, 1996; MA, 1988, University of California (Berkeley), PhD, 1997, University of California (Berkeley); Steelband music in Trinidad; Caribbean music; colonialism, nationalism, ethnicity

DUNNELL, ROBERT C \* Professor Emeritus, 1967; PhD, 1967, Yale University; archaeological theory, field method, eastern North America

ECK, GERALD G, Associate Professor Emeritus, 1974; MA, 1974, University of California (Berkeley), PhD, 1977, University of California (Berkeley)

ELLINGSON, TERRY J \* Adjunct Professor, 1981; MA, 1970, University of Chicago, PhD, 1979, University of Wisconsin (Madison); ethnomusicology, anthropology, religion, Tibet, Nepal, Buddhism

ETNIER, MICHAELA., Affiliate Assistant Professor, 2003; MA, 1997, University of Washington, PhD, 2002, University of Washington

FEATHERS, JAMES K \* Research Associate Professor, 1990; MA, 1985, University of Washington, PhD, 1990, University of Washington; Luminescence dating of sediments and pottery from archaeological sites

FITZHUGH, J.BEN \* Associate Professor, 1997; MA, 1992, University of Michigan, PhD, 1996, University of Michigan; Archaeology, Anthropology, evolutionary ecology, complex hunter-gatherers, social evolution, settlement systems; North Pacific Rim, Alaska, Russian Far East

GOODREAU, STEVEN M. \* Assistant Professor, 2001; MA, 1998, Pennsylvania State University, PhD, 2001, Pennsylvania State University; HIV, social network analysis, population genetics, sexual behavior, Peru

GORMAN, E. MICHAEL, Affiliate Assistant Professor, 1997; PhD, 1980, University of Chicago, MPH, 1982, University of California (Berkeley), MSW, 1994, University of California (Berkeley)

GRAYSON, DONALD K \* Professor, 1975; MA, 1969, University of Oregon, PhD, 1973, University of Oregon; North American prehistory, paleoecology, vertebrate faunal analysis, history of archaeology

GREEN, JAMES W \* Senior Lecturer Emeritus, 1981; MA, 1964, Ohio State University, PhD, 1972, University of Washington; Comparative religion, visual anthropology, cross-cultural mental health, comparative study of death; West Indies, Pakistan

HARRELL, STEVAN \* Professor, 1974; MA, 1971, Stanford University, PhD, 1974, Stanford University; family systems, demography, social evolution, religion, China, Taiwan

HOFFMAN, DANIEL J \* Assistant Professor, 2004; MA, 2001, Duke University, MD, 2004, Duke University; Violence in contemporary West Africa: war, violence, visual anthropology, globalization, post-structuralism

HOLMAN, DARRYL J. \* Associate Professor, 1999; MS, 1990, University of Wisconsin, PhD, 1996, Pennsylvania State University; Human population biology, anthropological demography, paleodemography and statistical modeling

HUNN, EUGENE S \* Professor Emeritus, 1972; MA, 1969, University of California (Berkeley), PhD, 1973, University of California (Berkeley); cognitive anthropology, ethnobiology, cultural ecology and evolution, North American Indians

- KAHN, MIRIAM \* Professor, 1986; MA, 1974, Bryn Mawr College, PhD, 1980, Bryn Mawr College; museum exhibits, cultural representations, senses of place, tourism, Pacific Islands (Papua New Guinea, French Polynesia)
- KEYES, CHARLES F \* Professor Emeritus, 1965; PhD, 1965, Cornell University; Interpretive anthropology, religion & political-economic change, ethnic & national cultures, sociology of Theravada Buddhism; Southeast Asia, Thailand, Vietnam
- KRAMER, PATRICIA \* Research Assistant Professor, 1998; PhD, 1998, University of Washington; Analysis of gait, osteoarthritis and fossils using biomechanics and functional morphology
- KYES, RANDALL C. \* Adjunct Research Professor, 1994; MA, 1985, Bucknell University, PhD, 1989, University of Georgia
- LAPE, PETER V \* Assistant Professor, 2000; MA, 1995, San Francisco State, MA, 1995, San Francisco State; Western Pacific archaeology, history, colonialism, landscape, palaeoclimate, religious change
- LEONETTI, DONNA \* Associate Professor, 1974; MA, 1967, University of Washington, PhD, 1976, University of Washington; biological and sociocultural interactions in population adaptation, epidemiology, Japanese Americans
- LIEBOW, EDWARD B., Affiliate Associate Professor, 1987; MA, 1978, Arizona State University, PhD, 1986, Arizona State University
- LLOBERA, MARCOS \* Assistant Professor, 2004; MSC, 1993, University of Leicester (UK), DPhil, 1999, University of Oxford (UK); Landscape Archaeology, Mathematical and Computer Modeling, GIS, Cognition, Archaeological Theory
- LOWE, CELIA \* Associate Professor, 1999; MPhil, 1996, Yale University, PhD, 2000, Yale University; Critical environmental studies, science studies, nationalism, post-colonial theory, identity, gender
- MARWICK, BENJAMIN, Acting Assistant Professor, 2008; MA, 2002, University of West Australia, PhD, 2008, Australian National University
- MCCRATH, BARBARA B. \* Adjunct Research Assoc Professor, 1987; MA, 1981, University of Washington, PhD, 1993, University of Washington; ethnographic studies with U.S. Pacific Islanders on health issues, specifically, HIV/AIDS prevention among adolescents
- MEILLEUR, BRIEN A., Affiliate Associate Professor, 2005; MA, 1978, University of Washington, PhD, 1986, University of Washington
- MILLER, MARC \* Adjunct Professor, 1979; MA, 1972, University of California (San Diego), PhD, 1974, University of California (Irvine); maritime anthropology, cognitive anthropology and social/cultural change
- MINICHILLO, THOMAS J., Affiliate Assistant Professor, 2006; MA, 1995, Ohio State University, PhD, 2005, University of Washington
- MUGERAUER, ROBERT \* Adjunct Professor, 2000; PhD, 1973, University of Texas (Austin); Sustainability; Impact of Information Technology; Values, Social and Cultural Factors in Design and Planning -Theory and Current Research Methods
- NASON, JAMES \* Professor Emeritus, 1968; MA, 1967, University of Washington, PhD, 1970, University of Washington; sociocultural anthropology, museology, culture change, material culture, Micronesia, North America
- NEWELL, LAURA L \* Professor, 1963; MA, 1957, Northwestern University, PhD, 1967, University of Washington; primatology growth and development, human biology, evolutionary aspects of dermatoglyphics
- NUTE, PETER E, Professor Emeritus, 1968; PhD, 1969, Duke University
- O'CONNOR, KATHLEEN A. \* Associate Professor, 1999; MA, 1987, State University of New York (Albany), PhD, 1995, State University of New York (Albany); Biodemography, human reproductive biology and ecology, mortality, fertility
- OSANLOO, ARZOO \* Assistant Professor, 2002; JD, 1993, American University, PhD, 2002, Stanford University; Anthropology and Law, Human Rights, Gender and Islam, Theories of the State: socio-legal constructions of women's rights within Iran's Islamic republican state
- OTTENBERG, SIMON \* Professor Emeritus, 1955; PhD, 1957, Northwestern University; art, aesthetics, politics, law, ethnicity
- PENA, DEVON G \* Professor, 1999; MA, 1978, University of Texas (Austin), PhD, 1983, University of Texas (Austin); Agroecosystems (Southwestern U.S.); environmental history; political ecology of complex systems; workplace politics (US-Mexico border); postmodern theories of science and technology
- POSNER, KAREN L., Adjunct Research Professor, 1990; MA, 1980, University of Washington, PhD, 1990, University of Washington
- RHODES, LORNA A \* Professor, 1984; MA, 1971, Cornell University, PhD, 1973, Cornell University; medical anthropology, symbolic anthropology, South Asia, religion, psychiatry
- ROBINSON, CABEIRI DEBERGH \* Adjunct Assistant Professor, 2003; MA, 1999, Cornell University, PhD, 2005, Cornell University; Political violence and the transformation of political cultures in contemporary South Asia, Pakistan, and Jammu and Kashmir
- SEPEZ, JENNIFER A., Affiliate Assistant Professor, 2003; MA, 1996, University of Washington, PhD, 2001, University of Washington
- SHELL-DUNCAN, BETTINA \* Associate Professor, 1995; MS, 1988, University of Wisconsin, PhD, 1994, Pennsylvania State University; health assessment in traditional societies, including immunity, nutrition, and anthropological demography
- SMITH, ERICA \* Professor, 1980; MA, 1976, Cornell University, PhD, 1980, Cornell University; ecology, evolutionary theory, hunter-gatherers, demography, Native Americans, Canadian Inuit
- SNYDER, KAREN, Affiliate Assistant Professor, 2004; MPH, 1995, University of Washington, PhD, 2001, University of Washington
- SORENSEN, CLARK W. \* Adjunct Associate Professor, 1989; MA, 1974, University of Washington, PhD, 1981, University of Washington; Korea, social change in East Asia, development, ethnic identity
- SPAIN, DAVID H, Professor Emeritus, 1968; MA, 1962, Ohio State University
- STEIN, JULIE K \* Professor, 1980; MA, 1976, University of Minnesota, PhD, 1980, University of Minnesota; New World archaeology, Northwest coast archaeology, geoarchaeology, shell middens
- STRAZICICH, NICOLAM., Affiliate Assistant Professor, 1998; MA, 1991, State University of New York (Buffalo), PhD, 1995, State University of New York (Buffalo)
- TAKEZAWA, YASUKO I., Affiliate Associate Professor, 1990; MA, 1985, University of Washington, PhD, 1989, University of Washington
- TAYLOR, JANELLE S \* Associate Professor, 1999; MA, 1990, University of

Chicago, PhD, 1999, University of Chicago; Anthropology of medicine, science and technology, reproduction, gender, and consumption

TAYLOR, KATHERINE M., Affiliate Assistant Professor, 2000; MA, 1992, University of Arizona, PhD, 2000, University of Arizona

THURTLIE, PHILLIP S \* Adjunct Assistant Professor, 1998; MA, 1994, Stanford University, PhD, 1999, Stanford University

WALL-SCHEFFLER, CARA, Affiliate Assistant Professor, 2007; MPhil, 2001, University of Cambridge (UK), PhD, 2005, University of Cambridge (UK)

WATSON, JAMES B, Professor Emeritus, 1955; MA, 1945, University of Chicago, PhD, 1948, University of Chicago

WEBSTER, STEVEN S., Affiliate Professor, 1993; MA, 1965, University of Washington, PhD, 1972, University of Washington

WELLAND, SASHA \* Assistant Professor, 2004; MA, 1998, University of California (Santa Cruz), PhD, 2005, University of California (Santa Cruz); Gender, feminist ethnography, anthropology of art, visual/ expressive culture; China, East Asia, Asian America

WINANS, EDGAR V \* Professor Emeritus, 1957; MA, 1954, University of California (Los Angeles), PhD, 1959, University of California (Los Angeles); politics, economics and law, Africa, the developing world

WYLIE, MARGARET ALISON \* Professor, 2005; MA, 1979, State University of New York (Binghamton), PhD, 1982, State University of New York (Binghamton); Philosophy of social science; feminist philosophy; archaeological history and theory

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## Applied Mathematics

ADAMS, LOYCE M. \* Professor, 1985; MS, 1978, University of Virginia, PhD, 1983, University of Virginia; numerical algorithms for parallel computers

BRETHERTON, CHRISTOPHER S. \* Professor, 1984; PhD, 1984, Massachusetts Institute of Technology; convective cloud systems, mesoscale meteorology, climate theory

BUBE, KENNETH P. \* Adjunct Professor, 1986; MS, 1976, Stanford University, PhD, 1978, Stanford University; numerical analysis, partial differential equations

BURKE, JAMES V. \* Adjunct Professor, 1985; PhD, 1983, University of Illinois; optimization, nonsmooth analysis

CRIMINALE, WILLIAM O \* Professor Emeritus, 1968; PhD, 1960, Johns Hopkins University; fluid dynamics, mathematical physics, nonlinear mechanics, stability theory

DE BOOR, CARL R., Affiliate Professor, 2004; Diploma, 1959, University of Hamburg (Germany), PhD, 1966, University of Michigan

DECONINCK, BERNARD \* Associate Professor, 1999; MSC, 1995, University of Colorado (Boulder), PhD, 1998, University of Colorado (Boulder); Nonlinear Waves and integrable systems. Applications in water waves and Bose-Einstein condensates

DURRAN, DALE R \* Adjunct Professor, 1987; MS, 1975, University of California (Berkeley), PhD, 1981, Massachusetts Institute of Technology; atmospheric dynamics, mesoscale meteorology, numerical modeling

FORD, E DAVID \* Adjunct Professor, 1985; PhD, 1968, University College, London (UK); forest ecology and ecophysiology, modeling, spatial statistics, philosophy of science, plant structure and function, analysis of ecological systems

GREENBAUM, ANNE \* Adjunct Professor, 1997; MA, 1978, University of California (Berkeley), PhD, 1981, University of California (Berkeley); numerical analysis

GUPTA, MAYA R \* Adjunct Assistant Professor, 2003; MSEE, 1999, Stanford University, PhD, 2003, Stanford University; Statistical signal and image processing including color engineering

KEVORKIAN, JIRAIR, Professor Emeritus, 1964; MS, 1956, Georgia Institute of Technology, PhD, 1961, California Institute of Technology

KOT, MARK \* Associate Professor, 1989; MS, 1979, Cornell University, MS, 1984, University of Arizona, PhD, 1987, University of Arizona, MS, 1987, University of Arizona; mathematical ecology, nonlinear dynamics, and population biology

KUTZ, JOSE NATHAN \* Professor, 1997; PhD, 1994, Northwestern University; Nonlinear waves, dynamical systems, asymptotic and perturbation methods, scientific computing

LEVEQUE, RANDALL J. \* Professor, 1985; PhD, 1982, Stanford University; Numerical

analysis, hyperbolic conservation laws, computational fluid dynamics, partial differential equations, wave propagation

LEWIS, MARK A, Affiliate Professor, 1988; PhD, 1990, Oxford University (UK)

MIURA, ROBERT M., Affiliate Professor, 1985; MS, 1962, University of California (Berkeley), MA, 1964, Princeton University, PhD, 1966, Princeton University

MOOLGAVKAR, SURESH H. \* Adjunct Professor, 1982; MBBS, 1966, University of Bombay, PhD, 1973, Johns Hopkins University; cancer epidemiology, development of quantitative methodology

MURRAY, JAMES D., Professor Emeritus, 1988; PhD, 1956, University of St. Andrews (UK), MA, 1961, Oxford University (UK), DSc, 1968, Oxford University (UK)

NAZARETH, JOHN L., Affiliate Professor, 1991; PhD, 1973, University of California (campus unspecified), MA, 1973, University of California (campus unspecified)

O'MALLEY, ROBERT E. \* Professor, 1990; MS, 1961, University of New Hampshire, PhD, 1966, Stanford University; singular perturbations and asymptotic methods

PEARSON, CARL E, Professor Emeritus, 1965; PhD, 1949, Brown University

PEARSON, ERIK W., Affiliate Assistant Professor, 1986; MA, 1978, Harvard University, PhD, 1983, Harvard University

QIAN, HONG \* Professor, 1999; PhD, 1989, Washington University; Mathematical, physical chemistry and biology, statistical physics, stochastic mathematics and modeling

RILEY, JAMES J \* Adjunct Professor, 1983; PhD, 1971, Johns Hopkins University; fluid mechanics, especially turbulent flows

SHEA-BROWN, ERIC T. \* Assistant Professor, 2007; MS, 2001, Princeton University, PhD, 2004, Princeton University; Mathematical Biology Computational Neuroscience

STORTI, DUANE W \* Adjunct Associate Professor, 1983; MS, 1981, Cornell University, PhD, 1983, Cornell University; nonlinear dynamics and vibrations, dynamical systems, perturbations and bifurcations

SWANSON, KRISTIN R. \* Adjunct Research Asst Professor, 1999; MD, 1998, University of Washington, PhD, 1999, University of Washington; Modeling

growth and invasion of gliomas in living patients, particularly brain tumors

SYLVESTER, JOHN \* Adjunct Professor, 1987; MS, 1977, New York University, PhD, 1980, New York University; partial differential equations

TUNG, KAKIT \* Professor, 1988; MS, 1972, California Institute of Technology, PhD, 1977, Harvard University; atmospheric and geophysical fluid dynamics

WAN, FREDERIC Y, Affiliate Professor, 1983; ScB, 1959, Massachusetts Institute of Technology, MS, 1963, Massachusetts Institute of Technology, PhD, 1965, Massachusetts Institute of Technology

WATKINS, DAVID S, Affiliate Professor, 1993; MS, 1971, University of Toronto (Canada), PhD, 1974, University of Calgary (Canada)

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## Art

AHN, SANG-GYEUN \* Assistant Professor, 2006; MA, 2000, Purdue University, MFA, 2002, University of Illinois; Industrial Design

ANDREWS, STEPHANIE \* Assistant Professor, 2004; MFA, 2003, The School of Art Institute of Chicago; Experimental art incorporating computer graphics, installation, sculpture, and animation

BERGER, PAUL E \* Professor, 1978; MFA, 1973, State University of New York (Buffalo); photography

BOGEL, CYNTHIA J. \* Associate Professor, 1999; MA, 1985, Harvard University, PhD, 1995, Harvard University; Buddhist arts; Japanese art, architecture; ritual aesthetic meaning, changing values

BRIXEY, SHAWN \* Associate Professor, 1994; MS, 1988, Massachusetts Institute of Technology; The creation of advanced digital and experimental media art forms which synthesize physics, astronomy, cosmology, and biotechnology

BRODY, DAVID \* Associate Professor, 1996; MFA, 1983, Yale University; painting and drawing

CABEEN, LOUISE \* Associate Professor, 1993; MFA, 1989, The School of Art Institute of Chicago; socially critical art with research specialties in textile history and techniques

CARRAHER, RONALD G, Professor Emeritus, 1967; MA, 1961, San Jose State University

CASTERAS, SUSAN P \* Professor, 1996; MA, 1973, Yale University, MPhil, 1975, Yale University, PhD, 1977, Yale University; Nineteenth to mid-twentieth century British, American, European art; museology; women's studies

CELENTANO, FRANCIS, Professor Emeritus, 1966; MA, 1957, New York University

CHENG, KAREN \* Associate Professor, 1997; MA, 1996, University of Cincinnati; Professional practice of graphic design in both the print and web mediums; typeface and font design

CHIHULY, DALE P., Affiliate Professor, 1990; MS, 1967, University of Wisconsin (Madison), MFA, 1968, Rhode Island School of Design

CHRISTOFIDES, C G, Professor Emeritus, 1966; MA, 1949, University of Michigan, MA, 1950, University of Michigan, PhD, 1956, University of Michigan

CLAUSEN, MEREDITH L \* Professor, 1979; MA, 1972, University of California (Berkeley), PhD, 1975, University of California (Berkeley); twentieth-century architecture

COLLINS, JEFFREY L \* Affiliate Professor, 1994; MA, 1989, Yale University, MA, 1992, Cambridge University (UK), PhD, 1994, Yale University; 17th-/18th-century European art and architecture; American material culture

CUMMINS, REBECCA \* Associate Professor, 2001; MA, 1982, University of New Mexico, PhD, 2003, University of Technology (Australia); Extended photographic practice, sculptural potential of light and optics and the history of media

DAILEY, MICHAEL D, Professor Emeritus, 1963; MFA, 1963, University of Iowa

DAVIDSON, ANDREW H., Affiliate Assistant Professor, 2006; MSEE, 1982, University of Pennsylvania

FAILING, PATRICIA A \* Professor, 1982; MA, 1974, University of California (Berkeley); contemporary art and criticism

GALE, ANN E \* Associate Professor, 1995; MFA, 1991, Yale University; Studio Painting and Drawing

GARVENS, ELLEN J. \* Associate Professor, 1994; MA, 1983, University of New Mexico, MFA, 1987, University of New Mexico; Mixed Media Photographic works combining flat images with sculptural materials

GATES, MARY GARDNER, Affiliate Professor, 1995; MA, 1969, University of Iowa, PhD, 1981, Yale University

GOLDSMITH, LAYNE \* Professor, 1983; MA, 1975, San Jose State University, MFA, 1979, Cranbrook Academy of Art; fiber arts and related historic and contemporary textile structures and processes

GOTTLER, CHRISTINE E. \* Associate Professor, 1998; MA, 1985, University of Zurich (Switzerland), PhD, 1991, University of Zurich (Switzerland); Northern European art (late medieval to Baroque); religious/devotional art; iconoclasm

GOULD, ANNABELLE K \* Assistant Professor, 2003; MFA, 1999, Cranbrook Academy of Art; Graphic design for print and interactive media; information design; publication design

GOVEDARE, PHILIP B. \* Professor, 1991; MFA, 1984, Tyler School of Art; painting and drawing

HALLETT, CHRISTOPHER, Affiliate Associate Professor, 1993; MPhil, 1983, Lincoln College, PhD, 1993, University of California (Berkeley)

HIXSON, WILLIAM J, Professor Emeritus, 1950; MFA, 1950, University of Oregon

HOLM, BILL, Professor Emeritus, 1968; MFA, 1951, University of Washington

HOUSER, CAROLINE, Affiliate Professor, 2005; PhD, 1975, Harvard University

HU, MARY L \* Professor Emeritus, 1980; MFA, 1967, Southern Illinois University; metal design

HURLEY, DENZIL \* Professor, 1994; MFA, 1979, Yale University; abstraction involving painterly practice which establishes form

HUSHKA, ROCK L., Affiliate Assistant Professor, 1998; MA, 1994, University of Wisconsin

JECK, DOUGLAS A. \* Associate Professor, 1996; MFA, 1989, The School of Art Institute of Chicago; figurative ceramics

JONES, ROBERT C, Professor Emeritus, 1960; MS, 1959, Rhode Island School of Design

KARTSONIS, ANNA D. \* Professor, 1983; MA, 1968, New York University, PhD, 1982, New York University; Byzantine and medieval art

KEHL, RICHARD L., Professor Emeritus, 1962; MFA, 1961, Kansas City Art Institute

KINGSBURY, MARTHA \* Professor Emeritus, 1968; MA, 1963, Harvard University, PhD, 1969, Harvard University; nineteenth and twentieth centuries

KOENIG, HAZEL L, Associate Professor Emeritus, 1950; MFA, 1950, University of Washington

LABITZKE, CURT W \* Associate Professor, 1984; MFA, 1984, University of Notre Dame; printmaking: intaglio and lithography emphasizing hand drawn techniques

LAIRD, MARGARET L \* Assistant Professor, 2004; MS, 1994, Princeton University, PhD, 2002, Princeton University; ancient Roman art, archaeology; non-elite art; ancient urbanism; Roman imperial cult

LIN, ZHI \* Associate Professor, 2001; MFA, 1989, University of London, UK, MFA, 1992, University of Delaware; European and Chinese painting, drawing and printmaking

LINGO, ESTELLE C \* Assistant Professor, 2006; MA, 1993, Brown University, PhD, 1999, Brown University; 17th and 18th century Southern European Art

LINGO, STUART P \* Assistant Professor, 2006; MA, 1986, University of London, UK, PhD, 1998, Harvard University; Italian Art of the 14th to 16th century

LUNDIN, NORMAN K, Professor Emeritus, 1964; MFA, 1963, University of Cincinnati

MARSHALL, JOHN C, Professor Emeritus, 1970; MFA, 1968, Syracuse University

MASON, ALDEN, Professor Emeritus, 1946; MFA, 1947, University of Washington

MATTHEWS, KRISTINE \* Assistant Professor, 2007; MA, 1997, Royal College of Art (UK); Visual Communication Design

MCNEEL, AMIE L. \* Assistant Professor, 2007; MFA, 1990, University of California (Berkeley); Sculpture

OPPERMAN, HAL N, Professor Emeritus, 1967; MA, 1963, University of Chicago, PhD, 1972, University of Chicago

O'TOOLE, HELEN J. \* Assistant Professor, 1996; MFA, 1989, The School of Art Institute of Chicago, MFA, 1989, The School of Art Institute of Chicago; studio drawing, painting, and art history

OZUBKO, CHRISTOPHER \* Professor, 1981; MFA, 1981, Cranbrook Academy of Art; visual communication design

PASCAL, PAUL, Professor Emeritus, 1953; PhD, 1953, University of North Carolina

PAWULA, KENNETH J, Professor Emeritus, 1965; MA, 1962, University of California (Berkeley)

PRACZUKOWSKI, EDWARD, Associate Professor Emeritus, 1965; MFA, 1965, Cranbrook Academy of Art

PROCTOR, RICHARD M, Associate Professor Emeritus, 1962; MA, 1962, Michigan State University

ROESLER, AXEL \* Assistant Professor, 2005; Diploma, 2000, Burg Giebichenstein (Germany), MFA, 2001, Ohio State University, PhD, 2005, Ohio State University; Interaction design

SCHEIER, SHIRLEY E. \* Associate Professor, 1986; MFA, 1985, University of Wisconsin (Madison); printmaking

SILBERGELD, JEROME, Affiliate Professor, 1975; MA, 1967, Stanford University, PhD, 1974, Stanford University

SMITH, CHARLES W, Professor Emeritus, 1948; MFA, 1956, Cranbrook Academy of Art

SNOW-SMITH, JOANNE \* Professor, 1981; MA, 1968, University of Arizona, PhD, 1976, University of California (Los Angeles); Italian Renaissance

SPAFFORD, MICHAEL C, Professor Emeritus, 1963; MA, 1960, Harvard University

STEVENS, ANNE HAYDEN, Lecturer, 1998; MA, 1997, University of California (Berkeley)

TAKAMORI, AKIO \* Professor, 1988; MFA, 1978, New York State College of Ceramics; ceramic sculpture

TAYLOR, NORMAN J, Professor Emeritus, 1968; MA, 1967, University of Iowa, MFA, 1967, University of Iowa

WADDEN, DOUGLAS J. \* Professor, 1970; MFA, 1970, Yale University; graphic design, photography

WALKER, JAMIE \* Professor, 1987; MFA, 1983, Rhode Island School of Design; ceramic arts

WARASHINA, M PATRICIA, Professor Emeritus, 1968; MFA, 1964, University of Washington

WELMAN, VALENTINE S, Associate Professor Emeritus, 1954; MFA, 1954, University of Colorado (Boulder)

WHITEHILL-WARD, JOHN, Professor Emeritus, 1975; MS, 1974, Chicago Institute of Design & Technology

WIECZOREK, MAREK K. \* Associate Professor, 1997; MA, 1990, University of Amsterdam (Netherlands), MPhil, 1992, Columbia University, PhD, 1997, Columbia University; Modern European art; Mondrian and De Stijl; critical theory

WRIGHT, ROBIN K \* Professor, 1985; MA, 1977, University of Washington, PhD, 1985, University of Washington; Native American art, Native art of the Pacific Northwest Coast, Haida art

YOUNG, JOHN T \* Professor, 1984; MFA, 1978, Rhode Island School of Design; sculpture, conceptual art

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## Art History

AHN, SANG-GYEUN \* Assistant Professor, 2006; MA, 2000, Purdue University, MFA, 2002, University of Illinois; Industrial Design

BERGER, PAUL E \* Professor, 1978; MFA, 1973, State University of New York (Buffalo); photography

BOGEL, CYNTHIA J. \* Associate Professor, 1999; MA, 1985, Harvard University, PhD, 1995, Harvard University; Buddhist arts; Japanese art, architecture; ritual aesthetic meaning, changing values

BRAVMANN, RENE A. \* Professor, 1968; MA, 1963, Indiana University, PhD, 1971, Indiana University; African art

BRODY, DAVID \* Associate Professor, 1996; MFA, 1983, Yale University; painting and drawing

CABEEN, LOUISE \* Associate Professor, 1993; MFA, 1989, The School of Art Institute of Chicago; socially critical art with research specialties in textile history and techniques

CASTERAS, SUSAN P \* Professor, 1996; MA, 1973, Yale University, MPhil, 1975, Yale University, PhD, 1977, Yale University; Nineteenth to mid-twentieth century British, American, European art; museology; women's studies

CHENG, KAREN \* Associate Professor, 1997; MA, 1996, University of Cincinnati; Professional practice of graphic design in

both the print and web mediums; typeface and font design

CLAUSEN, MEREDITH L \* Professor, 1979; MA, 1972, University of California (Berkeley), PhD, 1975, University of California (Berkeley); twentieth-century architecture

CUMMINS, REBECCA \* Associate Professor, 2001; MA, 1982, University of New Mexico, PhD, 2003, University of Technology (Australia); Extended photographic practice, sculptural potential of light and optics and the history of media

FAILING, PATRICIAA \* Professor, 1982; MA, 1974, University of California (Berkeley); contemporary art and criticism

GARVENS, ELLEN J. \* Associate Professor, 1994; MA, 1983, University of New Mexico, MFA, 1987, University of New Mexico; Mixed Media Photographic works combining flat images with sculptural materials

GOLDSMITH, LAYNE \* Professor, 1983; MA, 1975, San Jose State University, MFA, 1979, Cranbrook Academy of Art; fiber arts and related historic and contemporary textile structures and processes

GOTTLER, CHRISTINE E. \* Associate Professor, 1998; MA, 1985, University of Zurich (Switzerland), PhD, 1991, University of Zurich (Switzerland); Northern European art (late medieval to Baroque); religious/devotional art; iconoclasm

GOULD, ANNABELLE K \* Assistant Professor, 2003; MFA, 1999, Cranbrook Academy of Art; Graphic design for print and interactive media; information design; publication design

GOVEDARE, PHILIP B. \* Professor, 1991; MFA, 1984, Tyler School of Art; painting and drawing

HURLEY, DENZIL \* Professor, 1994; MFA, 1979, Yale University; abstraction involving painterly practice which establishes form

JECK, DOUGLAS A. \* Associate Professor, 1996; MFA, 1989, The School of Art Institute of Chicago; figurative ceramics

KARTSONIS, ANNA D. \* Professor, 1983; MA, 1968, New York University, PhD, 1982, New York University; Byzantine and medieval art

LABITZKE, CURT W \* Associate Professor, 1984; MFA, 1984, University of Notre Dame; printmaking: intaglio and lithography emphasizing hand drawn techniques

LAIRD, MARGARET L \* Assistant Professor, 2004; MS, 1994, Princeton University, PhD, 2002, Princeton University; ancient Roman art, archaeology; non-elite art; ancient urbanism; Roman imperial cult

LINGO, ESTELLE C \* Assistant Professor, 2006; MA, 1993, Brown University, PhD, 1999, Brown University; 17th and 18th century Southern European Art

LINGO, STUART P \* Assistant Professor, 2006; MA, 1986, University of London, UK, PhD, 1998, Harvard University; Italian Art of the 14th to 16th century

MATTHEWS, KRISTINE \* Assistant Professor, 2007; MA, 1997, Royal College of Art (UK); Visual Communication Design

MCNEEL, AMIE L. \* Assistant Professor, 2007; MFA, 1990, University of California (Berkeley); Sculpture

O'TOOLE, HELEN J. \* Assistant Professor, 1996; MFA, 1989, The School of Art Institute of Chicago, MFA, 1989, The School of Art Institute of Chicago; studio drawing, painting, and art history

OZUBKO, CHRISTOPHER \* Professor, 1981; MFA, 1981, Cranbrook Academy of Art; visual communication design

ROESLER, AXEL \* Assistant Professor, 2005; Diploma, 2000, Burg Giebichenstein (Germany), MFA, 2001, Ohio State University, PhD, 2005, Ohio State University; Interaction design

SCHEIER, SHIRLEY E. \* Associate Professor, 1986; MFA, 1985, University of Wisconsin (Madison); printmaking

STEVENS, ANNE HAYDEN, Lecturer, 1998; MA, 1997, University of California (Berkeley)

TAKAMORI, AKIO \* Professor, 1988; MFA, 1978, New York State College of Ceramics; ceramic sculpture

WADDEN, DOUGLAS J. \* Professor, 1970; MFA, 1970, Yale University; graphic design, photography

WALKER, JAMIE \* Professor, 1987; MFA, 1983, Rhode Island School of Design; ceramic arts

WIECZOREK, MAREK K. \* Associate Professor, 1997; MA, 1990, University of Amsterdam (Netherlands), MPhil, 1992, Columbia University, PhD, 1997, Columbia University; Modern European art; Mondrian and De Stijl; critical theory

WRIGHT, ROBIN K \* Professor, 1985; MA, 1977, University of Washington, PhD, 1985, University of Washington; Native American art, Native art of the Pacific Northwest Coast, Haida art

YOUNG, JOHN T \* Professor, 1984; MFA, 1978, Rhode Island School of Design; sculpture, conceptual art

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## Asian Languages and Literature

ATKINS, PAUL S \* Associate Professor, 2002; MA, 1994, Stanford University, PhD, 1999, Stanford University; medieval Japanese literature and culture, especially waka poetry and noh drama

BHOWMIK, DAVINDER L. \* Assistant Professor, 1998; MA, 1993, University of Washington, PhD, 1997, University of Washington; Modern Japanese literature from Okinawa

BI, NYAN-PING, Lecturer, 2000; MA, 1988, Indiana University, PhD, 2000, Indiana University

BOLTZ, JUDITH M. \* Affiliate Associate Professor, 1988; MA, 1976, University of California (Berkeley), PhD, 1985, University of California (Berkeley); Classical Chinese Literature

BOLTZ, WILLIAM \* Professor, 1978; MA, 1969, University of California (Berkeley), PhD, 1974, University of California (Berkeley); classical Chinese

BRAESTER, YOMI \* Adjunct Associate Professor, 2000; MA, 1991, Hebrew University (Israel), MA, 1992, Yale University, PhD, 1998, Yale University; Modern Chinese literature, film, literary criticism and theory of art

BRANDAUER, FREDERICK P, Associate Professor Emeritus, 1973; MDiv, 1958, United Theological Seminary, MA, 1965, University of Pittsburgh, PhD, 1973, Stanford University

COOKE, JOSEPH R, Associate Professor Emeritus, 1967; PhD, 1965, University of California (Berkeley)

COX, COLLETT D. \* Professor, 1985; MA, 1974, Columbia University, MPhil, 1976, Columbia University, PhD, 1983, Columbia University; Buddhist studies (East and South Asian), Indian philosophy and religion, comparative religion

GETHING, THOMAS W., Affiliate Professor, 1995; MA, 1963, University of Michigan, PhD, 1966, University of Michigan

HAMM, JOHN C. \* Associate Professor, 1999; MA, 1994, University of California (Berkeley), PhD, 1999, University of California (Berkeley); Late imperial and modern Chinese literature, fiction and popular culture

HANDEL, ZEV \* Associate Professor, 1998; MA, 1992, University of California (Berkeley), PhD, 1998, University of California (Berkeley); Chinese historical phonology; Sino-Tibetan linguistics

KANO, TAMAKO-NIWA, Associate Professor Emeritus, 1982; PhD, 1956, Radcliffe

KESAVATANA-DOHRS, WIWORN, Lecturer, 1990; MA, 1984, University of Detroit, PhD, 1989, University of Michigan

KIM, SOOHEE, Senior Lecturer, 1999; MA, 1991, Florida International University, PhD, 1999, University of Washington

KNECHTGES, DAVID R \* Professor, 1972; MA, 1965, Harvard University, PhD, 1968, University of Washington; Han and Six Dynasties literature

MACK, EDWARD T \* Assistant Professor, 2002; MA, 1996, Columbia University, PhD, 2002, Harvard University; Modern Japanese literature, criticism, publishing; literature and empire; diaspora literature

MATSUDA-KIAMI, IZUMI, Lecturer, 1996; MA, 1992, University of Wisconsin (Madison)

NORMAN, JERRY, Professor Emeritus, 1971; MA, 1965, University of California (Berkeley), PhD, 1969, University of California (Berkeley)

OHTA, AMY \* Associate Professor, 1995; MA, 1990, University of California (Los Angeles), PhD, 1993, University of California (Los Angeles); Applied linguistics, especially second language acquisition, discourse analysis, and Japanese

OHTA, KAORU, Senior Lecturer, 1995; MA, 1984, Meiji Gakuin University (Japan), MA, 1987, University of California (Los Angeles), PhD, 1994, University of California (Los Angeles)

PAHLAJRAI, PREM, Lecturer, 2007; MS, 1990, Georgia Institute of Technology, MA, 2005, University of Washington

PAUWELS, HEIDI R. \* Associate Professor, 1996; MA, 1986, Catholic University of

Leuven (Belgium), PhD, 1994, University of Washington; Hindi language and literature: medieval and modern; Sanskrit language and literature; Hinduism; Krishna devotion and pilgrimage, the goddess (Radha), hagiography, vernacular reworking of Sanskrit scripture; women's rites and folksongs in Braj

SALOMON, RICHARD G. \* Professor, 1978; PhD, 1975, University of Pennsylvania; Sanskrit language and literature

SHAPIRO, MICHAEL \* Professor, 1970; MA, 1970, University of Chicago, PhD, 1973, University of Chicago; South Asian language, literature, and linguistics

TSUTSUI, MICHIO \* Adjunct Associate Professor, 1990; MA, 1980, University of Illinois, PhD, 1984, University of Illinois; technical Japanese, computer-aided instruction, international technical communication, linguistics

YUE-HASHIMOTO, ANNE O \* Professor, 1980; MA, 1963, University of Texas (unspecified), PhD, 1966, Ohio State University; Chinese language, linguistics and dialectology

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## Astronomy

AGOL, ERIC \* Assistant Professor, 2003; PhD, 1997, University of California (Santa Barbara); Black holes, gravitational lensing, extrasolar planets, and accretion

ANDERSON, SCOTT \* Professor, 1988; MA, 1980, University of California (Los Angeles), PhD, 1985, University of Washington; quasars and active galaxies, x-ray astronomy

BALICK, BRUCE \* Professor, 1975; PhD, 1971, Cornell University; radio astronomy, ionized nebulae, peculiar galaxies

BOHM, KARL-HEINZ, Professor Emeritus, 1967; PhD, 1954, University of Kiel (Germany)

BOHM-VITENSE, ERIKA H, Professor Emeritus, 1967; PhD, 1951, University of Kiel (Germany)

BROWNLEE, DONALD E \* Professor, 1971; PhD, 1971, University of Washington; origin of the solar system, comets, interplanetary dust

CONNOLLY, ANDREW J. \* Associate Professor, 2006; PhD, 1993, University of London, UK; Formation and evolution of galaxies; astronomical survey

DALCANTON, JULIANNE \* Associate Professor, 1998; PhD, 1995, Princeton University; The evolution and formation of galaxies

GOVERNATO, FABIO \* Research Assistant Professor, 1996; PhD, 1996, University of Rome (Italy); Cosmic structure formation using N-Body simulations

HAWLEY, SUZANNE \* Professor, 1999; MA, 1984, University of Texas (Austin), PhD, 1989, University of Texas (Austin); Variable stars, magnetic activity, flares, galactic structure, dwarf galaxies

HAXTON, WICK C. \* Adjunct Professor, 1984; MS, 1973, Stanford University, PhD, 1976, Stanford University; theoretical physics, nuclear physics

HODGE, PAUL W. \* Professor Emeritus, 1965; PhD, 1960, Harvard University; M31

HOGAN, CRAIG J. \* Professor, 1990; PhD, 1980, Cambridge University (UK); astrophysical cosmology, especially the origin of astronomical structures in the expanding universe

IVEZIC, ZELJKO \* Associate Professor, 2004; PhD, 1995, University of Kentucky; Detection, analysis, and interpretation of electromagnetic radiation from extraterrestrial sources

LINNELL, ALBERT P., Affiliate Professor, 2002; PhD, 1950, Harvard University

MEADOWS, VICTORIA S \* Associate Professor, 2007; PhD, 1994, University of Sydney (Australia); Astrobiology; Remote-sensing observations of planetary atmospheres and surfaces

QUINN, THOMAS R. \* Professor, 1993; PhD, 1986, Princeton University; Solar System dynamics and galaxy formation

ROSENBERG, LESLIE \* Adjunct Professor, 2006; MS, 1980, San Francisco State, PhD, 1985, Stanford University; Searches for rare and exotic particles in electron-positron annihilation, studies of very energetic cosmic rays, and searches for particle dark matter

STUBBS, CHRISTOPHER, Affiliate Professor, 1987; MS, 1983, University of Washington, PhD, 1988, University of Washington

SULLIVAN, WOODRUFF T \* Professor, 1973; PhD, 1971, University of Maryland; radio astronomy, galactic and extragalactic structure, history of astronomy

SZKODY, PAULA \* Professor, 1975; MS, 1972, University of Washington, PhD,

1975, University of Washington; cataclysmic variables, photometry, spectroscopy

WALLERSTEIN, GEORGE, Professor Emeritus, 1965; PhD, 1958, California Institute of Technology

WARD, PETER D. \* Adjunct Professor, 1985; MS, 1973, University of Washington, PhD, 1976, McMaster University (Canada); invertebrate paleontology, paleobiology

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## Atmospheric Sciences

ACKERMAN, THOMAS P. \* Professor, 2002; MS, 1971, University of Washington, PhD, 1976, University of Washington; Clouds; radiation; remote sensing; aerosols; global climate change

ALEXANDER, M. JOAN \* Affiliate Associate Professor, 1992; MS, 1989, University of Colorado (campus unspecified), PhD, 1992, University of Colorado (campus unspecified); Earth middle atmosphere dynamics, gravity waves, atmospheres of Venus and Mars

ANDERSON, THEODORE L. \* Research Associate Professor, 1993; PhD, 1992, University of Washington; Atmospheric aerosols and climate change

BADGLEY, FRANKLIN, Professor Emeritus, 1950; MS, 1948, New York University, PhD, 1951, New York University

BAKER, MARCIA \* Professor Emeritus, 1971; MS, 1960, Stanford University, PhD, 1971, University of Washington; cloud physics, atmospheric geophysics

BATES, TIMOTHY S, Affiliate Associate Professor, 1990; MS, 1978, University of Washington, PhD, 1988, University of Washington

BATTISTI, DAVID S \* Professor, 1988; MS, 1981, University of Washington, PhD, 1988, University of Washington; large-scale atmosphere-ocean dynamics, climate dynamics, tropical circulation, polar climates, paleoclimate

BITZ, CECILIA \* Assistant Professor, 2002; MS, 1990, University of Washington, PhD, 1997, University of Washington; Polar climate, climate change, and sea ice and climate modeling

BOND, NICHOLAS A, Affiliate Associate Professor, 1997; PhD, 1986, University of Washington

BREIDENTHAL, ROBERT E \* Adjunct Professor, 1980; MS, 1974, California Institute of Technology, PhD, 1978, California Institute of Technology; turbulence, entrainment, mixing, vorticity

BRETHERTON, CHRISTOPHER S. \* Professor, 1984; PhD, 1984, Massachusetts Institute of Technology; convective cloud systems, mesoscale meteorology, climate theory

BUSINGER, JOOST A, Professor Emeritus, 1958; PhD, 1954, University of Utrecht (Netherlands)

CATLING, DAVID C. \* Affiliate Assistant Professor, 2001; DPhil, 1994, Oxford University (UK); Research in planetary atmospheres, atmospheric evolution, climate, and biogeochemistry

CHARLSON, ROBERT J, Professor Emeritus, 1962; MS, 1959, Stanford University, PhD, 1964, University of Washington

CHEN, SHUYI S \* Affiliate Associate Professor, 1991; MS, 1985, University of Oklahoma, PhD, 1990, Pennsylvania State University; Atmospheric dynamics and numerical modeling; atmospheric deep convection; tropical meteorology

COLMAN, BRADLEY R., Affiliate Associate Professor, 1999; DSc, 1984, Massachusetts Institute of Technology

COVERT, DAVID S \* Research Professor, 1974; MS, 1971, University of Washington, PhD, 1974, University of Washington; atmospheric chemistry, aerosol physics and instrumentation

CZICZO, DANIEL J. \* Affiliate Assistant Professor, 2008; MS, 1997, University of Chicago, PhD, 1999, University of Chicago; Chemical composition of atmospheric aerosols, cloud formation mechanisms and Earth's radiative budget, meteoritic debris in the atmosphere, launch vehicle particulate emissions

DURRAN, DALE R \* Professor, 1987; MS, 1975, University of California (Berkeley), PhD, 1981, Massachusetts Institute of Technology; atmospheric dynamics, mesoscale meteorology, numerical modeling

FLEAGLE, ROBERT G, Professor Emeritus, 1948; MS, 1944, New York University, PhD, 1949, New York University

FRIERSON, DARGAN M \* Assistant Professor, 2007; PhD, 2005, Princeton University, MS, 2005, Princeton University; Atmospheric general circulation; water vapor; climate change

FU, QIANG \* Professor, 2000; MS, 1985, Peking University (China), PhD, 1991, University of Utah; Atmospheric radiation; cloud/aerosol/radiation/climate interactions; remote sensing

GAMMON, RICHARD H \* Adjunct Professor, 1977; MA, 1966, Harvard University, PhD, 1970, Harvard University; atmospheric chemistry, chemical oceanography, environmental chemistry; biogeochemical cycles, global climate change, astrobiology

GRENFELL, THOMAS C \* Research Professor, 1972; ScB, 1965, Brown University, MS, 1968, University of Chicago, PhD, 1972, University of Washington; radiative transfer, remote sensing, sea-ice optics, microwave theory

HAKIM, GREGORY J \* Associate Professor, 1999; MS, 1993, University of Albany, PhD, 1997, University of Albany; Synoptic and mesoscale meteorology; atmospheric dynamics; rotating, stratified turbulence

HARRISON, DON EDMUNDS \* Affiliate Professor, 1985; MS, 1973, Harvard University, PhD, 1977, Harvard University; ocean circulation modeling, air-sea interaction, ocean and climate dynamics

HARRISON, HALSTEAD, Associate Professor Emeritus, 1971; PhD, 1960, Stanford University

HARTMANN, DENNIS L \* Professor, 1977; MA, 1973, Princeton University, PhD, 1975, Princeton University; climate theory, dynamic meteorology, radiation and remote sensing

HEGG, DEAN A \* Research Professor, 1979; MS, 1976, University of Washington, PhD, 1979, University of Washington; atmospheric chemistry, cloud physics

HOUBE, ROBERT A. \* Professor, 1972; MS, 1969, Massachusetts Institute of Technology, PhD, 1972, Massachusetts Institute of Technology; mesoscale meteorology

JAEGLE, LYATT \* Associate Professor, 2000; MS, 1992, California Institute of Technology, PhD, 1996, California Institute of Technology; Atmospheric chemistry; chemical modeling of atmospheric observations

JAFFE, DANIEL A \* Adjunct Professor, 1997; MS, 1983, University of Washington, PhD, 1987, University of Washington; atmospheric chemistry, urban and global air pollution, environmental education



LEOVY, CONWAY B, Professor Emeritus, 1967; PhD, 1963, Massachusetts Institute of Technology

MANTUA, NATHAN \* Adjunct Associate Professor, 1995; PhD, 1994, University of Washington; large-scale climate variability/predictability, climate impacts on human activities and ecosystems

MASS, CLIFFORD F \* Professor, 1981; PhD, 1978, University of Washington; synoptic and mesoscale meteorology

MC MURDIE, LYNN A \* Senior Lecturer, 1997; MS, 1983, University of Washington, PhD, 1989, University of Washington; Synoptic Meteorology and Predictability

MOTE, PHILIP W, Affiliate Assistant Professor, 2002; PhD, 1994, University of Washington

OVERLAND, JAMES E \* Affiliate Professor, 1983; MS, 1971, University of Washington, PhD, 1973, New York University; arctic, coastal and marine meteorology, sea ice

PATOUX, JEROME \* Research Assistant Professor, 2003; MS, 1994, University of Texas (Austin), PhD, 2003, University of Washington; Planetary boundary layer modeling; air-sea interaction; satellite remote sensing; synoptic meteorology

RADKE, LAWRENCE F., Affiliate Professor, 1968; MS, 1967, University of Washington

RHINES, PETER B. \* Professor, 1984; MS, 1964, Massachusetts Institute of Technology, ScB, 1964, Massachusetts Institute of Technology, PhD, 1967, Cambridge University (UK); the circulation of the oceans and evolution of climate

ROE, GERARD H \* Adjunct Associate Professor, 1999; PhD, 1999, Massachusetts Institute of Technology; Climate physics and dynamics, interaction with Earth's surface, Glaciology, Geomorphology

SALATHE, ERIC P. \* Affiliate Associate Professor, 2005; PhD, 1994, Yale University; Climate change, regional climate modeling, climate impacts

SARACHIK, EDWARD \* Professor Emeritus, 1984; MS, 1963, Brandeis University, PhD, 1966, Brandeis University; large scale ocean/atmosphere interaction, equatorial dynamics, climate change

STOELINGA, MARK T \* Research Assistant Professor, 2002; PhD, 1993, University of Washington; Synoptic and mesoscale meteorology

SUESS, BECKY ALEXANDER \* Assistant Professor, 2005; PhD, 2002, University of California (San Diego); Paleoclimate; atmospheric chemistry; aerosols; stable isotope geochemistry

THOMPSON, LUANNE \* Adjunct Associate Professor, 1990; MA, 1986, Harvard University, PhD, 1990, Woods Hole Oceanographic Institution; numerical modeling of mesoscale and general circulation of the oceans

THORNTON, JOEL A. \* Assistant Professor, 2004; PhD, 2002, University of California (Berkeley); Atmospheric Chemistry and Composition, Air Pollution, Atmosphere-Biosphere Interactions

TUNG, KA KIT \* Adjunct Professor, 1988; MS, 1972, California Institute of Technology, PhD, 1977, Harvard University; atmospheric and geophysical fluid dynamics

UNTERSTEINER, NORBERT, Professor Emeritus, 1962; PhD, 1950, University of Innsbruck (Austria)

WALDEN, VON P, Affiliate Assistant Professor, 1995; MS, 1990, University of Washington, PhD, 1995, University of Washington

WALLACE, JOHN M \* Professor, 1966; PhD, 1966, Massachusetts Institute of Technology; large-scale atmospheric motions; climate; global warming

WARREN, STEPHEN G \* Professor, 1981; MA, 1969, Harvard University, PhD, 1973, Harvard University; atmospheric radiation, climatology, glaciology

WOOD, ROBERT \* Assistant Professor, 2001; PhD, 1997, University of Manchester (UK); cloud physical processes, microphysics, and structural properties

YUTER, SANDRA ELLYN \* Affiliate Associate Professor, 1997; PhD, 1996, University of Washington; Physical meteorology, mesoscale meteorology, radar and remote sensing

BEDALOV, ANTONIO \* Adjunct Assistant Professor, 1996; MD, 1989, University of Zagreb (Yugoslavia), DSc, 1998, University of Zagreb (Yugoslavia); Hematology Oncology

BIGGINS, SUSAN \* Affiliate Assistant Professor, 2000; PhD, 1995, Princeton University

BORNSTEIN, PAUL, Professor Emeritus, 1966; MD, 1958, New York University

BRADLEY, PHILIP H., Affiliate Assistant Professor, 2001; PhD, 2001, Massachusetts Institute of Technology

BROCKERHOFF, SUSAN E. \* Associate Professor, 1996; PhD, 1993, University of Washington; Retinal cone photoreceptor function in zebrafish

BROSEMER, RONALD W., Affiliate Professor, 1985; PhD, 1960, University of Illinois (Urbana)

CARTER, BRUCE L.A., Affiliate Professor, 1996; PhD, 1968, University of London, UK

CHAMBERLAIN, JEFFREY S \* Professor, 2000; PhD, 1985, University of Washington; Gene therapy for muscular dystrophy

CHUNG, DOMINIC W \* Professor, 1977; PhD, 1976, University of California (Los Angeles); Blood coagulation and platelet functions

COLE, DOUGLAS G., Affiliate Assistant Professor, 2003; PhD, 1990, Washington State University

COOPER, JONATHAN A. \* Affiliate Professor, 1987; MA, 1973, University of Cambridge (UK), PhD, 1976, University of Warwick (UK); regulation of cellular metabolism and proliferation by protein phosphorylation

COPIE, VALERIE, Affiliate Associate Professor, 2003; PhD, 1990, Massachusetts Institute of Technology

CROTEAU, RODNEY BRUCE, Affiliate Professor, 1985; PhD, 1970, University of Massachusetts

DAGGETT, VALERIE D. \* Adjunct Professor, 1993; PhD, 1990, University of California (San Francisco); Computational and Integrative Bioengineering, Molecular Bioengineering and Nanotechnology

DAUGHDRILL, GARY W, Affiliate Assistant Professor, 2003; PhD, 1997, University of Oregon

DAVIE, EARL WARREN \* Professor, 1954; PhD, 1954, University of Washington;

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## Biochemistry

AITCHISON, JOHN \* Affiliate Associate Professor, 2004; PhD, 1992, McMaster University (Canada); Yeast model systems to address cell biology of nucleocytoplasmic exchange and metabolic function of peroxisomes

BAKER, DAVID \* Professor, 1993; PhD, 1989, University of California (Berkeley); protein folding

protein synthesis, mechanism of blood clotting, cloning of plasma proteins

DAVIS, TRISHA NELL \* Professor, 1987; PhD, 1983, Yale University; control of the cell cycle, chromosome segregation, proteomics

DRATZ, EDWARD, Affiliate Professor, 2005; PhD, 1966, University of California (Berkeley)

EISENMAN, ROBERT M \* Affiliate Professor, 1976; PhD, 1971, University of Chicago; viral oncology, oncogenes, retrovirus multiplication

EYRE, DAVID R. \* Adjunct Professor, 1985; PhD, 1969, University of Leeds (UK); connective tissue biology, collagen chemistry, bone and cartilage metabolism

FAN, ERKANG \* Research Associate Professor, 1996; PhD, 1993, University of Pittsburgh; Organic and Combinatorial Chemistry, Structure-Based Drug Design, Molecular Recognition

FERRE-D'AMARE, ADRIAN RIU \* Affiliate Associate Professor, 2000; PhD, 1994, Rockefeller University; Structural biology of RNA, X-ray crystallography, biological catalysis

FISCHER, EDMOND H, Professor Emeritus, 1953; PhD, 1947, University of Geneva (Switzerland)

FORTUNATO, ELIZABETH A., Affiliate Assistant Professor, 2001; PhD, 1995, University of California (San Diego)

GELB, MICHAEL H. \* Adjunct Professor, 1985; PhD, 1982, Yale University; mechanistic enzymology, bioorganic and medicinal chemistry

GLOMSET, JOHN A \* Professor, 1960; LicMed, 1960, University of Uppsala (Sweden), MD, 1960, University of Uppsala (Sweden); membrane structure and function

GONEN, TAMIR \* Assistant Professor, 2005; PhD, 2002, University of Auckland (New Zealand); Structure and function of membrane proteins in native lipid bilayer environments

HAHN, STEVEN M. \* Affiliate Professor, 1994; PhD, 1984, Brandeis University; transcription initiation in yeast

HAPP, GEORGE, Affiliate Professor, 2004; PhD, 1964, Cornell University

HAUSCHKA, STEPHEN D \* Professor, 1966; PhD, 1966, Johns Hopkins University; regulation of skeletal muscle

differentiation, growth factor-receptor signal mechanisms and the control of muscle gene expression

HOL, WILHELMUS G.J. \* Professor, 1992; MS, 1966, Technical University (Eindhoven), PhD, 1971, University of Groningen (Netherlands); protein crystallography, drug design, vaccine development, and protein engineering

HURLEY, JAMES BRYANT \* Professor, 1985; PhD, 1979, University of Illinois; molecular basis of vision

HYMAN, LINDA E., Affiliate Associate Professor, 2004; MS, 1984, Brandeis University, PhD, 1987, Brandeis University

JACKSON, LARRY LEE, Affiliate Professor, 1985; PhD, 1965, North Dakota State University

JENSEN, LYLE H, Professor Emeritus, 1947; PhD, 1944, University of Washington

KENNEDY, BRIAN K. \* Associate Professor, 2001; PhD, 1996, Massachusetts Institute of Technology; Control of DNA replication; cell cycle; tumor suppressor function; aging

KIMELMAN, DAVID \* Professor, 1989; PhD, 1985, Harvard University; molecular biology of early development in the frog, *Xenopus laevis*

KLEVIT, RACHEL E \* Professor, 1983; DPhil, 1981, Oxford University (UK); protein structure & function; molecular recognition; protein NMR

KREBS, EDWIN G, Professor Emeritus, 1948; MD, 1943, Washington University

KREBS, JOCELYN, Affiliate Assistant Professor, 2002; PhD, 1997, University of California (Berkeley)

LANGER, PAMELA, Affiliate Associate Professor, 2001; PhD, 1980, Massachusetts Institute of Technology

LEWIS, RANDOLPH V, Affiliate Professor, 2003; MS, 1974, University of California (San Diego), PhD, 1978, University of California (San Diego)

LODMELL, JOHN S., Affiliate Associate Professor, 2004; MS, 1991, University of Montana, PhD, 1996, Brown University

LOEB, LAWRENCE A \* Professor, 1978; MD, 1961, New York University, PhD, 1967, University of California (Berkeley); DNA replication, cancer and AIDS

LOPEZ, JOSE A, Adjunct Professor, 1981;

MD, 1981, University of New Mexico

MAIZELS, NANCY \* Professor, 2000; PhD, 1974, Harvard University; Recombination and repair in mammalian cells, especially activated B cells

MCGUIRL, MICHELE A, Affiliate Assistant Professor, 2003; PhD, 1999, Montana State University

MERRITT, ETHAN ALLEN \* Research Associate Professor, 1989; MS, 1975, Stanford University, PhD, 1980, University of Wisconsin; X-ray crystallography and structure-based drug design

MERZ, ALEXEY \* Assistant Professor, 2004; PhD, 2000, Oregon Health Sciences University; Molecular mechanisms of cell membrane organization, with emphasis on lysosomes

MILLER, KURT W., Affiliate Associate Professor, 2001; PhD, 1982, Boston University

MORRIS, DAVID R \* Professor, 1966; PhD, 1964, University of Illinois; biosynthesis and biological function of polyamines, regulation of growth of eukaryotic and prokaryotic cells

MULLER, ERIC D. \* Research Associate Professor, 1988; PhD, 1981, Yale University; My interests include the impact of dNTP synthesis on cell cycle regulation. I work in *S. cerevisiae* studying ribonucleotide reductase, the DNA checkpoint pathway and thioredoxin using genetics, biochemistry and fluorescence microscopy

OXFORD, JULIA, Affiliate Associate Professor, 2003; PhD, 1986, Washington State University, MS, 1986, Washington State University

PALL, MARTIN, Affiliate Professor, 2002; PhD, 1968, California Institute of Technology

PALMITER, RICHARD D \* Professor, 1974; PhD, 1969, Stanford University; regulation of gene expression in transgenic mice

PARSON, WILLIAM W \* Professor, 1967; PhD, 1965, Case Western Reserve University; bioenergetics, with particular emphasis on photosynthesis, picosecond spectroscopy

RANISH, JEFFREY A., Affiliate Assistant Professor, 1999; PhD, 1999, University of Washington

ROBERTS, JAMES MICHAEL \* Affiliate Associate Professor, 1989; PhD, 1984, Columbia University, MD, 1984, Columbia

University; how cyclin-kinase complexes regulate events necessary for chromosomal DNA replication

ROTH, MARK \* Affiliate Professor, 1994; PhD, 1988, University of Colorado (Boulder); nuclear proteins involved in the regulation of gene expression

RUOHOLA-BAKER, HANNELE \* Professor, 1993; MSC, 1984, University of Helsinki (Finland), PhD, 1989, University of Helsinki (Finland); oogenesis, developmental genetics

RUSSELL, DAVID WILLIAM \* Adjunct Professor, 1991; PhD, 1988, Rockefeller University, MD, 1989, Cornell University; Vectors for gene therapy

SAARI, JOHN C \* Professor, 1970; MS, 1963, University of Minnesota, PhD, 1970, University of Washington; retinal biochemistry

SCHIEF JR, WILLIAM R. \* Research Assistant Professor, 1999; MS, 1992, University of Washington, PhD, 1999, University of Washington; HIV vaccine design, Computational Protein Design, Immunogen Design for Influenza, Malaria

SCHMIDT, EDWARD, Affiliate Assistant Professor, 2005; PhD, 1990, Oregon State University

SHAPIRO, BENNETT M, Affiliate Professor, 1971; MD, 1964, Jefferson Medical College

STAYTON, MARK M., Affiliate Associate Professor, 2001; PhD, 1980, Iowa State University

STENKAMP, RONALD E \* Adjunct Associate Professor, 1975; MS, 1971, University of Washington, MS, 1971, University of Washington, PhD, 1975, University of Washington, PhD, 1975, University of Washington; crystallography, metalloproteins, protein engineering, blood clotting proteins

STODDARD, BARRY L. \* Affiliate Professor, 1994; PhD, 1990, Massachusetts Institute of Technology; Physical and Structural Studies of Biological Macromolecules

STRONG, ROLAND K \* Affiliate Professor, 1994; PhD, 1990, Harvard University; Structural immunology: analysis of the functions of proteins mediating immune responses through the study of their structures by molecular biology, solution biochemistry and x-ray crystallography

TEINTZE, MARTIN, Affiliate Associate Professor, 2000; PhD, 1981, University of California (San Diego)

TELLER, DAVID C \* Professor Emeritus, 1965; PhD, 1965, University of California (Berkeley); physical chemistry of macromolecules, association reactions of proteins, X-ray crystallography of proteins

TSUKIYAMA, TOSHIO \* Affiliate Associate Professor, 1999; DVM, 1987, Obihiro University of Agriculture and Veterinary Medicine, Japan, MS, 1987, Obihiro University of Agriculture and Veterinary Medicine, Japan, PhD, 1991, University of Horishima (Japan)

VARANI, GABRIELE \* Professor, 2001; PhD, 1987, University of Milan (Italy); Structural basis of RNA-protein recognition and drug design

VERLINDE, CHRISTOPHE \* Associate Professor, 1992; PhD, 1988, Catholic University of Leuven (Belgium); Structure-based drug design & protein crystallography

WALSH, KENNETH A, Professor Emeritus, 1958; MS, 1953, Purdue University, PhD, 1959, University of Toronto (Canada)

WEI, JUNHUA, Acting Instructor, 2004; MS, 1996, Jilin University (China), PhD, 1999, Chinese Academy of Sciences (China)

WEINER, ALAN \* Professor, 2000; PhD, 1973, Harvard University; Genome structure; function of small nuclear and cytoplasmic RNA species

WICHMAN, HOLLY A., Affiliate Professor, 2004; PhD, 1983, Wesleyan University

YOUNG, ELTON \* Professor, 1969; PhD, 1967, California Institute of Technology; regulation of gene activity in the yeast *Saccharomyces cerevisiae*

YOUNT, RALPH G., Affiliate Professor, 1985; PhD, 1958, Iowa State University

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## Biology

AMMIRATI, JOSEPH F \* Professor, 1979; MA, 1967, San Francisco State, PhD, 1972, University of Michigan; mycology, taxonomy and ecology of fungi

BAKKEN, AIMEE, Associate Professor Emeritus, 1973; PhD, 1970, University of Iowa

BEECHER, MICHAEL D \* Adjunct Professor, 1978; MA, 1965, Boston University, PhD, 1970, Boston University; animal behavior, animal communication, sensory processes

BENDICH, ARNOLD J \* Professor Emeritus, 1969; PhD, 1969, University of Washing-

ton; The structure and replication of chromosomal DNA molecules in bacteria, mitochondria, chloroplasts and the nucleus. Analytical methods include fluorescence microscopy of individual DNA molecules and pulsed-field gel electrophoresis of in-gel prepared DNA

BERGSTROM, CARL T \* Associate Professor, 2001; PhD, 1998, Stanford University; Theoretical biology: Ecology and evolution of disease, evolution of animal communication

BLISS, LAWRENCE C, Professor Emeritus, 1978; MSC, 1953, Kent State University, PhD, 1956, Duke University

BOERSMA, P DEE \* Professor, 1974; PhD, 1974, Ohio State University; population, ecology

BOSMA, MARTHA \* Associate Professor, 1987; PhD, 1986, University of California (Los Angeles); electrophysiological and secretory development of central nervous system neurons

BRADSHAW, HARVEY D \* Professor, 1984; PhD, 1984, Louisiana State University; plant molecular genetics, evolutionary biology, genetic engineering of forest trees

BRENOWITZ, ELIOT A. \* Professor, 1987; PhD, 1982, Cornell University; animal behavior, neuroethology, neuroendocrinology, animal communication

CARRINGTON, EMILY \* Associate Professor, 2005; PhD, 1992, Stanford University

CATTOLICO, ROSE A. \* Professor, 1975; MA, 1968, Temple University, PhD, 1973, State University of New York (Stony Brook); plastid replication, nucleic acid biochemistry in synchronized unicellular algae

CLELAND, ROBERT E., Professor Emeritus, 1968; PhD, 1957, California Institute of Technology

CLONEY, RICHARD A, Professor Emeritus, 1958; MA, 1954, Humboldt State University, PhD, 1959, University of Washington

COOPER, MARK S \* Associate Professor, 1990; PhD, 1985, University of California (Berkeley); cellular physiology and cell motility in developing tissues

CROWE, ALISON J, Senior Lecturer, 2000; PhD, 1993, State University of New York (Stony Brook)

DE LA IGLESIA, HORACIO O. \* Assistant Professor, 2003; MA, 1991, University of

Buenos Aires (Argentina), PhD, 1997, University of Massachusetts; Neural Basis of Circadian Rhythms

DEL MORAL, ROGER \* Professor, 1968; MA, 1966, University of California (Santa Barbara), PhD, 1968, University of California (Santa Barbara); ecology, primary succession gradient analysis, community structure

DISTILIO, VERONICA SANDRA \* Assistant Professor, 2003; PhD, 1998, University of Massachusetts; Cell and molecular biology, Developmental biology, Evolution and systematics, Genetics and genomics, Plant biology

DUNWIDDIE, PETER W, Affiliate Professor, 1998; MS, 1976, University of Wisconsin, PhD, 1983, University of Washington

EDWARDS, JOHN S, Professor Emeritus, 1967; MSC, 1956, University of Auckland (New Zealand), PhD, 1960, Cambridge University (UK)

FELSENSTEIN, JOSEPH \* Professor, 1967; PhD, 1968, University of Chicago; estimation of evolutionary trees, models of long-term evolutionary processes, and theoretical population genetics

FORD, E DAVID \* Adjunct Professor, 1985; PhD, 1968, University College, London (UK); forest ecology and ecophysiology, modeling, spatial statistics, philosophy of science, plant structure and function, analysis of ecological systems

GALITSKI, TIMOTHY P. \* Affiliate Assistant Professor, 2001; PhD, 1996, University of Utah; Functional genomics and genetics of microbial development

GROOM, MARTHA \* Adjunct Associate Professor, 1998; MS, 1989, University of Florida, PhD, 1995, University of Washington; Ecology and conservation of patchy populations; restoration ecology; conservation biology

GRUNBAUM, DANIEL \* Adjunct Associate Professor, 1991; MSME, 1987, University of Washington, PhD, 1991, Cornell University; Marine ecology, zooplankton population biology, biomechanics, mathematical biology, conservation biology

HALL, BENJAMIN D \* Professor Emeritus, 1963; MA, 1956, Harvard University, PhD, 1959, Harvard University; molecular genetics of yeast and higher plants

HALPERIN, WALTER, Professor Emeritus, 1968; MS, 1961, Southern Connecticut State University, PhD, 1965, University of Connecticut

HASKINS, EDWARD F, Professor Emeritus, 1966; MS, 1962, University of Minnesota, PhD, 1965, University of Minnesota

HAUSCHKA, STEPHEN D \* Adjunct Professor, 1966; PhD, 1966, Johns Hopkins University; regulation of skeletal muscle differentiation, growth factor-receptor signal mechanisms and the control of muscle gene expression

HERRING, SUSAN W. \* Adjunct Professor, 1990; PhD, 1971, University of Chicago; vertebrate functional morphology, relations between muscular function and skull growth

HILLE, MERRILL \* Professor, 1969; PhD, 1965, Rockefeller University; developmental biology, gastrulation in sea urchin embryos, translational regulation during meiosis

HILLE RIS LAMBERS, JANNEKE \* Assistant Professor, 2006; PhD, 2001, Duke University; Ecology and conservation, Mathematical biology, Plant biology

HINCKLEY, THOMAS M \* Adjunct Professor, 1980; PhD, 1971, University of Washington; forest tree physiology and autecology, subalpine ecosystems, water stress problems

HOEKSTRA, JONATHAN M., Affiliate Assistant Professor, 2001; MS, 1993, Stanford University, PhD, 2001, University of Washington

HUEY, RAYMOND B \* Professor, 1977; MA, 1969, University of Texas (Austin), PhD, 1975, Harvard University; evolutionary and physiological ecology, herpetology, behavior restorative dentistry, periodontics

KENAGY, GEORGE JAMES \* Professor, 1976; PhD, 1972, University of California (Los Angeles); ecophysiology and behavior, reproduction and life history, population biology, evolution, mammalogy

KERR, BENJAMIN B \* Assistant Professor, 2005; PhD, 2002, Stanford University; Mathematical biology and experimental evolutionary ecology using model microbial communities

KIMELMAN, DAVID \* Adjunct Professor, 1989; PhD, 1985, Harvard University; molecular biology of early development in the frog, *Xenopus laevis*

KINGSOLVER, JOEL, Affiliate Professor, 1986; MS, 1978, University of Wisconsin, PhD, 1981, Stanford University

KOHN, ALAN J, Professor Emeritus, 1961; PhD, 1957, Yale University

KOZLOFF, EUGENE N, Professor Emeritus, 1961; MA, 1946, University of California (Berkeley), PhD, 1950, University of California (Berkeley)

KRUCKEBERG, ARTHUR R, Professor Emeritus, 1950; PhD, 1950, University of California (Berkeley)

LAIRD, CHARLES D \* Professor, 1968; PhD, 1966, Stanford University; cell and developmental biology, human genetics

LEOPOLD, ESTELLA B, Professor Emeritus, 1976; MS, 1950, University of California (Berkeley), PhD, 1955, Yale University

MARTIN-MORRIS, LINDA E., Senior Lecturer, 1994; PhD, 1991, Brandeis University

MILLS, CLAUDIA E, Affiliate Assistant Professor, 1995; MS, 1976, Florida State University, PhD, 1982, University of Victoria (Canada)

MOENS, CECILIA B \* Affiliate Associate Professor, 1998; PhD, 1993, University of Toronto (Canada); Development of segmentation and segment identity in the vertebrate hindbrain

MOODY, WILLIAM J \* Professor, 1982; PhD, 1977, Stanford University; single cell electrophysiology, development of electrical properties in embryos

MUNRO, EDWIN M. \* Research Assistant Professor, 2000; PhD, 2000, University of Washington; Mechanochemical networks underlying cell polarization and asymmetric cell divisions in early *C. elegans* embryos: How mixed networks of regulatory and cytoskeletal proteins interact biochemically and mechanically to bring about the cortical and cytoplasmic

NEMHAUSER, JENNIFER L \* Assistant Professor, 2006; PhD, 2000, University of California (Berkeley); Regulation of plant growth Biology, Developmental biology, Genetics and genomics, Plant biology

NESTER, EUGENE W \* Adjunct Professor, 1962; PhD, 1959, Case Western Reserve University; genetics and biochemistry, of bacterial-plant cell interactions

OCONNOR, EILEEN, Senior Lecturer, 1976; MS, 1976, University of Washington

ODELL, GARRETT M. \* Professor, 1985; PhD, 1972, Johns Hopkins University; mathematical biology, ecology, models in cell and developmental biology

O'DONNELL, SEAN \* Adjunct Associate Professor, 1996; PhD, 1993, University of

Wisconsin (Madison); genotypic and endocrine effects on social organization and division of labor in insects, evolution of social behavior

OLMSTEAD, RICHARD G. \* Professor, 1996; PhD, 1988, University of Washington; Plant Molecular Systematics and Evolution

ORIAN, GORDON H, Professor Emeritus, 1960; PhD, 1960, University of California (Berkeley)

PAINE, ROBERT T, Professor Emeritus, 1962; MS, 1958, University of Michigan, PhD, 1961, University of Michigan

PALKA, JOHN M \* Professor Emeritus, 1969; PhD, 1965, University of California (Los Angeles); neurophysiology, sensory physiology, developmental neurobiology

PARICHY, DAVID M \* Associate Professor, 2005; PhD, 1997, University of California (Davis)

PARKHURST, SUSAN M. \* Affiliate Associate Professor, 1994; PhD, 1985, Johns Hopkins University; Developmental, Genetic, and Molecular Analysis of *Drosophila* embryogenesis

PARRISH, JULIA \* Associate Professor, 1990; PhD, 1988, Duke University; Organismal biology. Aggregation of animals: schooling in fish and colonial nesting in seabirds

PEICHEL, CATHERINE L. \* Affiliate Assistant Professor, 2003; PhD, 1998, Princeton University; Genetic and molecular analysis of reproductive isolation in threespine sticklebacks. sticklebacks

PERKEL, DAVID J \* Professor, 2000; PhD, 1992, University of California (San Francisco); Neural mechanisms of learning; focus on vocal learning in songbirds

PRIESS, JAMES R. \* Affiliate Associate Professor, 1993; PhD, 1983, University of Colorado (Boulder); reliability models, fault trees

RAIBLE, DAVID W. \* Adjunct Professor, 1995; PhD, 1989, University of Pennsylvania; vertebrate embryology and development of the nervous system

RIDDIFORD, LYNN M \* Professor Emeritus, 1973; PhD, 1961, Cornell University; insect development and physiology, invertebrate endocrinology

ROHWER, SIEVERT A \* Professor Emeritus, 1973; MA, 1970, University of

Kansas, PhD, 1971, University of Kansas; ecology and evolution of social behavior, deception and evolution of status-signaling systems, avian biology

ROTH, MARK \* Affiliate Professor, 1994; PhD, 1988, University of Colorado (Boulder); nuclear proteins involved in the regulation of gene expression

RUESINK, JENNIFER \* Associate Professor, 1998; MPhil, 1991, Cambridge University (UK), PhD, 1996, University of Washington; Marine intertidal ecology, especially community dynamics, food webs, introduced species

RUTHERFORD, SUZANNE L., Affiliate Assistant Professor, 1999; PhD, 1995, University of California (San Diego)

SAMUDRALA, VAIKUNTANATH V \* Adjunct Associate Professor, 2001; PhD, 1997, University of Maryland; Modeling the structure and function of whole genomes

SCHINDLER, DANIELE E. \* Associate Professor, 1997; MS, 1992, University of Wisconsin, PhD, 1995, University of Wisconsin (Madison); Ecosystem and community ecology - especially of aquatic systems

SCHUBIGER, GEROLDA \* Professor, 1972; Diploma, 1957, Teachers Training College, Zurich, PhD, 1968, University of Zurich (Switzerland); developmental biology of insects, embryonic determination in *Drosophila*, pattern formation in imaginal disks

SEBENS, KENNETH \* Professor, 2005; PhD, 1977, University of Washington

SECORD, DAVID L \* Affiliate Associate Professor, 1996; PhD, 1995, University of Washington; Population and Community Ecology; Science and Policy; Marine Conservation and Marine Invertebrates; Environmental Science, Interdisciplinary and Environmental Education

SIDOR, CHRISTIANA A \* Assistant Professor, 2005; MS, 1997, University of Chicago, PhD, 2000, University of Chicago

SISNEROS, JOSEPH A. \* Adjunct Assistant Professor, 2003; MA, 1989, California State University, Long Beach, PhD, 1999, Florida Institute of Technology; Sensory neurobiology, animal physiology and behavioral biology

STRATHMANN, RICHARD R \* Professor, 1972; MS, 1966, University of Washington, PhD, 1970, University of Washington; invertebrate development, larval ecology and developmental strategies of marine invertebrates

STROMBERG, CAROLINE A \* Assistant Professor, 2007; MSC, 1997, University of Lund (Sweden), PhD, 2003, University of California (Berkeley); Research Interests: research photo1. Cenozoic evolution of grasses and grazers The evolution of grassland ecosystems was one of the most profound ecological changes of the past 65 million years, but many questions remain as to when it occurred and w

SWALLA, BILLIE J. \* Associate Professor, 1999; MS, 1983, University of Iowa, PhD, 1988, University of Iowa; How developmental and evolutionary processes influence animal body plans

SWANSON, WILLIE J \* Adjunct Associate Professor, 2002; PhD, 1998, University of California (San Diego); Function and evolution of proteins with emphasis on reproduction

TEWKSBURY, JOSHUA J \* Assistant Professor, 2003; PhD, 2000, University of Montana; evolutionary ecology, chemical ecology, plant-animal interactions, landscape ecology

TORII, KEIKO \* Associate Professor, 1999; MS, 1989, University of Tsukuba (Japan), PhD, 1993, University of Tsukuba (Japan); Arabidopsis Developmental Genetics; Receptor-mediated Signal Transduction in Higher Plants

TRUMAN, JAMES W \* Professor Emeritus, 1973; MA, 1969, Harvard University, PhD, 1970, Harvard University; hormones and invertebrate behavior, insect physiology, circadian rhythms

TSUKADA, MATSUO, Professor Emeritus, 1969; MSC, 1958, Osaka City University (Japan), PhD, 1961, Osaka City University (Japan)

VAN VOLKENBURGH, ELIZABETH \* Professor, 1982; PhD, 1980, University of Washington; leaf growth and development, photobiology and electrophysiology

WAALAND, J ROBERT \* Professor, 1969; PhD, 1969, University of California (Berkeley); biology of algae, experimental, cytological and ecological studies of marine algae, gas vacuoles of blue-green algae

WAALAND, KATHRYN SUSAN D., Lecturer, 1972; PhD, 1969, University of California (Berkeley)

WAKIMOTO, BARBARA T \* Professor, 1984; PhD, 1981, Indiana University; developmental genetics, gene expression and chromosome organization in eukaryotes

WALKER, RICHARD B, Professor Emeritus, 1948; PhD, 1948, University of California (Berkeley)

WARD, PETER D. \* Professor, 1985; MS, 1973, University of Washington, PhD, 1976, McMaster University (Canada); invertebrate paleontology, paleobiology

WASSER, SAMUEL K. \* Research Professor, 1981; MS, 1976, University of Wisconsin, PhD, 1981, University of Washington; behavioral ecology, endocrinology, conservation genetics and reproductive biology

WENDEROTH, MARY PAT, Senior Lecturer, 1988; MS, 1981, Purdue University, PhD, 1987, Rush University

WHITELEY, ARTHUR H, Professor Emeritus, 1947; MA, 1939, University of Wisconsin, PhD, 1945, Princeton University

WILLOWS, ARTHUR O, Professor Emeritus, 1969; PhD, 1967, University of Oregon

WILSON, GREGORY P. \* Assistant Professor, 2007; PhD, 2004, University of California (Berkeley); Vertebrate paleontology, mammalian evolution

WISE, PHYLLIS M, Professor, 2005; MA, 1969, University of Michigan, PhD, 1972, University of Michigan

ZEMAN, LESLIE B., Senior Lecturer, 1998; DVM, 1975, Michigan State University

surfaces, chemisorption, catalysis, and surface analysis

CARLSON, WILLIAM BRENDEN, Affiliate Assistant Professor, 2004; PhD, 2003, University of Washington

CHAMBERS, SCOTT A., Affiliate Professor, 1992; PhD, 1977, Oregon State University

CHARLSON, ROBERT J, Professor Emeritus, 1962; MS, 1959, Stanford University, PhD, 1964, University of Washington

CHIU, DANIEL T. \* Professor, 2000; PhD, 1998, Stanford University; Development of biophysical and bioanalytical tools for applications in proteomics

CHRISTIAN, GARY D \* Professor Emeritus, 1972; MS, 1962, University of Maryland, PhD, 1964, University of Maryland; atomic spectroscopy, clinical analysis, electroanalysis, flow injection analysis, optrodes, process control

COLSON, STEVEN D., Affiliate Professor, 1990; PhD, 1968, California Institute of Technology

CRITTENDEN, ALDEN L, Associate Professor Emeritus, 1947; PhD, 1947, University of Illinois

DALTON, LARRY R. \* Professor, 1998; MS, 1966, MA, 1971, Harvard University, Michigan State University, PhD, 1971, Harvard University; Materials chemistry focused on producing next generation opto-electronic materials

DAVIDSON, ERNEST, Professor, 2002; PhD, 1961, Indiana University

DOVICH, NORMAN J \* Professor, 2000; PhD, 1980, University of Utah; ultrasensitive bioanalytical chemistry of proteins, nucleic acids, enzymes, and lipids

DROBNY, GARY P \* Professor, 1982; PhD, 1981, University of California (Berkeley); two-dimensional and multiple quantum studies in nuclear magnetic resonance

ELANGO VAN, ARUMUGASAMY, Acting Instructor, 2005; MS, 1991, University of Madras (India), PhD, 1999, University of Madras (India)

FLOSS, HEINZ G., Professor Emeritus, 1987; MS, 1959, Technical University of Berlin (Germany), PhD, 1961, Technical University of Munich (Germany)

GAMELIN, DANIEL R. \* Associate Professor, 2000; PhD, 1997, Stanford University; Physical inorganic chemistry.

Spectroscopy, Bio-and Materials related inorganic chemistry

GAMMON, RICHARD H \* Professor, 1977; MA, 1966, Harvard University, PhD, 1970, Harvard University; atmospheric chemistry, chemical oceanography, environmental chemistry; biogeochemical cycles, global climate change, astrobiology

GELB, MICHAEL H. \* Professor, 1985; PhD, 1982, Yale University; mechanistic enzymology, bioorganic and medicinal chemistry

GINGER JR, DAVID S. \* Assistant Professor, 2003; PhD, 2001, University of Cambridge (UK); Physical chemistry of nanostructured materials, optical spectroscopy, atomic force microscopy, photonics

GOLDBERG, KAREN \* Professor, 1995; PhD, 1988, University of California (Berkeley); Energetics and Mechanisms of Fundamental Organometallic Reactions

GOUTERMAN, MARTIN, Professor Emeritus, 1966; MS, 1955, University of Chicago, PhD, 1958, University of Chicago

GRATE, JAY W., Affiliate Professor, 2004; MS, 1980, University of California (San Diego), PhD, 1983, University of California (San Diego)

GREGORY, NORMAN W, Professor Emeritus, 1946; MS, 1941, University of Washington, PhD, 1943, Ohio State University

HAIGHT, GILBERT P., Affiliate Professor, 1989; PhD, 1947, Princeton University

HALSEY, GEORGE D, Professor Emeritus, 1951; PhD, 1948, Princeton University

HEINEKEY, DENNIS M. \* Professor, 1991; PhD, 1982, University of Alberta, Canada; organometallic chemistry of the transition metals

HOPKINS, PAUL B \* Professor, 1982; PhD, 1982, Harvard University; organic synthesis, bioorganic and nucleic acid chemistry

IVASKA, ARI U., Affiliate Professor, 1993; MSC, 1971, Abo Akademi University, PhD, 1975, Abo Akademi University

JEN, ALEX K-Y. \* Professor, 1999; PhD, 1984, University of Pennsylvania; Organic Materials/Polymer Chemistry, Functional Materials, Optical Sciences

JENEKHE, SAMSON A. \* Professor, 2000; MS, 1980, University of Minnesota, MA,

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## Chemistry

ANDERSEN, NIELS \* Professor, 1968; PhD, 1967, Northwestern University; bioorganic and biophysical chemistry, natural products synthesis and structure elucidation, biorecognition phenomena

BURGESS, LLOYD W. \* Research Professor, 1985; MS, 1979, Syracuse University, PhD, 1984, Virginia Polytechnic Institute and State University; Analytical instrumentation, sensors, and optical waveguides for chemical process analysis

CALLIS, JAMES B \* Professor, 1970; PhD, 1970, University of Washington; instrumentation development, process analytical chemistry, non-invasive clinical chemistry

CAMPBELL, CHARLES T. \* Professor, 1992; PhD, 1979, University of Texas (Austin); physical chemistry of solid

1981, University of Minnesota, PhD, 1985, University of Minnesota; Polymer science; electronic and optoelectronic polymers; block copolymers; macromolecular self-assembly

JONSSON, HANNES \* Affiliate Professor, 1988; PhD, 1985, University of California (San Diego); computer simulations and scattering calculation in materials and surface science

KAHR, BART E. \* Professor, 1997; PhD, 1988, Princeton University; design, growth, structure, physical properties of new crystalline materials

KELLER, SARAH L. \* Associate Professor, 2000; PhD, 1995, Princeton University; Biophysics; physical chemistry; soft condensed matter; surfactants; lipids; self-assembly; microscopy

KHALIL, MUNIRA \* Assistant Professor, 2006; PhD, 2004, Massachusetts Institute of Technology; Laser spectroscopy

KIM, BYUNG JU, Acting Instructor, 2003; MS, 1989, Sogang University (Korea), PhD, 2000, Toyama University (Japan)

KLEVIT, RACHEL E \* Adjunct Professor, 1983; DPhil, 1981, Oxford University (UK); protein structure & function; molecular recognition; protein NMR

KOVACS, JULIA A. \* Professor, 1988; PhD, 1986, Harvard University; synthesis, structure, and reactivity of biologically relevant transition-metal complexes

KOWALSKI, BRUCE, Professor Emeritus, 1973; PhD, 1969, University of Washington

KROHN, KENNETH A \* Adjunct Professor, 1981; PhD, 1971, University of California (Davis); chemistry, radiation oncology

KWIRAM, ALVIN L \* Professor Emeritus, 1970; PhD, 1963, California Institute of Technology; molecular structure and dynamics in the solid state with emphasis on excited states, magnetic resonance (ESR, NMR, ENDOR, and optical detection methods)

LABROO, VIRENDER M., Affiliate Assistant Professor, 1991; MSC, 1974, University of Jammu And Kashmir (India), PhD, 1980, University of Kanpur (India)

LI, XIAOSONG \* Assistant Professor, 2005; PhD, 2003, Wayne State University; Theoretical and Computational Physical Chemistry and Chemical Physics

MACKLIN, JOHN W, Associate Professor Emeritus, 1968; PhD, 1969, Cornell University

MALY, DUSTIN JAMES \* Assistant Professor, 2006; PhD, 2002, University of California (Berkeley); Biological Chemistry

MAYER, JAMES M \* Professor, 1984; PhD, 1982, California Institute of Technology; inorganic, organometallic, and bioinorganic chemistry. syntheses and mechanisms of reactions of transition metal compounds oxidation chemistry

MICHAEL, FORREST \* Assistant Professor, 2004; MA, 1998, Harvard University, PhD, 2001, Harvard University; Organic and organometallic chemistry - Development of methods for organic synthesis

MONTANA, ANDREW F., Affiliate Professor, 1958; PhD, 1957, University of Washington

MOORE, BRADLEY, Affiliate Assistant Professor, 1995; PhD, 1994, University of Washington

MURRAY, JAMES W \* Adjunct Professor, 1973; PhD, 1973, Massachusetts Institute of Technology; marine geochemistry, aquatic chemistry

NORMAN, JOSEPHUS G \* Professor, 1972; PhD, 1972, Massachusetts Institute of Technology; synthesis and structures of transition metal complexes, theoretical calculations on large molecules

OLMSTEAD, MARJORIE A \* Adjunct Professor, 1991; MA, 1979, Swarthmore College, MA, 1982, University of California (Berkeley), PhD, 1985, University of California (Berkeley); experimental condensed-matter physics, surface and interface physics

PARSON, WILLIAM W \* Adjunct Professor, 1967; PhD, 1965, Case Western Reserve University; bioenergetics, with particular emphasis on photosynthesis, picosecond spectroscopy

PETERSON, JOHN R., Affiliate Associate Professor, 1992; PhD, 1984, University of Minnesota

PHELAN, GREGORY D., Affiliate Assistant Professor, 2004; MS, 1998, State University of New York (Albany), PhD, 2003, University of Washington

POCKER, YESHAYAU, Professor Emeritus, 1961; MS, 1949, Hebrew University (Israel), PhD, 1953, University College, London (UK), DSc, 1960, University College, London (UK)

PREZHDO, OLEG \* Assistant Professor, 2001; MS, 1991, Kharkov State Medical University(Ukraine), MS, 1991, Kharkov State Medical University(Ukraine), PhD,

1997, University of Texas (Austin); Excitation dynamics of condensed phase chemical systems

QUINN, PATRICIA K, Affiliate Professor, 1996; PhD, 1988, University of Washington

RABINOVITCH, B SEYMOUR, Professor Emeritus, 1948; PhD, 1942, McGill University (Canada)

RASCHKE, MARKUS \* Assistant Professor, 2006; MS, 1995, Rutgers University, PhD, 1999, Technical University of Munich (Germany); Physical Chemistry

RATHOD, PRADIPSINH K. \* Professor, 2001; PhD, 1982, Oregon Health Sciences University; Study of malaria chemotherapy and drug resistance using genomics tools

RAUCHER, STANLEY \* Professor, 1975; PhD, 1973, University of Minnesota; new methods in synthetic organic chemistry, total synthesis of natural products

REID, PHILIP J. \* Professor, 1995; PhD, 1992, University of California (Berkeley); Ultrafast condensed phase chemical reaction dynamics

REINHARDT, WILLIAM P. \* Professor, 1991; PhD, 1968, Harvard University; theoretical and computational chemistry with applications in chemistry and biophysics

ROBINSON, BRUCE H \* Professor, 1980; PhD, 1975, Vanderbilt University; magnetic resonance, molecular dynamics, polymer dynamics, nonlinear response theory

ROSE, NORMAN J, Professor Emeritus, 1966; PhD, 1960, University of Illinois

RUZICKA, JAROMIR \* Professor, 1984; MSC, 1959, Technical University of Prague (Czech), PhD, 1963, Technical University of Prague (Czech); analysis via flow injection for clinical research and industrial applications

SASAKI, TOMIKAZU \* Associate Professor, 1989; MS, 1981, Kyoto University (Japan), PhD, 1985, Kyoto University (Japan); design and synthesis of functional proteins and protein mimetics

SCHUBERT, WOLFGANG M, Professor Emeritus, 1947; PhD, 1947, University of Minnesota

SCHURR, J MICHAEL \* Professor Emeritus, 1966; PhD, 1965, University of California (Berkeley); physical chemistry of DNA and other biopolymers, photon correlation techniques, dynamics of Brownian motions and internal deformations, polyelectrolytes, macromolecular theory,

structures and dynamics of super-coiled DNAs

SIMON, JULIAN A. \* Affiliate Associate Professor, 1996; MA, 1984, Columbia University, MPhil, 1986, Columbia University, PhD, 1991, Columbia University; Identification and characterization of new anticancer agents

STUVE, ERIC M \* Adjunct Professor, 1985; MS, 1979, Stanford University, PhD, 1983, Stanford University; catalytic and electrochemical surface science

SYNOVEC, ROBERT E. \* Professor, 1986; PhD, 1986, Iowa State University; multidimensional chemical separation techniques, chemometric data analysis, novel detectors for chromatography

TURECEK, FRANTISEK \* Professor, 1990; MSC, 1973, Charles University (Czech Republic), PhD, 1977, Charles University (Czech Republic); mass spectrometry and organic structural analysis

VANDENBOSCH, ROBERT, Professor Emeritus, 1963; PhD, 1957, University of California (Berkeley)

VARANASI, USHA S, Affiliate Professor, 1980; MS, 1964, California Institute of Technology, PhD, 1968, University of Washington

VARANI, GABRIELE \* Professor, 2001; PhD, 1987, University of Milan (Italy); Structural basis of RNA-protein recognition and drug design

WEST, DOUGLAS X., Affiliate Professor, 2000; PhD, 1964, Washington State University

WIEGAND, DEBORAH H., Senior Lecturer, 1990; PhD, 1990, Northern Illinois University

WOODMAN, DARRELL J, Professor Emeritus, 1965; PhD, 1965, Harvard University, MA, 1965, Harvard University

YAGER, PAUL \* Adjunct Professor, 1987; PhD, 1980, University of Oregon; physical chemistry, applications of biomembranes, biosensors, microfluidics, biomedical diagnostic instrumentation

ZHANG, DAISY Y, Affiliate Associate Professor, 2002; PhD, 1993, University of Chicago

ZOLLER, WILLIAM H \* Professor, 1984; PhD, 1969, Massachusetts Institute of Technology; analytical, environmental, and nuclear chemistry

## Classics

BLIQUEZ, LAWRENCE J \* Professor Emeritus, 1969; PhD, 1968, Stanford University; Greek Art, Greek historiography and historians, Greek and Roman medicine and private life

BLONDELL, RUBY \* Professor, 1985; MA, 1981, Oxford University (UK), PhD, 1984, University of California (Berkeley); Greek and Roman philosophy and literature

CLAUSS, JAMES J \* Professor, 1984; MA, 1976, Fordham University, PhD, 1983, University of California (Berkeley); Latin poetry and prose, Hellenistic literature, Latin literature of the Empire

CONNORS, CATHERINE M. \* Associate Professor, 1990; MA, 1986, University of Michigan, PhD, 1989, University of Michigan; Roman epic, ancient novel, women in Greek and Roman antiquity, representations of nature

GOWING, ALAIN M. \* Professor, 1988; MA, 1981, Bryn Mawr College, PhD, 1988, Bryn Mawr College; Latin and Greek historiography, Latin literature of the Empire

HALLERAN, MICHAEL R \* Affiliate Professor, 1983; PhD, 1981, Harvard University; Greek literature, especially tragedy; Greek intellectual history

HARMON, DANIEL P. \* Professor Emeritus, 1967; MA, 1965, Northwestern University, PhD, 1968, Northwestern University; Greek and Roman religion, Latin poetry, Greek tragedy, classical linguistics

HINDS, STEPHEN E. \* Professor, 1992; MA, 1983, Trinity College (Ireland), PhD, 1985, St. Johns College (UK); Latin poetry, especially elegy and epic; literary criticism and theory

KAMEN, DEBORAH E., Assistant Professor, 2007; MS, 1999, Oxford University (UK), MA, 2005, University of California (Berkeley), PhD, 2005, University of California (Berkeley)

LEVANIOUK, OLGA \* Assistant Professor, 2001; MA, 1994, University of Colorado (campus unspecified), PhD, 2000, Harvard University; Homer, Greek poetry, Greek religion and myth, history of Greek

MACKAY, PIERRE A, Professor Emeritus, 1966; MA, 1959, University of California (campus unspecified), PhD, 1964, University of California (campus unspecified)

STROUP, SARAH C \* Assistant Professor, 2000; MA, 1994, University of California

(Berkeley), PhD, 2000, University of California (Berkeley); Latin literature of the Republic and early Empire, Critical theory, Ancient spectacle, Material culture

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## Communication

BALDASTY, GERALD J \* Professor, 1978; MA, 1974, University of Wisconsin (Madison), PhD, 1978, University of Washington; communications history and law, government-press relations, First Amendment philosophy and theory

BARZILAI-NAHON, KARINE \* Adjunct Associate Professor, 2004; MSC, 2000, Tel Aviv University (Israel), PhD, 2001, Tel Aviv University (Israel)

BEAM, RANDAL A \* Associate Professor, 2003; MA, 1976, Syracuse University, DPhil, 1988, University of Wisconsin; Media institutions

BENNETT, WALTER LANCE \* Professor, 1974; MPhil, 1973, Yale University, PhD, 1974, Yale University; American politics, comparative politics, political communication, mass media, political culture

BONUS, ENRIQUE C. \* Adjunct Associate Professor, 1998; MA, 1990, California State University, Fresno, PhD, 1997, University of California (San Diego); Race and ethnicity; communication, education and culture; Asian American studies

BOSMAJIAN, HAIG A, Professor Emeritus, 1965; MA, 1951, University of The Pacific, PhD, 1960, Stanford University

BOWEN, LAWRENCE, Associate Professor Emeritus, 1973; MA, 1971, University of Wisconsin, PhD, 1974, University of Wisconsin (Madison)

BOWES, JOHN E, Associate Professor Emeritus, 1974; MS, 1965, Syracuse University, PhD, 1971, Michigan State University

CARTER, RICHARD FREMONT, Professor Emeritus, 1967; MA, 1954, University of Wisconsin, PhD, 1957, University of Wisconsin (Madison)

CECCARELLI, LEAH M. \* Associate Professor, 1996; MA, 1992, Northwestern University, PhD, 1995, Northwestern University; rhetoric of science, rhetorical criticism

CHAN, ANTHONY B. \* Associate Professor, 1990; MA, 1969, Bowling Green State University, MA, 1973, University of Arizona, PhD, 1980, York University (Canada); Chinese Communications,



especially Information Technology, E-commerce, especially Dot-com Enterprises, Internet Journalism, Asian Media Systems, Race, Gender and Power in Asian American Media

COUTU, LISA \* Senior Lecturer, 1997; MA, 1992, University of Washington, PhD, 1996, University of Washington; communication and culture, the ethnography of communication, and discourse analysis

CRANSTON, PATRICIA, Associate Professor Emeritus, 1954; MA, 1954, University of Texas (Austin)

DOMKE, DAVID S. \* Professor, 1998; MA, 1992, California State University, Fullerton, PhD, 1996, University of Minnesota; communication effects; political cognition; political elites and public opinion; race, gender and media; journalism and social change

FEARN-BANKS, KATHLEEN A. \* Associate Professor, 1990; MS, 1965, University of California (Los Angeles); Crisis communications; also press secretaries to U.S. presidents

FOOT, KIRSTEN A \* Associate Professor, 2001; MA, 1990, Wheaton College, PhD, 1999, University of California (San Diego); technology and society, political communication, Web studies, NGO networks

GASTIL, JOHN W. \* Professor, 1997; MA, 1991, University of Wisconsin, PhD, 1994, University of Wisconsin (Madison); Deliberation and democracy, group decision making, political discourse, political philosophy, civic participation, and social influence

GIFFARD, CHARLES A \* Professor, 1978; MA, 1964, University of Washington, PhD, 1968, University of Washington; international news systems, news flow, editing and reporting

GILL, KATHY E, Senior Lecturer, 2003; MS, 1979, Virginia Polytechnic Institute and State University

HABELL-PALLAN, MICHELLE \* Adjunct Associate Professor, 2001; MA, 1993, University of California (San Diego), MA, 1994, University of California (San Diego), PhD, 1997, University of California (Santa Cruz); Chicano studies and literature, performance and popular culture, women of color feminist theories

HAROLD, CHRISTINE L, Assistant Professor, 2007; MA, 1999, Pennsylvania State University, PhD, 2003, Pennsylvania State University

HART, DANIEL \* Adjunct Professor, 1999; MFA, 1985, Temple University; The

anthropology of visual communications, with an emphasis upon Indigenous media and documentary film

HOSEIN, HANSON RIAD, Assistant Professor, 2007; MS, 1994, Columbia University

HOWARD, PHILIP EDWARD \* Assistant Professor, 2002; MA, 1994, London School of Economics (UK), PhD, 2002, Northwestern University; Political Communication, New Media and Society, Social Science Research Methods

JACKSON, KENNETH M, Associate Professor Emeritus, 1969; MA, 1968, University of Washington, PhD, 1970, University of Washington

JOSEPH, RALINA L \* Assistant Professor, 2005; MA, 2001, University of California (San Diego), PhD, 2005, University of California (San Diego); Contemporary representations of mixed-race women in the United States

KIELBOWICZ, RICHARD B \* Associate Professor, 1984; MA, 1978, University of Minnesota, PhD, 1984, University of Minnesota; communication history/law, impact of technology on press and society, Canadian media

LANG, GLADYS ENGEL, Professor Emeritus, 1984; MA, 1942, University of Washington, PhD, 1954, University of Chicago

LANG, KURT, Professor Emeritus, 1984; MA, 1952, University of Chicago, PhD, 1953, University of Chicago

MANUSOV, VALERIE L. \* Professor, 1993; MA, 1984, Michigan State University, PhD, 1989, University of Southern California; the interplay between communication behaviors and cognitions in interpersonal interactions

MCGARRITY, MATTHEW K, Lecturer, 2004; MA, 2000, Indiana University, PhD, 2004, Indiana University

MOY, PATRICIA \* Associate Professor, 1999; MS, 1993, Cornell University, PhD, 1998, University of Washington; political communication, public opinion, media effects and research methodology

NEFF, GINA S \* Assistant Professor, 2005; MPhil, 2001, City University of New York, PhD, 2004, Columbia University; Work and Technology; Organizational Communication; High-tech Industries; Cultural sociology; creative industries

NYQUIST, JODY D \* Senior Lecturer Emeritus, 1967; MA, 1967, University of

Washington; communication occurring in higher education and/or business/industry training units

PARKS, MALCOLM R \* Adjunct Professor, 1978; MA, 1975, Michigan State University, PhD, 1976, Michigan State University; communication theory, interpersonal communication, social uses of the Internet, social network and organizational analysis, research methods

PEMBER, DON R, Professor Emeritus, 1969; MA, 1966, Michigan State University, PhD, 1969, University of Wisconsin (Madison)

PHILIPSEN, GERRY F \* Professor, 1978; PhD, 1972, Northwestern University; ethnography of communication

POST, ROBERT M, Associate Professor Emeritus, 1960; MA, 1958, Ohio University, PhD, 1961, Ohio University

RATHE, KAREN M., Lecturer, 2001; MS, 1986, University of Oregon

RIVENBURGH, NANCY \* Associate Professor, 1990; MS, 1982, Boston University, PhD, 1991, University of Washington; international communications; the role of media in international and intercultural relations

SAMUELSON, MERRILL, Associate Professor Emeritus, 1962; MS, 1955, University of Oregon, PhD, 1960, Stanford University

SCHEIDEL, THOMAS, Professor Emeritus, 1955; MA, 1955, University of Washington, PhD, 1958, University of Washington

SIMMONS, CYNTHIA J, Lecturer, 2003; MA, 1990, University of Wisconsin (Madison), JD, 2006, University of Washington

SIMPSON, ROGER A \* Associate Professor, 1970; MS, 1961, University of Wisconsin, PhD, 1973, University of Washington; communication history, law of communication, media economics, editorial journalism

SMITH, MARK A. \* Adjunct Associate Professor, 1997; PhD, 1997, University of Minnesota; The workings of American democracy and the role of interest groups

STAMM, KEITH R \* Professor Emeritus, 1973; MS, 1965, University of Wisconsin, PhD, 1968, University of Wisconsin (Madison); communities and newspapers, new media technology, dynamic models of communication behavior

THURLOW, CRISPIN SIMON \* Assistant Professor, 2003; MED, 1990, University of Natal, South Africa, MA, 1996, University of Sheffield (UK), PhD, 2001, Cardiff University, Wales; Language and discourse in adolescence and new media; globalization and tourism; sex and sexuality. Preferred theories/methods: Critical Discourse Analysis, Social Semiotics

UNDERWOOD, DOUGLAS M \* Associate Professor, 1987; MA, 1974, Ohio State University; Newspaper economics and management; press and politics; literature and journalism

## Comparative History of Ideas

AMES, ERIC C. \* Assistant Professor, 2000; MA, 1993, University of Washington, PhD, 2000, University of California (Berkeley); film history and theory; cultural studies; late nineteenth and twentieth-century literature

ANTONY, JAMES SOTO \* Associate Professor, 1997; MA, 1993, University of California (Los Angeles), PhD, 1996, University of California (Los Angeles); Identifying the factors that influence aspirations and success of professional occupations; special focus on post-secondary faculty careers

BERGER, PAUL E \* Professor, 1978; MFA, 1973, State University of New York (Buffalo); photography

BLONDELL, RUBY \* Professor, 1985; MA, 1981, Oxford University (UK), PhD, 1984, University of California (Berkeley); Greek and Roman philosophy and literature

GIEBEL, CHRISTOPH \* Associate Professor, 1998; MA, 1989, Cornell University, MA, 1991, Cornell University, PhD, 1996, Cornell University; Viet Nam; 20th century history, communism, labor, post-independence historiography

INGEBRITSEN, CHRISTINE \* Adjunct Professor, 1992; MA, 1986, Columbia University, PhD, 1993, Cornell University; Scandinavian domestic and foreign policies, European community integration and Scandinavia

MODIANO, RAIMONDA \* Professor, 1973; Diploma, 1968, University of Bucharest (Romania), PhD, 1973, University of California (San Diego); romanticism

SEARLE, LEROY F \* Professor, 1977; MA, 1968, University of Iowa, PhD, 1970,

University of Iowa; twentieth-century literature, critical theory, American studies

SINGH, NIKHIL PAL \* Associate Professor, 1998; MA, 1990, Yale University, MPhil, 1992, Yale University, PhD, 1995, Yale University; 20th-Century U.S. History and Theory with a focus on ethnicity, race and nationalism

SOKOLOVA, VERA, Affiliate Assistant Professor, 2005; MA, 1996, University of Washington, PhD, 2002, University of Washington

STEELE, CYNTHIA \* Professor, 1986; MA, 1979, University of California (San Diego), PhD, 1980, University of California (San Diego); Latin American literature and society, narrative and feminist theory

TOEWS, JOHN E \* Professor, 1979; MA, 1968, Harvard University, PhD, 1973, Harvard University; modern European intellectual history

THURTMORE, PHILLIP S \* Adjunct Assistant Professor, 1998; MA, 1994, Stanford University, PhD, 1999, Stanford University

WIECZOREK, MAREK K. \* Associate Professor, 1997; MA, 1990, University of Amsterdam (Netherlands), MPhil, 1992, Columbia University, PhD, 1997, Columbia University; Modern European art; Mondrian and De Stijl; critical theory

## Comparative Literature

ADAMS, HAZARD S, Professor Emeritus, 1977; MA, 1949, University of Washington, PhD, 1953, University of Washington

ALANIZ, JOSE \* Adjunct Assistant Professor, 2003; PhD, 2003, University of California (Berkeley); Post-Soviet Russian culture, cinema, disability, death and dying, eco-criticism

BEAN, JENNIFER M. \* Associate Professor, 1998; PhD, 1998, University of Texas (Austin); Film history, film preservation and film theory as well as studies in gender and sexuality

BEHLER, DIANA I \* Professor, 1969; MA, 1966, University of Washington, PhD, 1970, University of Washington; romanticism, nineteenth century, comparative literature

BENITEZ, JOSE FRANCISCO \* Assistant Professor, 2004; MA, 1996, University of Wisconsin (Madison), PhD, 2004, University of Wisconsin (Madison);

Colonial and Postcolonial Literature and Theory (particularly in Insular southeast Asia), Diasporic and Transnational Literature and Culture, Southeast Asian Film and Literature, Philippine and Filipino American Studies

BLAU, HERBERT \* Professor, 2000; MA, 1949, Stanford University, PhD, 1954, Stanford University; Modern/postmodern literature, critical theory, drama, performance and the visual arts

BORCH-JACOBSEN, MIKKEL \* Professor, 1986; Doctorat D'Etat, 1981, University of Strasbourg (France); French twentieth-century literature, modern philosophy, psycho-analysis

BRAESTER, YOMI \* Associate Professor, 2000; MA, 1991, Hebrew University (Israel), MA, 1992, Yale University, PhD, 1998, Yale University; Modern Chinese literature, film, literary criticism and theory of art

BROWN, JANE K \* Professor, 1988; MPhil, 1969, Yale University, PhD, 1971, Yale University; seventeenth, eighteenth and nineteenth century, comparative literature

BROWN, MARSHALL J \* Professor, 1988; MPhil, 1969, Yale University, PhD, 1972, Yale University; eighteenth- and nineteenth-century literature, literary theory, music and literature

CHRISTOFIDES, C G, Professor Emeritus, 1966; MA, 1949, University of Michigan, MA, 1950, University of Michigan, PhD, 1956, University of Michigan

CLAUSS, JAMES J \* Adjunct Professor, 1984; MA, 1976, Fordham University, PhD, 1983, University of California (Berkeley); Latin poetry and prose, Hellenistic literature, Latin literature of the Empire

COLLINS, DOUGLAS P \* Associate Professor, 1980; MA, 1972, University of Missouri, PhD, 1978, University of Missouri; twentieth-century French literature

COLONNESE, TOM G \* Adjunct Senior Lecturer, 1996; MA, 1974, University of Northern Iowa, PhD, 1981, Arizona State University; American Indian literature, film, and military history

CRNKOVIC, GORDANA \* Associate Professor, 1993; MA, 1991, Stanford University, PhD, 1993, Stanford University; East European literature, film and cultural studies, former Yugoslavia, theory, American literature

ELLRICH, ROBERT J, Associate Professor Emeritus, 1964; MA, 1953, Harvard

University, PhD, 1960, Harvard University

GEIST, ANTHONY L \* Professor, 1987; MA, 1969, University of California (Berkeley), PhD, 1978, University of California (Berkeley); twentieth-century Spanish literature: ideology and literary form

HALMI, NICHOLAS \* Associate Professor, 2001; MA, 1989, University of Toronto (Canada), PhD, 1995, University of Toronto (Canada); Enlightenment and Romantic literature (English and German), philosophy, and science; literary theory; architectural history

HAMM, JOHN C. \* Adjunct Associate Professor, 1999; MA, 1994, University of California (Berkeley), PhD, 1999, University of California (Berkeley); Late imperial and modern Chinese literature, fiction and popular culture

HANDWERK, GARY J \* Professor, 1984; PhD, 1984, Brown University; British, German and French nineteenth- and twentieth-century narrative; Romantic and post-Romantic literary theory and philosophy

HRUBY, ANTONIN F, Professor Emeritus, 1961; PhD, 1946, Charles University (Czech Republic)

KOGOJ-KAPETANIC, BREDA, Associate Professor Emeritus, 1973; Diploma, 1954, University of Zagreb (Yugoslavia), LITTD, 1966, University of Zagreb (Yugoslavia)

KONICK, WILLIS \* Associate Professor Emeritus, 1959; MA, 1954, University of Washington, PhD, 1964, University of Washington; Russian literature, nineteenth-century European literature

KRAMER, KARL D, Professor Emeritus, 1957; MA, 1957, University of Washington, PhD, 1964, University of Washington

LIGHT, ANDREW \* Adjunct Associate Professor, 2004; MA, 1992, University of California (Riverside), PhD, 1996, University of California (Riverside); Environmental Ethics & Policy, relating to restoration ecology and urban ecology; Philosophy of Technology, relating to ethical issues in emerging technologies; Philosophical issues in Architecture and Urban Planning

MACKAY, PIERRE A, Professor Emeritus, 1966; MA, 1959, University of California (campus unspecified), PhD, 1964, University of California (campus unspecified)

MC LEAN, SAMMY K, Associate Professor Emeritus, 1967; MA, 1957, University of Michigan, PhD, 1963, University of Michigan

MODIANO, RAIMONDA \* Professor, 1973; Diploma, 1968, University of Bucharest (Romania), PhD, 1973, University of California (San Diego); romanticism

NOEGEL, SCOTT B. \* Adjunct Professor, 1995; MA, 1993, Cornell University, PhD, 1994, Cornell University; Ancient Near Eastern Languages, Literatures, Cultures and History

REINERT, OTTO, Professor Emeritus, 1956; MA, 1948, Yale University, PhD, 1952, Yale University

ROSSEL, SVEN H, Affiliate Professor, 1974; PhD, 1968, University of Copenhagen (Denmark)

SEARLE, LEROY F \* Professor, 1977; MA, 1968, University of Iowa, PhD, 1970, University of Iowa; twentieth-century literature, critical theory, American studies

SEHMSDORF, HENNING K, Associate Professor Emeritus, 1967; MA, 1964, University of Chicago, PhD, 1968, University of Chicago

SOKOLOFF, NAOMI B. \* Professor, 1985; MA, 1979, Princeton University, PhD, 1980, Princeton University; Hebrew language and literature

STATEN, HENRY J. \* Professor, 1998; PhD, 1978, University of Texas (Austin); 19th and 20th century British literature, history of literary criticism, contemporary literary theory

STEELE, CYNTHIA \* Professor, 1986; MA, 1979, University of California (San Diego), PhD, 1980, University of California (San Diego); Latin American literature and society, narrative and feminist theory

STEENE, BIRGITTA, Professor Emeritus, 1955; MA, 1955, University of Washington, PhD, 1960, University of Washington, PhD, 1966, University of Uppsala (Sweden)

TWEEDIE, JAMES \* Assistant Professor, 2004; MA, 1999, University of Iowa, PhD, 2002, University of Iowa; Film Studies, Contemporary European and Chinese Cinema, Cinematic Modernism, Globalization

VANCE, EUGENE \* Professor Emeritus, 1990; PhD, 1964, Cornell University, MA, 1964, Cornell University; medieval literature, the history of criticism, and discourse analysis

VAUGHAN, MICEAL F \* Associate Professor, 1973; PhD, 1973, Cornell University, MA, 1973, Cornell University;

medieval European languages and literature; textual studies

WANG, CHING-HSIEN \* Professor Emeritus, 1971; MFA, 1966, University of Iowa, MA, 1969, University of California (Berkeley), PhD, 1971, University of California (Berkeley); Chinese poetry and comparative literature

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## Dance

COOPER, ELIZABETH A \* Associate Professor, 2001; MFA, 1997, University of Washington; Dance History: Federal Dance Project, Dance in the Hollywood Musical, 20th century ballet history. Use of writing in Dance Technique Class

COUPE, JAMES \* Assistant Professor, 2007; MA, 1999, University of Edinburgh (UK), MA, 2000, University of Salford (UK), PhD, 2007, University of Washington; mechatronic art sculpture installation art internet art telematic art robotic art algorithmic art digital art history

KNAPP, JOAN S, Professor Emeritus, 1989; MA, 1964, University of Illinois

MCMAINS, JULIET \* Assistant Professor, 2006; PhD, 2003, University of California (Riverside); Dance Ethnography, history of social dance, cultural studies, poststructuralist theory, feminist theory, critical race theory, ballroom dance, Latin dance

NOVAK, MARSHA, Affiliate Assistant Professor, 1994; MA, 1972, State University of New York (Albany), MS, 1982, University of Washington

SALK, JENNIFER \* Associate Professor, 2002; MFA, 1994, Ohio State University; Interactive digital dance preservation/education. Experiential anatomy. Choreography

WILEY, HANNAH \* Professor, 1980; MA, 1981, New York University; ballet, scientific aspects of dance, choreography, dance in higher education

WOODY, ANDREA I. \* Adjunct Associate Professor, 1997; PhD, 1996, University of Pittsburgh, PhD, 1997, University of Pittsburgh; Philosophy of Science, especially biology and physics; epistemology; logic

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## Digital Arts and Experimental Media

ANDREWS, STEPHANIE \* Assistant Professor, 2004; MFA, 2003, The School of Art Institute of Chicago; Experimental art incorporating computer graphics, installation, sculpture, and animation

BERGER, PAUL E \* Professor, 1978; MFA, 1973, State University of New York (Buffalo); photography

BRIXEY, SHAWN \* Associate Professor, 1994; MS, 1988, Massachusetts Institute of Technology; The creation of advanced digital and experimental media art forms which synthesize physics, astronomy, cosmology, and biotechnology

COUPE, JAMES \* Assistant Professor, 2007; MA, 1999, University of Edinburgh (UK), MA, 2000, University of Salford (UK), PhD, 2007, University of Washington; mechatronic art sculpture installation art internet art telematic art robotic art algorithmic art digital art history

HANNAFORD, BLAKE \* Professor, 1989; MS, 1982, University of California (Berkeley), PhD, 1985, University of California (Berkeley); haptic interfaces, robotics, biomechanics, bioengineering, controls, human-machine interaction

KARPEN, RICHARD S. \* Professor, 1989; MA, 1986, Stanford University, DMA, 1989, Stanford University; music composition, computer music, digital arts

PAMPIN, JUAN C. \* Assistant Professor, 1999; MA, 1995, National Conservatory of Music, France, DMA, 2000, Stanford University, PhD, 2000, Stanford University; Sound Art. Music Composition. Digital Sound Processing/Synthesis. Spectral Modeling

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## Drama

BLAU, HERBERT \* Adjunct Professor, 2000; MA, 1949, Stanford University, PhD, 1954, Stanford University; Modern/postmodern literature, critical theory, drama, performance and the visual arts

BRYANT-BERTAIL, SARAH \* Associate Professor, 1990; MA, 1981, University of Minnesota, PhD, 1986, University of Minnesota; Western & Asian drama, theater history, performance practices, film, critical theory

CLAY, JACK D., Professor Emeritus, 1986; MA, 1956, Northwestern University

COMTOIS, MARY ELIZABETH, Professor Emeritus, 1985; MA, 1962, San Francisco State, PhD, 1970, University of Colorado (Boulder)

CRIDER, JAMES R, Professor Emeritus, 1952; MA, 1950, University of Washington

CURTIS-NEWTON, VALERIE \* Associate Professor, 1998; MA, 1996, University of Washington; Theatrical production, theatre technique, and theatre history with emphasis upon African American and Feminist Theatre

DAHLSTROM, ROBERT A \* Professor Emeritus, 1971; MA, 1967, University of Illinois; design

FORRESTER, WILLIAM D \* Associate Professor Emeritus, 1972; MFA, 1969, Yale University; scene design

GATES, SARAH N \* Professor, 1983; MA, 1974, University of California (Santa Barbara), MFA, 1983, Boston University; costume design

HAFSO, SCOTT, Lecturer, 1996; MFA, 1995, University of Washington, MMus, 1999, University of Washington

JOHNSON, DAVID ODAI \* Associate Professor, 1998; MFA, 1990, University of Utah, PhD, 1994, University of Texas (Austin); Theatre history with an area of emphasis in English Restoration and 18th century

KORF, GEOFFREY L \* Assistant Professor, 2002; MFA, 1991, Yale University; lighting design

LYNCH, THOMAS \* Professor, 2005; MFA, 1979, Yale University; Scenic Design for the Stage

MADDEN, CATHERINE M, Senior Lecturer, 1987; MA, 1977, Washington University

MEZUR, KATHERINE \* Assistant Professor, 2007; MA, 1979, Mills College, PhD, 1998, University of Hawaii; Theatre theory and criticism with an emphasis on gender studies, corporeality and media, and transnational performance in the Asia Pacific region

PARKER, SHANGA KYLE GERARD \* Associate Professor, 1994; MFA, 1991, University of California (San Diego); Acting in Shakespearean verse

SYDOW, JOHN D, Professor Emeritus, 1970; MFA, 1950, Yale University

TROUT, DEBORAH L \* Senior Lecturer, 1994; MFA, 1994, Yale University; Design for the theatre; costume and set design

TSAO, ANDREW H \* Associate Professor, 2006; MFA, 1990, California Institute of The Arts; Acting and directing, emphasis on camera work

VALENTINETTI, AURORA, Associate Professor Emeritus, 1957; MA, 1949, University of Washington

WOLCOTT, JOHN R, Assistant Professor Emeritus, 1967; MFA, 1964, Carnegie Institute of Technology, PhD, 1967, Ohio State University

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## Earth and Space Sciences

AALTO, ROLF E \* Affiliate Assistant Professor, 2002; MS, 1995, University of Washington, PhD, 2002, University of Washington; Quantitative Geomorphology and Geochronology

ADAMS, JOHN B, Professor Emeritus, 1961; MS, 1958, University of Washington, PhD, 1961, University of Washington

ANDERSON, PATRICIAM \* Research Professor, 1982; MA, 1976, Brown University, PhD, 1982, Brown University; paleoecology, paleoclimatology, Quaternary studies, biogeography, and North American archaeology

ATWATER, BRIAN F \* Affiliate Professor, 1986; MS, 1974, Stanford University, PhD, 1980, University of Delaware; Quaternary geology, earthquake hazards

BACHMANN, OLIVIER \* Assistant Professor, 2001; MSC, 1997, University of Geneva (Switzerland), PhD, 2000, University of Geneva (Switzerland); Igneous Petrology; Volcanic Systems

BAKER, MARCIA \* Professor Emeritus, 1971; MS, 1960, Stanford University, PhD, 1971, University of Washington; cloud physics, atmospheric geophysics

BATTISTI, DAVID S \* Adjunct Professor, 1988; MS, 1981, University of Washington, PhD, 1988, University of Washington; large-scale atmosphere-ocean dynamics, climate dynamics, tropical circulation, polar climates, paleoclimate

BERGANTZ, GEORGE W \* Professor, 1988; MS, 1985, Georgia Institute of Technology, PhD, 1988, Johns Hopkins University; physical petrology, heat and mass transfer, geophysics

BERNARD, EDDIE NOLAN \* Affiliate Professor, 2005; MS, 1970, Texas A&M University, PhD, 1976, Texas A&M

University; Tsunami, ocean climate, fisheries oceanography, submarine volcanic impact on ocean environment

BODIN, PAUL A \* Research Associate Professor, 2006; MA, 1981, Humboldt State University, PhD, 1992, University of Colorado (Boulder); Seismology; Earthquake triggering, impacts, hazard mitigation

BOOKER, JOHN R \* Professor, 1971; MS, 1965, University of California (San Diego), PhD, 1968, University of California (San Diego); geophysical fluid dynamics, geomagnetism, inverse theory

BOOTH, DEREK B \* Affiliate Professor, 1984; MS, 1980, Stanford University, PhD, 1984, University of Washington; Environmental geology, particularly human influences on hillslopes, runoff, and rivers

BOURGEOIS, JOANNE \* Professor, 1980; PhD, 1980, University of Wisconsin (Madison); sedimentology, sedimentary geology

BROWN, J. MICHAEL \* Professor, 1984; MS, 1978, University of Washington, PhD, 1980, University of Minnesota; experimental and theoretical mineral and rock physics

BROWNLEE, DONALD E \* Adjunct Professor, 1971; PhD, 1971, University of Washington; origin of the solar system, comets, interplanetary dust

BUICK, ROGER \* Professor, 2001; PhD, 1986, University of West Australia; Astrobiology, paleontology, stratigraphy, early earth evolution

BUSINGER, JOOST A, Professor Emeritus, 1958; PhD, 1954, University of Utrecht (Netherlands)

CHARLSON, ROBERT J, Professor Emeritus, 1962; MS, 1959, Stanford University, PhD, 1964, University of Washington

CHENEY, ERIC S. \* Professor Emeritus, 1964; PhD, 1964, Yale University; economic geology, application of light isotopes to ore deposits

CLADOUHOS, TRENTON T, Affiliate Assistant Professor, 1995; PhD, 1993, Cornell University

CLARK, KENNETH C, Professor Emeritus, 1948; MA, 1941, Harvard University, PhD, 1947, Harvard University

CONWAY, HOWARD B \* Research Professor, 1987; PhD, 1986, University of

Canterbury (New Zealand); glaciology with emphasis on physical process in snow and ice

COOPER, KARI MELISSA \* Affiliate Assistant Professor, 2002; MS, 1995, University of Washington, PhD, 2001, University of California (Los Angeles); Isotope geochemistry of volcanic rocks; timescales of magmatic processes; mantle geochemistry

COWAN, DARREL S \* Professor, 1974; PhD, 1972, Stanford University; structural geology and regional tectonics

CREAGER, JOE S, Professor Emeritus, 1958; MS, 1953, Texas A&M University, PhD, 1958, Texas A&M University

CREAGER, KENNETH C \* Professor, 1986; PhD, 1984, University of California (San Diego); global seismology and geophysical inverse theory

CROSSON, ROBERT S \* Professor Emeritus, 1966; MS, 1963, University of Utah, PhD, 1966, Stanford University; seismology, structure of the earth, tectonics

DAVIES-VOLLUM, SIAN \* Adjunct Associate Professor, 2003; MSC, 1990, University of London: Imperial College, DPhil, 1993, Oxford University (UK); Sedimentology, paleobotany, taphonomy and coal geology of fluvio-alluvial environments

DECOSMO, JANICE M, Affiliate Assistant Professor, 1991; MS, 1984, University of Oregon, PhD, 1991, University of Washington

DELANEY, JOHN R. \* Adjunct Professor, 1977; MA, 1967, University of Virginia, PhD, 1977, University of Arizona; geological oceanography, origin of oceanic crust, igneous petrology

EVANS, BERNARD W, Professor Emeritus, 1969; PhD, 1959, Oxford University (UK)

GHIORSO, MARK S \* Affiliate Professor, 1980; MA, 1978, University of California (Berkeley), PhD, 1980, University of California (Berkeley); Geochemistry, Petrology

GHOSE, SUBRATA \* Professor Emeritus, 1972; MSC, 1955, University of Calcutta (India), MS, 1959, University of Chicago, PhD, 1959, University of Chicago

GILLESPIE, ALAN R. \* Professor, 1985; MS, 1977, California Institute of Technology, PhD, 1982, California Institute of Technology; landscape evolution,

paleoclimate, geochronology, and applications of remote sensing

GONZALEZ, FRANK IGNACIO \* Affiliate Professor, 2005; PhD, 1974, University of Hawaii; Tsunami science, hazard assessment and mitigation

HALLET, BERNARD \* Professor, 1979; PhD, 1975, University of California (Los Angeles); glaciology, permafrost studies, geomorphology

HANDCOCK, REBECCA, Affiliate Assistant Professor, 2005; MSC, 1995, University of Toronto (Canada), PhD, 2001, University of Toronto (Canada)

HANSEN, GARY B. \* Research Assistant Professor, 2002; MS, 1986, University of Washington, PhD, 1996, University of Washington; Planetary Remote Sensing

HARNETT, ERIKA \* Research Associate Professor, 2003; MA, 1998, University of Washington, PhD, 2003, University of Washington; Space Physics, Planetary Systems Environment Modeling

HARRIS, WALTER M \* Affiliate Associate Professor, 2003; PhD, 1993, University of Michigan; Observational study of planet/comet atmospheres; space science instrumentation development

HAUGERUD, RALPH \* Affiliate Assistant Professor, 2002; MS, 1980, Western Washington University, PhD, 1985, University of Washington; Pacific NW regional geology, geologic mapping, GIS in earth sciences

HERNANDEZ, GONZALO \* Research Professor, 1989; PhD, 1962, University of Rochester; optical interference phenomena, with application to remote sensing of atmospheres

HOLZWORTH, ROBERT \* Professor, 1982; MA, 1974, University of California (Berkeley), PhD, 1977, University of California (Berkeley); experimental space plasma physics, atmospheric/magnetospheric electric fields, thunderstorms

HOPPE, KATHRYN A, Affiliate Assistant Professor, 2004; MS, 1992, University of Washington, PhD, 1999, Princeton University

HOUSTON, HEIDI B \* Professor, 2006; MS, 1980, University of Wisconsin (Madison), PhD, 1987, California Institute of Technology; Seismology; Earthquake fault mechanics, nucleation

IVERSON, RICHARD M, Affiliate Professor, 1990; MS, 1980, Stanford University, MS, 1981, Stanford University, PhD, 1984, Stanford University

JACOBSON, ABRAM R. \* Affiliate Professor, 2005; PhD, 1974, Harvard University; Space Physics, Lightning Research (ground-to-satellite)

JOHNSON, HARLAN PAUL \* Adjunct Professor, 1972; MS, 1966, Southern Illinois University, PhD, 1972, University of Washington; paleomagnetism and marine geophysics

JOUGHIN, IAN R. \* Affiliate Associate Professor, 2005; MS, 1990, University of Vermont, PhD, 1995, University of Washington; Ice Dynamics, Remote Sensing, Climate Change

KRESS, VICTOR C \* Research Associate Professor, 1996; MS, 1986, State University of New York (Stony Brook), PhD, 1990, University of California (Berkeley); Experimental and theoretical igneous petrology. Physics and chemistry of volcanic systems

LARSEN, JIMMY C, Affiliate Associate Professor, 1978; MS, 1960, California Institute of Technology, PhD, 1966, University of California (San Diego)

LEOVY, CONWAY B, Professor Emeritus, 1967; PhD, 1963, Massachusetts Institute of Technology

MATSUOKA, KENICHI \* Research Assistant Professor, 2002; MS, 1997, Hokkaido University (Japan), PhD, 2002, Hokkaido University (Japan); Glaciology, Radiowave remote sensing of snow and ice

MC CALLUM, IAN S \* Professor, 1970; PhD, 1968, University of Chicago; petrology

MC CARTHY, MICHAEL P \* Research Associate Professor, 1988; MS, 1980, Western Washington University, PhD, 1988, University of Washington; Natural processes which accelerate or energize charged particles

MCCORD, THOMAS B., Affiliate Professor, 2002; MS, 1966, California Institute of Technology, PhD, 1968, California Institute of Technology

MERCER, JAMES A \* Research Professor, 1989; PhD, 1983, University of Washington; ocean acoustic tomography, global climate measurements, and ocean dynamic modeling

MERRILL, RONALD T \* Professor Emeritus, 1967; MS, 1961, University of Michigan, PhD, 1967, University of California (Berkeley); geomagnetism

MONTGOMERY, DAVID R \* Professor, 1991; PhD, 1991, University of California (Berkeley); earth surface processes, especially those occurring in mountain drainage basins

NELSON, BRUCE K. \* Professor, 1986; MS, 1980, University of Kansas, PhD, 1985, University of California (Los Angeles); isotopic and geochemical investigations

NESBITT, ELIZABETH A. \* Affiliate Assistant Professor, 1993; PhD, 1982, University of California (Berkeley), PhD, 1982, University of California (Berkeley); Paleoenvironments and stratigraphy of the Pacific Northwest of Tertiary rocks

NEUMANN, THOMAS A., Affiliate Assistant Professor, 2003; PhD, 2003, University of Washington

NEWHALL, CHRISTOPHER \* Affiliate Professor, 1994; MS, 1977, University of California (Davis), PhD, 1980, Dartmouth College; Volcanology; processes, prediction, products and societal impacts of volcanic eruptions

NITTROUER, CHARLES \* Professor, 1978; MS, 1974, University of Washington, PhD, 1978, University of Washington; geological oceanography, continental-margin sedimentation

ODOM, ROBERT I. \* Research Associate Professor, 1993; MSE, 1973, University of Washington, PhD, 1980, University of Washington; Theoretical seismology; ocean acoustic tomography; wave propagation and scattering

PARKS, GEORGE K, Professor Emeritus, 1971; PhD, 1966, University of California (Berkeley)

PARSONS, JEFFREY D \* Affiliate Assistant Professor, 2000; MSCE, 1995, University of Illinois (Urbana), PhD, 1998, University of Illinois (Urbana); Sediment dynamics, environmental fluid mechanics, submarine and Martian morphology

PORTER, STEPHEN C, Professor Emeritus, 1962; MS, 1958, Yale University, PhD, 1962, Yale University

PRATT, THOMAS L. \* Affiliate Professor, 2003; MS, 1982, Virginia Polytechnic Institute and State University, PhD, 1986, Virginia Polytechnic Institute and State University; Earthquake hazards, active fault structures, seismic imaging

PUTKONEN, JAAKKO K \* Affiliate Associate Professor, 1997; MS, 1990, University of Helsinki (Finland), PhD, 1997, University of Washington; Geomorphology, Quaternary geology, Arctic and Antarctic

surface processes, permafrost, slope processes

RAYMOND, CHARLES F, Professor Emeritus, 1969; PhD, 1969, California Institute of Technology

RENSBERGER, JOHN M \* Professor Emeritus, 1966; MA, 1961, University of California (campus unspecified), PhD, 1967, University of California (campus unspecified); Vertebrate paleontology and evolution, structures of hard tissues in vertebrate animals, functional morphology, systematics

ROE, GERARD H \* Associate Professor, 1999; PhD, 1999, Massachusetts Institute of Technology; Climate physics and dynamics, interaction with Earth's surface, Glaciology, Geomorphology

SACK, RICHARD O \* Affiliate Professor, 1993; MA, 1975, Harvard University, PhD, 1979, Harvard University; petrology, thermochemistry of rock-forming minerals

SAHR, JOHN D. \* Adjunct Professor, 1991; PhD, 1990, Cornell University; radar remote sensing, ionospheric physics; signal processing; wireless communications

SCHREIBER, B. CHARLOTTE \* Affiliate Professor, 2005; MA, 1966, Rutgers University, PhD, 1974, Rensselaer Polytechnic Institute; Sedimentology, stratigraphy, carbonates and evaporites

SHERROD, BRIAN L. \* Affiliate Assistant Professor, 1998; MS, 1989, University of Pittsburgh, PhD, 1998, University of Washington; Geomorphic, structural, and paleoenvironmental characteristics of active fault zones as they relate to the Puget Sound region

SIDOR, CHRISTIAN A \* Adjunct Assistant Professor, 2005; MS, 1997, University of Chicago, PhD, 2000, University of Chicago

SLETTEN, RONALD S \* Research Associate Professor, 1995; MSE, 1987, University of Washington, PhD, 1995, University of Washington; Environmental and low temperature geochemistry focusing on the arctic and antarctic

SMITH, STEWART W, Professor Emeritus, 1970; MS, 1958, California Institute of Technology, PhD, 1961, California Institute of Technology

STEIG, ERIC J \* Associate Professor, 2001; MS, 1992, University of Washington, PhD, 1996, University of Washington; Glaciology, isotope chemistry and physics, past and future climate change

STONE, JOHN O.H. \* Assistant Professor, 1998; PhD, 1986, Cambridge University (UK); Quaternary dating and geomorphological studies with cosmic-ray-produced isotopes

STUIVER, MINZE, Professor Emeritus, 1969; PhD, 1958, University of Groningen (Netherlands)

LEOVY, CONWAY B, Professor Emeritus, 1967; PhD, 1963, Massachusetts Institute of Technology

SWANSON, BRIAN \* Research Associate Professor Emeritus, 1993; MS, 1985, University of Washington, PhD, 1992, University of Washington; atmospheric geophysics, condensed matter physics and the physics of ice

SWANSON, DONALD A \* Affiliate Professor, 1992; PhD, 1964, Johns Hopkins University; volcanology

SWANSON, TERRY W \* Senior Lecturer, 1994; MA, 1989, University of California (Davis), PhD, 1994, University of Washington; geo-chronology

TITOV, VASSILII V \* Affiliate Assistant Professor, 2005; MS, 1984, Novosibirsk State University (Russia), PhD, 1997, University of Southern California; Tsunami Modeling

TUDHOPE, ALEXANDER W. \* Affiliate Professor, 2004; PhD, 1983, Edinburgh University, Scotland; Global Change; Quaternary Paleoenvironments

TYLER, ROBERT H., Affiliate Assistant Professor, 2000; MS, 1992, University of Puerto Rico, PhD, 1995, McGill University (Canada)

UNTERSTEINER, NORBERT, Professor Emeritus, 1962; PhD, 1950, University of Innsbruck (Austria)

VIDALE, JOHN E \* Professor, 2006; PhD, 1987, California Institute of Technology; Seismology; Earthquake triggering, core/mantle dynamics, impacts, hazard mitigation

WADDINGTON, EDWIN D \* Professor, 1984; MSC, 1973, University of Alberta, Canada, PhD, 1981, University of British Columbia (Canada); glacier and ice sheet modeling, interpretation of ice sheet stratigraphy

WARD, PETER D. \* Professor, 1985; MS, 1973, University of Washington, PhD, 1976, McMaster University (Canada); invertebrate paleontology, paleobiology

WARREN, STEPHEN G \* Professor, 1981; MA, 1969, Harvard University, PhD, 1973, Harvard University; atmospheric radiation, climatology, glaciology

WILCOCK, WILLIAM S D \* Adjunct Professor, 1993; MSC, 1986, Imperial College, PhD, 1992, Massachusetts Institute of Technology; marine seismology, dynamics of mid-ocean ridges, geological fluid dynamics

WILLETT, SEAN D. \* Affiliate Associate Professor, 1998; PhD, 1988, University of Utah; Numerical modeling of lithospheric processes; mechanical and thermal processes associated with orogenic mountain-building development of process-based landscape evolution models to address the erosion of active mountain belts

WINEBRENNER, DALE P. \* Research Professor, 1986; MS, 1980, University of California (San Diego), PhD, 1985, University of Washington; optical and radiowave propagation and scattering, remote sensing of planetary surfaces and subsurfaces, optical probing for life and biogenic materials in extreme environments

WINGLEE, ROBERT M \* Professor, 1991; PhD, 1984, University of Sydney (Australia); space weather, energetic phenomena in sun/earth plasmas, excitation of waves, high energy particle acceleration, advanced spacecraft propulsion

ZIEMBA, TIMOTHY M. \* Affiliate Assistant Professor, 2004; MS, 1997, University of Washington, PhD, 2003, University of Washington; Experimental plasma physics; advanced propulsion research

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## Economics

BARZEL, YORAM \* Professor, 1961; MA, 1956, Hebrew University (Israel), PhD, 1961, University of Chicago; price theory

BROCK, PHILIP L \* Associate Professor, 1991; PhD, 1982, Stanford University; economic liberalization with emphasis on financial markets and capital accumulation

BROWN, GARDNER, Professor Emeritus, 1965; PhD, 1964, University of California (Berkeley)

BRUCE, NEIL \* Professor, 1990; MA, 1969, Queen's University At Kingston (Canada), PhD, 1975, University of Chicago; public finance (economics of the public sector), especially taxation

CHEN, YU-CHIN \* Assistant Professor, 2003; MA, 1996, Harvard University, PhD, 2002, Harvard University; International finance, open economy macroeconomics, international trade and growth

CRUTCHFIELD, JAMES A, Professor Emeritus, 1949; MA, 1942, University of California (Los Angeles), PhD, 1954, University of California (Berkeley)

EICHER, THEO S. \* Professor, 1994; MA, 1991, Columbia University, MPhil, 1993, Columbia University, PhD, 1994, Columbia University; international, development, and macroeconomics, with emphasis on economic growth

HADJIMICHALAKIS, MICHAEL \* Associate Professor, 1969; PhD, 1970, University of Rochester; monetary theory and policy, macroeconomics, growth

HALVORSEN, ROBERT F \* Professor, 1972; MBA, 1965, Harvard University, MPA, 1968, Harvard University, PhD, 1973, Harvard University; natural resource economics

HARTMAN, RICHARD C \* Professor, 1971; PhD, 1971, University of California (Berkeley), MA, 1971, University of California (Berkeley); economic theory

HUPPERT, DANIEL D. \* Adjunct Professor, 1987; MA, 1972, University of Washington, PhD, 1975, University of Washington; economics and management of natural resources, especially marine fisheries

KHALIL, FAHAD A. \* Professor, 1991; MA, 1988, Virginia Polytechnic Institute and State University, PhD, 1991, Virginia Polytechnic Institute and State University; information economics and the theory of contracts

KIM, CHANG JIN \* Professor, 1997; PhD, 1989, University of Washington; Time series analysis; applied macroeconomics

KIM, SEIK \* Assistant Professor, 2007; MA, 2002, Seoul National University (Korea), MA, 2003, Yale University, MPhil, 2005, Yale University, PhD, 2008, Yale University; labor economics; microeconometrics

KOCHIN, LEVIS A \* Associate Professor, 1972; PhD, 1975, University of Chicago; macroeconomics, industrial organization

LAWARREE, JACQUES P. \* Professor, 1990; MA, 1984, University of Liege (Belgium), PhD, 1990, University of California (Berkeley); industrial organization, contract theory, game theory

LAYTON, DAVID F \* Adjunct Associate Professor, 2001; MA, 1993, University of

Washington, PhD, 1995, University of Washington; Environmental and Natural Resource Economics and Policy; Non-market Valuation; Discrete Choice Econometrics

LEFFLER, KEITH B \* Associate Professor, 1978; MA, 1974, University of California (Los Angeles), PhD, 1977, University of California (Los Angeles); industrial organization, microeconomics

LONG, MARK C \* Adjunct Assistant Professor, 2004; MPP, 1996, University of Michigan, MA, 1998, University of Michigan, PhD, 2002, University of Michigan; Economics of Education, Race, Inequality, Labor Markets, and Public Goods

LUNDBERG, SHELLY J \* Professor, 1984; PhD, 1981, Northwestern University; labor economics

MAH, FENG-HWA, Professor Emeritus, 1961; MA, 1956, University of Michigan, PhD, 1959, University of Michigan

MC CAFFREE, KENNETH M, Professor Emeritus, 1949; MA, 1942, University of Denver, PhD, 1950, University of Chicago

MC GEE, JOHN S, Professor Emeritus, 1966; PhD, 1952, Vanderbilt University

MORRIS, MORRIS D, Professor Emeritus, 1949; PhD, 1954, University of California (campus unspecified)

NELSON, CHARLES R \* Professor, 1975; MA, 1967, University of Wisconsin, PhD, 1969, University of Wisconsin (Madison); time series analysis, economic statistical analysis, advanced macroeconomic theory

NORTH, DOUGLAS C, Professor Emeritus, 1950; PhD, 1952, University of California (Berkeley)

PLOTNICK, ROBERT D. \* Adjunct Professor, 1984; MA, 1973, University of California (Berkeley), PhD, 1976, University of California (Berkeley); economics of poverty, labor and social welfare policy

RICHARDSON, THOMAS S. \* Adjunct Professor, 1996; MS, 1995, Carnegie Mellon University, PhD, 1996, Carnegie Mellon University; Graphical models; algorithmic model selection; Bayesian inference; causal models; applications in Economics

ROSE, ELAINA \* Associate Professor, 1993; MA, 1988, University of Pennsylvania, PhD, 1993, University of Pennsylvania; Economics of the Household in Developed and Developing Countries

SALEHI-ESFAHANI, HAIDEH \* Senior Lecturer, 1990; PhD, 1985, University of Pennsylvania; Institutional Development in the Transition Economies of Central Asia

STARTZ, RICHARD \* Professor, 1984; PhD, 1978, Massachusetts Institute of Technology; macroeconomics, econometrics, finance

THOMAS, ROBERT P, Associate Professor Emeritus, 1963; PhD, 1964, Northwestern University

THORNTON, JUDITH A \* Professor, 1961; MA, 1958, Radcliffe, PhD, 1960, Radcliffe; Economics of transition, resources

TURNOVSKY, MICHELLE H. L. \* Senior Lecturer, 1987; MBA, 1965, Harvard University, PhD, 1978, Australian National University; Energy economics, international economics, and economics of the European Union

TURNOVSKY, STEPHEN J \* Professor, 1987; MA, 1963, Victoria University of Wellington (New Zealand), PhD, 1968, Harvard University; monetary and macroeconomics, international economics, theory of economic stabilization, public economics

WATTS, CAROLYN A. \* Adjunct Professor, 1975; MA, 1974, Johns Hopkins University, PhD, 1976, Johns Hopkins University; health economics and policy

WOLFF, HENDRIK GEORG \* Assistant Professor, 2007; MSC, 2000, University of Bonn (Germany), MSC, 2004, University of California (Berkeley); Econometrics, Environmental Economics, Development Economics

WONG, KAR-YIU \* Professor, 1983; MPhil, 1979, Chinese University of Hong Kong, MPhil, 1981, Columbia University, PhD, 1983, Columbia University; international trade, commercial policy, Asian growth and Asian crisis

ZIVOT, ERIC W \* Professor, 1993; PhD, 1992, Yale University; time series, econometrics, applied macroeconomics, empirical finance

## English

ABRAMS, ROBERT \* Professor, 1971; PhD, 1973, Indiana University; American literature

ALEXANDER, EDWARD \* Professor Emeritus, 1960; MA, 1959, University of Minnesota, PhD, 1963, University of

Minnesota; romantic and Victorian literature

ALLEN, CAROLYN \* Professor, 1972; MA, 1966, Claremont Graduate School, PhD, 1972, University of Minnesota; twentieth-century literature, women writers, contemporary critical theory

BARLOW, CANDACE M., Acting Instructor, 2007; MA, 2001, University of Washington, PhD, 2007, University of Washington

BAWARSHI, ANIS \* Associate Professor, 1999; MA, 1995, University of Kansas, PhD, 1999, University of Kansas; Rhetoric and Composition Studies, with an emphasis in genre theory, invention, theories of authorship, and writing pedagogy

BIERDS, LINDA L \* Professor, 1989; MA, 1971, University of Washington; poetry writing; contemporary American poetry

BLAKE, KATHLEEN \* Professor, 1971; MA, 1967, University of California (Los Angeles), PhD, 1971, University of California (San Diego); Victorian literature, children's literature, women's studies

BLAU, HERBERT \* Professor, 2000; MA, 1949, Stanford University, PhD, 1954, Stanford University; Modern/postmodern literature, critical theory, drama, performance and the visual arts

BRENNER, GERALD J, Associate Professor Emeritus, 1966; MA, 1960, San Francisco State, PhD, 1969, University of New Mexico

BROWN, MARSHALL J \* Professor, 1988; MPhil, 1969, Yale University, PhD, 1972, Yale University; eighteenth- and nineteenth-century literature, literary theory, music and literature

BURNS, WAYNE, Professor Emeritus, 1948; MA, 1940, Harvard University, PhD, 1946, Cornell University

BURSTEIN, JESSICAL. \* Associate Professor, 1998; MA, 1990, University of Chicago, PhD, 1998, University of Chicago; British & American modernist literature (1890-1930), focusing on cultural and artistic representations of the body, with emphasis on prosthesis and fashion

BUTWIN, JOSEPH M \* Associate Professor, 1970; MA, 1966, Harvard University, PhD, 1971, Harvard University; Victorian literature

CHERNIAVSKY, EVA \* Professor, 2005;



- PhD, 1990, University of California (Berkeley)
- CHRISMAN, LAURA H \* Professor, 2005; DPhil, 1992, University of Oxford (UK); African and African Diaspora studies; Postcolonial Studies; British imperial literatures
- COLDEWEY, JOHN C \* Professor, 1972; MA, 1969, Northern Illinois University, PhD, 1972, University of Colorado (Boulder); Medieval and Renaissance drama and literature
- COLONNESE, TOM G \* Adjunct Senior Lecturer, 1996; MA, 1974, University of Northern Iowa, PhD, 1981, Arizona State University; American Indian literature, film, and military history
- CUMMINGS, KATHERINE \* Associate Professor, 1985; MA, 1979, Montclair State University, PhD, 1985, University of Wisconsin (Madison); cultural studies, critical theory, queer studies, 20th.c americanist
- DILLON, GEORGE L. \* Professor, 1986; MA, 1966, University of California (Berkeley), PhD, 1969, University of California (Berkeley); rhetoric, composition
- DUNN, RICHARD J. \* Professor Emeritus, 1967; MA, 1961, Case Western Reserve University, PhD, 1964, Case Western Reserve University; Victorian literature, English novel
- FEETHAM, ELIZABETH L, Affiliate Assistant Professor, 1970; MA, 1967, University of Washington, PhD, 1977, University of Washington
- FELD, ANDREW E \* Assistant Professor, 2006; MFA, 1998, University of Houston; poetry writing
- FOSTER, RONALD THOMAS \* Professor, 2005; MA, 1984, University of Texas (Austin), PhD, 1990, University of Wisconsin
- FREY, CHARLES HUBBARD, Professor Emeritus, 1970; JD, 1960, Harvard University, PhD, 1971, Yale University
- GEORGE, E. LAURIE \* Senior Lecturer, 1991; MA, 1980, University of Oregon, PhD, 1984, University of Oregon; Computer-integrated pedagogy (writing and literature) feminist pedagogies, rhetoric, American literature
- GERSTENBERGER, DONNA, Professor Emeritus, 1960; MA, 1952, University of Oklahoma, PhD, 1958, University of Oklahoma
- GILLIS-BRIDGES, KIMBERLEE, Senior Lecturer, 1999; MA, 1990, University of Washington, PhD, 1999, Claremont Graduate School
- GRAHAM, JOAN ADELLE, Senior Lecturer, 1975; MA, 1972, University of Washington, PhD, 1973, University of Washington
- GRIFFITH, JOHN W \* Associate Professor, 1968; PhD, 1969, University of Oregon; American literature
- GRIFFITH, MALCOLM A, Assistant Professor Emeritus, 1966; MA, 1962, Ohio State University, PhD, 1966, Ohio State University
- GUERRA, JUAN C \* Associate Professor, 1990; MA, 1983, University of Illinois, PhD, 1992, University of Illinois; Literacy, Ethnography, Composition, Pedagogy and Chicano Literature
- HALMI, NICHOLAS \* Associate Professor, 2001; MA, 1989, University of Toronto (Canada), PhD, 1995, University of Toronto (Canada); Enlightenment and Romantic literature (English and German), philosophy, and science; literary theory; architectural history
- HANDWERK, GARY J \* Professor, 1984; PhD, 1984, Brown University; British, German and French nineteenth- and twentieth-century narrative; Romantic and post-Romantic literary theory and philosophy
- HARKINS, GILLIAN H \* Assistant Professor, 2002; PhD, 2002, University of California (Berkeley); 20th century United States literature and culture; gender and sexuality
- HEUVING, JEANNE D. \* Adjunct Associate Professor, 1990; MA, 1982, University of Washington, PhD, 1988, University of Washington; 20th century American poetry, modern literature, critical theory (especially poststructuralist), women's studies, creative writing (poetry)
- HUDSON, LOIS PHILLIPS, Associate Professor Emeritus, 1969; DLitt, 1965, North Dakota State University
- IBRAHIM, HABIBA \* Assistant Professor, 2006; PhD, 2005, State University of New York (Albany); African American literary criticism and theory
- JEFFORDS, SUSAN E. \* Professor, 1985; MA, 1977, University of Pennsylvania, PhD, 1981, University of Pennsylvania; feminist theory, American popular culture, and the representation of Vietnam
- JOHNSON, CHARLES R \* Professor, 1976; MA, 1973, Southern Illinois University, PhD, 1988, State University of New York (Stony Brook); fiction writing
- JOHNSON-BOGART, KIM, Affiliate Assistant Professor, 1998; MA, 1988, University of Washington, PhD, 1993, University of Washington
- KANNO, YASUKO \* Affiliate Assistant Professor, 2002; MA, 1991, Keio University (Japan), PhD, 1996, University of Toronto (Canada); language and identity, bilingual/ESL education, qualitative research methods
- KAPLAN, SYDNEY J \* Professor, 1971; MA, 1966, University of California (Los Angeles), PhD, 1971, University of California (Los Angeles); twentieth-century literature, women writers, feminist criticism
- KORG, JACOB, Professor Emeritus, 1955; MA, 1947, Columbia University, PhD, 1952, Columbia University
- LAGUARDIA, ERIC HENRY \* Associate Professor, 1961; PhD, 1961, University of Iowa; Renaissance literature
- LAPORTE, CHARLES P \* Assistant Professor, 2005; MA, 1997, University of Virginia, PhD, 2004, University of Michigan
- LAUFENBERG, HENRY J, Lecturer, 2003; MA, 1994, University of Washington, MA, 1996, San Francisco State, PhD, 2001, University of California (Riverside)
- LIU, MICHELLE S., Lecturer, 2001; MA, 1996, Yale University, PhD, 2003, Yale University
- LOCKWOOD, THOMAS FRANK \* Professor, 1967; PhD, 1967, Rice University; eighteenth-century literature
- LONGYEAR, CHRISTOPHER R, Associate Professor Emeritus, 1972; MA, 1955, University of Michigan, PhD, 1961, University of Michigan
- MALONE, ERIN C., Affiliate Assistant Professor, 2007; MFA, 1996, University of Washington
- MATCHETT, WILLIAM H, Professor Emeritus, 1954; MA, 1950, Harvard University, PhD, 1957, Harvard University
- MC CRACKEN, J DAVID, Professor Emeritus, 1966; MA, 1962, University of Chicago, PhD, 1966, University of Chicago
- MC ELROY, COLLEEN J \* Professor Emeritus, 1983; PhD, 1973, University of Washington; Black literature, women

- writers, poetry writing
- MC HUGH, HEATHER \* Professor, 1982; MA, 1972, University of Denver; writing and close reading of poetry, form in nature and art
- MC NAMARA, ROBERT J, Senior Lecturer, 1985; MA, 1975, Colorado State University, PhD, 1985, University of Washington
- MODIANO, RAIMONDA \* Professor, 1973; Diploma, 1968, University of Bucharest (Romania), PhD, 1973, University of California (San Diego); romanticism
- MOODY, JOYCELYN K. \* Affiliate Associate Professor, 1991; MA, 1980, University of Wisconsin (Madison), PhD, 1993, University of Kansas; 19th c. American Literature; African-American Autobiography; Women's Literature
- MOORE, COLETTE V \* Assistant Professor, 2005; PhD, 2004, University of Michigan; History of the English language, medieval literature, and the ideologies of present-day English
- MUSSETTER, SALLY ANN, Associate Professor Emeritus, 1978; MA, 1962, Ohio State University, PhD, 1975, Cornell University
- O'NEILL, JOHN, Senior Lecturer, 1996; MA, 1986, University of Washington
- PALOMO, DOLORES J, Associate Professor Emeritus, 1971; MA, 1966, Wayne State University, PhD, 1972, State University of New York (Buffalo)
- PATTERSON, MARK R \* Associate Professor, 1981; PhD, 1981, Princeton University; American literature
- POPOV, NIKOLAI B., Senior Lecturer, 1982; PhD, 1994, University of Washington
- REDDY, CHANDAN C. \* Assistant Professor, 2001; MA, 1995, Columbia University, MPhil, 1999, Columbia University, PhD, 2004, Columbia University; Critical Race Theory and American Studies, Sexuality and Queer Studies, Globalization Studies and Diaspora Studies
- REED, BRIAN \* Associate Professor, 2000; PhD, 2000, Stanford University; Modernist and postmodernist American poetry
- REINERT, OTTO, Professor Emeritus, 1956; MA, 1948, Yale University, PhD, 1952, Yale University
- REMLEY, PAUL G \* Professor, 1988; MA, 1985, University of Cambridge (UK), MPhil, 1987, Columbia University, PhD, 1990, Columbia University; Old and Middle English, medieval languages and literatures, critical theory
- RETMAN, SONNET H., Adjunct Assistant Professor, 2002; PhD, 1997, University of California (Los Angeles)
- RUSS, JOANNA, Professor Emeritus, 1977; MFA, 1960, Yale University
- SALE, ROGER H, Professor Emeritus, 1962; MA, 1954, Cornell University, PhD, 1957, Cornell University
- SEARLE, LEROY F \* Professor, 1977; MA, 1968, University of Iowa, PhD, 1970, University of Iowa; twentieth-century literature, critical theory, American studies
- SHIELDS, DAVID \* Professor, 1988; MFA, 1980, University of Iowa; fiction writing, screen writing, twentieth-century literature, autobiography, mass media, film
- SHULMAN, ROBERT \* Professor Emeritus, 1961; PhD, 1959, Ohio State University, MA, 1959, Ohio State University; American literature
- SILBERSTEIN, SANDRA V \* Professor, 1982; MA, 1971, University of Michigan, PhD, 1982, University of Michigan; TESL, critical theory, discourse analysis, sociolinguistics, language and culture
- SIMMONS-ONEILL, ELIZABETH, Senior Lecturer, 1988; MA, 1982, University of Washington, PhD, 1988, University of Washington
- SIMONSON, HAROLD P, Professor Emeritus, 1967; MA, 1951, Northwestern University, PhD, 1958, Northwestern University
- SIMPSON, CAROLINE CHUNG \* Associate Professor, 1994; MA, 1989, University of Houston, PhD, 1994, University of Texas (Austin); Asian American studies and postwar American culture
- SISKO, NANCY J., Affiliate Assistant Professor, 1992; MA, 1986, University of Maine, PhD, 1992, University of Washington
- SMITH, EUGENE H, Associate Professor Emeritus, 1958; MA, 1954, University of Washington, PhD, 1963, University of Washington
- SONENBERG, MAYA \* Associate Professor, 1996; MA, 1984, Brown University; fiction writing, twentieth-century fiction, postmodern fiction, women writers
- STANTON, ROBERT B, Associate Professor Emeritus, 1956; MA, 1950, University of Missouri (Kansas City), PhD, 1953, Indiana University
- STATEN, HENRY J. \* Professor, 1998; PhD, 1978, University of Texas (Austin); 19th and 20th century British literature, history of literary criticism, contemporary literary theory
- STEVICK, ROBERT D, Professor Emeritus, 1962; MA, 1951, University of Tulsa, PhD, 1956, University of Wisconsin (Madison)
- STREITBERGER, WILLIAM R \* Professor, 1973; MA, 1971, University of Illinois, PhD, 1973, University of Illinois; Renaissance literature, textual criticism, paleography
- STYGALL, GAIL \* Associate Professor, 1990; PhD, 1989, Indiana University, PhD, 1989, Indiana University; discourse analysis, rhetoric and composition, English language linguistics, forensic linguistics
- SUMIDA, STEPHEN H. \* Adjunct Professor, 1998; MA, 1970, Columbia University, PhD, 1982, University of Washington; Asian American, multicultural, American literary and interdisciplinary studies
- TOLLEFSON, JAMES W \* Professor Emeritus, 1980; MA, 1973, Purdue University, PhD, 1978, Stanford University; English as a second language, language planning
- TRIPLETT, PIMONE E \* Assistant Professor, 2006; MFA, 1990, University of Iowa; poetry writing
- VANDENBERG, SARA J., Associate Professor Emeritus, 1980; MA, 1965, Yale University, MPhil, 1967, Yale University, PhD, 1969, Yale University
- VAUGHAN, MICEAL F \* Associate Professor, 1973; PhD, 1973, Cornell University, MA, 1973, Cornell University; medieval European languages and literature; textual studies
- WACKER, NORMAN J., Senior Lecturer, 1979; MA, 1976, University of Washington, PhD, 1986, University of Washington
- WAGONER, DAVID R, Professor Emeritus, 1954; MA, 1949, Indiana University
- WALD, PRISCILLA B. \* Affiliate Associate Professor, 1995; MA, 1981, Columbia University, MPhil, 1983, Columbia University, PhD, 1989, Columbia University; United States Literature and Cultures; Feminisms; Ethnic and Cultural Studies
- WEBSTER, JOHN M \* Associate Professor, 1972; MA, 1969, University of California (Berkeley), PhD, 1974, University of

California (Berkeley); Renaissance literature

WEINBAUM, ALYS E. \* Associate Professor, 1998; MA, 1990, University of Sussex (UK), MA, 1992, Columbia University, PhD, 1998, Columbia University; Feminist theory; representations of race and reproduction in modern literature

WONG, SHAWN H \* Professor, 1984; MA, 1974, San Francisco State; creative writing, Chinese-American area studies

WOODWARD, KATHLEEN \* Professor, 2000; PhD, 1976, University of California (San Diego)

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## Geography

BEYERS, WILLIAM B \* Professor, 1966; PhD, 1967, University of Washington; regional science, economic geography, location theory, regional analysis, environment of the Pacific Northwest

BRADEN, KATHLEEN, Affiliate Professor, 1989; MA, 1974, University of Washington, PhD, 1981, University of Washington

BROWN, MICHAEL P. \* Professor, 1997; MA, 1990, University of British Columbia (Canada), PhD, 1994, University of British Columbia (Canada); political geography, cultural geography, health geography, sexuality

CHAN, KAM WING \* Professor, 1991; MSC, 1983, University of Hong Kong, PhD, 1988, University of Toronto (Canada); economic development, urbanization, migration, labor market, China, Hong Kong

CHANG, KUEI-SHENG, Associate Professor Emeritus, 1966; MA, 1950, University of Michigan, PhD, 1955, University of Michigan

CONWAY, RICHARD S, Affiliate Associate Professor, 1975; MBA, 1971, University of Washington, MA, 1972, University of Pennsylvania, PhD, 1976, University of Pennsylvania

ELLIS, JOHN MARK \* Professor, 1999; MA, 1984, Indiana University, PhD, 1988, Indiana University; Race, ethnicity, immigration and local labor markets

ELWOOD-FAUSTINO, SARAH A. \* Assistant Professor, 2006; MA, 1996, University of Minnesota, PhD, 2000, University of Minnesota; Geographical information systems, urban geography, critical social theory

ENGLAND, KIM V.L. \* Associate Professor, 1999; MA, 1984, Ohio State University, PhD, 1988, Ohio State University; Employment studies (especially women), families, child care, feminist methodology

FLEMING, DOUGLAS K, Professor Emeritus, 1965; PhD, 1965, University of Washington

HARRINGTON, JAMES W. \* Professor, 1997; MA, 1980, University of Washington, PhD, 1983, University of Washington; roles of industrial change and labor processes in sub-national, regional economic development

HAYES, MICHAEL V, Affiliate Assistant Professor, 1990; MSC, 1986, McMaster University (Canada), PhD, 1989, McMaster University (Canada)

HERBERT, STEVEN K \* Associate Professor, 2000; MA, 1987, University of Minnesota, PhD, 1995, University of California (Los Angeles); Policing and social control; American criminal justice; geography and law

JACKSON, W A DOUGLAS, Professor Emeritus, 1955; MA, 1949, University of Toronto (Canada), PhD, 1953, University of Maryland

JAROSZ, LUCY A. \* Associate Professor, 1990; MA, 1979, University of Wisconsin, PhD, 1990, University of California (Berkeley); political economy of development, food and agriculture, feminist geography, political ecology

JEFFREY, CRAIG J \* Associate Professor, 2005; PhD, 1999, University of Cambridge (UK), MA, 1999, University of Cambridge (UK)

KAKIUCHI, GEORGE H, Associate Professor Emeritus, 1957; MA, 1953, University of Michigan, PhD, 1957, University of Michigan

KNOPP, LAWRENCE M., Affiliate Professor, 2005; MA, 1985, University of Iowa, PhD, 1989, University of Iowa

KRUMME, GUNTER \* Professor Emeritus, 1970; PhD, 1966, University of Washington; economic geography, regional economics, location theory, organization and decision theory, European regional development and planning

LAWSON, VICTORIA A. \* Professor, 1986; MA, 1982, Ohio State University, PhD, 1986, Ohio State University; Latin America, political economy of development, feminist theory in development

LIGHT, ANDREW \* Adjunct Associate

Professor, 2004; MA, 1992, University of California (Riverside), PhD, 1996, University of California (Riverside); Environmental Ethics & Policy, relating to restoration ecology and urban ecology; Philosophy of Technology, relating to ethical issues in emerging technologies; Philosophical issues in Architecture and Urban Planning

MAYER, JONATHAN D \* Professor, 1977; MA, 1975, University of Michigan, PhD, 1977, University of Michigan; infectious disease ecology, infectious diseases in sub-Saharan Africa, tropical and travel medicine, infectious disease epidemiology, global health, and HIV

MITCHELL, KATHARYNE \* Professor, 1993; MA, 1989, University of California (Berkeley), PhD, 1993, University of California (Berkeley); urban economic and cultural geography, with focus on social theory, the Pacific Rim, and Chinese business organization

MORRILL, RICHARD L \* Professor Emeritus, 1958; MA, 1957, University of Washington, PhD, 1959, University of Washington; quantitative methods, political geography, population geography

NYERGES, TIMOTHY L. \* Professor, 1985; MA, 1976, Ohio State University, PhD, 1980, Ohio State University; GIS, spatial decision support, urban, transportation, environment, groupware

SPARKE, MATTHEW \* Professor, 1995; MA, 1991, University of British Columbia (Canada), PhD, 1996, University of British Columbia (Canada); political-geography, social theory, cultural (American & Canadian) studies & Int'l political economy

VELIKONJA, JOSEPH, Professor Emeritus, 1964; PhD, 1948, State University (Italy)

WADDELL, PAUL A \* Adjunct Professor, 1997; MS, 1981, University of Texas (Houston), PhD, 1989, University of Texas (Dallas); urban policy, regional planning, growth management, land use, transportation, GIS

WITHERS, SUZANNE D \* Associate Professor, 1997; MA, 1988, Queen's University At Kingston (Canada), PhD, 1992, University of California (Los Angeles); Urban housing; residential mobility and migration; longitudinal methods; life course dynamics

ZUMBRUNNEN, CRAIG \* Professor, 1975; MS, 1968, California Institute of Technology, PhD, 1973, University of California (Berkeley); resource analysis, Russia and NIS, environment, mathematical programming

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## Germanics

AMES, ERIC C. \* Assistant Professor, 2000; MA, 1993, University of Washington, PhD, 2000, University of California (Berkeley); film history and theory; cultural studies; late nineteenth and twentieth-century literature

BANSLEBEN, MANFRED \* Professor Emeritus, 1988; PhD, 1979, Vienna University of Technology; German language and methodology, history, culture studies

BARRACK, CHARLES M \* Professor, 1968; MA, 1966, University of Washington, PhD, 1969, University of Washington; Germanic linguistics

BEHLER, DIANA I \* Professor, 1969; MA, 1966, University of Washington, PhD, 1970, University of Washington; romanticism, nineteenth century, comparative literature

BLOCK, RICHARD \* Associate Professor, 2004; MA, 1979, University of Washington, PhD, 1998, Northwestern University; The manner in which Jewish identity and sexual identity contest and anchor each other

BROWN, JANE K \* Professor, 1988; MPhil, 1969, Yale University, PhD, 1971, Yale University; seventeenth, eighteenth and nineteenth century, comparative literature

BROWN, MARSHALL J \* Adjunct Professor, 1988; MPhil, 1969, Yale University, PhD, 1972, Yale University; eighteenth- and nineteenth-century literature, literary theory, music and literature

GRAY, RICHARD T \* Professor, 1991; MA, 1976, University of Cincinnati, PhD, 1981, University of Virginia; eighteenth, nineteenth and early twentieth-century literature, literary sociology, critical theory

HRUBY, ANTONIN F, Professor Emeritus, 1961; PhD, 1946, Charles University (Czech Republic)

MC LEAN, SAMMY K, Associate Professor Emeritus, 1967; MA, 1957, University of Michigan, PhD, 1963, University of Michigan

PRUTTI, BRIGITTE \* Associate Professor, 1991; MA, 1987, University of Colorado, DPhil, 1988, University of Graz (Austria), PhD, 1991, University of California (Irvine); eighteenth-century literature, twentieth-century Austrian literature, theory and history of drama

TILGHMAN, HEIDI R., Affiliate Assistant Professor, 2002; PhD, 1989, University of Washington, MA, 1989, University of Washington

VOYLES, JOSEPH B. \* Professor, 1965; MA, 1962, Indiana University, PhD, 1965, Indiana University; Germanics and linguistics

WILKE, SABINE \* Professor, 1988; PhD, 1986, University of Mainz (Germany); critical theory, contemporary theater and film, literature and philosophy

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## History

ALDEN, DAURIL \* Professor Emeritus, 1959; MA, 1952, University of California (Berkeley), PhD, 1959, University of California (Berkeley); Latin American history, comparative colonial history

BACHARACH, JERE L \* Professor Emeritus, 1967; MA, 1962, Harvard University, PhD, 1967, University of Michigan; history of the Near East

BAILKIN, JORDANNA \* Associate Professor, 2001; MA, 1994, Stanford University, PhD, 1998, Stanford University; Modern Britain; colonialism; gender history; museum studies; material culture

BARLOW, TANI E. \* Professor, 1994; MA, 1979, University of California (Davis), PhD, 1985, University of California (Davis); modern Chinese history, feminist studies, East Asia/Asian American studies

BEHLMER, GEORGE K \* Professor, 1979; MA, 1972, Stanford University, PhD, 1977, Stanford University; modern English history

BERGQUIST, CHARLES W \* Professor Emeritus, 1989; MA, 1968, Stanford University, PhD, 1973, Stanford University; modern Latin American history, comparative labor history, Third World development

BRIDGMAN, JON M, Professor Emeritus, 1961; PhD, 1960, Stanford University

BUTOW, ROBERT J C, Professor Emeritus, 1960; MA, 1948, Stanford University, PhD, 1953, Stanford University

CAMP, STEPHANIE M. H. \* Associate Professor, 1995; MA, 1992, Yale University, PhD, 1998, University of Pennsylvania; Nineteenth-century American slavery, with a special emphasis on women, gender, and culture

CAMPBELL, ELENA, Assistant Professor, 2007; MA, 1994, St. Petersburg State

University (Russia), MA, 1996, European University, PhD, 1999, Russian Academy of Sciences (Russia)

CONLON, FRANK F \* Professor Emeritus, 1968; MA, 1963, University of Minnesota, PhD, 1969, University of Minnesota; South Asian History

DHAVAN, PURNIMA \* Assistant Professor, 2005; MA, 1998, University of Virginia, PhD, 2003, University of Virginia; The development of religious identity in early modern South Asia

DONG, YUE \* Associate Professor, 1996; MA, 1989, Beijing University, China, MA, 1991, University of Oregon, PhD, 1996, University of California (San Diego); Modern Chinese history, urban history, gender studies

EBREY, PATRICIA B. \* Professor, 1997; MA, 1970, Columbia University, PhD, 1975, Columbia University; The social and cultural history of China, especially the Song Dynasty (960-1279)

ELLISON, HERBERT J, Professor Emeritus, 1954; MA, 1952, University of Washington, PhD, 1955, University of London, UK

FELAK, JAMES R \* Associate Professor, 1989; MA, 1985, Indiana University, PhD, 1989, Indiana University; modern East European history

FERRILL, ARTHUR L, Professor Emeritus, 1964; MA, 1961, University of Illinois, PhD, 1964, University of Illinois

FINDLAY, JOHN M \* Professor, 1987; MA, 1978, University of California (Berkeley), PhD, 1982, University of California (Berkeley); history of the American West

FINE, ARTHUR I \* Adjunct Professor, 2001; MS, 1960, Illinois Institute of Technology, PhD, 1963, University of Chicago; philosophy of science and mathematics, Einstein, philosophy of quantum theory

FOWLER, WILTON B \* Professor Emeritus, 1969; MA, 1962, Yale University, PhD, 1966, Yale University; American history (especially diplomatic)

GAMBOA, ERASMO \* Adjunct Associate Professor, 1975; MA, 1973, University of Washington, PhD, 1984, University of Washington; history, Chicano experience, Pacific Northwest

GIEBEL, CHRISTOPH \* Associate Professor, 1998; MA, 1989, Cornell University, MA, 1991, Cornell University, PhD, 1996, Cornell University; Viet Nam; 20th century history, communism, labor, post-independence historiography

- GIL, CARLOS \* Professor Emeritus, 1974; MA, 1963, Georgetown University, PhD, 1975, University of California (Los Angeles); Latin America and history of the Chicano people
- GLENN, SUSAN A \* Professor, 1993; MA, 1975, University of California (San Diego), PhD, 1983, University of California (Berkeley); twentieth-century U.S. social history including women's history, immigration, labor, popular culture
- GOWING, ALAIN M. \* Adjunct Professor, 1988; MA, 1981, Bryn Mawr College, PhD, 1988, Bryn Mawr College; Latin and Greek historiography, Latin literature of the Empire
- GREGORY, JAMES N \* Professor, 1993; MA, 1977, University of California (Santa Barbara), PhD, 1983, University of California (Berkeley); U.S. social and political history since 1865, labor, the West
- GUY, R KENT \* Professor, 1980; MA, 1974, Harvard University, PhD, 1981, Harvard University; modern Chinese history
- HANKINS, THOMAS L, Professor Emeritus, 1964; MAT, 1958, Harvard University, PhD, 1964, Cornell University
- HARMON, ALEXANDRA J \* Adjunct Associate Professor, 1995; JD, 1972, Yale University, MA, 1990, University of Washington, PhD, 1995, University of Washington; history of U.S. race and ethnic relations, especially involving American Indians
- HEVLY, BRUCE W \* Associate Professor, 1989; PhD, 1987, Johns Hopkins University; history of technology and history of modern physics
- HUFBAUER, KARL G, Affiliate Professor, 1996; PhD, 1970, University of California (Berkeley)
- JACOBY, DANIEL F. \* Adjunct Professor, 1986; MA, 1977, University of Washington, PhD, 1986, University of Washington; history and analysis of labor institutions in the United States
- JOHNSON, RICHARD R \* Professor, 1972; MA, 1965, University of California (Berkeley), PhD, 1972, University of California (Berkeley); United States colonial history
- JONAS, RAYMOND A. \* Professor, 1985; MA, 1980, University of California (Davis), PhD, 1985, University of California (Berkeley); modern France
- JOSHEL, SANDRA R. \* Associate Professor, 1993; MA, 1970, Rutgers University, PhD, 1977, Rutgers University; Ancient Rome; slavery in the Roman world
- JUNG, MOON-HO \* Associate Professor, 2001; MA, 1995, Cornell University, PhD, 2000, Cornell University; Race, labor, Asian American history
- KIRKENDALL, RICHARD S \* Professor Emeritus, 1988; MS, 1953, University of Wisconsin (Madison), PhD, 1958, University of Wisconsin (Madison); Modern US History
- LEBSOCK, SUZANNE D. \* Affiliate Professor, 1995; MA, 1973, University of Virginia, PhD, 1977, University of Virginia; history of women, American social history, history of the South
- LEIREN, TERJE I \* Adjunct Professor, 1977; MA, 1970, California State University, campus unspecified, PhD, 1978, North Texas State University; Scandinavian history, nationalism, immigration, ethnicity
- LEVY, FRED J, Professor Emeritus, 1960; PhD, 1960, Harvard University
- LOPEZ, SHAUN T \* Assistant Professor, 2006; MA, 1995, University of Utah, PhD, 2004, University of Michigan; Middle Eastern Studies - Modern Period
- MCKENZIE, ROBERT T \* Associate Professor, 1988; MA, 1984, Vanderbilt University, PhD, 1988, Vanderbilt University; nineteenth-century U.S., U.S. economic
- NAM, HWASOOK BERGQUIST \* Assistant Professor, 2007; MA, 1989, Seoul National University (Korea), PhD, 2003, University of Washington; Korean history
- NASH, LINDA L \* Associate Professor, 1999; MS, 1989, University of California (Berkeley), PhD, 2000, University of Washington; U.S. environmental and cultural history since 1865; U.S. West
- NOEGEL, SCOTT B. \* Adjunct Professor, 1995; MA, 1993, Cornell University, PhD, 1994, Cornell University; Ancient Near Eastern Languages, Literatures, Cultures and History
- NOMURA, GAIL M. \* Adjunct Associate Professor, 1999; MA, 1971, University of California (Berkeley), PhD, 1978, University of Hawaii; Asian/Pacific Islander American studies, Asian American history, race, ethnicity, and gender studies
- O'NEIL, MARY R \* Associate Professor, 1980; MA, 1971, Stanford University, PhD, 1982, Stanford University; Renaissance/Reformation, early modern Europe, social history, Italy before 1700
- PEASE, OTIS A, Professor Emeritus, 1955; PhD, 1954, Yale University
- PIANKO, NOAM \* Adjunct Assistant Professor, 2004; PhD, 2004, Yale University; Modern Jewish history, American Jewish history, Jewish thought, diaspora studies
- POIGER, UTA G. \* Associate Professor, 1995; MA, 1990, Brown University, MA, 1990, University of Massachusetts, PhD, 1995, Brown University; modern German history, gender history, cultural studies
- PRESSLY, THOMAS J, Professor Emeritus, 1949; MA, 1941, Harvard University, PhD, 1949, Harvard University
- PYLE, KENNETH B \* Professor, 1964; PhD, 1965, Johns Hopkins University; modern Japanese history
- RAFAEL, VICENTE L. \* Professor, 2003; MA, 1982, Cornell University, PhD, 1984, Cornell University; Colonialisms and nationalisms, Southeast Asia, the Philippines, Filipino Americans, technology and culture, historiography and deconstruction
- RODRIGUEZ SILVA, ILEANA M. \* Assistant Professor, 2004; MA, 1997, University of Wisconsin (Madison), PhD, 2004, University of Wisconsin (Madison); Social and cultural history of Latin American and Caribbean in the nineteenth and twentieth century
- RORABAUGH, WILLIAM J \* Professor, 1976; MA, 1970, University of California (Berkeley), PhD, 1976, University of California (Berkeley); United States social history
- SALAS, ELIZABETH, Adjunct Associate Professor, 1987; MA, 1977, California State University, Los Angeles, PhD, 1987, University of California (Los Angeles)
- SAUM, LEWIS O, Professor Emeritus, 1965; MA, 1959, University of Missouri, PhD, 1962, University of Missouri
- SCHMIDT, BENJAMIN \* Associate Professor, 1996; MA, 1988, Harvard University, PhD, 1994, Harvard University; Early Modern European History, especially the Netherlands; Cultural History; European Expansion and Colonialism (16th - 18th centuries)
- SCHWARZ, FLORIAN \* Assistant Professor, 2005; MA, 1993, University of Tübingen (Germany), PhD, 1998, University of Tübingen (Germany)

SEARS, LAURIE J \* Professor, 1989; MA, 1977, University of Arizona, PhD, 1986, University of Wisconsin (Madison); Southeast Asian social and cultural history

SMALLWOOD, STEPHANIE E, Associate Professor, 2006; PhD, 1999, Duke University

SPAFFORD, DAVID, Assistant Professor, 2007; PhD, 2006, University of California (Berkeley), MA, 2006, University of California (Berkeley)

STACEY, ROBERT C. \* Professor, 1988; MA, 1978, Yale University, MPhil, 1979, Yale University, PhD, 1983, Yale University; medieval England, medieval Judaism, political and legal history

STACEY, ROBIN C \* Professor, 1988; MA, 1979, Yale University, MLitt, 1982, Oxford University (UK), MPhil, 1983, Yale University, PhD, 1986, Yale University; early and high medieval history, tribal law, Celtic/Anglo-Saxon literature, heresy

SULLIVAN, WOODRUFF T \* Adjunct Professor, 1973; PhD, 1971, University of Maryland; radio astronomy, galactic and extragalactic structure, history of astronomy

TAYLOR, QUINTARD \* Professor, 1999; MA, 1971, University of Minnesota, PhD, 1977, University of Minnesota; African American history with a focus on blacks in the West

THOMAS, CAROL G \* Professor, 1964; MA, 1961, Northwestern University, PhD, 1965, Northwestern University; ancient history

THOMAS, LYNN M. \* Associate Professor, 1997; MA, 1989, Johns Hopkins University, MA, 1993, Northwestern University, PhD, 1997, University of Michigan; 20th c. Kenyan history; gender, social, and cultural history

THURTLIE, PHILLIP S \* Assistant Professor, 1998; MA, 1994, Stanford University, PhD, 1999, Stanford University

TOEWS, JOHN E \* Professor, 1979; MA, 1968, Harvard University, PhD, 1973, Harvard University; modern European intellectual history

ULLMAN, JOAN CONNELLY, Professor Emeritus, 1966; MA, 1953, Bryn Mawr College, PhD, 1963, Bryn Mawr College

WALKER, JOEL T \* Associate Professor, 1997; MA, 1994, Princeton University, PhD, 1998, Princeton University; History and archaeology of the late antique Near East

WARREN, ADAM W \* Assistant Professor, 2004; MA, 2000, University of California (San Diego), PhD, 2004, University of California (San Diego); Latin American history, especially Peru/Andean region; history of medicine

WERRETT, SIMON R. E. \* Assistant Professor, 2002; MPhil, 1996, Cambridge University (UK), PhD, 2000, Cambridge University (UK); Early modern European sciences, especially Russia; art, science, and media

WHITE, RICHARD \* Affiliate Professor, 1990; PhD, 1975, University of Washington; American West, American Indian, environmental history

WHORTON, JAMES C \* Adjunct Professor, 1970; PhD, 1969, University of Wisconsin (Madison); history of American medicine, public health, alternative healing, pharmacy and biochemistry

WILLIAMS, MICHAELA \* Adjunct Professor, 1976; MA, 1970, Miami University (Ohio), PhD, 1977, Harvard University; early Christianity and religions of antiquity

WOODY, ANDREA I. \* Adjunct Associate Professor, 1997; PhD, 1996, University of Pittsburgh, PhD, 1997, University of Pittsburgh; Philosophy of Science, especially biology and physics; epistemology; logic

WRIGHT, MARY C, Senior Lecturer, 1997; MA, 1973, Portland State University, PhD, 1996, Rutgers University

YEE, SHIRLEY J. \* Adjunct Associate Professor, 1988; MA, 1983, Ohio State University, PhD, 1987, Ohio State University; U.S. women's history, African-American history, nineteenth-century U.S. social history

YOUNG, GLENNYS J. \* Associate Professor, 1992; MA, 1983, University of California (Berkeley), PhD, 1989, University of California (Berkeley); late Imperial and early Soviet Russia

Stanford University; Chinese politics and foreign policy and China's political economy (1949-present); US-China relations

BARZILAI, GAD \* Professor, 2004; MA, 1982, Bar-Ilan University (Israel), PhD, 1988, Hebrew University (Israel); Middle East Studies; international law

BRASS, PAUL R, Professor, 1965; MA, 1959, University of Chicago, MA, 1959, University of Chicago, PhD, 1964, University of Chicago

BUTOW, ROBERT J C, Professor Emeritus, 1960; MA, 1948, Stanford University, PhD, 1953, Stanford University

CALLAHAN, MARY P. \* Associate Professor, 1999; MSC, 1984, London School of Economics (UK), MA, 1991, Cornell University, PhD, 1996, Cornell University; Southeast Asian political history after World War II

CARLSON, CHARLES F., Affiliate Professor, 2004; MA, 1967, Indiana University, PhD, 1970, Indiana University

CHALOUPEK, VLADIMIR \* Adjunct Professor, 1980; PhD, 1975, University of Geneva (Switzerland); experimental elementary-particle physics

CHAN, ANTHONY B. \* Associate Professor, 1990; MA, 1969, Bowling Green State University, MA, 1973, University of Arizona, PhD, 1980, York University (Canada); Chinese Communications, especially Information Technology, E-commerce, especially Dot-com Enterprises, Internet Journalism, Asian Media Systems, Race, Gender and Power in Asian American Media

CHIROT, DANIEL \* Professor, 1974; PhD, 1973, Columbia University; comparative ethnic conflict, social change, post-communist societies, historical and political sociology

CHRISTIE, PATRICK JOHN \* Associate Professor, 1999; MS, 1993, University of Michigan, Ann Arbor, PhD, 1999, University of Michigan, Ann Arbor; Management of marine and coastal areas

CONLON, FRANK F \* Professor Emeritus, 1968; MA, 1963, University of Minnesota, PhD, 1969, University of Minnesota; South Asian History

CURRAN, SARA R \* Associate Professor, 2005; MS, 1990, North Carolina State University, PhD, 1994, University of North Carolina; globalization, development, migration, environment, gender &

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## International Studies

ANCHORDOGUY, MARIE C \* Associate Professor, 1989; MBA, 1982, University of California (Berkeley), MBA, 1982, University of California (Berkeley), PhD, 1986, University of California (Berkeley); Japan's political economy; East Asian economic development

BACHMAN, DAVID M \* Professor, 1991; MA, 1977, Stanford University, PhD, 1984,

Southeast Asia

DONG, WONMO, Affiliate Professor, 2001; MA, 1961, University of Kentucky, PhD, 1965, Georgetown University

DONG, YUE \* Associate Professor, 1996; MA, 1989, Beijing University, China, MA, 1991, University of Oregon, PhD, 1996, University of California (San Diego); Modern Chinese history, urban history, gender studies

DYSON, JANE, Affiliate Assistant Professor, 2005; MSC, 2000, University of Edinburgh (UK), PhD, 2006, Cambridge University (UK)

ELLINGS, RICHARD J., Affiliate Professor, 1984; MA, 1976, University of Washington, PhD, 1983, University of Washington

ELLISON, HERBERT J, Professor Emeritus, 1954; MA, 1952, University of Washington, PhD, 1955, University of London, UK

FRIEDMAN, KATHIE \* Associate Professor, 1987; MA, 1979, State University of New York (Binghamton), PhD, 1992, State University of New York (Binghamton); sociology of gender, immigration, race, and ethnicity in the U.S

FULLER, JAMES L., Affiliate Professor, 1979; MS, 1972, University of Florida, PhD, 1975, University of Florida

GIEBEL, CHRISTOPH \* Associate Professor, 1998; MA, 1989, Cornell University, MA, 1991, Cornell University, PhD, 1996, Cornell University; Viet Nam; 20th century history, communism, labor, post-independence historiography

GODOY, ANGELINA SNODGRASS \* Associate Professor, 2002; MA, 1997, University of California (Berkeley), PhD, 2001, University of California (Berkeley); human rights, Latin America, law and society, development

GUY, R KENT \* Professor, 1980; MA, 1974, Harvard University, PhD, 1981, Harvard University; modern Chinese history

HA, YONG-CHOO \* Professor, 2003; MA, 1978, Kent State University, PhD, 1985, University of California (Berkeley); Korean politics, Soviet/Russian politics, East Asian politics

HAMILTON, GARY G. \* Professor, 1993; MA, 1970, University of Washington, PhD, 1975, University of Washington; economic sociology, historical comparative, organizational studies, East Asia

HANLEY, SUSAN B, Professor Emeritus,

1970; MA, 1964, Yale University, PhD, 1971, Yale University

HATCH, WALTER F, Affiliate Assistant Professor, 2001; MA, 1992, University of Washington, PhD, 2000, University of Washington

HELLMANN, DONALD C \* Professor, 1967; MA, 1960, University of California (Berkeley), PhD, 1964, University of California (Berkeley); Japanese politics and international relations

HUBER, ROBERT, Affiliate Professor, 2006; MA, 1981, American University, PhD, 1987, American University

JACKSON, W A DOUGLAS, Professor Emeritus, 1955; MA, 1949, University of Toronto (Canada), PhD, 1953, University of Maryland

JAFFEE, MARTIN S. \* Professor, 1987; MA, 1974, Florida State University, PhD, 1980, Brown University; rabbinic religion and literature in late antiquity

JEFFREY, CRAIG J \* Associate Professor, 2005; PhD, 1999, University of Cambridge (UK), MA, 1999, University of Cambridge (UK)

JONES, CHRISTOPHER D \* Associate Professor, 1984; MA, 1969, Harvard University, PhD, 1975, Harvard University; post-Cold War security issues in Europe and East Asia, political economy

KAPETANIC, DAVOR, Professor Emeritus, 1970; MA, 1954, University of Zagreb (Yugoslavia), PhD, 1972, University of Zagreb (Yugoslavia)

KASABA, RESAT \* Professor, 1985; MA, 1979, State University of New York (Binghamton), PhD, 1986, State University of New York (Binghamton); historical sociology, world systems, social change in the Middle East

KHAGRAM, SANJEEV \* Associate Professor, 2005; MA, 1993, Stanford University, PhD, 1999, Stanford University; transnational/comparative studies, sustainable development, human security, good governance, democratization

LACEY, MICHAEL, Affiliate Professor, 2002; MPhil, 1974, George Washington University, PhD, 1979, George Washington University

LANG, SABINE \* Assistant Professor, 2002; MA, 1985, Free University Berlin, PhD, 1997, Free University Berlin; Germany, European Union, Women's Studies

LATSCH, WOLFRAM W. \* Assistant Professor, 2003; MSC, 1991, University of Oxford (UK), DPhil, 2000, University of Oxford (UK); Africa, global economics

LAVELY, WILLIAM R. \* Associate Professor, 1985; MA, 1977, University of California (Berkeley), PhD, 1982, University of Michigan; social demography of China

LEGTERS, LYMAN H, Professor Emeritus, 1966; MA, 1956, Boston University, PhD, 1958, Freie University of Berlin (Germany)

MAH, FENG-HWA, Professor Emeritus, 1961; MA, 1956, University of Michigan, PhD, 1959, University of Michigan

MICKLESEN, LEW R, Professor Emeritus, 1953; PhD, 1951, Harvard University

MIGDAL, JOEL S \* Professor, 1980; MA, 1968, Harvard University, PhD, 1972, Harvard University; state and society in the Third World; Middle East politics

MINES, MATTISON, Affiliate Professor, 2007; MA, 1965, University of Washington, PhD, 1969, Cornell University

NAM, HWASOOK BERGQUIST \* Assistant Professor, 2007; MA, 1989, Seoul National University (Korea), PhD, 2003, University of Washington; Korean history

NOVETZKE, CHRISTIAN L. \* Assistant Professor, 2007; MS, 1996, Harvard University, PhD, 2002, Columbia University; Comparative religion, Indian religions, Hinduism

PEKKANEN, ROBERT J. \* Assistant Professor, 2004; MA, 1992, Harvard University, PhD, 2002, Harvard University; Japanese politics. Civil society. Political party organization. Electoral systems

PEKKANEN, SAADIA \* Associate Professor, 2004; MA, 1988, Columbia University, PhD, 1996, Harvard University; International political economy, international law, Japan, Japanese foreign policy

PIANKO, NOAM \* Assistant Professor, 2004; PhD, 2004, Yale University; Modern Jewish history, American Jewish history, Jewish thought, diaspora studies

PORTER, DEBORAH \* Associate Professor, 2002; PhD, 1989, Princeton University; China studies; psychoanalysis of politics

POTTER, KARL H, Professor Emeritus, 1970; MA, 1952, Harvard University, PhD, 1955, Harvard University

POZNANSKI, KAZIMIERZ \* Professor, 1987; MA, 1969, University of Warsaw

(Poland), PhD, 1974, University of Warsaw (Poland); international trade; economics of technology; comparative economic systems; regional interest in Eastern Europe, Soviet Union, Latin America and Far East

PLYE, KENNETH B \* Professor, 1964; PhD, 1965, Johns Hopkins University; modern Japanese history

ROBINSON, CABEIRI DEBERGH \* Assistant Professor, 2003; MA, 1999, Cornell University, PhD, 2005, Cornell University; Political violence and the transformation of political cultures in contemporary South Asia, Pakistan, and Jammu and Kashmir

ROUYER, ALWYNN R, Affiliate Professor, 2003; MA, 1966, Georgetown University, PhD, 1971, Tulane University

SORENSEN, CLARK W. \* Associate Professor, 1989; MA, 1974, University of Washington, PhD, 1981, University of Washington; Korea, social change in East Asia, development, ethnic identity

SPARKE, MATTHEW \* Professor, 1995; MA, 1991, University of British Columbia (Canada), PhD, 1996, University of British Columbia (Canada); political-geography, social theory, cultural (American & Canadian) studies & Int'l political economy

STEELE, CYNTHIA \* Professor, 1986; MA, 1979, University of California (San Diego), PhD, 1980, University of California (San Diego); Latin American literature and society, narrative and feminist theory

WARREN, JONATHAN W. \* Associate Professor, 1996; MA, 1990, University of California (Berkeley), PhD, 1997, University of California (Berkeley); Social stratification and inequality, sociology of education, research methods

WEBB, EUGENE \* Professor Emeritus, 1966; MA, 1962, Columbia University, PhD, 1965, Columbia University; modern English, French, and German literature, comparative religion

WELLMAN, JAMES K. \* Assistant Professor, 1997; MDiv, 1985, Princeton Theological Seminary, PhD, 1995, University of Chicago; Historian and cultural sociologist of twentieth century and contemporary American Christianity

WHITING, SUSAN H. \* Adjunct Associate Professor, 1994; PhD, 1995, University of Michigan; political economy of development in post-1949 China

WILLIAMS, MICHAELA \* Professor, 1976; MA, 1970, Miami University (Ohio), PhD, 1977, Harvard University; early Christian-

ity and religions of antiquity

YAMAMURA, KOZO, Professor Emeritus, 1970; PhD, 1964, Northwestern University

YANG, ANAND A \* Professor, 2002; PhD, 1976, University of Virginia; Modern South Asian and comparative and global history

YOUNG, GLENNYS J. \* Associate Professor, 1992; MA, 1983, University of California (Berkeley), PhD, 1989, University of California (Berkeley); late Imperial and early Soviet Russia

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## Law, Societies, and Justice

BARZILAI, GAD \* Professor, 2004; MA, 1982, Bar-Ilan University (Israel), PhD, 1988, Hebrew University (Israel); Middle East Studies; international law

BECKETT, KATHERINE A \* Associate Professor, 2000; MA, 1989, University of California (Los Angeles), PhD, 1994, University of California (Los Angeles); Law, politics, culture and society

CICHOWSKI, RACHELA \* Associate Professor, 2001; MA, 1997, University of California (Irvine), PhD, 2001, University of California (Irvine); Comparative judicial politics; European Union law; women's rights; European integration

GODOY, ANGELINA SNODGRASS \* Associate Professor, 2002; MA, 1997, University of California (Berkeley), PhD, 2001, University of California (Berkeley); human rights, Latin America, law and society, development

HERBERT, STEVEN K \* Associate Professor, 2000; MA, 1987, University of Minnesota, PhD, 1995, University of California (Los Angeles); Policing and social control; American criminal justice; geography and law

LOVELL, GEORGE I \* Associate Professor, 2001; MA, 1990, University of North Carolina, PhD, 1997, University of Michigan; American political institutions, constitutional development, civil rights and labor history

MC CANN, MICHAEL W \* Professor, 1982; MA, 1976, University of California (Berkeley), PhD, 1983, University of California (Berkeley); American government and politics, public law, political theory

MAYERFELD, JASON \* Associate Professor, 1991; MA, 1988, Princeton

University, PhD, 1992, Princeton University; political theory, ethics

MIGDAL, JOEL S \* Professor, 1980; MA, 1968, Harvard University, PhD, 1972, Harvard University; state and society in the Third World; Middle East politics

OSANLOO, ARZOO \* Assistant Professor, 2002; JD, 1993, American University, PhD, 2002, Stanford University; Anthropology and Law, Human Rights, Gender and Islam, Theories of the State: socio-legal constructions of women's rights within Iran's Islamic republican state

RAMASASTRY, ANITA G. \* Associate Professor, 1996; MA, 1989, University of Sydney (Australia), JD, 1992, Harvard University

SCHEINGOLD, STUART A, Professor Emeritus, 1969; MA, 1959, University of California (Berkeley), PhD, 1963, University of California (Berkeley)

TALBOTT, WILLIAM J. \* Professor, 1989; PhD, 1976, Harvard University; epistemology, ethics, political philosophy, game theory, and decision theory

TAYLOR, VERONICA \* Professor, 2001; LLM, 1992, University of Washington; Asian and Comparative Law

WALSH, WALTER J. \* Associate Professor, 1996; LLM, 1989, Yale University

WHITING, SUSAN H. \* Associate Professor, 1994; PhD, 1995, University of Michigan; political economy of development in post-1949 China

WOLCHER, LOUIS E. \* Professor, 1986; JD, 1973, Harvard University; contracts, critical legal studies, torts, remedies, philosophy of law

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## Linguistics

ALDRIDGE, EDITH \* Assistant Professor, 2007; MA, 1992, Sophia University (Japan), PhD, 2004, Cornell University; Syntax

AOKI, PAUL K \* Affiliate Assistant Professor, 2004; MA, 1976, University of Washington, PhD, 1981, University of Washington; computer-assisted language learning; digital multimedia; computational linguistics; translation tools

AUGEROT, JAMES E. \* Adjunct Professor, 1963; MA, 1959, New Mexico Highlands University, PhD, 1968, University of Washington; Slavic linguistics, Romanian, Bulgarian



- BARRACK, CHARLES M \* Adjunct Professor, 1968; MA, 1966, University of Washington, PhD, 1969, University of Washington; Germanic linguistics
- BENDER, EMILY R. MENON \* Assistant Professor, 2003; MA, 1997, Stanford University, PhD, 2000, Stanford University; Computational linguistics (grammar engineering, software supporting language documentation); syntax; sociolinguistics
- BILANIUK, LAADA M. \* Adjunct Associate Professor, 1998; MA, 1991, University of Michigan, PhD, 1998, University of Michigan; Language politics, language ideology, ethnicity, nationalism, gender, Ukraine, former USSR
- BILMES, JEFFREY A. \* Adjunct Associate Professor, 1999; MS, 1993, Massachusetts Institute of Technology, PhD, 1999, University of California (Berkeley); Speech & pattern recognition, learning, audio processing, high-performance computing, human-computer interfaces
- BRAME, MICHAEL \* Professor Emeritus, 1971; PhD, 1970, Massachusetts Institute of Technology; syntax, phonology, structure of Arabic and English
- CITKO, BARBARA \* Assistant Professor, 2005; PhD, 2000, Stony Brook University; linguistic theory, syntax, syntax-semantics interface, Slavic linguistics
- CONTRERAS, HELES, Professor Emeritus, 1964; MA, 1959, Indiana University, PhD, 1961, Indiana University
- DZIWIWREK, KATARZYNA A. \* Adjunct Associate Professor, 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); linguistics, syntax and typology
- ETZIONI, OREN \* Adjunct Professor, 1991; MS, 1988, Carnegie Mellon University, PhD, 1991, Carnegie Mellon University; artificial intelligence, machine learning, integrated architectures, planning
- EVANS, BETSY E \* Assistant Professor, 2007; MA, 1992, Kent State University, PhD, 2001, Michigan State University; Sociolinguistics
- HANDEL, ZEV \* Adjunct Associate Professor, 1998; MA, 1992, University of California (Berkeley), PhD, 1998, University of California (Berkeley); Chinese historical phonology; Sino-Tibetan linguistics
- HARGUS, SHARON \* Professor, 1985; MA, 1981, University of California (Los Angeles), PhD, 1985, University of California (Los Angeles); phonology, morphology, northwestern Native American languages, lexicography, phonetics
- HERSCHENSOHN, JULIA R. \* Professor, 1986; MA, 1970, University of California (Santa Barbara), PhD, 1976, University of Washington; romance linguistics, French syntax, second language acquisition
- HOARD, JAMES E, Affiliate Professor, 1990; MA, 1966, University of Washington, PhD, 1967, University of Washington
- KAISSE, ELLEN \* Professor, 1976; PhD, 1977, Harvard University; phonology, historical linguistics, ancient and modern Greek/Spanish, syntax-phonology interface
- KIRCHHOFF, KATRIN \* Adjunct Research Assoc Professor, 1999; MA, 1996, Universitat Bielefeld (Germany), PhD, 1999, Universitat Bielefeld (Germany); Research area: automatic speech and language processing, human-computer interfaces, machine learning
- KLAUSENBURGER, JURGEN \* Professor Emeritus, 1969; MA, 1966, University of Michigan, PhD, 1969, University of Michigan; Romance linguistics
- KUHL, PATRICIA K \* Adjunct Professor, 1976; MA, 1971, University of Minnesota, PhD, 1973, University of Minnesota; speech perception
- LADNER, RICHARD E \* Adjunct Professor, 1971; PhD, 1971, University of California (Berkeley); Theory of computation, design and analysis of algorithms, data compression, computer networks, computational complexity
- LEWIS, WILLIAM D. \* Affiliate Assistant Professor, 2005; MA, 1999, University of Arizona, PhD, 2002, University of Arizona; Corpus Linguistics, Computational Linguistics, Morphosyntax
- MICKLESEN, LEW R, Professor Emeritus, 1953; PhD, 1951, Harvard University
- MOORE, COLETTE V \* Adjunct Assistant Professor, 2005; PhD, 2004, University of Michigan; History of the English language, medieval literature, and the ideologies of present-day English
- NEWMAYER, FREDERICK \* Professor Emeritus, 1969; MA, 1967, University of Rochester, PhD, 1969, University of Illinois; theoretical and English syntax, history of linguistics
- OGIHARA, TOSHIYUKI \* Associate Professor, 1991; MA, 1983, Sophia University (Japan), PhD, 1989, University of Texas (unspecified); semantic theory, mathematical linguistics, structure of Japanese
- OHTA, AMY \* Adjunct Associate Professor, 1995; MA, 1990, University of California (Los Angeles), PhD, 1993, University of California (Los Angeles); Applied linguistics, especially second language acquisition, discourse analysis, and Japanese
- OSTENDORF, MARI \* Adjunct Professor, 1999; MSEE, 1981, Stanford University, PhD, 1985, Stanford University; Speech synthesis and understanding; spoken document retrieval; statistical pattern recognition
- OSTERHOUT, LEE E \* Adjunct Professor, 1991; MS, 1987, Tufts University, PhD, 1990, Tufts University; psycholinguistics, cognitive psychophysiology
- SHAPIRO, MICHAEL \* Adjunct Professor, 1970; MA, 1970, University of Chicago, PhD, 1973, University of Chicago; South Asian language, literature, and linguistics
- STOEL-GAMMON, CAROL \* Adjunct Professor, 1977; MA, 1968, Stanford University, PhD, 1974, Stanford University; developmental phonology and phonetics
- THURLOW, CRISPIN SIMON \* Adjunct Assistant Professor, 2003; MEd, 1990, University of Natal, South Africa, MA, 1996, University of Sheffield (UK), PhD, 2001, Cardiff University, Wales; Language and discourse in adolescence and new media; globalization and tourism; sex and sexuality. Preferred theories/methods: Critical Discourse Analysis, Social Semiotics
- VOYLES, JOSEPH B. \* Adjunct Professor, 1965; MA, 1962, Indiana University, PhD, 1965, Indiana University; Germanics and linguistics
- WASSINK, ALICIA BECKFORD \* Associate Professor, 1998; PhD, 1999, University of Michigan; Sociolinguistics, experimental phonetics and Creole linguistics
- WRIGHT, RICHARD A. \* Associate Professor, 1998; MA, 1993, University of California (Los Angeles), PhD, 1996, University of California (Los Angeles); Production and perception of language, automatic speech recognition, phonetics and phonology of African and Austronesian languages
- XIA, FEI \* Assistant Professor, 2005; MS, 1997, University of Pennsylvania, PhD, 2001, University of Pennsylvania;

computational linguistics (a.k.a. natural language processing)

YUE-HASHIMOTO, ANNE O \* Adjunct Professor, 1980; MA, 1963, University of Texas (unspecified), PhD, 1966, Ohio State University; Chinese language, linguistics and dialectology

ZAGONA, KAREN T \* Professor, 1987; PhD, 1982, University of Washington; syntactic theory and Spanish syntax

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## Mathematics

ARMS, JUDITH M \* Associate Professor, 1980; MA, 1974, University of California (Berkeley), PhD, 1977, University of California (Berkeley); geometric analysis of Hamiltonian systems with symmetry

ARSOVE, MAYNARD G, Professor Emeritus, 1951; MS, 1948, Brown University, PhD, 1950, Brown University

BILLEY, SARA \* Associate Professor, 2002; MA, 1991, University of California (San Diego), PhD, 1994, University of California (San Diego); Combinatorics, representation theory, and algebraic geometry

BLUMENTHAL, ROBERT M, Professor Emeritus, 1956; PhD, 1956, Cornell University

BORGES, CHRISTIAN, Affiliate Professor, 1999; PhD, 1987, University of Munich (Germany)

BROWNELL, FRANCIS H, Professor Emeritus, 1950; MS, 1947, Yale University, PhD, 1949, Princeton University

BUBE, KENNETH P. \* Professor, 1986; MS, 1976, Stanford University, PhD, 1978, Stanford University; numerical analysis, partial differential equations

BUNGART, LUTZ, Associate Professor Emeritus, 1966; PhD, 1962, Princeton University

BURDZY, KRZYSZTOF \* Professor, 1988; MA, 1979, Maria Curie-Skłodowska University, PhD, 1984, University of California (Berkeley); probability theory

BURKE, JAMES V. \* Professor, 1985; PhD, 1983, University of Illinois; optimization, nonsmooth analysis

CHAYES, JENNIFER T., Affiliate Professor, 1997; PhD, 1983, Princeton University

CHEN, ZHEN-QING \* Professor, 1998; MS, 1987, East China Normal University, PhD, 1992, Washington University; Probability theory and stochastic analysis

COHN, HENRY L. \* Affiliate Associate Professor, 2001; PhD, 2000, Harvard University; Number theory, combinatorics, discrete geometry, theory of computation, and cryptography

COLLINGWOOD, DAVID \* Professor, 1987; PhD, 1983, University of Utah; representation theory

CURJEL, CASPAR R, Professor Emeritus, 1964; Diploma, 1954, Eidgenosse Technische Hochschule (Switz), DSc, 1960, Eidgenosse Technische Hochschule (Switz)

CURTIS, EDWARD B \* Professor Emeritus, 1970; PhD, 1962, Harvard University, MA, 1962, Harvard University; algebraic topology

DEVINATZ, ETHAN S \* Associate Professor, 1991; PhD, 1985, Massachusetts Institute of Technology; algebraic topology

DUCHAMP, THOMAS E. \* Professor, 1979; MS, 1969, University of Illinois, PhD, 1976, University of Illinois; differential geometry, computer graphics

ERICKSON, KENT B \* Professor Emeritus, 1973; MS, 1966, Georgia Institute of Technology, PhD, 1970, University of Wisconsin; Markov Processes and their applications

FOLLAND, GERALD B. \* Professor, 1973; MA, 1970, Princeton University, PhD, 1971, Princeton University; partial differential equations

FREEDMAN, MICHAEL H., Affiliate Professor, 1999; PhD, 1973, Princeton University

GANGOLLI, RAMESH A, Professor Emeritus, 1962; PhD, 1961, Massachusetts Institute of Technology

GOLDSTEIN, ALLEN A., Professor Emeritus, 1964; MA, 1952, Georgetown University, PhD, 1954, Georgetown University

GOODEARL, KENNETH R., Affiliate Professor, 1998; MS, 1969, University of Washington, PhD, 1971, University of Washington

GRAHAM, C. ROBIN \* Professor, 1984; MA, 1976, Rice University, PhD, 1981, Princeton University; partial differential equations, differential geometry, invariant

theory

GREENBAUM, ANNE \* Professor, 1997; MA, 1978, University of California (Berkeley), PhD, 1981, University of California (Berkeley); numerical analysis

GREENBERG, RALPH \* Professor, 1978; PhD, 1970, Princeton University; number theory

GRUNBAUM, BRANKO, Professor Emeritus, 1960; MA, 1954, Hebrew University (Israel), PhD, 1957, Hebrew University (Israel)

HOFFMAN, CHRISTOPHER \* Associate Professor, 1999; MS, 1994, Stanford University, PhD, 1996, Stanford University; Ergodic theory and probability theory

IRVING, RONALD S \* Professor, 1980; PhD, 1977, Massachusetts Institute of Technology; representations of Lie algebras and Lie groups, ring theory

KAS, ARNOLD, Affiliate Professor, 1995; PhD, 1966, Stanford University

KING, JAMES RICHARD \* Associate Professor, 1974; MA, 1967, University of California (Berkeley), PhD, 1969, University of California (Berkeley); complex manifolds, instructional computing in geometry

KOBLITZ, NEAL I \* Professor, 1979; PhD, 1974, Princeton University; number theory and cryptography

KOVACS, SANDOR J \* Professor, 2000; MS, 1990, Eotvos Lorand University (Hungary), PhD, 1995, University of Utah; Higher dimensional geometry, Mori theory, moduli problems, singularities, vanishing theorems

LEE, JOHN M \* Professor, 1986; PhD, 1982, Massachusetts Institute of Technology; differential geometry and partial differential equations

LEVEQUE, RANDALL J. \* Adjunct Professor, 1985; PhD, 1982, Stanford University; Numerical analysis, hyperbolic conservation laws, computational fluid dynamics, partial differential equations, wave propagation

LIND, DOUGLAS A \* Professor, 1975; MA, 1971, Stanford University, PhD, 1973, Stanford University; ergodic theory

LOVASZ, LASZLO \* Affiliate Professor, 1999; PhD, 1977, Hungarian Academy of Sciences; Combinatorial optimization, graph theory, theoretical computer science

MARSHALL, DONALD E \* Professor, 1976; MA, 1972, University of California (Los Angeles), PhD, 1976, University of California (Los Angeles); complex analysis

MCGOVERN, WILLIAM M \* Professor, 1990; PhD, 1987, Massachusetts Institute of Technology; representation theory

MICHAEL, ERNEST A, Professor Emeritus, 1953; MA, 1948, Harvard University, PhD, 1951, University of Chicago

MITCHELL, STEPHEN A. \* Professor, 1985; PhD, 1981, University of Washington; algebraic topology

MONK, GEORGE STEPHEN \* Associate Professor Emeritus, 1964; PhD, 1966, University of Minnesota; algebra

MOORE, ROBERT T, Associate Professor Emeritus, 1968; PhD, 1964, Princeton University

MORROW, JAMES ALLEN \* Professor, 1969; PhD, 1967, Stanford University; complex analysis

NAMIOKA, ISAAC, Professor Emeritus, 1963; EE, 1948, Kobe Technical College, MA, 1953, University of Kansas, PhD, 1956, University of California (Berkeley)

NIJENHUIS, ALBERT, Affiliate Professor, 1988; PhD, 1952, University of Amsterdam (Netherlands)

NOVIK, ISABELLA \* Associate Professor, 2001; MS, 1996, Hebrew University (Israel), PhD, 1999, Hebrew University (Israel); algebraic and geometric combinatorics

NUNKE, RONALD, Professor Emeritus, 1958; MS, 1951, University of Chicago, PhD, 1955, University of Chicago

OSBORNE, MASON S \* Professor, 1975; PhD, 1972, Yale University; representation theory

OZOLS, VILNIS, Assistant Professor Emeritus, 1968; MA, 1965, University of California (Berkeley), PhD, 1967, University of California (Berkeley)

PALMIERI, JOHN \* Associate Professor, 1999; PhD, 1991, Massachusetts Institute of Technology; Algebraic topology, modular representation theory, and the connections between them

PERES, YUVAL, Affiliate Professor, 2006; MS, 1986, Tel Aviv University (Israel), PhD, 1990, Hebrew University (Israel)

PHELPS, ROBERT R, Professor Emeritus, 1962; PhD, 1958, University of Washing-

ton

POLLACK, DANIEL \* Professor, 1996; MS, 1986, University of Pennsylvania, PhD, 1991, Stanford University; differential geometry and nonlinear partial differential equations

RAGOZIN, DAVID, Professor Emeritus, 1969; MA, 1963, Harvard University, PhD, 1967, Harvard University

ROCKAFELLAR, R T \* Professor Emeritus, 1966; MS, 1959, Marquette University, PhD, 1963, Harvard University; convexity, linear programming

ROHDE, STEFFEN \* Professor, 1998; MS, 1987, Technical University of Berlin (Germany), PhD, 1989, Technical University of Berlin (Germany); Complex analysis, complex dynamics, and geometric function theory

SCHRAMM, ODED, Affiliate Professor, 2001; MS, 1987, Hebrew University (Israel), PhD, 1990, Princeton University

SEGAL, JACK, Professor Emeritus, 1960; MS, 1957, University of Miami (Florida), PhD, 1960, University of Georgia

SHORACK, GALEN \* Adjunct Professor, 1965; MA, 1962, University of Oregon, PhD, 1965, Stanford University; empirical processes, tolerance bounds, nonparametric statistics

SMITH, HART F \* Professor, 1991; PhD, 1989, Princeton University; partial differential equations, Fourier analysis

SMITH, SHOLTO PAUL \* Professor, 1986; MSC, 1978, University of London, UK, PhD, 1981, University of Leeds (UK); algebra

SOLOMYAK, BORIS \* Professor, 1990; MSC, 1981, Leningrad University (Russia), PhD, 1986, Leningrad University (Russia); ergodic theory, symbolic dynamics, spectral theory

STEIN, WILLIAM A \* Associate Professor, 2006; PhD, 2000, University of California (Berkeley); Number Theory

SULLIVAN, JOHN B \* Professor, 1973; PhD, 1971, Cornell University; algebraic groups

SYLVESTER, JOHN \* Professor, 1987; MS, 1977, New York University, PhD, 1980, New York University; partial differential equations

TAGGART, JENNIFER, Senior Lecturer, 2001; MA, 1993, University of Colorado (Boulder), PhD, 1997, University of

Colorado (Boulder)

THOMAS, REKHA R. \* Associate Professor, 2000; MS, 1992, Cornell University, PhD, 1994, Cornell University; Computational algebra, combinatorics, discrete optimization

TORO, TATIANA \* Professor, 1996; MS, 1989, Stanford University, PhD, 1992, Stanford University; analysis and geometric measure theory

TSENG, PAUL YUN \* Professor, 1990; PhD, 1986, Massachusetts Institute of Technology; optimization, operations research

TUNCCEL, SELIM \* Professor, 1982; MSC, 1979, University of Warwick (UK), PhD, 1982, University of Warwick (UK); ergodic theory, symbolic dynamics

UHLMANN, GUNTHER A. \* Professor, 1984; PhD, 1976, Massachusetts Institute of Technology; partial differential equations

WARNER, GARTH \* Professor, 1966; PhD, 1966, University of Michigan; analysis

WESTWATER, MICHAEL, Professor Emeritus, 1970; PhD, 1967, Cambridge University (UK)

WILSON, DAVID B., Affiliate Associate Professor, 2000; PhD, 1996, Massachusetts Institute of Technology

YUAN, YU \* Associate Professor, 2001; MS, 1993, Academia Sinica, China, PhD, 1998, University of Minnesota; Partial differential equations and differential geometry

ZHANG, JIAN JAMES \* Professor, 1994; MS, 1985, Fudan University (China), PhD, 1991, Massachusetts Institute of Technology; algebra, ring theory

## Microbiology

AEBERSOLD, RUDOLF HANS, Affiliate Professor, 1993; PhD, 1983, University of Basel (Switzerland)

ANDERSON, DENISE G, Senior Lecturer, 1987; MS, 1985, University of Washington, MS, 1987, University of Washington

ANDREWS, GERARD, Affiliate Assistant Professor, 2005; MS, 1983, University of New Hampshire, PhD, 1993, Uniformed Services University of The Health Sciences

ARRIZABALAGA, GUSTAVO, Affiliate Assistant Professor, 2005; PhD, 1999,

Massachusetts Institute of Technology

BALIGA, NITIN, Affiliate Assistant Professor, 2005; MS, 1994, Goa University (India), PhD, 2000, University of Massachusetts

BARNES, GLOVER W, Lecturer, 1969; MA, 1955, State University of New York (Buffalo), PhD, 1961, State University of New York (Buffalo)

BESSEN, RICHARD, Affiliate Associate Professor, 2005; MS, 1987, University of Wisconsin, PhD, 1991, University of Wisconsin

BICKNELL, MARY, Senior Lecturer Emeritus, 1966; MS, 1962, University of Washington

BOHACH, CAROLYN, Affiliate Professor, 2003; PhD, 1985, University of Minnesota

BOHACH, GREGORY A, Affiliate Assistant Professor, 1992; MS, 1982, West Virginia University, PhD, 1985, West Virginia University

BRADDOCK, JOAN, Affiliate Professor, 2003; MS, 1983, University of Alaska, PhD, 1989, University of Alaska

BRAWNER, DIANE L., Affiliate Assistant Professor, 2001; PhD, 1985, Montana State University

BUMGARNER, ROGER E. \* Associate Professor, 1992; MS, 1983, Eastern Illinois University, PhD, 1988, University of Arizona; DNA array technology for evaluation of gene expression in microbial systems

BURRITT, JAMES, Affiliate Assistant Professor, 2004; PhD, 1995, Montana State University

CHAMPOUX, JAMES J \* Professor, 1972; PhD, 1970, Stanford University; DNA replication, tumor virology

CHANDLER, MARK S, Senior Lecturer, 1998; MS, 1979, University of Washington, PhD, 1998, University of Illinois

CLARK, EDWARD A \* Professor, 1979; PhD, 1977, University of California (Los Angeles); lymphocyte surface molecules, lymphocyte activation and cell communication

COOKSON, BRAD T \* Associate Professor, 1991; PhD, 1991, Washington University, MD, 1991, Washington University; Cellular Immune Response to Intracellular Bacteria; Microbial Pathogenesis; Clinical Microbiology

COREY, LAWRENCE \* Adjunct Professor, 1975; MD, 1971, University of Michigan; laboratory medicine: diagnosis, therapy, and pathogenesis of viral infections, AIDS virus

COYLE, MARIE B, Professor Emeritus, 1973; MS, 1963, St. Louis University, PhD, 1965, Kansas State University

CRAWFORD, DON, Affiliate Professor, 2003; MS, 1972, University of Wisconsin, PhD, 1973, University of Wisconsin

CRAWFORD, RONALD L., Affiliate Professor, 2003; MS, 1972, University of Wisconsin, PhD, 1973, University of Wisconsin

DARVEAU, RICHARD P. \* Adjunct Professor, 1989; MS, 1977, Northern Illinois University, PhD, 1981, Washington State University; Innate host defense interactions between bacteria and their hosts

EMERMAN, MICHAEL \* Affiliate Professor, 1994; PhD, 1986, University of Wisconsin; Molecular biology of the human immunodeficiency virus

EVANS, CHARLES A, Professor Emeritus, 1946; MD, 1937, University of Minnesota, PhD, 1942, University of Minnesota

FANG, FERRIC C. \* Professor, 2001; MD, 1983, Harvard University; Bacterial pathogenesis with focus on macrophage-salmonella interactions

FIELDS, STANLEY \* Adjunct Professor, 1995; MA, 1978, Cambridge University (UK), PhD, 1981, Cambridge University (UK); Yeast Molecular Biology and Genetics

FULTON, JANIS R, Senior Lecturer, 1983; MS, 1977, Montana State University

GALE, MICHAEL J \* Adjunct Associate Professor, 1994; PhD, 1994, University of Washington; Virus-host interactions that control innate defenses and immunity to infection; genetic and functional analysis of the innate immune antiviral response; interferon biology; immune control of the replication and pathogenesis of hepatitis C virus, West Nile

GALLOWAY, DENISE A \* Research Professor, 1982; PhD, 1976, City University of New York; viral pathogenesis and neoplasia

GEBALLE, ADAM PHILIP \* Adjunct Professor, 1988; MD, 1978, Duke University; Translational regulation of viral and cellular gene expression

GRAY, KENDALL M, Senior Lecturer, 2000; PhD, 1989, University of Southern California

GREENBERG, E. PETER \* Professor, 2005; MS, 1972, University of Iowa, PhD, 1977, Harvard University; Molecular basis of social activities in bacteria: quorum sensing and biofilms

GUSTIN, KURT, Affiliate Assistant Professor, 2003; PhD, 1998, University of Michigan

GUVERNER, ZEHRA T, Acting Instructor, 2005; MS, 1990, University of Washington, PhD, 2000, University of Wisconsin (Madison)

HAKOMORI, SEN-ITIROH \* Professor Emeritus, 1967; MD, 1951, Tohoku Imperial University (Japan), DrMedSci, 1956, Tohoku Imperial University (Japan); membrane biochemistry and glycoproteins

HALFORD, WILLIAM, Affiliate Assistant Professor, 2005; MS, 1994, Louisiana State University, PhD, 1996, Louisiana State University

HALONEN, SANDRA, Affiliate Assistant Professor, 2004; MS, 1984, University of Illinois, PhD, 1993, Louisiana State University

HARDY, MICHELE, Affiliate Assistant Professor, 2003; PhD, 1993, Texas A&M University

HAROLD, FRANKLIN M., Affiliate Professor, 2001; PhD, 1955, University of California (Berkeley)

HARTZELL, PATRICIA L., Affiliate Associate Professor, 2003; PhD, 1986, University of Illinois

HARWOOD, CAROLINE \* Professor, 2005; MA, 1976, Boston University, PhD, 1982, University of Massachusetts; Genomics of environmental bacteria. Bacterial sensing and response

HECKERMAN, DAVID \* Affiliate Professor, 2006; MS, 1979, University of California (Los Angeles), MS, 1983, Stanford University, PhD, 1990, Stanford University, MD, 1992, Stanford University; Machine Learning and Applied Statistics

HELLSTROM, KARL-ERIK, Affiliate Professor, 1966; DrMed, 1964, Karolinska Institute (Sweden), Lic.Med., 1964, Karolinska Institute (Sweden)

HERWIG, RUSSELL P \* Adjunct Research Assoc Professor, 1983; MA, 1978, College of William And Mary, PhD, 1989, University

of Washington; environmental microbiology, bioremediation, molecular microbial ecology, microbial phylogenetics

HILL, WALTER E, Affiliate Associate Professor, 1992; PhD, 1972, University of Washington

HOLMES, KING K. \* Adjunct Professor, 1967; MD, 1963, Cornell University, PhD, 1967, University of Hawaii; clinical epidemiology and pathogenesis of infectious diseases

HU, SHIU-LOK \* Professor, 1988; PhD, 1978, University of Wisconsin (Madison); Virus-host interactions, AIDS vaccines and pathogenesis of primate lentivirus infection

JARVIS, DONALD L., Affiliate Professor, 2001; MS, 1980, Idaho State University, PhD, 1986, Baylor College of Medicine

JOHNSON, JILL, Affiliate Assistant Professor, 2003; PhD, 1994, Mayo Medical School/Graduate School

JOLLEY, WILLIAM R., Affiliate Associate Professor, 2001; MS, 1969, Utah State University, PhD, 1973, Brigham Young University

KATZE, MICHAEL GERALD \* Professor, 1987; MS, 1978, Hahnemann Medical College, PhD, 1980, Hahnemann Medical College; regulation of viral gene expression at the translational level

KOBAYASHI, SCOTT, Affiliate Assistant Professor, 2006; PhD, 1998, Montana State University

LAGUNOFF, MICHAEL \* Associate Professor, 2001; PhD, 1995, University of Chicago; Molecular Virology of Kaposi's Sarcoma-associated herpesvirus

LAMPE, MARY F \* Adjunct Associate Professor, 1988; MS, 1976, University of Washington, PhD, 1984, University of North Carolina; Molecular analysis of the pathogenic bacterium *Chlamydia trachomatis*

LARA, JIMMIE CANO \* Associate Professor, 1972; MS, 1967, California State College, PhD, 1970, University of California (San Diego); microbial physiology and crytology, sporulation and gas vesicle synthesis and regulation

LAW, CHE-LEUNG, Affiliate Assistant Professor, 1990; MPhil, 1986, University of Hong Kong, PhD, 1990, University of Minnesota

LEI, BENFANG, Affiliate Assistant Professor, 2005; MS, 1985, Beijing University of

Chemical Tech. (China), MS, 1989, University of Texas (El Paso), PhD, 1993, University of Houston

LEIGH, JOHN A. \* Professor, 1985; MS, 1979, University of Illinois, PhD, 1983, University of Illinois; bacterial physiology, biochemistry, genetics

LIBBY, STEPHEN JAMES \* Adjunct Research Assoc Professor, 2003; MS, 1983, Iowa State University, PhD, 1987, Iowa State University; Salmonella molecular pathogenesis and oxidative stress resistance

LIDSTROM, MARY E. \* Professor, 1977; MS, 1975, University of Wisconsin (Madison), PhD, 1977, University of Wisconsin (Madison); Genomic approaches to metabolic engineering of bacteria for commercial use

LINIAL, MAXINE L \* Research Professor, 1970; PhD, 1970, Tufts University; retroviral replication and genetics, retroviral transformation

LIU, YI, Acting Instructor, 2000; MD, 1993, Zhejiang University (China), PhD, 2000, Loma Linda University

LORY, STEPHEN, Affiliate Professor, 1984; PhD, 1980, University of California (Los Angeles)

LUKEHART, SHEILAA \* Adjunct Professor, 1979; PhD, 1978, University of California (Los Angeles); Immunology of infectious diseases; microbiology; sexually transmitted diseases

MILLER, BRUCE, Affiliate Professor, 2003; PhD, 1981, University of California (Davis)

MILLER, SAMUEL I \* Professor, 1995; MD, 1979, Baylor College of Medicine; Salmonella pathogenesis and bacterial-eukaryotic cell interactions

MITTLER, JOHN E. \* Associate Professor, 1999; PhD, 1992, University of California (Irvine); Microbial population biology, mathematical modeling of dynamical systems, HIV pathogenesis

MOSELEY, STEPHEN L. \* Professor, 1985; MS, 1978, Catholic University of America, PhD, 1981, University of Washington; molecular basis of pathogenesis in *E. coli* diarrhea

MOUGOUS, JOSEPH D \* Assistant Professor, 2007; PhD, 2004, University of California (Berkeley); protein secretion and bacterial pathogenesis

MULLINS, JAMES I. \* Professor, 1994; PhD, 1978, University of Minnesota;

retroviruses and AIDS, molecular virology

NESTER, EUGENE W \* Professor, 1962; PhD, 1959, Case Western Reserve University; genetics and biochemistry, of bacterial-plant cell interactions

OVERBAUGH, JULIE MAUREEN \* Affiliate Professor, 1988; PhD, 1983, University of Colorado (campus unspecified); molecular mechanisms of virus-host cell interactions/retroviral pathogenesis/aids

PARKS, LEO, Affiliate Professor, 2006; MA, 1953, Indiana University, PhD, 1956, University of Washington

PARSEK, MATTHEW R \* Associate Professor, 2006; PhD, 1995, University of Illinois; microbial communities

PLUMLEY, FRANCIS G., Affiliate Professor, 2003; MS, 1978, Auburn University, PhD, 1983, University of Georgia

POLYAK, STEPHEN J. \* Adjunct Research Assoc Professor, 1993; PhD, 1993, McMaster University (Canada); Virology-Infectious Disease, Hepatology Hepatitis C Molecular Biology

PULLMAN, JOHN, Affiliate Assistant Professor, 2005; MD, 1977, University of Rochester

RAMAKRISHNAN, LALITA \* Associate Professor, 2001; MD, 1983, Baroda Medical College (India), PhD, 1990, Tufts University; Contributions of Mycobacteria and hosts to maintenance of chronic tuberculosis

ROSE, TIMOTHY M \* Adjunct Professor, 1991; PhD, 1981, University of Geneva (Switzerland); molecular biology of tumor viruses, cell growth, differentiation, and transformation

RUBENS, CRAIG E \* Adjunct Professor, 1982; PhD, 1978, Medical University of South Carolina, MD, 1982, University of Washington; Infectious Diseases/pathogenesis of gram(+) bacterial infections

SALAMA, NINA \* Affiliate Assistant Professor, 2001; PhD, 1995, Stanford University; Genetics and Pathogenesis of *Helicobacter pylori* infection of the stomach

SAMUDRALA, VAIKUNTANATH V \* Associate Professor, 2001; PhD, 1997, University of Maryland; Modeling the structure and function of whole genomes

SHERRIS, JOHN C, Professor Emeritus, 1959; MBBS, 1948, London Contemp.

Dance School (England), MD, 1950,  
London Contemp. Dance School (England)

SINGH, PRADEEP \* Associate Professor,  
2005; MD, 1989, Northwestern University;  
biofilm biology and chronic lung infections

SMITH, ARNOLD L \* Adjunct Professor,  
2003; MD, 1964, University of Missouri,  
MS, 1964, University of Missouri;  
Investigating the biology of the human-  
restricted bacterium *Haemophilus*  
*influenzae*

STAHL, DAVID A \* Adjunct Professor,  
2000; MS, 1975, University of Illinois  
(Urbana), PhD, 1978, University of Illinois  
(Urbana); Microbial Ecology and Bio-  
geochemistry, Microbial Evolution and  
Systematics, Comparative Sequence  
Analysis

STALEY, JAMES T \* Professor Emeritus,  
1971; MS, 1963, Ohio State University,  
PhD, 1967, University of California (Davis);  
freshwater bacteriology, microbial  
ecology, general microbiology

STEWART, PHILIP, Affiliate Professor,  
2003; MS, 1985, Stanford University, PhD,  
1988, Stanford University

STROM, MARK S, Affiliate Associate  
Professor, 1995; MS, 1982, University of  
Washington, PhD, 1992, University of  
Washington

TARR, PHILLIP I, Affiliate Professor, 1980;  
MD, 1980, Yale University

TOP, EVA, Affiliate Associate Professor,  
2003; MS, 1989, University of Ghent  
(Belgium), PhD, 2003, University of Ghent  
(Belgium)

TRAXLER, BETH A \* Associate Professor,  
1992; PhD, 1987, Carnegie Mellon  
University; bacterial physiology, genetics,  
and membrane protein biochemistry

VAN VOORHIS, WESLEY C \* Adjunct  
Professor, 1986; PhD, 1983, Rockefeller  
University, MD, 1984, Cornell University;  
infectious diseases

WHITE, THEODORE C \* Adjunct Professor,  
1996; PhD, 1984, University of Michigan;  
molecular mechanisms of virulence and  
drug resistance in pathogenic yeasts

WOOD, DEREK WILLIAM, Affiliate  
Assistant Professor, 1997; PhD, 1997,  
University of Arizona

ZHU, TUOFU \* Adjunct Associate  
Professor, 1997; MD, 1984, Tiangxi  
(Jiangxi) Medical School, China, PhD,  
1990, Peking Union Medical College  
(China); HIV-1 pathogenesis, host  
genetics, therapy, and vaccine

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## Music

BEALE, JAMES M, Professor Emeritus,  
1948; MMus, 1947, Yale University,,,,,

BENSHOOF, KENNETH, Associate  
Professor Emeritus, 1963; MA, 1963, San  
Francisco State,,,,,

BERNARD, JONATHAN W \* Professor,  
1987; MA, 1973, Yale University, MPhil,  
1975, Yale University, PhD, 1977, Yale  
University,,,,,,; theory and analysis of  
twentieth-century music

BOERS, GEOFFREY PAUL \* Associate  
Professor, 1996; MS, 1985, Portland State  
University, DMA, 1987, University of  
Arizona; Choral Music: Literature, History,  
Conducting, and Rehearsal Techniques;  
Vocal Pedagogy; Group Psychology;  
Languages

BOZARTH, GEORGE S \* Professor, 1978;  
MFA, 1973, Princeton University, PhD,  
1978, Princeton University; music history  
and literature

CAMPBELL, PATRICIA S. \* Professor,  
1989; MM, 1975, University of Akron, PhD,  
1981, Kent State University; music and  
child development, multicultural music  
education, comparative music education

CARLSEN, JAMES C, Professor Emeritus,  
1967; MA, 1958, University of Washing-  
ton, PhD, 1962, Northwestern University

CHALOUKPA, VLADIMIR \* Adjunct  
Professor, 1980; PhD, 1975, University of  
Geneva (Switzerland),,,,,,; experimental  
elementary-particle physics

COLLINS, DOUGLAS P \* Adjunct Associ-  
ate Professor, 1980; MA, 1972, University  
of Missouri, PhD, 1978, University of  
Missouri; twentieth-century French  
literature

DEMOREST, STEVEN M \* Associate  
Professor, 1993; MM, 1983, Westminster  
Choir College, PhD, 1989, University of  
Wisconsin (Madison); music education,  
choral ensembles

DEMPSTER, STUART R, Professor  
Emeritus, 1968; MA, 1967, San Francisco  
State,,,,,

DUDLEY, SHANNON K. \* Associate  
Professor, 1996; MA, 1988, University of  
California (Berkeley), PhD, 1997, Univer-  
sity of California (Berkeley); Steelband  
music in Trinidad; Caribbean music;  
colonialism, nationalism, ethnicity

DURAND, JOEL-FRANCOIS \* Professor,  
1991; MM, 1984, Musikhochschule,  
Freiburg (Germany), PhD, 1988, State  
University of New York (Stony Brook);  
music composition

ELLINGSON, TERRY J \* Professor, 1981;  
MA, 1970, University of Chicago, PhD,  
1979, University of Wisconsin (Madison);  
ethnomusicology, anthropology, religion,  
Tibet, Nepal, Buddhism

EROS, PETER S \* Professor, 1989;  
Diploma, 1956, Franz Liszt Music  
Academy,,,,,,; orchestra and opera, works  
of Richard and Siegfried  
Wagner(Diploma1956Franz Liszt  
Academy)

GROSSMAN, ARTHUR, Professor  
Emeritus, 1968; Diploma, 1955, Curtis  
Institute of Music,,,,,

HABELL-PALLAN, MICHELLE \* Adjunct  
Associate Professor, 2001; MA, 1993,  
University of California (San Diego), MA,  
1994, University of California (San Diego),  
PhD, 1997, University of California (Santa  
Cruz),,,,,,; Chicano studies and literature,  
performance and popular culture, women  
of color feminist theories

HARPER, THOMAS \* Associate Professor,  
1998; MM, 1976, University of Arkan-  
sas,,,,,,; SING OPERAAND CONCERTS  
WORLDWIDE

HENEGHAN, AINE CAITRIONA \* Assistant  
Professor, 2006; PhD, 2006, Trinity College  
(Ireland),,,,,,; Music Theory

JUSSILA, CLYDE F, Associate Professor  
Emeritus, 1971; MS, 1951, Kansas State  
University,,,,,

KAPLAN, ABRAHAM \* Professor Emeritus,  
1977; Diploma, 1953, Israel Academy of  
Sciences and Humanities, Jerusalem,  
Diploma, 1953, Juilliard School, Diploma,  
1957, Juilliard School,,,,,,; choral conduct-  
ing

KAPPY, DAVID L \* Professor, 1979; MM,  
1971, University of Wisconsin (Madi-  
son),,,,,,; French horn performance,  
chamber music, and theory

KARPEN, RICHARD S. \* Professor, 1989;  
MA, 1986, Stanford University, DMA, 1989,  
Stanford University; music composition,  
computer music, digital arts

KECHLEY, GERALD, Professor Emeritus,  
1947; MA, 1950, University of Washington

LUNDQUIST, BARBARA R, Professor  
Emeritus, 1966; MS, 1959, Montana State  
University, DMA, 1973, University of  
Washington

MC CABE, ROBIN L \* Professor, 1987; MMus, 1973, Juilliard School, DMA, 1978, Juilliard School; piano performance, communications skill, and pedagogy

MICHAELIAN, PATRICIA \* Associate Professor, 1984; Diploma, 1970, Curtis Institute of Music, Diploma, 1971, Curtis Institute of Music; concert pianist: orchestral soloist, recitalist, and chamber musician

MORRISON, STEVEN J. \* Associate Professor, 1997; MM, 1988, University of Wisconsin (Madison), PhD, 1995, Louisiana State University; Factors in the development of music listening and performance behaviors

PAMPIN, JUAN C. \* Assistant Professor, 1999; MA, 1995, National Conservatory of Music, France, DMA, 2000, Stanford University, PhD, 2000, Stanford University,,,,,; Sound Art. Music Composition. Digital Sound Processing/Synthesis. Spectral Modeling

RAHN, JOHN \* Professor, 1975; Diploma, 1967, Juilliard School, MFA, 1972, Princeton University, PhD, 1974, Princeton University,,,,,; theory/composition

ROSINBUM, RALPH, Associate Professor Emeritus, 1948; MA, 1948, University of Washington,,,,,

RUMPH, STEPHEN C \* Assistant Professor, 2002; MA, 1992, University of California (Berkeley), PhD, 1997, University of California (Berkeley); Current research compares Mozart's church music and Enlightenment linguistics

SAKS, TOBY \* Professor, 1976; MS, 1966, Juilliard School,,,,,; performance and teaching of violoncello and chamber music

SALZMAN, TIMOTHY O \* Professor, 1987; MM, 1979, Northern Illinois University,,,,,; wind ensemble conducting, pedagogy and repertoire

SCHUYLER, PHILIP D \* Associate Professor, 1999; MA, 1974, University of Washington, PhD, 1979, University of Washington; Near Eastern musics and cultures; contemporary music and art in the US

SHEPPARD, CRAIG \* Professor, 1993; MSC, 1971, Juilliard School,,,,,; Piano and Piano Literature Diploma, The Curtis Institute, Philadelphia, 1968; BM, The Juilliard School, New York 1970; MSc, The Juilliard School, New York, 1971

SHIN, DONNA YOUNG \* Assistant Professor, 2007; MM, 1999, New England Conservatory of Music, DMA, 2007,

Eastman School of Music; flute

SIKI, BELA, Professor Emeritus, 1965; Diploma, 1945, Franz Liszt Music Academy, Diploma, 1948, Conservatoire De Musique (Switzerland)

SMITH, WILLIAM O, Professor Emeritus, 1966; MA, 1952, University of California (campus unspecified),,,,,

STARR, LAWRENCE \* Professor, 1977; PhD, 1973, University of California (Berkeley),,,,,,; music history and literature

SUNARDI, CHRISTINA, Assistant Professor, 2007; MA, 2003, University of California (Berkeley),,,,,,

TARICANI, JO ANN \* Associate Professor, 1980; MA, 1977, University of Pennsylvania, PhD, 1986, University of Pennsylvania; music history and literature

TERRY, CAROLE R \* Professor, 1979; MM, 1973, University of Rochester, DMA, 1977, Stanford University; organ, harpsichord

THOME, DIANE \* Professor Emeritus, 1977; MA, 1966, University of Pennsylvania, MFA, 1970, Princeton University, PhD, 1973, Princeton University,,,,,; theory/composition

WATRAS, M. MELIA \* Assistant Professor, 2004; MM, 1995, Indiana University,,,,,; Viola Performance and Chamber Music

WYERS, GISELLE E \* Assistant Professor, 2006; MM, 1996, Westminster Choir College, PhD, 2000, University of Arizona; Choral Conducting

PhD, 1958, University of Hamburg (Germany); Turkic languages and literatures

CLAUSS, JAMES J \* Adjunct Professor, 1984; MA, 1976, Fordham University, PhD, 1983, University of California (Berkeley); Latin poetry and prose, Hellenistic literature, Latin literature of the Empire

DEYOUNG, TERRI LYNN \* Associate Professor, 1991; MA, 1981, American University in Cairo, PhD, 1988, University of California (Berkeley); Arabic language and literature

ELKHAFIFI, HUSSEIN M. \* Assistant Professor, 2004; MA, 1977, University of Utah, PhD, 1985, University of Utah; Second language acquisition; teaching Arabic as a second/foreign language

GOLDBERG, ELLIS \* Adjunct Professor, 1985; MA, 1970, University of California (Berkeley), PhD, 1983, University of California (Berkeley); political economy of the Middle East, comparative politics

HEER, NICHOLAS L. \* Professor Emeritus, 1965; PhD, 1955, Princeton University; Arabic language and literature, Islamic theology and philosophy

JAFFEE, MARTIN S. \* Adjunct Professor, 1987; MA, 1974, Florida State University, PhD, 1980, Brown University; rabbinic religion and literature in late antiquity

KASABA, RESAT \* Adjunct Professor, 1985; MA, 1979, State University of New York (Binghamton), PhD, 1986, State University of New York (Binghamton); historical sociology, world systems, social change in the Middle East

KURU, SELIM SIRRI \* Associate Professor, 1999; MA, 1993, Bogazici University (Istanbul), PhD, 2000, Harvard University; Ottoman, Turkish, Language, Literature

LOPEZ, SHAUN T \* Adjunct Assistant Professor, 2006; MA, 1995, University of Utah, PhD, 2004, University of Michigan; Middle Eastern Studies - Modern Period

MACKAY, PIERRE A, Professor Emeritus, 1966; MA, 1959, University of California (campus unspecified), PhD, 1964, University of California (campus unspecified)

NOEGEL, SCOTT B. \* Professor, 1995; MA, 1993, Cornell University, PhD, 1994, Cornell University; Ancient Near Eastern Languages, Literatures, Cultures and History

OSANLOO, ARZOO \* Adjunct Assistant Professor, 2002; JD, 1993, American

## Near Eastern Languages and Civilization

ANDREWS, WALTER G \* Research Professor, 1968; MA, 1963, University of Michigan, MA, 1965, University of Michigan, PhD, 1970, University of Michigan; Ottoman and Modern Turkish literature and literary history; literary theory

BACHARACH, JERE L \* Professor Emeritus, 1967; MA, 1962, Harvard University, PhD, 1967, University of Michigan; history of the Near East

BROWN, JONATHAN AC, Assistant Professor, 2006; PhD, 2006, University of Chicago

CIRTAUTAS, ILSE D \* Professor, 1968;

University, PhD, 2002, Stanford University; Anthropology and Law, Human Rights, Gender and Islam, Theories of the State: socio-legal constructions of women's rights within Iran's Islamic republican state

PAPAN-MATIN, FIROOZEH \* Assistant Professor, 2005; MA, 1991, California State University, Northridge, MA, 1995, University of California (Los Angeles), PhD, 2003, University of California (Los Angeles); Iranian Studies, Persian Language and Literature, Medieval Islamic Mysticism in Iran

REID, DONALD M., Affiliate Professor, 2006; PhD, 1969, Princeton University

SCHUYLER, PHILIP D \* Adjunct Associate Professor, 1999; MA, 1974, University of Washington, PhD, 1979, University of Washington; Near Eastern musics and cultures; contemporary music and art in the US

SCHWARZ, FLORIAN \* Adjunct Assistant Professor, 2005; MA, 1993, University of Tübingen (Germany), PhD, 1998, University of Tübingen (Germany)

SOKOLOFF, NAOMI B. \* Professor, 1985; MA, 1979, Princeton University, PhD, 1980, Princeton University; Hebrew language and literature

WALKER, JOEL T \* Adjunct Associate Professor, 1997; MA, 1994, Princeton University, PhD, 1998, Princeton University; History and archaeology of the late antique Near East

WILLIAMS, MICHAELA \* Professor, 1976; MA, 1970, Miami University (Ohio), PhD, 1977, Harvard University; early Christianity and religions of antiquity

## Neurobiology

FROEHNER, STANLEY C \* Professor, 2000; PhD, 1973, California Institute of Technology; Molecular mechanisms of synapse formation and muscle disease

GORDON, SHARONA E. \* Associate Professor, 1993; PhD, 1993, Brown University; Molecular Mechanisms of Ion Channel Gating in Visual and Olfactory Transduction

KIM, JEANSOK J \* Associate Professor, 2003; MA, 1989, University of California (Los Angeles), PhD, 1991, University of California (Los Angeles); Neurobiology of learning & memory, emotion, and stress

MOODY, WILLIAM J \* Professor, 1982; PhD, 1977, Stanford University; single cell electrophysiology, development of electrical properties in embryos

PERKEL, DAVID J \* Professor, 2000; PhD, 1992, University of California (San Francisco); Neural mechanisms of learning; focus on vocal learning in songbirds

ROBINSON, FARREL R. \* Associate Professor, 1986; PhD, 1982, Brown University; Study of the cerebellum via monkey eye movements

## Philosophy

BLAKE, MICHAEL I. \* Associate Professor, 2005; PhD, 1998, Stanford University; International ethics, multiculturalism, and immigration

BOLER, JOHN F, Professor Emeritus, 1960; MA, 1952, St. Louis University, PhD, 1960, Harvard University

BONJOUR, LAURENCE A \* Professor, 1977; PhD, 1969, Princeton University; epistemology, contemporary philosophy

CLATTERBAUGH, KENNETH C. \* Professor, 1966; PhD, 1966, Indiana University; philosophy of science, ancient philosophy, continental rationalism

COBURN, ROBERT, Professor Emeritus, 1970; PhD, 1958, Harvard University, MA, 1958, Harvard University

COHEN, S MARC \* Professor, 1973; PhD, 1967, Cornell University; ancient philosophy, metaphysics, philosophy of language, philosophy of mind

DIETRICHSON, PAUL, Professor, 1955; PhD, 1955, Yale University, PhD, 1955, Yale University

FINE, ARTHUR I \* Professor, 2001; MS, 1960, Illinois Institute of Technology, PhD, 1963, University of Chicago; philosophy of science and mathematics, Einstein, philosophy of quantum theory

GARDINER, STEPHEN M. \* Associate Professor, 2004; MA, 1993, University of Colorado (Boulder), PhD, 1999, Cornell University; Ethics, Political Philosophy, Environmental Ethics and Ancient Philosophy

GOERING, SARA L. \* Assistant Professor, 2003; MA, 1994, University of Colorado (Denver), PhD, 1998, University of

Colorado (Denver); Bioethics, primarily issues in genetics and disability theory; feminist philosophy

HANKINSON NELSON, LYNN \* Professor, 2002; PhD, 1987, Temple University; Philosophy of Science, Feminist Philosophy of Science, History and Philosophy of Biology, Quine

JECKER, NANCY A.S. \* Adjunct Professor, 1986; MA, 1982, Stanford University, MA, 1984, University of Washington, PhD, 1986, University of Washington; philosophical and ethical aspects of health care delivery and policy

KELLEY, MAUREEN C, Adjunct Assistant Professor, 2007; MA, 1993, Bowling Green State University, PhD, 2001, Rice University

KEYT, CHRISTINE M, Affiliate Assistant Professor, 1977; MA, 1970, University of Wisconsin, MA, 1978, University of Washington, PhD, 1980, University of Washington

KEYT, DAVID \* Professor, 1957; MA, 1953, Cornell University, PhD, 1955, Cornell University; ancient and contemporary philosophy

LANGE, MARC B. \* Affiliate Professor, 1997; PhD, 1990, University of Pittsburgh; history of science, philosophy of the history of science, science, and ethics

LIGHT, ANDREW \* Associate Professor, 2004; MA, 1992, University of California (Riverside), PhD, 1996, University of California (Riverside); Environmental Ethics & Policy, relating to restoration ecology and urban ecology; Philosophy of Technology, relating to ethical issues in emerging technologies; Philosophical issues in Architecture and Urban Planning

LONE, JANA MOHR, Affiliate Assistant Professor, 1996; JD, 1985, George Washington University, MA, 1990, University of Washington, PhD, 1996, University of Washington

LUCIAN, MIRIAM L, Affiliate Assistant Professor, 1972; PhD, 1970, Harvard University, MS, 1970, Harvard University

MARKS, CHARLES \* Professor Emeritus, 1966; PhD, 1972, Cornell University; contemporary philosophy, British empiricism and continental rationalism

MISHALANI, JAMES K, Associate Professor Emeritus, 1963; MA, 1958, Brown University, PhD, 1961, Brown University

MOORE, ADAM DANIEL \* Assistant



Professor, 2003; MA, 1993, Ohio State University, PhD, 1997, Ohio State University; Philosophy of Law, Applied Ethics, Information Policy, Political Theory, Privacy

MOORE, RONALD M \* Professor, 1977; PhD, 1971, Columbia University; philosophy of law, aesthetics

POTTER, KARL H, Professor Emeritus, 1970; MA, 1952, Harvard University, PhD, 1955, Harvard University

RICHMAN, ROBERT J, Professor Emeritus, 1961; MA, 1950, Harvard University, PhD, 1953, Harvard University

ROBERTS, JEAN VALERIE \* Associate Professor, 1991; MA, 1978, University of Pittsburgh, PhD, 1982, University of Pittsburgh; Ancient Greek philosophy, history of ethics and political theory, feminist philosophy

ROSENTHAL, MICHAEL \* Associate Professor, 2002; PhD, 1996, University of Chicago, MA, 1996, University of Chicago; History of Early Modern philosophy, including ethics, political theory, and Jewish thought

SCHELLENBERG, INGRAR. \* Assistant Professor, 2007; MA, 2000, Queen's University (UK), MA, 2003, University of North Carolina, Chapel Hill, PhD, 2006, University of North Carolina, Chapel Hill; Ethics, Bioethics, Philosophy of Medicine, Moral Psychology, Philosophy of Feminism

SMITH, ANGELA \* Associate Professor, 1999; PhD, 1999, Harvard University; Moral and political philosophy

STATEN, HENRY J. \* Adjunct Professor, 1998; PhD, 1978, University of Texas (Austin); 19th and 20th century British literature, history of literary criticism, contemporary literary theory

TALBOTT, WILLIAM J. \* Professor, 1989; PhD, 1976, Harvard University; epistemology, ethics, political philosophy, game theory, and decision theory

TAYLOR, PAUL \* Affiliate Associate Professor, 1998; MA, 1996, Rutgers University, PhD, 1997, Rutgers University; U.S. conceptions of race and popular culture representations of race, love, gender, and sex

TOWNSEND, MICHAEL E. \* Adjunct Associate Professor, 1992; MA, 1978, University of Michigan, PhD, 1982, Yale University, JD, 1989, Yale University; law and science; intellectual property; use of quantitative methods

WEBER, RENEE, Affiliate Professor, 1996; MA, 1960, Northwestern University, PhD,

1966, Columbia University

WELLER, CASS J \* Associate Professor, 1990; MA, 1981, University of Pittsburgh, PhD, 1983, University of Pittsburgh; Ancient Greek Philosophy, Epistemology, and Hume

WOODY, ANDREA I. \* Associate Professor, 1997; PhD, 1996, University of Pittsburgh, PhD, 1997, University of Pittsburgh; Philosophy of Science, especially biology and physics; epistemology; logic

WYLIE, MARGARET ALISON \* Professor, 2005; MA, 1979, State University of New York (Binghamton), PhD, 1982, State University of New York (Binghamton); Philosophy of social science; feminist philosophy; archaeological history and theory

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## Physics

ADELBERGER, ERIC G, Professor Emeritus, 1970; PhD, 1967, California Institute of Technology

AGOL, ERIC \* Adjunct Assistant Professor, 2003; PhD, 1997, University of California (Santa Barbara); Black holes, gravitational lensing, extrasolar planets, and accretion

ALBERG, MARY ANN, Affiliate Professor, 1974; MS, 1970, University of Washington, PhD, 1974, University of Washington

ANDREEV, ANTON \* Associate Professor, 2004; MA, 1993, Johns Hopkins University, PhD, 1996, Massachusetts Institute of Technology; Theory of Coulomb blockade in electronic micro- and nano- devices. Theory of disordered metals and superconductors

AO, PING \* Adjunct Research Assoc Professor, 1990; MA, 1985, University of Illinois, PhD, 1990, University of Illinois; Dynamics of topological singularities, quantum tunneling and coherence, systems biology, mainly DNA chips and information pathways

BACON, DAVE M \* Adjunct Research Asst Professor, 2006; PhD, 2001, University of California (Berkeley); quantum computing

BAKER, DAVID \* Adjunct Professor, 1993; PhD, 1989, University of California (Berkeley); protein folding

BAKER, MARSHALL, Professor Emeritus, 1962; PhD, 1958, Harvard University

BALANTEKIN, AKIF BAHAA, Affiliate Professor, 1997; MS, 1976, Middle East Technical University (Turkey), MPhil, 1979, Yale University, PhD, 1982, Yale University

BARDEEN, JAMES M \* Professor Emeritus, 1966; PhD, 1965, California Institute of Technology; general relativity, theoretical astrophysics, cosmology

BARRETT, BRUCE R., Affiliate Professor, 2000; MS, 1964, Stanford University, PhD, 1967, Stanford University

BERTSCH, GEORGE F \* Professor, 1992; PhD, 1965, Princeton University; theoretical physics, nuclear and atomic cluster physics

BICHSEL, HANS, Affiliate Professor, 1958; PhD, 1951, University of Basel (Switzerland)

BLINOV, BORIS B. \* Assistant Professor, 2005; Diploma, 1995, Moscow State University (Russia), PhD, 2000, University of Michigan; Experimental quantum computing and quantum communication with trapped ions and single photons

BODANSKY, DAVID ., Professor Emeritus, 1954; MA, 1948, Harvard University, PhD, 1950, Harvard University

BOULWARE, DAVID G \* Professor, 1965; MA, 1960, Harvard University, PhD, 1962, Harvard University; field theory, theoretical elementary-particle physics, general relativity

BOYNTON, PAUL \* Professor, 1970; PhD, 1967, Princeton University; high-energy astrophysics, astronomy

BROWN, FREDERICK C, Professor Emeritus, 1987; MS, 1947, Harvard University, PhD, 1950, Harvard University

BROWN, LOWELL S, Professor Emeritus, 1968; MA, 1958, Harvard University, PhD, 1961, Harvard University

BUCK, WARREN W, Adjunct Professor, 1999; MA, 1970, College of William And Mary, PhD, 1976, College of William And Mary

BULGAC, AUREL \* Professor, 1993; MSC, 1973, Leningrad State University, PhD, 1977, Leningrad Nuclear Physics Inst (Russia); many body theory, molecular dynamics, classical and quantum chaos

BURNETT, THOMPSON H \* Professor, 1975; PhD, 1968, University of California (San Diego); experimental elementary-particle physics

CAHN, JOHN WERNER, Affiliate Professor,

- 1984; PhD, 1953, University of California (Berkeley)
- CAMPBELL, CHARLES T. \* Adjunct Professor, 1992; PhD, 1979, University of Texas (Austin); physical chemistry of solid surfaces, chemisorption, catalysis, and surface analysis
- CHALOUPKA, VLADIMIR \* Professor, 1980; PhD, 1975, University of Geneva (Switzerland); experimental elementary-particle physics
- CHAYES, JENNIFER T., Affiliate Professor, 1997; PhD, 1983, Princeton University
- CLARK, KENNETH C, Professor Emeritus, 1948; MA, 1941, Harvard University, PhD, 1947, Harvard University
- CLEVELAND, BRUCE T., Affiliate Professor, 2001; PhD, 1970, Johns Hopkins University
- COBDEN, DAVID \* Associate Professor, 2001; MSC, 1987, St. Andrews College, PhD, 1992, Cambridge University (UK); Experimental investigations of physical phenomena in molecular-scale electronic devices
- COOK, VICTOR, Professor Emeritus, 1963; PhD, 1962, University of California (Berkeley)
- CRAMER, JOHN G \* Professor, 1964; MA, 1959, Rice University, PhD, 1961, Rice University; experimental nuclear physics
- DALCANTON, JULIANNE \* Adjunct Associate Professor, 1998; PhD, 1995, Princeton University; The evolution and formation of galaxies
- DASH, J GREGORY, Professor Emeritus, 1960; PhD, 1951, Columbia University, MA, 1951, Columbia University
- DEHMELT, HANS G, Professor Emeritus, 1955; MA, 1948, University of Gottingen (Germany), PhD, 1950, University of Gottingen (Germany)
- DEN NIJS, MARCEL P \* Professor, 1981; PhD, 1979, Katholieke University (Netherlands); theoretical condensed-matter physics
- DETMOLD, WILLIAM \* Research Assistant Professor, 2002; MSC, 1997, University of Adelaide (Australia), DPhil, 2002, University of Adelaide (Australia); Quantum chromodynamics and quantum field theory
- DOE, PETER J. \* Research Professor, 1994; MSC, 1974, University of Durham (UK), PhD, 1977, University of Durham (UK); Electro-weak interactions and solar neutrino physics
- DROBNY, GARY P \* Adjunct Professor, 1982; PhD, 1981, University of California (Berkeley); two-dimensional and multiple quantum studies in nuclear magnetic resonance
- DUNHAM, SCOTT T. \* Adjunct Professor, 1999; MSEE, 1980, Stanford University, PhD, 1985, Stanford University; Modeling and simulation of microfabrication processes and device behavior
- ELLIOTT, STEVEN R \* Affiliate Associate Professor, 1995; MS, 1984, University of California (Irvine), PhD, 1987, University of California (Irvine); Physics
- ELLIS, STEPHEN D \* Professor, 1975; PhD, 1971, California Institute of Technology; theoretical elementary-particle physics
- FAIN, SAMUEL C \* Professor, 1969; MS, 1966, University of Illinois, PhD, 1969, University of Illinois; experimental condensed-matter physics, surface physics
- FAIRHALL, ADRIENNE L \* Adjunct Assistant Professor, 2003; MS, 1993, Weizmann Institute For Science (Israel), PhD, 1997, Weizmann Institute For Science (Israel); Computational and systems neuroscience: adaptive information processing in sensory systems
- FINE, ARTHUR I \* Adjunct Professor, 2001; MS, 1960, Illinois Institute of Technology, PhD, 1963, University of Chicago; philosophy of science and mathematics, Einstein, philosophy of quantum theory
- FORTSON, E. NORVAL \* Professor Emeritus, 1963; PhD, 1964, Harvard University; radio-frequency spectroscopy, experimental atomic physics
- GARCIA, ALEJANDRO \* Professor, 2002; PhD, 1991, University of Washington; Understanding fundamental symmetries and the electro-weak interaction in the nucleus
- GINGER JR, DAVID S. \* Adjunct Assistant Professor, 2003; PhD, 2001, University of Cambridge (UK); Physical chemistry of nanostructured materials, optical spectroscopy, atomic force microscopy, photonics
- GOUSSIOU, ANNA \* Associate Professor, 2007; PhD, 1995, University of Wisconsin (Madison); Physics
- GUNDLACH, JENS \* Professor, 1990; PhD, 1990, University of Washington; experimental gravitation, precision tests of fundamental physics, nanopore DNA sequencing
- GUPTA, SUBHADEEP \* Assistant Professor, 2003; PhD, 2003, Massachusetts Institute of Technology; Physics
- HALPERN, ISAAC, Professor Emeritus, 1953; PhD, 1948, Massachusetts Institute of Technology
- HAWLEY, SUZANNE \* Adjunct Associate Professor, 1999; MA, 1984, University of Texas (Austin), PhD, 1989, University of Texas (Austin); Variable stars, magnetic activity, flares, galactic structure, dwarf galaxies
- HAXTON, WICK C. \* Professor, 1984; MS, 1973, Stanford University, PhD, 1976, Stanford University; theoretical physics, nuclear physics
- HECKEL, BLAYNE \* Professor, 1983; MA, 1978, Harvard University, PhD, 1981, Harvard University; experimental neutron and atomic physics
- HENLEY, ERNEST M, Professor Emeritus, 1954; PhD, 1952, University of California (Berkeley)
- HERON, PAULA \* Professor, 1995; MS, 1992, University of Ottawa (Canada), PhD, 1995, University of Western Ontario (Canada); Research on the learning and teaching of physics
- HOLZWORTH, ROBERT \* Adjunct Professor, 1982; MA, 1974, University of California (Berkeley), PhD, 1977, University of California (Berkeley); experimental space plasma physics, atmospheric/magnetospheric electric fields, thunderstorms
- INGALLS, ROBERT L, Professor Emeritus, 1966; MS, 1960, Carnegie Institute of Technology, PhD, 1962, Carnegie Institute of Technology
- JARBOE, THOMAS R. \* Adjunct Professor, 1989; PhD, 1974, University of California (Berkeley); plasma physics and controlled fusion, magnetic reconnection and relaxation
- KAPLAN, DAVID B. \* Professor, 1994; PhD, 1985, Harvard University; theoretical nuclear and elementary-particle physics
- KARCH, ANDREAS \* Assistant Professor, 2002; MA, 1996, University of Texas (Austin), PhD, 1998, Humboldt University (Germany); Theoretical Particle Physics: String Theory
- KELLER, SARAH L. \* Adjunct Associate Professor, 2000; PhD, 1995, Princeton

University; Biophysics; physical chemistry; soft condensed matter; surfactants; lipids; self-assembly; microscopy

KRISHNAN, KANNAN \* Adjunct Professor, 2001; MS, 1980, State University of New York (Stony Brook), PhD, 1984, University of California (Berkeley); Integrated nanostructures and thin films for novel functionalities and devices

LI, XINGDE \* Adjunct Associate Professor, 2001; PhD, 1998, University of Pennsylvania; Biomedical optical imaging, spectroscopy and biophotonics

LIN, LIH-YUAN \* Adjunct Associate Professor, 2003; PhD, 1996, University of California (Los Angeles), MS, 1996, University of California (Los Angeles); Photonics and MEMS for advanced communication and bio-engineering

LUBATTI, HENRY J \* Professor, 1969; MS, 1963, University of Illinois, PhD, 1966, University of California (Berkeley); experimental elementary-particle physics

MAGIERSKI, PIOTR, Affiliate Professor, 1998; MSC, 1992, Technical University of Warsaw (Poland), PhD, 1995, Technical University of Warsaw (Poland)

MANDULA, JEFFREY E., Acting Professor, 2006; MA, 1964, Harvard University, PhD, 1966, Harvard University

MC DERMOTT, LILLIAN C \* Professor, 1967; MA, 1956, Columbia University, PhD, 1959, Columbia University; physics education

MILLER, GERALD \* Professor, 1975; SM, 1968, Massachusetts Institute of Technology, PhD, 1972, Massachusetts Institute of Technology; theoretical nuclear physics

MORALES, MIGUEL, Assistant Professor, 2007; PhD, 2002, University of California (Santa Cruz)

NELSON, ANN E \* Professor, 1994; MA, 1981, Harvard University, PhD, 1984, Harvard University; theoretical elementary-particle physics

NORDTVEDT, KENNETH, Affiliate Professor, 2003; PhD, 1964, Stanford University

OHUCHI, FUMIO \* Adjunct Professor, 1992; MS, 1974, Sophia University (Japan), PhD, 1981, University of Florida; nucleation and growth of thin film materials, surface science, glass, device applications

OLMSTEAD, MARJORIE A \* Professor, 1991; MA, 1979, Swarthmore College, MA, 1982, University of California (Berkeley), PhD, 1985, University of California

(Berkeley); experimental condensed-matter physics, surface and interface physics

PEDIGO, ROBERT D., Senior Lecturer, 1995; MA, 1972, Stanford University, PhD, 1977, University of Texas (Austin)

PUFF, ROBERT D, Professor Emeritus, 1962; PhD, 1960, Harvard University

QUINN, THOMAS R. \* Adjunct Professor, 1993; PhD, 1986, Princeton University; Solar System dynamics and galaxy formation

RAAB, FREDERICK, Affiliate Professor, 1980; MA, 1975, State University of New York (Stony Brook), PhD, 1980, State University of New York (Stony Brook)

REHR, JOHN J \* Professor, 1974; PhD, 1972, Cornell University; theoretical condensed-matter physics

REINHARDT, WILLIAM P. \* Adjunct Professor, 1991; PhD, 1968, Harvard University; theoretical and computational chemistry with applications in chemistry and biophysics

RIEDEL, EBERHARD K., Affiliate Professor, 1975; Diploma, 1961, University of Zu Koln (Germany), Diploma, 1964, University of Zu Koln (Germany), PhD, 1966, Technical University of Munich (Germany)

RIEKE, FREDERICK MARTIN \* Adjunct Associate Professor, 1997; PhD, 1991, University of California (Berkeley); Sensory signal processing and computation

ROBERTSON, CHARLES E, Senior Lecturer Emeritus, 1977; MS, 1963, University of Washington, MS, 1981, University of Washington

ROBERTSON, R. G. HAMISH \* Professor, 1994; MA, 1965, Oxford University (UK), PhD, 1971, McMaster University (Canada); experimental nuclear physics

ROSENBERG, LESLIE \* Professor, 2006; MS, 1980, San Francisco State, PhD, 1985, Stanford University; Searches for rare and exotic particles in electron-positron annihilation, studies of very energetic cosmic rays, and searches for particle dark matter

ROTHBERG, JOSEPH E \* Professor, 1969; MA, 1958, Columbia University, PhD, 1963, Columbia University; experimental high-energy physics

SAVAGE, MARTIN J. \* Professor, 1996; MSC, 1985, University of Auckland (New

Zealand), PhD, 1990, California Institute of Technology; Nuclear and Particle Physics

SCHICK, MICHAEL \* Professor, 1969; MS, 1964, Stanford University, PhD, 1967, Stanford University; theoretical condensed-matter physics

SEIDLER, GERALD T. \* Associate Professor, 1996; MA, 1991, University of Chicago, PhD, 1993, University of Chicago; condensed matter experiment: microstructural kinetics and nonequilibrium statistical mechanics

SHAFFER, PETER S. \* Associate Professor, 1993; PhD, 1993, University of Washington; research on the learning and teaching of physics

SHARPE, STEPHEN R. \* Professor, 1986; PhD, 1983, University of California (Berkeley); theoretical particle physics: lattice gauge theory and strong interaction phenomenology

SON, DAM THANH \* Professor, 2002; MSC, 1991, Moscow State University (Russia), PhD, 1995, Institute For Nuclear Research (Russia); theoretical particle and nuclear physics

SORENSEN, LARRY B \* Professor, 1983; MS, 1974, University of Illinois, PhD, 1979, University of Illinois; experimental condensed-matter physics

SPIVAK, BORIS \* Professor, 1991; PhD, 1978, Leningrad Polytechnic Institute (Russia); theoretical condensed-matter physics

STERN, EDWARD A \* Professor Emeritus, 1965; PhD, 1955, California Institute of Technology; experimental condensed-matter physics

STETZER, MACKENZIE R. \* Research Assistant Professor, 2001; PhD, 2000, University of Pennsylvania; Physics

STUBBS, CHRISTOPHER, Affiliate Professor, 1987; MS, 1983, University of Washington, PhD, 1988, University of Washington

THOULESS, DAVID \* Professor Emeritus, 1980; PhD, 1958, Cornell University; theoretical condensed-matter physics

TOLICH, NIKOLAI \* Assistant Professor, 2007; MSC, 1999, University of Auckland (New Zealand), PhD, 2005, Stanford University; Physics

TRAINOR, THOMAS A \* Research Professor, 1973; PhD, 1973, University of North Carolina; experimental nuclear physics

TUNG, WU-KI, Affiliate Professor, 2005; PhD, 1966, Yale University

VAN DYCK, ROBERT S \* Professor, 1971; PhD, 1971, University of California (Berkeley); experimental atomic physics

VAN KOLCK, UBIRAJARA L., Affiliate Assistant Professor, 1993; MSC, 1987, Instituto De Fisica Teorica (Brazil), PhD, 1993, University of Texas (unspecified)

VILCHES, OSCAR E \* Professor Emeritus, 1968; PhD, 1966, National University of Cuyo (Argentina); low-temperature condensed-matter physics

WATTS, GORDON T. \* Associate Professor, 1999; PhD, 1995, University of Rochester; Accelerator based Elementary Particle Physics

WETTLAUFRER, JOHN S, Affiliate Professor, 1996; PhD, 1991, University of Washington

WILETS, LAWRENCE, Professor Emeritus, 1958; MA, 1950, Princeton University, PhD, 1952, Princeton University

WILKERSON, JOHN F. \* Professor, 1994; MS, 1979, University of North Carolina, PhD, 1982, University of North Carolina; experimental nuclear and particle physics and astrophysics

WILKES, RICHARD JEFFREY \* Professor, 1974; MS, 1969, University of Wisconsin, PhD, 1974, University of Wisconsin (Madison); experimental cosmic ray and elementary particle physics

WILLIAMS, ROBERT W, Professor Emeritus, 1959; MA, 1943, Princeton University, PhD, 1948, Massachusetts Institute of Technology

WINGLEE, ROBERT M \* Adjunct Professor, 1991; PhD, 1984, University of Sydney (Australia); space weather, energetic phenomena in sun/earth plasmas, excitation of waves, high energy particle acceleration, advanced spacecraft propulsion

YAFFE, LAURENCE G \* Professor, 1983; MS, 1977, Princeton University, PhD, 1980, Princeton University; quantum field theory, elementary particle theory

ZHAO, TIANCHI \* Research Associate Professor, 1986; MA, 1983, Columbia University, MS, 1984, Columbia University, PhD, 1986, Columbia University; Experimental high energy physics instrumentation and detectors

## Political Science

ADOLPH, CHRISTOPHER A \* Assistant Professor, 2004; MA, 2000, Harvard University, PhD, 2005, Harvard University

ALBERTSON, BETHANY L \* Assistant Professor, 2006; MA, 2001, University of Chicago, PhD, 2006, University of Chicago; American politics: political psychology and public opinion

BACHMAN, DAVID M \* Adjunct Professor, 1991; MA, 1977, Stanford University, PhD, 1984, Stanford University; Chinese politics and foreign policy and China's political economy (1949-present); US-China relations

BARRETO, MATTHEW A \* Assistant Professor, 2005; MS, 2003, University of California (Irvine), PhD, 2005, University of California (Irvine); Racial/ethnic politics, Latino political participation, voting and elections

BENNETT, WALTER LANCE \* Professor, 1974; MPhil, 1973, Yale University, PhD, 1974, Yale University; American politics, comparative politics, political communication, mass media, political culture

BRASS, PAUL R, Professor Emeritus, 1965; MA, 1959, University of Chicago, PhD, 1964, University of Chicago

BURSTEIN, PAUL \* Adjunct Professor, 1985; MA, 1971, Harvard University, PhD, 1974, Harvard University; political sociology, social stratification, public policy, law

CAPORASO, JAMES A \* Professor, 1988; MA, 1965, Villanova University, PhD, 1968, University of Pennsylvania; international institutions, European law, international political economy, comparative politics, European Community, research methodology

CASSINELLI, CHARLES W, Professor Emeritus, 1960; MA, 1950, University of California (Berkeley), PhD, 1953, Harvard University

CICHOWSKI, RACHELA \* Associate Professor, 2001; MA, 1997, University of California (Irvine), PhD, 2001, University of California (Irvine); Comparative judicial politics; European Union law; women's rights; European integration

DI STEFANO, CHRISTINE \* Associate Professor, 1985; PhD, 1984, University of Massachusetts, MA, 1984, University of Massachusetts; political theory (modern and contemporary), feminist theory, political culture

DOBEL, J PATRICK \* Adjunct Professor, 1985; MA, 1972, Princeton University, PhD, 1976, Princeton University; political theory, ethics and public policy, organizational theory

DOMKE, DAVID S. \* Adjunct Professor, 1998; MA, 1992, California State University, Fullerton, PhD, 1996, University of Minnesota; communication effects; political cognition; political elites and public opinion; race, gender and media; journalism and social change

EVANS, LAURA E \* Adjunct Assistant Professor, 2004; MPP, 1996, University of Michigan, PhD, 2005, University of Michigan

FRAGA, LUIS R. \* Professor, 2007; MA, 1981, Rice University, PhD, 1984, Rice University; Urban Politics and Policy; Educational Politics and Policy; Politics of Race and Ethnicity; Voting Rights Policy; and American National Politics

GASTIL, JOHN W. \* Adjunct Professor, 1997; MA, 1991, University of Wisconsin, PhD, 1994, University of Wisconsin (Madison); Deliberation and democracy, group decision making, political discourse, political philosophy, civic participation, and social influence

GERBERDING, WILLIAM P, Professor Emeritus, 1979; MA, 1956, University of Chicago, PhD, 1959, University of Chicago

GILL, ANTHONY J \* Professor, 1994; MA, 1989, University of California (Los Angeles), PhD, 1994, University of California (Los Angeles); comparative politics, Latin America, political economy, methodology

GOLDBERG, ELLIS \* Professor, 1985; MA, 1970, University of California (Berkeley), PhD, 1983, University of California (Berkeley); political economy of the Middle East, comparative politics

GORE, WILLIAM J, Professor Emeritus, 1951; MA, 1950, University of Southern California, PhD, 1952, University of Southern California

GOTTFRIED, ALEX, Associate Professor Emeritus, 1950; MA, 1948, University of Chicago, PhD, 1952, University of Chicago

HANSON, STEPHEN E \* Professor, 1990; MA, 1986, University of California (Berkeley), PhD, 1991, University of California (Berkeley); Soviet, post-Soviet and comparative politics

HARTSOCK, NANCY C.M \* Professor, 1984; MA, 1967, University of Chicago, PhD, 1972, University of Chicago; feminist

theory, Marxism, contemporary political theory

HELLMANN, DONALD C \* Professor, 1967; MA, 1960, University of California (Berkeley), PhD, 1964, University of California (Berkeley); Japanese politics and international relations

INGEBRITSEN, CHRISTINE \* Adjunct Professor, 1992; MA, 1986, Columbia University, PhD, 1993, Cornell University; Scandinavian domestic and foreign policies, European community integration and Scandinavia

KASABA, RESAT \* Adjunct Professor, 1985; MA, 1979, State University of New York (Binghamton), PhD, 1986, State University of New York (Binghamton); historical sociology, world systems, social change in the Middle East

KIER, ELIZABETH L. \* Associate Professor, 1998; MA, 1985, Columbia University, PhD, 1992, Cornell University; International security, civil military relations and Western Europe

KISER, EDGAR VANCE \* Adjunct Professor, 1988; MA, 1980, University of Arizona, PhD, 1987, University of Arizona; political sociology, theory, historical sociology

LANG, GLADYS ENGEL, Professor Emeritus, 1984; MA, 1942, University of Washington, PhD, 1954, University of Chicago

LEVI, MARGARET \* Professor, 1974; PhD, 1974, Harvard University; comparative politics, political economy

LITFIN, KAREN T \* Associate Professor, 1991; MA, 1978, University of Maryland, PhD, 1992, University of California (Los Angeles); international environmental politics, globalization processes, technology and politics

LOVELL, GEORGE I \* Associate Professor, 2001; MA, 1990, University of North Carolina, PhD, 1997, University of Michigan; American political institutions, constitutional development, civil rights and labor history

MAJESKI, STEPHEN J \* Professor, 1984; MA, 1975, University of New Hampshire, PhD, 1981, Indiana University; international relations, foreign policy, peace and conflict resolution

MAY, PETER J. \* Professor, 1979; MPP, 1976, University of California (Berkeley), PhD, 1979, University of California (Berkeley); policy processes; policy design and implementation; environmental

regulation

MAYERFELD, JASON \* Associate Professor, 1991; MA, 1988, Princeton University, PhD, 1992, Princeton University; political theory, ethics

MC CANN, MICHAEL W \* Professor, 1982; MA, 1976, University of California (Berkeley), PhD, 1983, University of California (Berkeley); American government and politics, public law, political theory

MC CRONE, DONALD J., Professor Emeritus, 1979; PhD, 1966, University of North Carolina

MERCER, JONATHAN L. \* Associate Professor, 1996; MIA, 1987, Columbia University, PhD, 1993, Columbia University; international relations theory, security, political psychology, rationality and emotion

MIGDAL, JOEL S \* Adjunct Professor, 1980; MA, 1968, Harvard University, PhD, 1972, Harvard University; state and society in the Third World; Middle East politics

MODELSKI, GEORGE, Professor Emeritus, 1967; PhD, 1954, University of London, UK

MOY, PATRICIA \* Adjunct Associate Professor, 1999; MS, 1993, Cornell University, PhD, 1998, University of Washington; political communication, public opinion, media effects and research methodology

MURAKAWA, NAOMI D \* Assistant Professor, 2004; MSC, 1997, London School of Economics (UK), PhD, 2004, Yale University

OLSON, DAVID J, Professor Emeritus, 1974; MA, 1966, University of Wisconsin, PhD, 1971, University of Wisconsin

PARKER, CHRISTOPHER S \* Assistant Professor, 2006; MA, 1996, University of Chicago, PhD, 2001, University of Chicago; American politics: African-American political/public opinion and social movement politics; and IR: domestic politics of military service and international conflict

PARKER, WALTER C \* Adjunct Professor, 1985; MA, 1978, University of Colorado (Denver), PhD, 1982, University of Washington; curriculum and instruction: social studies, democratic education

PFAFF, STEVEN J. \* Adjunct Associate Professor, 1999; MA, 1994, University of North Carolina, MA, 1995, University of

North Carolina, PhD, 1999, New York University; Historical and comparative sociology; social movements; sociological theory

PRAKASH, ASEEM \* Professor, 2002; MBA, 1988, Indian Institute of Management, India, PhD, 1997, Indiana University; international political economy, environmental policy, private governance, business-government relations

RESHETAR, JOHN S, Professor Emeritus, 1957; MA, 1946, Harvard University, PhD, 1950, Harvard University

RIVENBURGH, NANCY \* Adjunct Associate Professor, 1990; MS, 1982, Boston University, PhD, 1991, University of Washington; international communications; the role of media in international and intercultural relations

ROHN, PETER H, Associate Professor Emeritus, 1956; MA, 1953, University of Washington, PhD, 1958, University of Washington

SCHEINGOLD, STUART A, Professor Emeritus, 1969; MA, 1959, University of California (Berkeley), PhD, 1963, University of California (Berkeley)

SMITH, MARK A. \* Associate Professor, 1997; PhD, 1997, University of Minnesota; The workings of American democracy and the role of interest groups

SMITH, STEVEN RATHGEB \* Adjunct Professor, 1996; MSW, 1978, Washington University, PhD, 1988, Massachusetts Institute of Technology; The changing relationship between government and nonprofit organizations

TAYLOR, MICHAEL JOHN \* Professor Emeritus, 1985; MSC, 1965, University of Essex (UK), PhD, 1976, University of Essex (UK); political theory, political economy

TURNER III, JACK \* Assistant Professor, 2007; MPhil, 2001, University of Cambridge (UK), PhD, 2006, Princeton University; American political thought, race in American politics, and critical race theory

WARD, MICHAEL D. \* Professor, 1997; PhD, 1977, Northwestern University; political, geography, spatial, models, democratization, globalization, national, security, defense, economics

WHITING, SUSAN H. \* Associate Professor, 1994; PhD, 1995, University of Michigan; political economy of development in post-1949 China

WILKERSON, JOHN D \* Associate

Professor, 1990; MA, 1986, University of Arizona, MA, 1989, University of Rochester, PhD, 1991, University of Rochester; American government and politics, quantitative methodology

## Psychology

AMSTERLAW, JENNIFER A., Affiliate Assistant Professor, 2004; PhD, 2004, University of Michigan

BAER, JOHN S. \* Research Professor, 1986; MS, 1982, University of Oregon, PhD, 1986, University of Oregon; clinical psychology, addictive behaviors, early intervention

BAIRD, ROBIN W., Affiliate Assistant Professor, 2005; PhD, 1994, Simon Fraser University, B.C. (Canada)

BAMFORD, NIGEL S., Adjunct Assistant Professor, 2002; MD, 1992, University of Utah

BARASH, DAVID P. \* Professor, 1973; MA, 1968, University of Wisconsin (Madison), PhD, 1970, University of Wisconsin (Madison); sociobiology, psychological aspects of the arms race and nuclear war, peace studies, animal behavior and evolution

BASSOK, MIRIAM \* Associate Professor, 1997; MA, 1978, Hebrew University (Israel), PhD, 1984, Hebrew University (Israel); learning, problem solving, analogical reasoning

BEAUCHAINE, THEODORE P. \* Associate Professor, 2000; MA, 1997, State University of New York (Stony Brook), PhD, 2000, State University of New York (Stony Brook); Autonomic nervous system functioning and psychopathology, child development, statistics

BECKER, JOSEPH, Professor Emeritus, 1965; MA, 1952, George Washington University, PhD, 1958, Duke University

BEECHER, MICHAEL D. \* Professor, 1978; MA, 1965, Boston University, PhD, 1970, Boston University; animal behavior, animal communication, sensory processes

BERNSTEIN, DANIEL M., Affiliate Assistant Professor, 2001; MA, 1995, Brock University (Canada), PhD, 2001, Simon Fraser University, B.C. (Canada)

BERNSTEIN, ILENE L. \* Professor, 1972; MA, 1967, Columbia University, PhD, 1972, University of California (Los Angeles); neurobiology of taste aversion learning;

developmental and genetic contributions to taste preference in rats and humans

BOOTH-LAFORCE, CATHRYN L. \* Adjunct Professor, 1977; MA, 1971, Ohio State University, MA, 1971, Ohio State University, PhD, 1974, Ohio State University; mother-infant interaction, observational methodology, child birth experiences and attachment

BRANSFORD, JOHN D. \* Professor, 2003; PhD, 1970, University of Minnesota; cognitive studies in education; how people learn, learning technologies

BRENOWITZ, ELIOT A. \* Professor, 1987; PhD, 1982, Cornell University; animal behavior, neuroethology, neuroendocrinology, animal communication

BREWER, DEVON, Affiliate Assistant Professor, 1997; MA, 1992, University of California (Irvine), PhD, 1994, University of California (Irvine)

BROWN, JONATHON D. \* Associate Professor, 1989; PhD, 1986, University of California (Los Angeles); self-concept and social behavior; coping with failure and disappointment

BUCK, STEVEN L. \* Professor, 1976; MA, 1974, University of California (San Diego), PhD, 1976, University of California (San Diego); human visual psychophysics, color vision, animal learning

CARLSON, STEPHANIE M. \* Affiliate Associate Professor, 1998; MS, 1992, University of Oregon, PhD, 1997, University of Oregon; Cognitive and social development in preschool children

CARR, JOHN E., Professor Emeritus, 1963; MA, 1958, Syracuse University, PhD, 1963, Syracuse University

CATZ, SHERYL L., Affiliate Assistant Professor, 2003; MA, 1991, College of William And Mary, PhD, 1997, Louisiana State University

CAUCE, ANA MARI \* Professor, 1986; MS, 1979, Yale University, PhD, 1984, Yale University; at-risk children, adolescents, and families; normative development in ethnic minority youth; homeless youth, adolescent substance abuse; children's services research; community psychology & social policy

CHERYAN, SAPNA \* Assistant Professor, 2007; PhD, 2007, Stanford University; identity, belonging, stereotypes, intergroup relations, Asian American identity, females in computer science and engineering

COLDWELL, SUSAN E. \* Adjunct Associate Professor, 1994; MA, 1990, University

of Pennsylvania, PhD, 1994, University of Pennsylvania; Pain, anxiety and taste preference

COMTOIS, KATHERINE ANN \* Adjunct Associate Professor, 1992; MA, 1990, University of Maryland, PhD, 1992, University of Maryland

CORINA, DAVID P. \* Affiliate Associate Professor, 1993; MA, 1984, Gallaudet University, PhD, 1991, University of California (San Diego); cognitive neuropsychology, psycholinguistics, computational modeling

COVEY, ELLEN \* Professor, 1996; MS, 1976, University of Houston, PhD, 1980, Duke University; Structure and function of the central auditory system

CRAFT, SUZANNE \* Adjunct Professor, 1994; PhD, 1985, University of Texas (Austin); neuropsychology of attention and memory in development and aging

CROCKETT, CAROLYN M., Affiliate Assistant Professor, 1971; PhD, 1971, University of Washington

CZERWINSKI, MARY P., Affiliate Assistant Professor, 1996; MA, 1983, Ball State University, PhD, 1988, Indiana University

DAWSON, GERALDINE \* Professor Emeritus, 1985; PhD, 1979, University of Washington; developmental disabilities, autism, and neuropsychology

DIAZ, JAIME \* Professor, 1978; MA, 1972, University of California (Los Angeles), PhD, 1975, University of California (Los Angeles); psychological brain development, neurophysiology, developmental psychopharmacology, effects of drugs on behavioral development

DOERR, HANS O., Professor Emeritus, 1967; MD, 1962, Florida State University, PhD, 1965, Florida State University

DONOVAN, DENNIS, Adjunct Professor, 1981; MA, 1972, Western Washington University, PhD, 1980, University of Washington

FIEDLER, FRED E., Professor Emeritus, 1969; PhD, 1949, University of Chicago

FITTS, DOUGLAS A. \* Research Associate Professor, 1980; MS, 1976, Washington State University, PhD, 1978, Washington State University; neurobiology, salt/water regulation, thirst

FLAHERTY, BRIAN P. \* Assistant Professor, 2005; MS, 1997, Pennsylvania State University, PhD, 2003, Pennsylvania State

University; measurement; analysis of change and developmental processes; substance use and dependence

GEORGE, WILLIAM H \* Professor, 1991; PhD, 1982, University of Washington; alcohol use and sexual behavior, addiction issues, sexual assault issues, racism issues

GINORIO, ANGELA B \* Adjunct Associate Professor, 1981; MA, 1971, University of Puerto Rico, PhD, 1979, Fordham University; women and science, violence against women, sexual harassment, racial identity among Latino/as, educational access issues

GOTTMAN, JOHN M, Professor Emeritus, 1986; MS, 1964, Massachusetts Institute of Technology, MA, 1967, University of Wisconsin, PhD, 1971, University of Wisconsin

GREENWALD, ANTHONY G. \* Professor, 1986; PhD, 1963, Harvard University; social cognition, attitudes, self and self-esteem, methodology, unconscious cognition

GURALNICK, MICHAEL J, Professor, 1986; MS, 1964, Lehigh University, PhD, 1967, Lehigh University

HA, JAMES \* Research Associate Professor, 1991; MA, 1983, Wake Forest University, PhD, 1989, Colorado State University; Animal behavior, especially ethology, evolution, infant primate development, and statistics

HOFFMAN, HUNTER G, Affiliate Assistant Professor, 1997; MS, 1989, University of Washington, PhD, 1992, University of Washington

HUNT, EARL B, Professor Emeritus, 1966; PhD, 1960, Yale University

JOSLYN, SUSAN L. \* Senior Lecturer, 1995; MS, 1994, University of Washington, PhD, 1995, University of Washington; Working memory and attention in applied setting. Autobiographical memory

KAHN, PETER H. \* Associate Professor, 2000; MA, 1984, University of California (Berkeley), PhD, 1988, University of California (Berkeley); Moral development; developmental psychology and the human relationship with nature

KAISER, CHERYL R \* Assistant Professor, 2006; MA, 1999, University of Vermont, PhD, 2001, University of Vermont; Understanding how individuals respond to threats against their personal and social identities. Prejudice and intergroup relationships, with a particular emphasis on members of socially devalued groups

KATZ, LYNN FAINSLBER \* Research Associate Professor, 1991; MA, 1981, New School For Social Research, PhD, 1990, University of Illinois (Urbana); Research examines familial and physiological processes that predict childhood aggression

KENNEY, NANCY J \* Associate Professor, 1976; MA, 1972, University of Virginia, PhD, 1974, University of Virginia; neural and endocrine controls of food and fluid intake, physiological basis of motivation

KERR, F BETH \* Associate Professor, 1968; MS, 1968, University of North Carolina, MS, 1969, University of North Carolina, MA, 1973, University of Oregon, PhD, 1974, University of Oregon; cognition, human motor control and learning, attention, human factors

KIM, JEANSOK J \* Associate Professor, 2003; MA, 1989, University of California (Los Angeles), PhD, 1991, University of California (Los Angeles); Neurobiology of learning & memory, emotion, and stress

KING, KEVIN M \* Assistant Professor, 2007; MA, 2002, Arizona State University; substance abuse, adolescence, stress and adjustment, quantitative psychology

KIVLAHAN, DANIEL R \* Adjunct Associate Professor, 1984; MA, 1979, University of Missouri, PhD, 1983, University of Missouri; evaluating assessment, prevention, and treatment approaches for addictive behaviors; implementation and effectiveness of clinical practice guidelines

KIYAK, H ASUMAN \* Adjunct Professor, 1977; MA, 1974, Wayne State University, PhD, 1977, Wayne State University; geriatric dentistry, behavioral aspects of health care

KOHLBERG, ROBERT J. \* Professor, 1968; MS, 1963, University of Wisconsin, PhD, 1968, University of California (Los Angeles); clinical behavior modification, learning, biofeedback, psychotherapy

KUHL, PATRICIA K \* Adjunct Professor, 1976; MA, 1971, University of Minnesota, PhD, 1973, University of Minnesota; speech perception

KYES, RANDALL C. \* Research Professor, 1994; MA, 1985, Bucknell University, PhD, 1989, University of Georgia

LARIMER, MARY E \* Adjunct Professor, 1992; MS, 1990, University of Washington, PhD, 1992, University of Washington; prevention of alcohol problems among college students

LATTEMANN, DIANNE \* Adjunct Research Professor, 1981; MS, 1977, Loyola University (campus unspecified), PhD, 1981, University of California (San Francisco); Effect of Regulatory Peptides on Feeding and Behavior and Metabolism

LEIGH, BARBARA C., Affiliate Assistant Professor, 1988; MS, 1982, University of Washington, PhD, 1983, University of Washington

LENGUA, LILIANA J \* Associate Professor, 1996; PhD, 1994, Arizona State University; stress, temperament, coping, and ecological models of the development of psychological symptomatology in children

LEONESIO, R. JACOB, Affiliate Assistant Professor, 1994; MS, 1985, University of Washington, PhD, 1993, University of Washington

LEU, JANXIN \* Assistant Professor, 2006; MA, 1997, Stanford University, PhD, 2004, University of Michigan

LEVY, RONA L \* Adjunct Professor, 1975; MSW, 1972, University of Michigan, PhD, 1974, University of Michigan, MPH, 1975, University of Michigan; research methodology, single-case evaluation, health care, behavioral medicine, biofeedback

LINEHAN, MARSHA M \* Professor, 1977; MA, 1970, Loyola University (campus unspecified), PhD, 1971, Loyola University (campus unspecified); behavioral assessment and therapy, suicide & parasuicide, borderline personality disorders, drug abuse, behavior therapy with women

LITTLE, LAURA M. \* Senior Lecturer, 1997; JD, 1981, University of Texas (unspecified), MS, 1993, University of New Mexico, PhD, 1998, University of New Mexico; Teaching contemporary methods of statistical inference; using computer technology to improve the teaching of statistics; juror understanding of expert witness testimony involving probabilistic and statistical concepts

LOCKARD, JOAN S. \* Professor Emeritus, 1962; MS, 1961, San Diego State College, PhD, 1963, University of Wisconsin (Madison); primate social behavior, animal behavior, sociobiology, human ethology, neurobehavior

LOFTUS, ELIZABETH F, Affiliate Professor, 1973; MA, 1967, Stanford University, PhD, 1970, Stanford University

LOFTUS, GEOFFREY R \* Professor, 1972; PhD, 1971, Stanford University; perception, memory, cognitive processes and information processing, computer control

- of experimentation
- MARLATT, G ALAN \* Professor, 1972; PhD, 1968, Indiana University; cognitive-behavior therapy and assessment, addictive behaviors, relapse prevention, harm reduction, health psychology
- MARTIN, BENNY R, Affiliate Assistant Professor, 2004; MA, 1998, University of California (Santa Barbara), PhD, 2004, University of California (Santa Barbara)
- MC CAULEY, ELIZABETH \* Adjunct Professor, 1979; PhD, 1973, State University of New York (Buffalo); Developmental Psychopathology Focused on Affective Disorders, Behavioral Genetics, Adolescent Adjustment
- MC DERMOTT, LOIS J., Senior Lecturer, 1984; PhD, 1979, University of Chicago
- MCMAHON, ROBERT J. \* Professor, 1987; MS, 1977, University of Georgia, PhD, 1979, University of Georgia; assessment, prevention, and treatment of children with conduct disorders; developmental psychopathology, tobacco use in children and adolescents, family interaction, pediatric psychology
- MELTZOFF, ANDREW N \* Professor, 1974; PhD, 1976, Oxford University (UK); perceptual, cognitive & social development in infants, concept formation & memory in infancy and early childhood
- MILLER, MARGARET A., Affiliate Associate Professor, 1989; MS, 1976, Idaho State University, PhD, 1984, University of Washington
- MITCHELL, TERENCE R. \* Professor, 1969; MA, 1967, University of Illinois, PhD, 1969, University of Illinois; leadership, group processes, motivation, turnover
- MIYAMOTO, JOHN M. \* Associate Professor, 1984; MA, 1978, University of Michigan, PhD, 1985, University of Michigan; mathematical psychology, preference and utility theory, cognitive theories of deductive and inductive inference, medical decision making
- MIZUMORI, SHERI J \* Professor, 2000; MS, 1983, University of California (Berkeley), PhD, 1985, University of California (Berkeley); Plasticity of neural and behavioral function during learning and memory
- MORRISON, DIANE M \* Adjunct Professor, 1983; MS, 1979, University of Washington, PhD, 1982, University of Washington; sexual decision-making, attitudes and behavior, teen pregnancy
- MURRAY, SCOTT O. \* Assistant Professor, 2005; MA, 1997, University of Hawaii, PhD, 2002, University of California (Davis)
- NORRIS, JEANETTE, Affiliate Associate Professor, 1988; MS, 1980, University of Washington, PhD, 1983, University of Washington
- O'DONNELL, SEAN \* Associate Professor, 1996; PhD, 1993, University of Wisconsin (Madison); genotypic and endocrine effects on social organization and division of labor in insects, evolution of social behavior
- OLAVARRIA, JAIME F \* Associate Professor, 1990; MD, 1974, State University of Chile, PhD, 1984, University of California (Berkeley); neurophysiological and neuroanatomical basis of vision, comparative organization of mammalian visual cortex, development & plasticity of cortical connections
- OSTERHOUT, LEE E \* Professor, 1991; MS, 1987, Tufts University, PhD, 1990, Tufts University; psycholinguistics, cognitive psychophysiology
- PALMER, JOHN C. \* Research Professor, 2005; PhD, 1984, University of Michigan; Behavioral studies and models of attention in visual perception and memory
- PASSER, MICHAEL W \* Senior Lecturer, 1977; MA, 1972, University of California (Los Angeles), PhD, 1977, University of California (Los Angeles); social psychology, organizational psychology, teaching of psychology
- PATTERSON, DAVID R. \* Adjunct Professor, 1984; PhD, 1982, Florida State University; treatment of acute pain, psychology of burn patients, psychological outcome of physical trauma
- PEREVERZEVA, MARIA, Affiliate Assistant Professor, 2006; MS, 2001, University of Washington, PhD, 2006, University of Washington
- PHILLIPS, NONA K, Affiliate Assistant Professor, 1984; MS, 1982, University of Washington, PhD, 1984, University of Washington
- PLAKS, JASON E. \* Affiliate Assistant Professor, 2001; MA, 1997, Columbia University, MPhil, 1999, Columbia University, PhD, 2000, Columbia University; stereotyping, prejudice, motivation, memory, and decision making
- RAMSAY, DOUGLAS S \* Adjunct Professor, 1985; DMD, 1983, University of Pennsylvania, PhD, 1988, University of Washington, MSW, 1990, University of Washington; behavioral medicine/dentistry, physiological psychology, orthodontics, pediatric dentistry
- REID, JAMILA, Affiliate Assistant Professor, 2004; PhD, 1997, State University of New York (Stony Brook)
- REPACHOLI, BETTY M \* Assistant Professor, 2001; MS, 1986, University of West Australia, PhD, 1996, University of California (Berkeley); Social-cognitive and emotional development during infancy and early childhood
- REYNOLDS, SARAH K, Affiliate Assistant Professor, 1999; MA, 1994, University of Iowa, PhD, 1999, University of Iowa
- ROSE, RICHARD M, Associate Professor Emeritus, 1966; MA, 1961, University of Pennsylvania, PhD, 1964, University of Pennsylvania
- ROY-BYRNE, PETER, Adjunct Professor, 1986; MD, 1978, Tufts University
- RUBEL, EDWIN W. \* Adjunct Professor, 1986; MS, 1967, Michigan State University, PhD, 1969, Michigan State University; developmental neurobiology, with special emphasis on vertebrate auditory system development
- SACKETT, GENE P \* Professor Emeritus, 1970; MA, 1961, Claremont Graduate School, PhD, 1963, Claremont Graduate School; experimental psychology, primate behavior, early experience and development
- SANQUIST, THOMAS F., Affiliate Professor, 1991; MA, 1975, University of California (Los Angeles), PhD, 1980, University of California (Los Angeles)
- SARASON, IRWIN G \* Professor Emeritus, 1956; MA, 1953, University of Iowa, PhD, 1955, Indiana University; personality, social support, stress and anxiety
- SAX, GILBERT, Professor Emeritus, 1965; MA, 1956, University of California (Los Angeles), PhD, 1958, University of Southern California
- SHODA, YUICHI \* Professor, 1996; PhD, 1990, Columbia University; Social and personality psychology; social cognition; computational modeling; health and coping
- SIMONI, JANE M \* Professor, 2001; MA, 1988, University of California (Los Angeles), PhD, 1990, University of California (Los Angeles); HIV/AIDS; influence of culture and social support on psychological well-being
- SISNEROS, JOSEPH A. \* Assistant



Professor, 2003; MA, 1989, California State University, Long Beach, PhD, 1999, Florida Institute of Technology; Sensory neurobiology, animal physiology and behavioral biology

SMITH, RONALD E \* Professor, 1969; MA, 1964, Southern Illinois University, PhD, 1968, Southern Illinois University; clinical, personality, sport psychology

SMOLL, FRANK L \* Professor, 1970; MS, 1966, University of Wisconsin, PhD, 1970, University of Wisconsin; developmental kinesiology, children's sports, sport psychology, behavioral assessment of coaches

SOMMERVILLE, JESSICAA \* Assistant Professor, 2002; MA, 2000, University of Chicago, PhD, 2002, University of Chicago; Cognitive development; action representation and understanding from infancy through preschool

SPELTZ, MATTHEW L., Adjunct Professor, 1980; MA, 1975, Western Washington University, PhD, 1980, University of Missouri

SPIEKER, SUSAN J \* Adjunct Professor, 1983; PhD, 1982, Cornell University; developmental psychology, infant security, mother-infant interaction

TELLER, DAVIDA Y \* Professor Emeritus, 1965; PhD, 1965, University of California (Berkeley); vision, psychophysics, development of vision

TERI, LINDA \* Adjunct Professor, 1984; PhD, 1980, University of Vermont; Controlled clinical trials of caregiving training for patients with Alzheimer's; studies on cognitive and behavioral changes that accompany normal and abnormal aging

VITALIANO, PETER P \* Adjunct Professor, 1976; MS, 1973, Syracuse University, PhD, 1975, Syracuse University; psychiatric methodology (epidemiology, design, psychometrics), behavioral medicine (stress and coping)

VITIELLO, MICHAEL V \* Adjunct Professor, 1977; PhD, 1980, University of Washington; Sleep, sleep disorders, circadian rhythms, aging, behavioral medicine, principles of behavioral sciences applied to medical research and practice

WEBSTER-STRATTON, CAROLYN \* Adjunct Professor, 1976; MN, 1972, Yale University, MPH, 1972, Yale University, PhD, 1979, University of Washington; parent intervention programs for behaviorally disturbed children

WEINSTEIN, PHILIP \* Adjunct Professor, 1971; MA, 1968, University of Kentucky, PhD, 1971, University of Kentucky; dental behavioral science, treatment and prevention of fear and pain, clinical assessment

WORLEIN, JULIE M., Affiliate Assistant Professor, 1998; PhD, 1993, University of Washington

ZOELLNER, LORI A \* Associate Professor, 2000; MA, 1992, University of California (Los Angeles), PhD, 1997, University of California (Los Angeles); Anxiety disorders: etiology, maintenance, and their treatment with particular interest in PTSD, OCD, and panic disorder

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## Romance Languages and Literature

ANDERSON, FARRIS FURMAN, Professor Emeritus, 1967; MA, 1962, Duke University, PhD, 1968, University of Wisconsin

BASDEO, GANESHDATH D., Senior Lecturer, 1979; MA, 1976, University of Washington

BENSADON, LEON M., Lecturer, 1991; MA, 1991, University of Washington

BORCH-JACOBSEN, MIKKEL \* Professor, 1986; Doctorat D'Etat, 1981, University of Strasbourg (France); French twentieth-century literature, modern philosophy, psycho-analysis

BRANDL, KLAUS K \* Adjunct Senior Lecturer, 1993; MA, 1987, University of Texas (unspecified), PhD, 1991, University of Texas (Austin); foreign language pedagogy, applied linguistics, foreign language teacher training, computer assisted language learning

CHRISTOFIDES, C G, Professor Emeritus, 1966; MA, 1949, University of Michigan, MA, 1950, University of Michigan, PhD, 1956, University of Michigan

CLAUSEN, MEREDITH L \* Adjunct Professor, 1979; MA, 1972, University of California (Berkeley), PhD, 1975, University of California (Berkeley); twentieth-century architecture

COLLINS, DOUGLAS P \* Associate Professor, 1980; MA, 1972, University of Missouri, PhD, 1978, University of Missouri; twentieth-century French literature

CREORE, A EMERSON, Professor Emeritus, 1940; MA, 1936, University of

Rochester, PhD, 1939, Johns Hopkins University

DALE, ROBERT C, Associate Professor Emeritus, 1963; MA, 1960, University of Wisconsin

DELCOURT, DENYSE \* Associate Professor, 1990; MA, 1980, University of Montreal (Canada), PhD, 1987, University of Montreal (Canada); French Middle Ages, French Renaissance, French women writers and Quebecois literature

DEYOUNG, TERRI LYNN \* Adjunct Associate Professor, 1991; MA, 1981, American University in Cairo, PhD, 1988, University of California (Berkeley); Arabic language and literature

DONNELLY, KEVIN T \* Assistant Professor, 2006; MS, 1999, Tulane University, PhD, 2006, New York University; Colonial Spanish American literature

ELLRICH, ROBERT J, Associate Professor Emeritus, 1964; MA, 1953, Harvard University, PhD, 1960, Harvard University

FERNANDEZ DOBAO, ANA M. \* Assistant Professor, 2007; MA, 1999, University of Santiago, Spain, PhD, 2005, University of Santiago, Spain; Applied linguistics, Second language acquisition, Spanish linguistics

FLORES, LAURO H \* Adjunct Professor, 1980; PhD, 1980, University of California (San Diego), PhD, 1980, University of California (San Diego); Chicano literature, contemporary Latin American literature (narrative)

FOX, JOAN H., Lecturer, 1986; MA, 1973, University of British Columbia (Canada)

FRIEDMAN, LIONEL J, Professor Emeritus, 1961; MA, 1946, Harvard University, PhD, 1950, Harvard University

GEIST, ANTHONY L \* Professor, 1987; MA, 1969, University of California (Berkeley), PhD, 1978, University of California (Berkeley); twentieth-century Spanish literature: ideology and literary form

GILLMAN, MARIA, Senior Lecturer, 1990; MA, 1986, Oregon State University

GONZALEZ, JORGE, Lecturer, 1988; MM, 1986, University of Wisconsin

HANDWERK, GARY J \* Adjunct Professor, 1984; PhD, 1984, Brown University; British, German and French nineteenth- and twentieth-century narrative; Romantic and post-Romantic literary theory and philosophy

JONAS, RAYMOND A. \* Adjunct Professor, 1985; MA, 1980, University of California (Davis), PhD, 1985, University of California (Berkeley); modern France

KAISSE, ELLEN \* Adjunct Professor, 1976; PhD, 1977, Harvard University; phonology, historical linguistics, ancient and modern Greek/Spanish, syntax-phonology interface

KENNEDY, DONALLY S, Lecturer, 1992; MA, 1988, University of Washington

LAWSON, VICTORIA A. \* Adjunct Professor, 1986; MA, 1982, Ohio State University, PhD, 1986, Ohio State University; Latin America, political economy of development, feminist theory in development

LEPORACE, GIUSEPPE, Senior Lecturer, 1990; MA, 1989, University of Washington

MACKENZIE, LOUISA \* Assistant Professor, 2001; MA, 1997, University of California (Berkeley), PhD, 2001, University of California (Berkeley); French and Italian Renaissance; lyric poetry, including scientific poetry; the writing of landscape; incipient nationalism and regionalism; ecocriticism; Caesar in the Renaissance imaginary; travel writing; literature and science

MAZZOLA, CLAUDIO \* Senior Lecturer, 2000; MA, 1982, University of Washington, PhD, 1986, University of Washington; Contemporary Italian fiction and Italian Cinema

MEYER, HEDWIGE M, Senior Lecturer, 1992; MA, 1992, University of Washington

O'HARA, EDGAR \* Professor, 1989; MA, 1985, Catholic University, PhD, 1989, University of Texas (unspecified); Spanish, Latin American poetry, writing poetry and essays

O'NEIL, MARY R \* Adjunct Associate Professor, 1980; MA, 1971, Stanford University, PhD, 1982, Stanford University; Renaissance/Reformation, early modern Europe, social history, Italy before 1700

PETERSEN, SUZANNE HELEN \* Associate Professor, 1973; MA, 1967, University of Wisconsin, PhD, 1976, University of Wisconsin (Madison); medieval Spanish literature

RANEDA-CUARTERO, I., Lecturer, 1997; MA, 1994, University of Wisconsin (Madison)

SBRAGIA, ALBERT J \* Associate Professor, 1989; MA, 1983, University of California (Berkeley), PhD, 1988, University of California (Berkeley); modern and contemporary Italian literature and cinema

SHIPLEY, GEORGE A \* Associate Professor Emeritus, 1967; MA, 1962, Harvard University, PhD, 1967, Harvard University; Spanish Golden Age

TURNOVSKY, GEOFFREY \* Assistant Professor, 2006; MA, 1995, Columbia University, PhD, 2001, Columbia University; Literature and cultural history of 17th- and 18th-century France. Research focuses on the institutional contexts of intellectual careers in this period

VANCE, EUGENE \* Professor Emeritus, 1990; PhD, 1964, Cornell University, MA, 1964, Cornell University; medieval literature, the history of criticism, and discourse analysis

VILAVELLA, HELENE, Senior Lecturer, 1996; MA, 1983, University of Paris (France), MA, 1986, University of Washington, PhD, 1996, University of Washington

WORTLEY, W VICTOR, Associate Professor Emeritus, 1965; MA, 1961, University of Oregon, PhD, 1964, University of Oregon

YOWELL, DONNA LYNNE \* Senior Lecturer, 1988; MA, 1982, University of California (Berkeley), PhD, 1987, University of California (Berkeley); medieval Italian literature, Dante, Occitan lyric

YOWELL, DONNA LYNNE \* Senior Lecturer, 1988; MA, 1982, University of California (Berkeley), PhD, 1987, University of California (Berkeley); medieval Italian literature, Dante, Occitan lyric

## Scandinavian Studies

BRANDL, KLAUS K \* Senior Lecturer, 1993; MA, 1987, University of Texas (unspecified), PhD, 1991, University of Texas (Austin); foreign language pedagogy, applied linguistics, foreign language teacher training, computer assisted language learning

BRYANT-BERTAIL, SARAH \* Adjunct Associate Professor, 1990; MA, 1981, University of Minnesota, PhD, 1986, University of Minnesota; Western & Asian drama, theater history, performance practices, film, critical theory

COHAN, PETER SCOTT \* Adjunct Assistant Professor, 1989; MFA, 1977, Northern Illinois University, MA, 1984, University of Washington; Architectural design, tectonics, Scandinavian architecture and environmental control systems

CONROY, PATRICIA L \* Associate Professor, 1972; MA, 1965, University of California (Berkeley), PhD, 1974, University of California (Berkeley); Scandinavian philology, Icelandic language and literature, Danish, Faroese

DUBOIS, IAG \* Senior Lecturer, 1996; MA, 1981, University of California (Los Angeles), PhD, 1991, University of Washington; Contemporary Scandinavian Literature and Culture

DUBOIS, THOMAS A, Affiliate Professor, 1990; PhD, 1990, University of Pennsylvania

GAVELADAMS, ANN-CHARLOTTE \* Professor, 1990; MA, 1968, University of Uppsala (Sweden), MA, 1975, Linköping University (Sweden), PhD, 1990, University of Washington; August Strindberg, Scandinavian women's literature, Scandinavian turn-of-the-century drama and art

HANSON, KATHERINE J., Affiliate Associate Professor, 1977; MA, 1970, University of Washington, PhD, 1978, University of Washington

INGEBRITSEN, CHRISTINE \* Professor, 1992; MA, 1986, Columbia University, PhD, 1993, Cornell University; Scandinavian domestic and foreign policies, European community integration and Scandinavia

LEIREN, TERJE I \* Professor, 1977; MA, 1970, California State University, campus unspecified, PhD, 1978, North Texas State University; Scandinavian history, nationalism, immigration, ethnicity

LUND, JENS, Affiliate Assistant Professor, 1988; MA, 1975, Bowling Green State University, PhD, 1983, Indiana University

MAGNUSSON, BRIAN, Affiliate Assistant Professor, 1965; MA, 1967, University of Washington, PhD, 1988, University of Wisconsin (Madison)

NESTINGEN, ANDREW \* Associate Professor, 2001; MA, 1999, University of Washington, PhD, 2001, University of Washington; Finnish literature & film, cultural studies, globalization, 20th-century Scandinavian literature & film

NORLEN, PAUL R, Affiliate Assistant Professor, 1995; MA, 1992, University of Washington, PhD, 1995, University of Washington

PFAFF, STEVEN J. \* Adjunct Associate Professor, 1999; MA, 1994, University of North Carolina, MA, 1995, University of North Carolina, PhD, 1999, New York University; Historical and comparative sociology; social movements; sociological theory

REMLEY, PAUL G \* Adjunct Professor,

1988; MA, 1985, University of Cambridge (UK), MPhil, 1987, Columbia University, PhD, 1990, Columbia University; Old and Middle English, medieval languages and literatures, critical theory

ROSSEL, SVEN H, Affiliate Professor, 1974; PhD, 1968, University of Copenhagen (Denmark)

SEHMSDORF, HENNING K, Associate Professor Emeritus, 1967; MA, 1964, University of Chicago, PhD, 1968, University of Chicago

SJAVIK, JAN \* Associate Professor, 1978; MA, 1976, Harvard University, PhD, 1979, Harvard University; Norwegian language and literature, prose fiction, literary theory

SMIDCHENS, GUNTIS I. \* Assistant Professor, 1993; MA, 1988, Indiana University, PhD, 1996, Indiana University; Estonian, Latvian and Lithuanian language, culture, history and society

STECHER HANSEN, MARIANNE T \* Associate Professor, 1986; MA, 1981, University of Washington, PhD, 1990, University of California (Berkeley); Danish language and literature, Scandinavian novel, Isak Dinesen (Karen Blixen), H.C. Anderson

STEENE, BIRGITTA, Professor Emeritus, 1955; MA, 1955, University of Washington, PhD, 1960, University of Washington, PhD, 1966, University of Uppsala (Sweden)

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## Slavic Languages and Literatures

ALANIZ, JOSE \* Assistant Professor, 2003; PhD, 2003, University of California (Berkeley); Post-Soviet Russian culture, cinema, disability, death and dying, eco-criticism

AUGEROT, JAMES E. \* Professor, 1963; MA, 1959, New Mexico Highlands University, PhD, 1968, University of Washington; Slavic linguistics, Romanian, Bulgarian

BELIC, BOJAN, Lecturer, 2005; MA, 2000, University of Illinois

BIGGINS, MICHAEL E., Affiliate Professor, 1994; MA, 1978, University of Kansas, PhD, 1985, University of Kansas, MS, 1988, University of Illinois

BILANIUK, LAADA M. \* Adjunct Associate Professor, 1998; MA, 1991, University of Michigan, PhD, 1998, University of

Michigan; Language politics, language ideology, ethnicity, nationalism, gender, Ukraine, former USSR

CITKO, BARBARA \* Adjunct Assistant Professor, 2005; PhD, 2000, Stony Brook University; linguistic theory, syntax, syntax-semantics interface, Slavic linguistics

COATS, HERBERT S, Associate Professor Emeritus, 1968; MA, 1964, Fordham University, PhD, 1970, University of Illinois

CRNKOVIC, GORDANA \* Associate Professor, 1993; MA, 1991, Stanford University, PhD, 1993, Stanford University; East European literature, film and cultural studies, former Yugoslavia, theory, American literature

DIMENT, GALYA \* Professor, 1989; MA, 1978, Claremont Graduate School, PhD, 1987, University of California (Berkeley); twentieth-century Russian literature, comparative literature, modernism, cultural studies

DZIWIWREK, KATARZYNA A. \* Associate Professor, 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); linguistics, syntax and typology

HENRY, BARBARA J \* Assistant Professor, 2003; MA, 1990, University of London, UK, DPhil, 1997, Oxford University (UK); Russian and Yiddish literature, drama and theatre

KAPETANIC, DAVOR, Professor Emeritus, 1970; MA, 1954, University of Zagreb (Yugoslavia), PhD, 1972, University of Zagreb (Yugoslavia)

KRAMER, KARL D, Professor Emeritus, 1957; MA, 1957, University of Washington, PhD, 1964, University of Washington

MICKLESEN, LEW R, Professor Emeritus, 1953; PhD, 1951, Harvard University

POLACK, ZOYA M, Senior Lecturer, 1973; MA, 1975, University of Washington

REED, BRIAN \* Adjunct Associate Professor, 2000; PhD, 2000, Stanford University; Modernist and postmodernist American poetry

SMIDCHENS, GUNTIS I. \* Adjunct Assistant Professor, 1993; MA, 1988, Indiana University, PhD, 1996, Indiana University; Estonian, Latvian and Lithuanian language, culture, history and society

SOLDANOVA, JAROSLAVA M., Lecturer,

1998; MA, 1977, Palackeho University, Czech Republic

WEST, JAMES D \* Associate Professor, 1972; MA, 1969, University of Cambridge (UK), PhD, 1970, University of Cambridge (UK); Russian literature, philosophy and art, comparative European culture studies and cultural nationalism

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## Sociology

ANTONY, JAMES SOTO \* Adjunct Associate Professor, 1997; MA, 1993, University of California (Los Angeles), PhD, 1996, University of California (Los Angeles); Identifying the factors that influence aspirations and success of professional occupations; special focus on post-secondary faculty careers

BAKER, KATHRYN A, Affiliate Assistant Professor, 1989; MA, 1977, University of Arizona, PhD, 1991, University of Arizona

BECKETT, KATHERINE A \* Associate Professor, 2000; MA, 1989, University of California (Los Angeles), PhD, 1994, University of California (Los Angeles); Law, politics, culture and society

BORGATTA, EDGAR F, Professor Emeritus, 1981; MA, 1949, New York University, PhD, 1952, New York University

BREWER, DEVON, Affiliate Assistant Professor, 1997; MA, 1992, University of California (Irvine), PhD, 1994, University of California (Irvine)

BRINES, JULIE E. \* Associate Professor, 1993; MA, 1985, Harvard University, PhD, 1990, Harvard University; gender, stratification, family, methods

BURSTEIN, PAUL \* Professor, 1985; MA, 1971, Harvard University, PhD, 1974, Harvard University; political sociology, social stratification, public policy, law

CAMPBELL, FREDERICK L, Professor Emeritus, 1966; MA, 1962, University of Michigan, PhD, 1967, University of Michigan

CATALANO, RICHARD F \* Adjunct Professor, 1979; MA, 1976, University of Washington, PhD, 1982, University of Washington; crime, violence and drug abuse prevention, promotion of positive youth development, Prevention/Intervention design and testing, Etiology of positive and problem development

CHILDRESS, CAROLINE, Affiliate Assistant

- Professor, 2005; MBA, 1994, University of California (Riverside), MA, 1996, State University of New York (Stony Brook), PhD, 2002, State University of New York (Stony Brook)
- CHIROT, DANIEL \* Professor, 1974; PhD, 1973, Columbia University; comparative ethnic conflict, social change, post-communist societies, historical and political sociology
- CLARK, SAMUEL J \* Assistant Professor, 2004; MA, 1995, University of Pennsylvania, PhD, 2001, University of Pennsylvania; Demography of Africa focusing on impact of HIV/AIDS
- COSTNER, HERBERT L, Professor Emeritus, 1959; MA, 1956, Indiana University, PhD, 1960, Indiana University
- CRUTCHFIELD, ROBERT D \* Professor, 1979; MA, 1976, Vanderbilt University, PhD, 1980, Vanderbilt University; deviance, criminology, social control, stratification
- CUBBINS, LISA, Affiliate Assistant Professor, 2001; MS, 1986, University of Washington, PhD, 1992, University of Washington
- DURBIN, NANCY E., Affiliate Assistant Professor, 1991; MA, 1978, University of Washington, PhD, 1985, University of Washington
- FRIEDMAN, KATHIE \* Adjunct Associate Professor, 1987; MA, 1979, State University of New York (Binghamton), PhD, 1992, State University of New York (Binghamton); sociology of gender, immigration, race, and ethnicity in the U.S
- GILL, ANTHONY J \* Adjunct Professor, 1994; MA, 1989, University of California (Los Angeles), PhD, 1994, University of California (Los Angeles); comparative politics, Latin America, political economy, methodology
- GODOY, ANGELINA SNODGRASS \* Adjunct Associate Professor, 2002; MA, 1997, University of California (Berkeley), PhD, 2001, University of California (Berkeley); human rights, Latin America, law and society, development
- GREMBOWSKI, DAVID \* Adjunct Professor, 1980; MA, 1975, Washington State University, PhD, 1982, University of Washington; Health services research, survey research, program evaluation, performance of health care systems, prevention, access to health care, quality of health care
- GROSS, EDWARD, Professor Emeritus, 1965; MA, 1945, University of Toronto (Canada), PhD, 1949, University of Chicago
- GUEST, AVERY \* Professor Emeritus, 1972; MS, 1964, Columbia University, MA, 1967, University of Wisconsin (Madison), PhD, 1970, University of Wisconsin (Madison); demography, ecology, stratification
- HAMILTON, GARY G. \* Professor, 1993; MA, 1970, University of Washington, PhD, 1975, University of Washington; economic sociology, historical comparative, organizational studies, East Asia
- HANSON, STEPHEN E \* Adjunct Professor, 1990; MA, 1986, University of California (Berkeley), PhD, 1991, University of California (Berkeley); Soviet, post-Soviet and comparative politics
- HARGENS, LOWELL L \* Professor, 2002; MA, 1969, University of Wisconsin (Madison), PhD, 1971, University of Wisconsin (Madison); Sociology of science and sociology of higher education
- HARRIS, ALEXES \* Assistant Professor, 2002; MA, 1999, University of California (Los Angeles), PhD, 2002, University of California (Los Angeles); Race and ethnicity, social stratification, and the juvenile and criminal justice systems
- HAWKINS, JOHN D \* Adjunct Professor, 1976; MA, 1969, Northwestern University, PhD, 1975, Northwestern University; crime and delinquency, substance abuse, social development, research, prevention
- HECHTER, MICHAEL N. \* Professor Emeritus, 1970; PhD, 1972, Columbia University; Rational choice theory, nationalism, intergroup relations, norms and values
- HERTING, JERALD R. \* Research Associate Professor, 1996; MA, 1977, State University of New York (Stony Brook), PhD, 1987, University of Washington; Research methodology and at-risk youth (primarily substance use, mental health, and educational outcomes)
- HIRSCHMAN, CHARLES \* Professor, 1987; MA, 1969, University of Wisconsin (Madison), PhD, 1972, University of Wisconsin (Madison); demography, race and ethnic relations, social stratification, Southeast Asia
- HOWARD, JUDITH A \* Professor, 1982; MA, 1977, University of Oregon, PhD, 1982, University of Wisconsin (Madison); social psychology, gender roles
- KASABA, RESAT \* Adjunct Professor, 1985; MA, 1979, State University of New York (Binghamton), PhD, 1986, State University of New York (Binghamton); historical sociology, world systems, social change in the Middle East
- KASHIMA, TETSUDEN \* Adjunct Professor, 1976; MA, 1968, San Francisco State, PhD, 1975, University of California (San Diego); sociology
- KEPPEL, ROBERT D., Affiliate Assistant Professor, 1998; MA, 1967, Washington State University, MEd, 1979, Seattle University, PhD, 1992, University of Washington
- KISER, EDGAR VANCE \* Professor, 1988; MA, 1980, University of Arizona, PhD, 1987, University of Arizona; political sociology, theory, historical sociology
- LANG, GLADYS ENGEL, Professor Emeritus, 1984; MA, 1942, University of Washington, PhD, 1954, University of Chicago
- LANG, KURT, Professor Emeritus, 1984; MA, 1952, University of Chicago, PhD, 1953, University of Chicago
- LASLETT, BARBARA, Affiliate Professor, 2005; MA, 1959, University of Chicago, PhD, 1969, University of Washington
- LAVELY, WILLIAM R. \* Associate Professor, 1985; MA, 1977, University of California (Berkeley), PhD, 1982, University of Michigan; social demography of China
- LEPORE, PAUL C. \* Affiliate Assistant Professor, 1997; MA, 1990, Brown University, MS, 1994, University of Wisconsin, PhD, 1997, University of Wisconsin; social psychology, social structure and personality, sociology of education, adolescence
- LEVI, MARGARET \* Adjunct Professor, 1974; PhD, 1974, Harvard University; comparative politics, political economy
- LIU, WILLIAM T., Affiliate Professor, 1993; MA, 1952, University of Notre Dame, PhD, 1958, Florida State University
- MARX, GARY T., Affiliate Professor, 2000; MA, 1962, University of California (Berkeley), PhD, 1966, University of California (Berkeley)
- MATSUEDA, ROSS L. \* Professor, 1998; MA, 1980, University of California (Santa Barbara), PhD, 1984, University of California (Santa Barbara); Testing sociological theories of crime using quantitative methods and survey data
- MELBER, BARBARA, Affiliate Assistant

Professor, 1970; MA, 1969, University of Chicago, PhD, 1974, University of Chicago

MIYAMOTO, S FRANK, Professor Emeritus, 1941; MA, 1938, University of Washington, PhD, 1950, University of Chicago

MORRIS, WANDA MARTINA \* Professor, 2000; MA, 1986, University of Chicago, PhD, 1989, University of Chicago; Network Epidemiology, Economic Inequality, statistical methods for social scientists, simulation

O'BRIEN, JODI, Affiliate Assistant Professor, 1994; MA, 1988, University of Washington, PhD, 1992, University of Washington

OPP, KARL-DIETER, Affiliate Professor, 2003; MA, 1963, University of Cologne (Germany), PhD, 1967, University of Cologne (Germany)

PATRICK, DONALD L. \* Adjunct Professor, 1987; MS, 1968, Columbia University, PhD, 1972, Columbia University; aging, disablement, and health-related quality of life

PETTIT, ELIZABETH M. \* Associate Professor, 1999; MA, 1997, Princeton University, PhD, 1999, Princeton University; Sociology of the family, social demography and inequality

PFAFF, STEVEN J. \* Associate Professor, 1999; MA, 1994, University of North Carolina, MA, 1995, University of North Carolina, PhD, 1999, New York University; Historical and comparative sociology; social movements; sociological theory

PITCHFORD, SUSAN \* Senior Lecturer, 1994; MA, 1990, University of Washington, PhD, 1994, University of Washington; Ethnic images: origins, dissemination through tourism, and social movements to improve them. Religion and ethnic relations. New religious movements

RAFTERY, ADRIAN ELMES \* Professor, 1985; MSC, 1977, Trinity College (Ireland), Doctorat D'Etat, 1980, Universite De Paris Vi (France); Bayesian statistics, spatial statistics, clustering, whales, sociology and demography

RESKIN, BARBARA F \* Professor, 2002; MA, 1970, University of Washington, PhD, 1973, University of Washington; Social stratification and race and gender at work

ROSENFELD, JAKE H \* Assistant Professor, 2007; MA, 2004, Princeton University; Stratification, work and occupations, criminology, political sociology, economic sociology, classical theory

ROUSSEL, AMY E, Affiliate Assistant Professor, 1991; MA, 1986, Stanford University, PhD, 1991, Stanford University

SCHMITT, DAVID R, Professor Emeritus, 1968; MA, 1962, Washington University, PhD, 1963, Washington University

SCHOENBERG, RONALD J., Affiliate Assistant Professor, 1991; MS, 1972, University of Washington, PhD, 1975, University of Washington

SCHRAG, CLARENCE, Professor Emeritus, 1944; MA, 1944, University of Washington

SCHWARTZ, PEPPER J \* Professor, 1972; MA, 1968, Washington University, MPhil, 1970, Yale University, PhD, 1974, Yale University; family, human sexuality, field methods

SCOTT, JOSEPH W \* Professor Emeritus, 1985; MA, 1959, Indiana University, PhD, 1963, Indiana University; political sociology, family sociology, race/ethnic relations

SMITH, MARC A., Affiliate Assistant Professor, 2002; MPhil, 1990, Cambridge University (UK), PhD, 2001, University of California (Los Angeles)

SNEDKER, KAREN A, Affiliate Assistant Professor, 2001; MA, 1999, New York University, PhD, 2003, New York University

STOVEL, KATHERINE W. \* Associate Professor, 1997; MA, 1994, University of North Carolina, PhD, 1999, University of North Carolina; Organizational change and career outcomes; social networks; networks and disease transmission

TAKEUCHI, DAVID \* Professor, 2002; MA, 1974, University of Hawaii, PhD, 1986, University of Hawaii; Investigates how race, ethnicity, and SES influences health and illness

TANFER, KORAY, Affiliate Assistant Professor, 1991; MA, 1972, University of Pennsylvania, PhD, 1975, University of Pennsylvania

TOLNAY, STEWART E \* Professor, 2000; MA, 1975, University of Washington, PhD, 1981, University of Washington; Social demography, race and ethnicity, marriage and family

VAN DEN BERGHE, PIERRE, Professor Emeritus, 1965; MA, 1953, Stanford University, MA, 1959, Harvard University, PhD, 1960, Harvard University

WAGER, L WESLEY, Professor Emeritus, 1954; MA, 1952, University of Washington

WEIS, JOSEPH G \* Professor, 1974; MCrim, 1969, University of California (Berkeley), DCRIM, 1974, University of California (Berkeley); crime, delinquency, social control, deviance

YAMAGISHI, TOSHIO, Affiliate Associate Professor, 1985; MA, 1972, Hitotsubashi University, PhD, 1981, University of Washington

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## Speech and Hearing Sciences

ALARCON, NANCY B., Senior Lecturer, 1988; MS, 1981, University of Wisconsin (Madison)

ANDERSON, SUSAN J, Lecturer, 2007; MA, 1989, University of Northern Colorado, Artist Diploma, 2005, Pennsylvania College of Optometry

BETZ, STACY K \* Assistant Professor, 2006; MS, 2000, University of Washington, PhD, 2005, University of Kansas; Child language acquisition and disorders Acquisition of morpho-syntax

BIERER, JULIE A \* Assistant Professor, 2005; PhD, 2001, University of Michigan, MS, 2003, San Francisco State; cochlear implant psychophysics, neurophysiology

BURNS, EDWARD M. \* Professor Emeritus, 1984; MS, 1966, University of Arizona, PhD, 1977, University of Minnesota; psychoacoustics

CARMICHAEL OLSON, HEATHER, Adjunct Senior Lecturer, 1987; MA, 1976, University of Iowa, PhD, 1986, University of Washington

CARPENTER, ROBERT L, Professor Emeritus, 1970; MA, 1965, Northwestern University, PhD, 1969, Northwestern University

COGGINS, TRUMAN E \* Professor, 1974; MS, 1971, University of Redlands, PhD, 1976, University of Wisconsin (Madison); language disorders in children

COOKER, HARRY S, Associate Professor Emeritus, 1976; MA, 1961, University of Iowa, PhD, 1963, University of Iowa

DOWDEN, PATRICIA A \* Clinical Assistant Professor, 1986; MS, 1980, University of Washington; Augmentative communication, including speech intelligibility, intervention systems, efficacy and outcomes

FEENEY, M. PATRICK, Adjunct Associate

Professor, 2002; MA, 1979, Washington State University, PhD, 1993, University of Washington

FOLSOM, RICHARD C \* Professor, 1977; MS, 1970, Portland State University, PhD, 1979, University of Washington; pediatric audiology, auditory evoked potentials

HUCKABAY, KRISTINA K, Lecturer, 2006; MA, 1997, Western Washington University

KUHL, PATRICIA K \* Professor, 1976; MA, 1971, University of Minnesota, PhD, 1973, University of Minnesota; speech perception

LABIAK, JAMES M, Senior Lecturer Emeritus, 1974; MA, 1971, University of Washington

MELTZOFF, ANDREW N \* Adjunct Professor, 1974; PhD, 1976, Oxford University (UK); perceptual, cognitive & social development in infants, concept formation & memory in infancy and early childhood

MILLER, ROBERT M, Senior Lecturer, 1976; MA, 1969, University of Redlands, PhD, 1976, University of Washington

MINIFIE, FRED D, Professor Emeritus, 1971; MA, 1962, University of Iowa, PhD, 1963, University of Iowa

MOON, CHRISTINE M., Affiliate Associate Professor, 1998; MA, 1983, Columbia University, PhD, 1985, Columbia University

MOORE, CHRISTOPHER A., Affiliate Professor, 1995; MA, 1981, Purdue University, PhD, 1985, Purdue University

NORTON, SUSAN J. \* Adjunct Professor, 1991; MS, 1973, Purdue University, PhD, 1982, University of Washington; normal and non-normal hearing, specifically cochlear mechanics, in humans and animals

OLSWANG, LESLEY B. \* Professor, 1977; MA, 1971, University of Illinois, PhD, 1978, University of Washington; language development and disorders/clinical processes

PRINS, DAVID, Professor Emeritus, 1969; MA, 1957, University of Michigan, PhD, 1961, University of Michigan

REES, THOMAS, Adjunct Associate Professor, 1972; MA, 1969, University of Redlands, PhD, 1972, University of Washington

ROGERS, MARGARET A., Affiliate Associate Professor, 1992; MA, 1984, University of Iowa, PhD, 1992, University of Iowa

SANBORN, E SUE, Senior Lecturer Emeritus, 1988; MA, 1967, University of Washington, PhD, 1971, University of Washington

SOUZA, PAMELA E \* Associate Professor, 1996; MS, 1992, Syracuse University, PhD, 1996, Syracuse University; Hearing aids, effects of sensorineural hearing loss on speech perception, aging

STECKER, GEORGE C \* Assistant Professor, 2005; MA, 1998, University of California (Berkeley), PhD, 2000, University of California (Berkeley); Spatial hearing, auditory neuroscience

STOEL-GAMMON, CAROL \* Professor, 1977; MA, 1968, Stanford University, PhD, 1974, Stanford University; developmental phonology and phonetics

STONE-GOLDMAN, JUDITH R, Senior Lecturer Emeritus, 1986; MA, 1977, University of Illinois, PhD, 1986, University of Washington

TREMBLAY, KELLY L \* Associate Professor, 1998; MSC, 1987, Dalhousie University (Canada), PhD, 1998, Northwestern University; Central auditory physiology and aging

WERNER, LYNNE A. \* Professor, 1986; PhD, 1980, Loyola University (campus unspecified), MA, 1980, Loyola University (campus unspecified); auditory development, infant psychoacoustics

WILSON, WESLEY, Professor Emeritus, 1963; MA, 1961, University of Redlands, PhD, 1969, University of Washington

WRIGHT, RICHARD A. \* Adjunct Associate Professor, 1998; MA, 1993, University of California (Los Angeles), PhD, 1996, University of California (Los Angeles); Production and perception of language, automatic speech recognition, phonetics and phonology of African and Austronesian languages

YANTIS, PHILLIP A, Professor Emeritus, 1991; PhD, 1955, University of Michigan

YORKSTON, KATHRYN \* Adjunct Professor, 1977; MS, 1972, University of Oregon, PhD, 1975, University of Oregon; neurogenic communication disorders in adults

University

ALTSCHUL, ROBERTO, Affiliate Associate Professor, 1977; MSC, 1969, Case Western Reserve University, PhD, 1973, Case Western Reserve University

BOOKSTEIN, FRED L \* Professor, 2005; MA, 1971, Harvard University, PhD, 1977, University of Michigan; Morphometrics

BURDZY, KRZYSZTOF \* Adjunct Professor, 1988; MA, 1979, Maria Curie-Skłodowska University, PhD, 1984, University of California (Berkeley); probability theory

BURKE, JAMES V. \* Adjunct Professor, 1985; PhD, 1983, University of Illinois; optimization, nonsmooth analysis

CHIU, GRACE, Affiliate Assistant Professor, 2003; MSC, 1996, University of British Columbia (Canada), PhD, 2002, Simon Fraser University, B.C. (Canada)

DOBRA, ADRIAN \* Assistant Professor, 2006; MS, 1996, University of Bucharest (Romania), PhD, 2001, Carnegie Mellon University; Statistics

EROSHEVA, ELENA A. \* Assistant Professor, 2002; MS, 1998, Utah State University, PhD, 2002, Carnegie Mellon University; Statistical methodology in the social sciences, latent variable models

FELSENSTEIN, JOSEPH \* Adjunct Professor, 1967; PhD, 1968, University of Chicago; estimation of evolutionary trees, models of long-term evolutionary processes, and theoretical population genetics

FLEMING, THOMAS RICHARD \* Professor, 1984; MA, 1974, University of Maryland, PhD, 1976, University of Maryland; survival analysis, cancer clinical trials, AIDS research, sequential analysis

FORD, E DAVID \* Adjunct Professor, 1985; PhD, 1968, University College, London (UK); forest ecology and ecophysiology, modeling, spatial statistics, philosophy of science, plant structure and function, analysis of ecological systems

GENTLEMAN, ROBERT CLIFFOR \* Affiliate Professor, 2005; MSC, 1986, University of Washington, PhD, 1988, University of Washington; Bioinformatics Computational biology

GNEITING, TILMANN J. \* Professor, 1997; MA, 1992, Boston University, PhD, 1997, Bayreuth University (Germany); Spatial and environmental statistics, positive definite functions

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## Statistics

ADOLPH, CHRISTOPHER A \* Adjunct Assistant Professor, 2004; MA, 2000, Harvard University, PhD, 2005, Harvard

GROENEBOOM, PETRUS \* Affiliate Professor, 1979; MS, 1971, University of Amsterdam (Netherlands), PhD, 1979, Free University Amsterdam; Statistical inverse problems

GUTTORP, PETER \* Professor, 1980; MA, 1976, University of California (Berkeley), PhD, 1980, University of California (Berkeley); point processes, stochastic models, applications to hydrology, environmental and atmospheric science

HANDCOCK, MARK S. \* Professor, 2000; PhD, 1989, University of Chicago; Statistical methodology for the social sciences, spatial statistics, demography

HAYNOR, DAVID R \* Adjunct Professor, 1979; PhD, 1971, University of California (Berkeley), MD, 1979, Harvard University; Medical image processing and segmentation; image deformation; functional MRI; expression arrays

HOFF, PETER D \* Associate Professor, 2000; MS, 1994, University of Wisconsin, PhD, 2000, University of Wisconsin; Nonparametric Bayesian methods, mixture models, two-sided matching models

KRONMAL, RICHARD A \* Professor, 1964; PhD, 1964, University of California (Los Angeles); nonparametric density estimation, computer algorithms, cardiovascular data analysis

MARTIN, R DOUGLAS \* Professor, 1969; MS, 1965, University of Washington, PhD, 1969, Princeton University; robust inference, time series, data analysis

MASON, DAVID M, Affiliate Professor, 1989; MA, 1972, University of Washington, PhD, 1977, University of Washington

MEILA-PREDOVICIU, MARINA \* Associate Professor, 2000; MS, 1985, University Politehnica of Bucharest (Romania), PhD, 1999, Massachusetts Institute of Technology; Machine learning, data mining, belief networks, reasoning in uncertainty, algorithms

MORRIS, WANDA MARTINA \* Professor, 2000; MA, 1986, University of Chicago, PhD, 1989, University of Chicago; Network Epidemiology, Economic Inequality, statistical methods for social scientists, simulation

NELSON, CHARLES R \* Adjunct Professor, 1975; MA, 1967, University of Wisconsin, PhD, 1969, University of Wisconsin (Madison); time series analysis, economic statistical analysis, advanced macroeconomic theory

PERCIVAL, DONALD B \* Professor, 1984; MA, 1976, George Washington University, PhD, 1983, University of Washington; time

series and signal analysis, computational environments, statistics of clocks

PERLMAN, MICHAEL D \* Professor, 1979; MS, 1965, Stanford University, PhD, 1967, Stanford University; multivariate analysis, decision theory, probability inequalities, graphical Markov models

RAFTERY, ADRIAN ELMES \* Professor, 1985; MSC, 1977, Trinity College (Ireland), Doctorat D'Etat, 1980, Universite De Paris Vi (France); Bayesian statistics, spatial statistics, clustering, whales, sociology and demography

REYNOLDS, JOEL HOWARD, Affiliate Assistant Professor, 1996; MS, 1989, University of California (Los Angeles), PhD, 1996, University of Washington

RICHARDSON, THOMAS S. \* Professor, 1996; MS, 1995, Carnegie Mellon University, PhD, 1996, Carnegie Mellon University; Graphical models; algorithmic model selection; Bayesian inference; causal models; applications in Economics

SAMPSON, PAUL D \* Research Professor, 1981; MS, 1974, Brown University, PhD, 1979, University of Michigan; spatial statistics and environmetrics, morphometrics, statistical consulting

SCHOLZ, FRIEDRICH-WILHELM \* Affiliate Professor, 1972; Diploma, 1966, University of Gottingen (Germany), PhD, 1971, University of California (Berkeley); large sample theory, reliability, risk and tolerance analysis, bootstrap, extreme value theory, statistical tolerancing, statistical quality control, software reliability

SHORACK, GALEN \* Professor, 1965; MA, 1962, University of Oregon, PhD, 1965, Stanford University; empirical processes, tolerance bounds, nonparametric statistics

SIEGEL, ANDREW F \* Adjunct Professor, 1982; MS, 1975, Stanford University, PhD, 1977, Stanford University

SIRAKAYA ALEMDAR, SIBEL \* Assistant Professor, 2003; PhD, 2003, University of Wisconsin (Madison); Statistical and Computational methodology development for social sciences, Applied Microeconomics, Macroeconomics

STEPHENS, MATTHEW \* Affiliate Associate Professor, 2000; MA, 1994, Cambridge University (UK), DPhil, 1997, University of Oxford (UK); Bayesian statistics, classification and clustering, statistical genetics

STUETZLE, WERNER \* Professor, 1984; PhD, 1977, Swiss Federal Institute of Technology; nonparametric methods in

multivariate analysis, statistical applications of computer graphics

THOMPSON, ELIZABETH A \* Professor, 1985; PhD, 1974, Cambridge University (UK), MA, 1974, University of Cambridge (UK); statistical analysis of human genetic data, statistics of conservation and computational biology

WAKEFIELD, JONATHAN C \* Professor, 1999; PhD, 1992, University of Nottingham (UK); Epidemiological methods, pharmacokinetic/pharmacodynamic models, Bayesian methods, biostatistical methods

WELLNER, JONA \* Professor, 1983; PhD, 1975, University of Washington; large-sample theory, asymptotic efficiency, empirical processes, semiparametric models

ZEH, JUDITH \* Research Professor, 1965; MS, 1969, University of Washington, PhD, 1979, University of Washington; estimation of whale population size and dynamics, statistics in infectious disease research

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## Women Studies

AANERUD, REBECCA \* Affiliate Assistant Professor, 1998; MA, 1993, University of Washington, PhD, 1998, University of Washington; Whiteness studies, feminist theory, critical race theory

ALLEN, CAROLYN \* Adjunct Professor, 1972; MA, 1966, Claremont Graduate School, PhD, 1972, University of Minnesota; twentieth-century literature, women writers, contemporary critical theory

ALLEN, DAVID G. \* Adjunct Professor, 1988; MA, 1971, University of Iowa, PhD, 1975, University of Iowa, MS, 1981, University of Wisconsin; philosophy of science, critical and feminist theory, psychosocial nursing theory

ANAGNOST, ANN S. \* Adjunct Professor, 1990; MA, 1977, University of Michigan, PhD, 1985, University of Michigan; ethnography of the state, ideology and popular culture, peasant society; China

BALDASTY, GERALD J \* Adjunct Professor, 1978; MA, 1974, University of Wisconsin (Madison), PhD, 1978, University of Washington; communications history and law, government-press relations, First Amendment philosophy and theory

BARLOW, TANI E. \* Professor, 1994; MA, 1979, University of California (Davis), PhD, 1985, University of California (Davis);

modern Chinese history, feminist studies,  
East Asia/Asian American studies

BASU, SUTAPA, Affiliate Assistant  
Professor, 2003; PhD, 1998, Fielding  
Institute

BEAN, JENNIFER M. \* Adjunct Associate  
Professor, 1998; PhD, 1998, University of  
Texas (Austin); Film history, film preserva-  
tion and film theory as well as studies in  
gender and sexuality

BLAKE, KATHLEEN \* Adjunct Professor,  
1971; MA, 1967, University of California  
(Los Angeles), PhD, 1971, University of  
California (San Diego); Victorian literature,  
children's literature, women's studies

BLONDELL, RUBY \* Adjunct Professor,  
1985; MA, 1981, Oxford University (UK),  
PhD, 1984, University of California  
(Berkeley); Greek and Roman philosophy  
and literature

BOERSMA, P DEE \* Adjunct Professor,  
1974; PhD, 1974, Ohio State University;  
population, ecology

BOUTAIN, DORIS M. \* Adjunct Associate  
Professor, 2004; PhD, 2000, University of  
Washington, MN, 2000, University of  
Washington; Using social justice as a  
framework to promote health and  
decrease disease among underserved  
populations and communities

BOYER, DEBRA, Affiliate Assistant  
Professor, 1988; MA, 1983, University of  
Washington, PhD, 1986, University of  
Washington

BRAINARD, SUZANNE GAGE \* Affiliate  
Associate Professor, 1996; MA, 1968,  
Ohio State University, PhD, 1972, Ohio  
State University; Mentoring; program  
evaluation; gender; workforce, diversity,  
and engineering and science

BROWN, MICHAEL P. \* Adjunct Professor,  
1997; MA, 1990, University of British  
Columbia (Canada), PhD, 1994, University  
of British Columbia (Canada); political  
geography, cultural geography, health  
geography, sexuality

BURSTEIN, JESSICA L. \* Adjunct Associate  
Professor, 1998; MA, 1990, University of  
Chicago, PhD, 1998, University of  
Chicago; British & American modernist  
literature (1890-1930), focusing on  
cultural and artistic representations of the  
body, with emphasis on prosthesis and  
fashion

CABEEN, LOUISE \* Adjunct Associate  
Professor, 1993; MFA, 1989, The School  
of Art Institute of Chicago; socially critical  
art with research specialties in textile

history and techniques

CAMP, STEPHANIE M. H. \* Adjunct  
Associate Professor, 1995; MA, 1992,  
Yale University, PhD, 1998, University of  
Pennsylvania; Nineteenth-century  
American slavery, with a special empha-  
sis on women, gender, and culture

CAUCE, ANA MARI \* Adjunct Professor,  
1986; MS, 1979, Yale University, PhD,  
1984, Yale University; at-risk children,  
adolescents, and families; normative  
development in ethnic minority youth;  
homeless youth, adolescent substance  
abuse; children's services research;  
community psychology & social policy

CHERNIAVSKY, EVA \* Adjunct Professor,  
2005; PhD, 1990, University of California  
(Berkeley)

CHRISMAN, LAURA H \* Adjunct Professor,  
2005; DPhil, 1992, University of Oxford  
(UK); African and African Diaspora  
studies; Postcolonial Studies; British  
imperial literatures

CICHOWSKI, RACHELA \* Adjunct  
Associate Professor, 2001; MA, 1997,  
University of California (Irvine), PhD, 2001,  
University of California (Irvine); Compara-  
tive judicial politics; European Union law;  
women's rights; European integration

CLATTERBAUGH, KENNETH C. \* Adjunct  
Professor, 1966; PhD, 1966, Indiana  
University; philosophy of science, ancient  
philosophy, continental rationalism

CONNORS, CATHERINE M. \* Adjunct  
Associate Professor, 1990; MA, 1986,  
University of Michigan, PhD, 1989,  
University of Michigan; Roman epic,  
ancient novel, women in Greek and  
Roman antiquity, representations of nature

CUMMINGS, KATHERINE \* Adjunct  
Associate Professor, 1985; MA, 1979,  
Montclair State University, PhD, 1985,  
University of Wisconsin (Madison);  
cultural studies, critical theory, queer  
studies, 20th.c Americanist

DI STEFANO, CHRISTINE \* Adjunct  
Associate Professor, 1985; PhD, 1984,  
University of Massachusetts, MA, 1984,  
University of Massachusetts; political  
theory (modern and contemporary),  
feminist theory, political culture

DONG, YUE \* Adjunct Associate Profes-  
sor, 1996; MA, 1989, Beijing University,  
China, MA, 1991, University of Oregon,  
PhD, 1996, University of California (San  
Diego); Modern Chinese history, urban  
history, gender studies

ENGLAND, KIM V.L. \* Adjunct Associate

Professor, 1999; MA, 1984, Ohio State  
University, PhD, 1988, Ohio State Univer-  
sity; Employment studies (especially  
women), families, child care, feminist  
methodology

ENSIGN, B. JOSEPHINE \* Adjunct Associ-  
ate Professor, 1994; MS, 1986, Virginia  
College of Medicine, MPH, 1992, Johns  
Hopkins University, DrPH, 1994, Johns  
Hopkins University; health care program  
planning and evaluation for marginalized  
populations

FRIEDMAN, KATHIE \* Adjunct Associate  
Professor, 1987; MA, 1979, State  
University of New York (Binghamton),  
PhD, 1992, State University of New York  
(Binghamton); sociology of gender,  
immigration, race, and ethnicity in the U.S

GAVELADAMS, ANN-CHARLOTTE \*  
Adjunct Professor, 1990; MA, 1968,  
University of Uppsala (Sweden), MA,  
1975, Linköping University (Sweden),  
PhD, 1990, University of Washington;  
August Strindberg, Scandinavian women's  
literature, Scandinavian turn-of-the-  
century drama and art

GILLESPIE, DIANE \* Adjunct Professor,  
1998; MA, 1971, Southern Illinois Univer-  
sity, PhD, 1982, University of Nebraska;  
College students' cognitive responses to  
multiculturalism and social inequality

GINORIO, ANGELA B \* Associate Profes-  
sor, 1981; MA, 1971, University of Puerto  
Rico, PhD, 1979, Fordham University;  
women and science, violence against  
women, sexual harassment, racial identity  
among Latino/as, educational access  
issues

GLENN, SUSAN A \* Adjunct Professor,  
1993; MA, 1975, University of California  
(San Diego), PhD, 1983, University of  
California (Berkeley); twentieth-century  
U.S. social history including women's  
history, immigration, labor, popular culture

GOLDSMITH, LAYNE \* Adjunct Professor,  
1983; MA, 1975, San Jose State Univer-  
sity, MFA, 1979, Cranbrook Academy of  
Art; fiber arts and related historic and  
contemporary textile structures and  
processes

GORBMAN, CLAUDIA L. \* Adjunct  
Professor, 1975; MA, 1971, University of  
Washington, PhD, 1978, University of  
Washington; film studies—history, theory,  
criticism; film sound and music

HABELL-PALLAN, MICHELLE \* Associate  
Professor, 2001; MA, 1993, University of  
California (San Diego), MA, 1994,  
University of California (San Diego), PhD,  
1997, University of California (Santa



Cruz); Chicano studies and literature, performance and popular culture, women of color feminist theories

HARKINS, GILLIAN H \* Adjunct Assistant Professor, 2002; PhD, 2002, University of California (Berkeley); 20th century United States literature and culture; gender and sexuality

HARTSOCK, NANCY C.M \* Adjunct Professor, 1984; MA, 1967, University of Chicago, PhD, 1972, University of Chicago; feminist theory, Marxism, contemporary political theory

HEUVING, JEANNE D. \* Adjunct Associate Professor, 1990; MA, 1982, University of Washington, PhD, 1988, University of Washington; 20th century American poetry, modern literature, critical theory (especially poststructuralist), women's studies, creative writing (poetry)

HOWARD, JUDITH A \* Adjunct Professor, 1982; MA, 1977, University of Oregon, PhD, 1982, University of Wisconsin (Madison); social psychology, gender roles

INGEBRITSEN, CHRISTINE \* Adjunct Professor, 1992; MA, 1986, Columbia University, PhD, 1993, Cornell University; Scandinavian domestic and foreign policies, European community integration and Scandinavia

JACOBS, SUE-ELLEN \* Professor Emeritus, 1974; MA, 1966, University of Colorado (campus unspecified), PhD, 1970, University of Colorado (campus unspecified); women studies, socio-cultural and applied anthropology, anthropological studies of women, ethnohistory, North America

JAROSZ, LUCY A. \* Adjunct Associate Professor, 1990; MA, 1979, University of Wisconsin, PhD, 1990, University of California (Berkeley); political economy of development, food and agriculture, feminist geography, political ecology

JEFFORDS, SUSAN E. \* Professor, 1985; MA, 1977, University of Pennsylvania, PhD, 1981, University of Pennsylvania; feminist theory, American popular culture, and the representation of Vietnam

JOSEPH, RALINA L \* Adjunct Assistant Professor, 2005; MA, 2001, University of California (San Diego), PhD, 2005, University of California (San Diego); Contemporary representations of mixed-race women in the United States

KAPLAN, SYDNEY J \* Adjunct Professor, 1971; MA, 1966, University of California (Los Angeles), PhD, 1971, University of California (Los Angeles); twentieth-

century literature, women writers, feminist criticism

KEMP, SUSAN \* Adjunct Associate Professor, 1997; MA, 1981, University of Auckland (New Zealand), PhD, 1994, Columbia University; Supports to low-income families; public child welfare; social welfare history; social work theory

KENNEY, NANCY J \* Associate Professor, 1976; MA, 1972, University of Virginia, PhD, 1974, University of Virginia; neural and endocrine controls of food and fluid intake, physiological basis of motivation

KILLIEN, MARCIA G \* Adjunct Professor, 1974; MN, 1974, University of Washington, PhD, 1982, University of Washington; women's health, reproductive decision making, work and family

KLAWITTER, MARIEKA \* Adjunct Associate Professor, 1990; MPP, 1983, University of Michigan, MS, 1986, University of Wisconsin, PhD, 1992, University of Wisconsin; family and employment policy, women's studies, sexual orientation discrimination

LANG, SABINE \* Adjunct Assistant Professor, 2002; MA, 1985, Free University Berlin, PhD, 1997, Free University Berlin; Germany, European Union, Women's Studies

LAWSON, VICTORIA A. \* Adjunct Professor, 1986; MA, 1982, Ohio State University, PhD, 1986, Ohio State University; Latin America, political economy of development, feminist theory in development

LOWE, CELIA \* Adjunct Associate Professor, 1999; MPhil, 1996, Yale University, PhD, 2000, Yale University; Critical environmental studies, science studies, nationalism, post-colonial theory, identity, gender

LUNDBERG, SHELLY J \* Adjunct Professor, 1984; PhD, 1981, Northwestern University; labor economics

MACK, EDWARD T \* Adjunct Assistant Professor, 2002; MA, 1996, Columbia University, PhD, 2002, Harvard University; Modern Japanese literature, criticism, publishing; literature and empire; diaspora literature

MAURER, SERENA D., Affiliate Assistant Professor, 2008; PhD, 2006, University of Washington, MPA, 2006, University of Washington

MCGRATH, BARBARA B. \* Adjunct Research Assoc Professor, 1987; MA, 1981, University of Washington, PhD,

1993, University of Washington; ethnographic studies with U.S. Pacific Islanders on health issues, specifically, HIV/AIDS prevention among adolescents

MITCHELL, KATHARYNE \* Adjunct Professor, 1993; MA, 1989, University of California (Berkeley), PhD, 1993, University of California (Berkeley); urban economic and cultural geography, with focus on social theory, the Pacific Rim, and Chinese business organization

MURAKAWA, NAOMI D \* Adjunct Assistant Professor, 2004; MSC, 1997, London School of Economics (UK), PhD, 2004, Yale University

NOBLE, KATHLEEN \* Professor, 1985; MEd, 1978, University of Washington, PhD, 1984, University of Washington; The psychology of talent development; spiritual intelligence; and feminist psychological theory

NOMURA, GAIL M. \* Adjunct Associate Professor, 1999; MA, 1971, University of California (Berkeley), PhD, 1978, University of Hawaii; Asian/Pacific Islander American studies, Asian American history, race, ethnicity, and gender studies

OSANLOO, ARZOO \* Adjunct Assistant Professor, 2002; JD, 1993, American University, PhD, 2002, Stanford University; Anthropology and Law, Human Rights, Gender and Islam, Theories of the State: socio-legal constructions of women's rights within Iran's Islamic republican state

PENA, DEVON G \* Adjunct Professor, 1999; MA, 1978, University of Texas (Austin), PhD, 1983, University of Texas (Austin); Agroecosystems (Southwestern U.S.); environmental history; political ecology of complex systems; workplace politics (US-Mexico border); postmodern theories of science and technology

POIGER, UTA G. \* Adjunct Assistant Professor, 1995; MA, 1990, Brown University, MA, 1990, University of Massachusetts, PhD, 1995, Brown University; modern German history, gender history, cultural studies

RAMAMURTHY, PRITI \* Associate Professor, 1997; MBA, 1978, Indian Institute of Management, India, MIH, 1982, Syracuse University, PhD, 1995, Syracuse University; Political economy of development; Third World feminism; agro-food systems; South Asia

RESKIN, BARBARA F \* Adjunct Professor, 2002; MA, 1970, University of Washington, PhD, 1973, University of Washington; Social stratification and race and gender at work

- RETMAN, SONNET H., Adjunct Assistant Professor, 2002; PhD, 1997, University of California (Los Angeles)
- ROBERTS, JEAN VALERIE \* Adjunct Associate Professor, 1991; MA, 1978, University of Pittsburgh, PhD, 1982, University of Pittsburgh; Ancient Greek philosophy, history of ethics and political theory, feminist philosophy
- ROSE, ELAINA \* Adjunct Associate Professor, 1993; MA, 1988, University of Pennsylvania, PhD, 1993, University of Pennsylvania; Economics of the Household in Developed and Developing Countries
- ROSS, LUANA K. \* Associate Professor, 1999; MSW, 1981, Portland State University, PhD, 1992, University of Oregon; Criminology/Deviance, Race/Ethnic Relations in North America, and issues of gender
- SALAS, ELIZABETH, Adjunct Associate Professor, 1987; MA, 1977, California State University, Los Angeles, PhD, 1987, University of California (Los Angeles)
- SCHROEDER, CAROLE A. \* Adjunct Associate Professor, 1993; MN, 1985, University of Nevada, PhD, 1993, University of Colorado (Denver); women's health experiences, critical approaches to knowledge development, and developing partnerships in community health
- SCHWARTZ, PEPPER J \* Adjunct Professor, 1972; MA, 1968, Washington University, MPhil, 1970, Yale University, PhD, 1974, Yale University; family, human sexuality, field methods
- SEARS, LAURIE J \* Adjunct Professor, 1989; MA, 1977, University of Arizona, PhD, 1986, University of Wisconsin (Madison); Southeast Asian social and cultural history
- SILBERSTEIN, SANDRA V \* Adjunct Professor, 1982; MA, 1971, University of Michigan, PhD, 1982, University of Michigan; TESL, critical theory, discourse analysis, sociolinguistics, language and culture
- SIMONI, JANE M \* Adjunct Professor, 2001; MA, 1988, University of California (Los Angeles), PhD, 1990, University of California (Los Angeles); HIV/AIDS; influence of culture and social support on psychological well-being
- SIMPSON, CAROLINE CHUNG \* Adjunct Associate Professor, 1994; MA, 1989, University of Houston, PhD, 1994, University of Texas (Austin); Asian American studies and postwar American culture
- SINGH, NIKHIL PAL \* Associate Professor, 1998; MA, 1990, Yale University, MPhil, 1992, Yale University, PhD, 1995, Yale University; 20th-Century U.S. History and Theory with a focus on ethnicity, race and nationalism
- SOHNG, SUE \* Adjunct Associate Professor, 1990; MSW, 1979, Wayne State University, PhD, 1989, University of Pittsburgh; action research and chronic mental illness, cross-cultural social work practice
- SOKOLOFF, NAOMI B. \* Adjunct Professor, 1985; MA, 1979, Princeton University, PhD, 1980, Princeton University; Hebrew language and literature
- SORENSEN, CLARK W. \* Adjunct Associate Professor, 1989; MA, 1974, University of Washington, PhD, 1981, University of Washington; Korea, social change in East Asia, development, ethnic identity
- STACEY, ROBIN C \* Adjunct Professor, 1988; MA, 1979, Yale University, MLitt, 1982, Oxford University (UK), MPhil, 1983, Yale University, PhD, 1986, Yale University; early and high medieval history, tribal law, Celtic/Anglo-Saxon literature, heresy
- STECHER HANSEN, MARIANNE T \* Adjunct Associate Professor, 1986; MA, 1981, University of Washington, PhD, 1990, University of California (Berkeley); Danish language and literature, Scandinavian novel, Isak Dinesen (Karen Blixen), H.C. Anderson
- STEELE, CYNTHIA \* Adjunct Professor, 1986; MA, 1979, University of California (San Diego), PhD, 1980, University of California (San Diego); Latin American literature and society, narrative and feminist theory
- STYGALL, GAIL \* Adjunct Professor, 1990; PhD, 1989, Indiana University; discourse analysis, rhetoric and composition, English language linguistics, forensic linguistics
- SWARR, AMANDA L \* Assistant Professor, 2005; MA, 1998, University of Minnesota, PhD, 2003, University of Minnesota
- TAYLOR, JANELLE S \* Adjunct Associate Professor, 1999; MA, 1990, University of Chicago, PhD, 1999, University of Chicago; Anthropology of medicine, science and technology, reproduction, gender, and consumption
- THOMAS, LYNN M. \* Adjunct Associate Professor, 1997; MA, 1989, Johns Hopkins University, MA, 1993, Northwestern University, PhD, 1997, University of Michigan; 20th c. Kenyan history; gender, social, and cultural history
- THOMAS-JONES, DEBORAH, Affiliate Assistant Professor, 2008; EdM, 2002, Washington State University, PhD, 2006, Washington State University
- WARD, DEBORAH \* Adjunct Associate Professor, 1987; MN, 1977, Yale University, PhD, 1987, Boston University; health policy and politics, women's paid and unpaid caregiving work
- WEINBAUM, ALYS E. \* Adjunct Associate Professor, 1998; MA, 1990, University of Sussex (UK), MA, 1992, Columbia University, PhD, 1998, Columbia University; Feminist theory; representations of race and reproduction in modern literature
- WELLAND, SASHA \* Assistant Professor, 2004; MA, 1998, University of California (Santa Cruz), PhD, 2005, University of California (Santa Cruz); Gender, feminist ethnography, anthropology of art, visual/expressive culture; China, East Asia, Asian America
- WEST, CAROLYN M. \* Adjunct Associate Professor, 1997; MA, 1988, University of Missouri, PhD, 1994, University of Missouri; Intimate partner violence and stereotypes of Black women
- WOODS, NANCY \* Adjunct Professor, 1978; MN, 1969, University of Washington, PhD, 1978, University of North Carolina; women's health
- WOODY, ANDREA I. \* Adjunct Associate Professor, 1997; PhD, 1996, University of Pittsburgh, PhD, 1997, University of Pittsburgh; Philosophy of Science, especially biology and physics; epistemology; logic
- WYLIE, MARGARET ALISON \* Adjunct Professor, 2005; MA, 1979, State University of New York (Binghamton), PhD, 1982, State University of New York (Binghamton); Philosophy of social science; feminist philosophy; archaeological history and theory
- YEE, SHIRLEY J. \* Associate Professor, 1988; MA, 1983, Ohio State University, PhD, 1987, Ohio State University; U.S. women's history, African-American history, nineteenth-century U.S. social history



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# Michael G. Foster School of Business

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## Accounting

ANGELL, PATRICIA L., Lecturer, 1999; MPAcc, 1999, University of Washington

BOWEN, ROBERT M \* Professor, 1978; MBA, 1971, Washington University, PhD, 1978, Stanford University; financial and managerial accounting. Hubert O. Whitten Endowed Professorship in Accounting

BURGSTAHLER, DAVID C \* Professor, 1980; PhD, 1981, University of Iowa; financial and managerial accounting, statistical methods

DU CHARME, LARRY L, Lecturer, 1997; MBA, 1989, University of Washington, PhD, 1994, University of Washington

DUKES, ROLAND E \* Professor, 1979; MBA, 1970, Stanford University, PhD, 1974, Stanford University; Financial and Managerial Accounting

GE, WEILI, Assistant Professor, 2006; MBA, 2001, Washington University, PhD, 2006, University of Michigan

HEATH, LOYD C, Professor Emeritus, 1962; MBA, 1953, Northwestern University, PhD, 1965, University of California (Berkeley)

HODGE, FRANK D, Associate Professor, 2000; MBA, 1996, Indiana University, PhD, 2000, Indiana University

JIAMBALVO, JAMES \* Professor, 1977; MAS, 1973, University of Illinois, PhD, 1977, Ohio State University; managerial accounting, auditing

KENNEDY, S. JANE \* Professor, 1991; MBA, 1977, University of Alberta, Canada, PhD, 1992, Duke University; Professional judgment/decision making in accounting, auditing, or business contexts

MATSUMOTO, DAWN A. \* Associate Professor, 2001; PhD, 1998, University of Washington

MEDLAR, DEBORAH L, Senior Lecturer, 1999; JD, 1978, University of Washington

MUELLER, FRED J, Professor Emeritus, 1956; MA, 1954, University of Washington, PhD, 1956, Ohio State University

MUELLER, GERHARD G, Professor Emeritus, 1960; MBA, 1957, University of California (Berkeley), PhD, 1961, University of California (Berkeley)

NOREEN, ERIC W, Professor Emeritus, 1976; MBA, 1974, Stanford University, PhD, 1976, Stanford University

RAJGOPAL, SHIVARAM \* Professor, 1998; PhD, 1998, University of Iowa; financial reporting, earnings management, voluntary disclosure, executive compensation

RAMANATHAN, K V \* Professor Emeritus, 1969; MBA, 1962, Northwestern University, PhD, 1969, Northwestern University; Managerial accounting

RESLER, WILLIAM M, Senior Lecturer, 1979; JD, 1972, University of Washington, LL.M., 1973, New York University

RICE, STEVEN J, Senior Lecturer, 1975; MS, 1971, Oklahoma State University, PhD, 1974, University of Texas (Austin)

SEDOR, LISA M., Assistant Professor, 2007; PhD, 2001, University of Washington

SEFCIK, STEPHAN E \* Professor, 1986; MAS, 1976, University of Illinois, PhD, 1983, University of Illinois; financial reporting and environmental accounting issues

SHEVLIN, TERENCE J \* Professor, 1985; MA, 1981, Monash University (Australia), PhD, 1986, Stanford University; financial accounting, capital markets, taxation

SHORES, DONNA J \* Associate Professor, 1986; MS, 1980, University of Wisconsin (Madison), PhD, 1986, Stanford University; Financial accounting, corporate reporting, role of accounting choices in equity valuation and contracting

SOLIMAN, MARK T \* Associate Professor, 2007; MS, 1999, Seattle University, PhD, 2003, University of Michigan; Financial Accounting, Capital Markets, Financial Economics

SUNDEM, GARY L, Professor, 1971; MBA, 1969, Stanford University, PhD, 1971, Stanford University

WELLS, WILLIAM L., Senior Lecturer, 1989; MBA, 1973, Syracuse University, MPAcc, 1989, University of Washington

1972, Ohio State University; Corporate finance and financial institutions

CONRAD, DOUGLAS A \* Adjunct Professor, 1977; MHA, 1973, University of Washington, MBA, 1977, University of Chicago, PhD, 1978, University of Chicago; alternative vertical and horizontal market structures in health care, hospital and health administration, cost effectiveness of dental treatment

DAMBROSIO, CHARLES A, Professor Emeritus, 1960; MS, 1958, University of Illinois, PhD, 1960, University of Illinois

DEWENTER, KATHRYN L \* Associate Professor, 1992; MA, 1985, Stanford University, MBA, 1985, Stanford University, PhD, 1993, University of Chicago; Empirical analysis of finance models in an international context

FROST, PETER A, Professor Emeritus, 1969; MA, 1961, University of California (Los Angeles), PhD, 1966, University of California (Los Angeles)

GLASSMAN, DEBRA A, Senior Lecturer, 1989; MS, 1979, University of Wisconsin, PhD, 1980, University of Wisconsin (Madison)

HALEY, CHARLES \* Professor Emeritus, 1966; MBA, 1964, Stanford University, PhD, 1968, Stanford University; finance

HANSON, KERMIT O, Professor Emeritus, 1948; MS, 1940, Iowa State University, PhD, 1950, Iowa State University

HARFORD, JARRAD \* Associate Professor, 2001; MS, 1995, University of Rochester, PhD, 1998, University of Rochester; Empirical corporate finance: mergers and acquisitions, corporate governance, payout policy

HESS, ALAN C. \* Professor, 1967; MS, 1967, Carnegie Institute of Technology, PhD, 1969, Carnegie Institute of Technology; finance and business economics

HIGGINS, ROBERT C \* Professor, 1967; MBA, 1965, Harvard University, PhD, 1969, Stanford University; finance

JOHNSON, DUDLEY, Professor Emeritus, 1960; MA, 1953, Northwestern University, PhD, 1957, Northwestern University

KAMARA, AVRAHAM \* Professor, 1984; MSC, 1978, Hebrew University (Israel), MPhil, 1981, Columbia University, PhD, 1986, Columbia University; financial economics, investment, futures and options

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## Finance and Business Economics

ALBERTS, WILLIAM, Professor Emeritus, 1967; MA, 1956, University of Chicago, PhD, 1961, University of Chicago

BRADFORD, WILLIAM D \* Professor, 1994; MBA, 1968, Ohio State University, PhD,

KARPOFF, JONATHAN M \* Professor, 1983; MA, 1980, University of California (Los Angeles), PhD, 1982, University of California (Los Angeles); corporate finance, law and economics, microeconomics, natural resources

KOLASINSKI, ADAM, Assistant Professor, 2006; PhD, 2006, Massachusetts Institute of Technology

KOSKI, JENNIFER LYNCH \* Associate Professor, 1991; MBA, 1987, Harvard University, PhD, 1991, Stanford University; Dividend policy, market microstructure, stock splits, mutual funds

MALATESTA, PAUL H \* Professor, 1980; MS, 1976, University of Rochester, PhD, 1982, University of Rochester; corporate finance, security and capital markets, corporate mergers, and empirical methods in finance

MALOY, FRANCES, Lecturer, 1999; MA, 1985, Southern Illinois University, PhD, 1999, University of Washington

MARTIN, R DOUGLAS \* Adjunct Professor, 1969; MS, 1965, University of Washington, PhD, 1969, Princeton University; robust inference, time series, data analysis

RICE, EDWARD M \* Associate Professor, 1979; MBA, 1973, University of Rochester, PhD, 1978, University of California (Los Angeles); corporate finance, microeconomics, industrial organization

SADKA, RONNIE, Assistant Professor, 2003; MA, 1998, Tel Aviv University (Israel), PhD, 2003, Northwestern University

SCHALL, LAWRENCE D \* Professor, 1968; PhD, 1969, University of Chicago; finance and business economics

SIEGEL, STEPHAN, Assistant Professor, 2005; MPhil, 2002, Columbia University, PhD, 2006, Columbia University

TARHOUNI, ALI A, Senior Lecturer, 1985; MA, 1978, Michigan State University, PhD, 1983, Michigan State University

ZIVOT, ERIC W \* Adjunct Professor, 1993; PhD, 1992, Yale University; time series, econometrics, applied macroeconomics, empirical finance

## Information Systems and Operations Management

BURROWS, WILLIAM E, Senior Lecturer Emeritus, 1973; MBA, 1972, University of Washington

CHIU, JOHN S Y, Professor Emeritus, 1960; MS, 1955, University of Kentucky, PhD, 1960, University of Illinois

DEY, DEBABRATA \* Professor, 1997; MS, 1989, Syracuse University, MS, 1992, University of Rochester, PhD, 1994, University of Rochester; Heterogeneous and distributed systems; database theory, design and performance; knowledge-based systems; software engineering

FAALAND, BRUCE H \* Professor, 1971; MS, 1968, Stanford University, PhD, 1971, Stanford University; quantitative methods

FAN, MING \* Assistant Professor, 2002; MA, 1991, University of Akron, PhD, 1999, University of Texas (Austin); The economics of information systems

GENG, XIANJUN \* Assistant Professor, 2003; MS, 1999, Tsinghua University (China), PhD, 2003, University of Texas (Austin); Information Systems

HILLIER, MARK S. \* Associate Professor, 1993; MS, 1991, Stanford University, PhD, 1994, Stanford University; Operations Management, Inventory, Commonality, Mathematical Programming Applications

JAIN, APURVA \* Assistant Professor, 1999; MS, 1989, National Inst Training Engin (Bombay), PhD, 1999, Purdue University; Supply chain management; Production, Operations and Inventory management; Global logistics

KIM, KEE YOUNG, Affiliate Professor, 2004; MS, 1966, Yonsei University (Korea), MBA, 1973, Washington University, PhD, 1975, Washington University

KLASTORIN, THEODORE \* Professor, 1974; PhD, 1973, University of Texas (Austin); operations management, facility location, project management, waiting lines, logistics, inventory

KUMAR, SUBODHA, Assistant Professor, 2001; MTech, 1997, Indian Institute of Technology (India), MBA, 2000, University of Texas (Dallas), PhD, 2001, University of Texas (Dallas)

MOINZADEH, KAMRAN \* Professor, 1984; MS, 1982, Stanford University, PhD, 1985, Stanford University; operations manage-

ment, production management, inventory, quality and supply chain management

PILCHER, MARTHA G, Senior Lecturer, 1987; MS, 1978, Georgia Institute of Technology, PhD, 1985, Georgia Institute of Technology

SCHMITT, THOMAS G \* Associate Professor, 1979; MBA, 1974, University of Cincinnati, DBA, 1979, Indiana University; management of service and manufacturing operations

SIEGEL, ANDREW F \* Professor, 1982; MS, 1975, Stanford University, PhD, 1977, Stanford University

SUSARLA, ANJANA, Assistant Professor, 2003; MBA, 1997, Indian Institute of Management, India, PhD, 2003, University of Texas (Austin)

TAMURA, HIROKUNI \* Professor, 1967; MS, 1961, University of Michigan, PhD, 1967, University of Michigan; quantitative methods

TAN, YONG \* Associate Professor, 2000; MS, 1988, University of Washington, PhD, 1993, University of Washington, PhD, 2000, University of Washington; Information systems development, economics and operations; electronic commerce; software engineering

TRIPATHI, ARVIND K., Assistant Professor, 2002; MS, 1997, Indian Institute of Technology (India), PhD, 2002, University of Connecticut

ZHOU, YONGPIN \* Associate Professor, 2000; MA, 1995, Johns Hopkins University, MA, 1997, University of Pennsylvania, PhD, 2000, University of Pennsylvania; Stochastic systems; service operations management

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## Management and Organization

BARDEN, JEFFREY Q., Assistant Professor, 2005; MBA, 1999, Indiana University, PhD, 2006, Duke University

BIGLEY, GREGORY \* Associate Professor, 2000; MBA, 1991, University of California (Irvine), PhD, 1995, University of California (Irvine); Trust, justice, and power within high-performance/reliability organizations and across cultural contexts

BOEKER, WARREN \* Professor, 1998; PhD, 1987, University of California (Berkeley); Business strategy, the management of technology and innovation, and entrepreneurship

BUCK, VERNON E, Associate Professor Emeritus, 1968; MS, 1960, Cornell University, PhD, 1963, Cornell University

CHEN, XIAO-PING \* Professor, 1999; MEd, 1988, Hangzhou University, MA, 1992, University of Illinois, PhD, 1998, University of Illinois; Individual and group decision making, leadership, employee turnover, cross-cultural management

FENN, MARGARET P, Professor Emeritus, 1953; MBA, 1950, University of Washington, DBA, 1963, University of Washington

FRENCH, WENDELL L, Professor Emeritus, 1958; MPS, 1949, University of Colorado (campus unspecified), EdD, 1956, Harvard University

GEORGE-FALVY, JANE, Lecturer, 2001; PhD, 1995, University of Washington

HENNING, DALE A, Professor Emeritus, 1955; MBA, 1949, University of Pennsylvania, PhD, 1954, University of Illinois

HERNANDEZ, MORELA, Assistant Professor, 2007; MA, 2004, Duke University, PhD, 2007, Duke University

HILL, CHARLES WILLIAM L \* Professor, 1988; PhD, 1983, University of Manchester (UK); business policy, corporate strategy, multinational enterprise

HUBER, VANDRA LEE \* Professor, 1987; MS, 1978, University of Utah, MBA, 1981, Indiana University, DBA, 1982, Indiana University; human resource decision making, compensation, and performance appraisal

JOHNSON, MICHAEL D. \* Assistant Professor, 2006; MA, 1999, University of Phoenix, PhD, 2006, Michigan State University; Human Relations Management Team Effectiveness Cooperation and Competition

JOHNSON, RICHARD A, Professor Emeritus, 1955; MBA, 1952, University of Minnesota, DBA, 1958, University of Washington

JONES, THOMAS M \* Professor, 1977; MBA, 1970, University of Washington, PhD, 1977, University of California (Berkeley); corporate governance, shareholder litigation, corporate social responsibility, business and society paradigms

KAST, FREMONT E, Professor Emeritus, 1951; MBA, 1949, Stanford University, DBA, 1956, University of Washington

KIENAST, PHILIP K \* Associate Professor, 1970; MLIR, 1966, Michigan State University, PhD, 1972, Michigan State University; human resources management

KOTHA, SURESH \* Professor, 1996; MArch, 1982, Rensselaer Polytechnic Institute, MBA, 1983, Rensselaer Polytechnic Institute, MS, 1986, Rensselaer Polytechnic Institute, PhD, 1988, Rensselaer Polytechnic Institute; competitive strategy, competing on the internet and ecommerce, and International Management

LEE, THOMAS W \* Professor, 1983; MA, 1977, Bowling Green State University, PhD, 1984, University of Oregon; administrative theory and organizational behavior, human resources management

MITCHELL, TERENCE R. \* Professor, 1969; MA, 1967, University of Illinois, PhD, 1969, University of Illinois; leadership, group processes, motivation, turnover

MOXON, RICHARD W, Professor Emeritus, 1971; MS, 1964, Stanford University, DBA, 1973, Harvard University

NEWELL, WILLIAM T, Professor Emeritus, 1960; MBA, 1955, University of Denver, PhD, 1962, University of Texas (unspecified)

NOLAN, RICHARD L, Professor, 2004; MBA, 1963, University of Washington, PhD, 1966, University of Washington

PETERSON, RICHARD B, Professor Emeritus, 1966; MA, 1956, University of Illinois, PhD, 1966, University of Wisconsin (Madison)

SAXBERG, BORJE O \* Professor, 1957; MS, 1953, University of Illinois, PhD, 1958, University of Illinois; administrative theory and organizational behavior

SCOTT, WILLIAM GEORGE, Professor Emeritus, 1966; MS, 1952, Loyola University (campus unspecified), DBA, 1957, Indiana University

SHAH, SONALI K., Assistant Professor, 2007; PhD, 2003, Massachusetts Institute of Technology

STEENSMA, HARVEY K. \* Professor, 2000; MBA, 1988, Washington State University, PhD, 1996, Indiana University; International joint ventures and alliances, theories of the firm, outsourcing, corporate strategy

STRONG, DENNIS FULTON, Associate Professor Emeritus, 1956; PhD, 1959, University of Washington

VESPER, KARL H, Professor Emeritus, 1969; MBA, 1960, Harvard University, MS, 1966, Stanford University, PhD, 1969, Stanford University

WOODWORTH, ROBERT T., Associate Professor Emeritus, 1961; MBA, 1956,

Northwestern University, PhD, 1963, Northwestern University

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## Marketing and International Business

DACUNHA, MARCUS V. MORETTI \* Assistant Professor, 2003; MS, 1998, University Federal Do Rio Grande Do Sul, Brazil, PhD, 2003, Warrington College of Business; Consumer information processing, intertemporal choice, bundling, framing, variety seeking, random-walk models, signal detection theory

ERICKSON, GARY \* Professor, 1980; MBA, 1973, Stanford University, PhD, 1978, Stanford University; quantitative models of marketing and analysis of competitive strategies

ETCHESON, WARREN W, Professor Emeritus, 1954; MA, 1951, State University of Iowa, PhD, 1956, State University of Iowa

FOREHAND, MARK ROBECK \* Associate Professor, 1997; PhD, 1997, Stanford University; Consumer Decision Making and Attitude Development

GARDNER, JACQUELINE S. \* Adjunct Professor, 1990; MPH, 1972, University of Hawaii, PhD, 1980, University of Washington; pharmacoepidemiology, drug therapy use and effects, pharmacist practice patterns

GIAMBATTISTA, MICHELE D., Lecturer, 1998; MBA, 1969, Harvard University

GRATHWOHL, HARRISON L, Associate Professor Emeritus, 1958; MBA, 1952, Indiana University, DBA, 1957, Indiana University

GREENWALD, ANTHONY G. \* Adjunct Professor, 1986; PhD, 1963, Harvard University; social cognition, attitudes, self and self-esteem, methodology, unconscious cognition

HARDER, VIRGIL E, Professor Emeritus, 1955; MA, 1950, State University of Iowa, PhD, 1958, University of Illinois

JACOBSON, ROBERT L \* Professor, 1984; PhD, 1981, University of California (Berkeley); marketing strategy, marketing management and entrepreneurial management

JAIN, SHAILENDRA P., Associate Professor, 2008; MBA, 1984, Indian Institute of Management, India, MPhil, 1992, New York

University, PhD, 1995, New York University

KALITZKI, JUDITHANN, Senior Lecturer, 1980; PhD, 1979, University of Washington

KOLDE, ENDEL-JAKOB, Professor Emeritus, 1951; MA, 1951, University of Washington, DBA, 1954, University of Washington

MACLACHLAN, DOUGLAS \* Professor, 1970; MBA, 1965, University of California (Berkeley), MA, 1970, University of California (Berkeley), PhD, 1971, University of California (Berkeley); quantitative methods and marketing research

MOINPOUR, REZA \* Professor, 1969; MBA, 1966, Ohio State University, PhD, 1970, Ohio State University; consumer behavior and marketing research

MONTOYA, DETRA Y, Assistant Professor, 2006; MBA, 2000, Arizona State University, PhD, 2006, Arizona State University

NARVER, JOHN C, Professor Emeritus, 1966; MBA, 1960, University of California (Berkeley), PhD, 1965, University of California (Berkeley)

ODEGAARD, MARY ANN, Lecturer, 1995; MBA, 1971, Stanford University, PhD, 1980, Stanford University

PALMATIER, ROBERT W \* Assistant Professor, 2007; MSEE, 1984, Georgia Institute of Technology, MBA, 1989, Georgia Institute of Technology, PhD, 2004, University of Missouri; Relationship marketing theory and strategy with emphasis on multi-channel customer relationships in the business-to-business and retail markets; role of customer relationships in services and innovation

SCHLOSSER, ANN E. \* Assistant Professor, 2000; MA, 1995, University of Illinois, PhD, 1997, University of Illinois; Attitudes, Internet marketing and social interaction

SHULMAN, JEFFREY D, Assistant Professor, 2006; PhD, 2006, Northwestern University

SPRATLEN, THADDEUS H \* Professor Emeritus, 1972; MA, 1957, Ohio State University, PhD, 1962, Ohio State University; marketing

SULLIVAN, JEREMIAH J \* Professor Emeritus, 1976; MA, 1967, New York University, PhD, 1970, New York University, MBA, 1975, University of Washington; international business, Japanese management

TURNER, DANIEL J., Senior Lecturer, 1999; MBA, 1993, Washington University, PhD, 2001, Northwestern University

WHEATLEY, JOHN J, Professor Emeritus, 1960; MBA, 1954, State University of New York (Buffalo), PhD, 1959, State University of New York (Buffalo)

YALCH, RICHARD F \* Professor, 1974; MS, 1970, Carnegie Mellon University, PhD, 1974, Northwestern University; advertising management and consumer behavior, marketing management, marketing research

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# School of Dentistry

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## Dental Public Health Sciences

AW, TAR C., Adjunct Associate Professor, 1995; DDS, 1990, Northwestern University, MS, 1995, University of Michigan

CAMERON, CHERYLA, Professor, 1979; MEd, 1978, University of Kentucky, PhD, 1986, University of Washington, JD, 1994, Seattle University

CASTILLO, JORGE L., Affiliate Assistant Professor, 2002; DDS, 1991, Univ. Peruana Cayetano Heredia (Peru), MDS, 1995, University of Connecticut, MSD, 2000, University of Washington

CHAPKO, MICHAEL K \* Adjunct Research Professor, 1978; MA, 1970, Hunter College, PhD, 1972, City University of New York; ambulatory care, long-term care, cost-effectiveness

COLDWELL, SUSAN E. \* Associate Professor, 1994; MA, 1990, University of Pennsylvania, PhD, 1994, University of Pennsylvania; Pain, anxiety and taste preference

CONRAD, DOUGLAS A \* Professor, 1977; MHA, 1973, University of Washington, MBA, 1977, University of Chicago, PhD, 1978, University of Chicago; alternative vertical and horizontal market structures in health care, hospital and health administration, cost effectiveness of dental treatment

DE ROUEN, TIMOTHY \* Professor, 1975; MS, 1969, Virginia Polytechnic Institute and State University, PhD, 1971, Virginia Polytechnic Institute and State University; applications of biostatistics to clinical epidemiology of oral and infectious diseases

DRANGSHOLT, MARK T. \* Assistant Professor, 1985; DDS, 1984, University of Washington; Orofacial Pain

FALES, MARTHA H, Professor Emeritus, 1959; MA, 1968, University of Michigan, PhD, 1975, University of Michigan

FISSET, LOUIS O., Affiliate Associate Professor, 1976; DDS, 1970, University of Washington

GREMBOWSKI, DAVID \* Professor, 1980; MA, 1975, Washington State University, PhD, 1982, University of Washington; Health services research, survey research, program evaluation, performance of health care systems, prevention, access to health care, quality of health care

HOSKULDSSON, OLAFUR, Affiliate Assistant Professor, 1994; DDS, 1966, University of Iceland

HUJOEL, PHILIPPE P \* Professor, 1985; DDS, 1984, University of Brussels (Belgium), MSD, 1986, University of Washington, PhD, 1993, University of Washington; Epidemiology and randomized controlled trials in the dental research field

KLEINKNECHT, RONALD, Affiliate Professor, 1982; MS, 1966, Washington State University, PhD, 1969, Washington State University

LEROUX, BRIAN \* Associate Professor, 1991; MSC, 1985, University of British Columbia (Canada), PhD, 1989, University of British Columbia (Canada); random effect models, stochastic processes, dental research, toxicology

MAKINEN, KAUKO K., Affiliate Professor, 1998; MS, 1965, University of Turku, Finland, PhD, 1969, University of Helsinki (Finland)

MANCL, LLOYD A. \* Research Associate Professor, 1992; MS, 1988, University of Washington, PhD, 1992, University of Washington; statistical methodology in periodontal disease and TMD research

MARTIN, MICHAEL D. \* Adjunct Associate Professor, 1986; DMD, 1979, University of Kentucky, MPH, 1989, University of Washington, MSD, 1994, University of Washington; dental education in oral health care of persons with disability

MILGROM, PETER M \* Professor, 1974; DDS, 1972, University of California (San Francisco); management of fearful and phobic dental patients, quality of dental care

MOURADIAN, WENDY ELYSE \* Clinical Professor, 1977; MS, 1973, Massachusetts Institute of Technology, MD, 1977, Columbia University; oral health in MCH population, quality of life, ethics

QUARNSTROM, FRED C., Affiliate Assistant Professor, 1983; DDS, 1964, University of Washington

RAMSAY, DOUGLAS S \* Adjunct Professor, 1985; DMD, 1983, University of Pennsylvania, PhD, 1988, University of Washington, MSW, 1990, University of Washington; behavioral medicine/dentistry, physiological psychology, orthodontics, pediatric dentistry

RIEDY, CHRISTINE A \* Research Assistant Professor, 1997; MS, 1995, University of

Washington, PhD, 1997, University of Washington, MPH, 2002, University of Washington; Children's oral health - cultural diversity, dietary influences; symptom self-report in children

SKARET, ERIK, Affiliate Assistant Professor, 1999; DDS, 1973, University of Oslo (Norway), PhD, 1999, University of Bergen (Norway)

SMITH, TIMOTHY A, Affiliate Professor, 1993; MA, 1961, University of North Carolina, PhD, 1963, University of North Carolina

SMITH, WILLIAM F, Affiliate Assistant Professor, 1993; DMD, 1972, University of Pennsylvania, MSC, 1975, University of Manitoba (Canada), MBA, 1987, University of Saskatchewan (Canada)

TUISUVA, JONACANI, Affiliate Assistant Professor, 2002; DDS, 1980, Fiji School of Medicine

WEINSTEIN, PHILIP \* Professor, 1971; MA, 1968, University of Kentucky, PhD, 1971, University of Kentucky; dental behavioral science, treatment and prevention of fear and pain, clinical assessment

WELLS, NORMA J., Associate Professor, 1960; RDH, 1958, University of Washington, MPH, 1966, University of California (Los Angeles)

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## Endodontics

ALIBHAI, KARIM Z., Affiliate Assistant Professor, 2002; DMD, 1994, Tufts University

AMINIAM, MARYAM, Affiliate Assistant Professor, 1992; DDS, 1992, University of Washington

BACKMAN, CHARLES A., Affiliate Associate Professor, 1982; DDS, 1982, University of Michigan, MSD, 1985, University of Washington

BAERG, STEVEN D, Affiliate Assistant Professor, 2000; DMD, 1996, Tufts University

BELL, JOHN A, Affiliate Associate Professor, 1952; DDS, 1952, University of Washington

BEPPU, KENJI G., Affiliate Assistant Professor, 2007; DDS, 1999, University of Washington, MSD, 2005, University of Washington



BERGER, REBECCA L., Affiliate Professor, 1981; DMD, 1976, University of Pennsylvania, MSD, 1981, University of Washington

BOGAERT, RAYMOND, Affiliate Associate Professor, 1988; DMD, 1988, University of Louisville

BRANDAL, JEANETTE L., Affiliate Associate Professor, 1985; DDS, 1982, University of Washington, MSD, 1985, University of Washington

BULL, ROGER J., Affiliate Associate Professor, 1993; DDS, 1991, University of California (San Francisco)

BURNETT, DEAN A., Affiliate Associate Professor, 1992; DDS, 1990, Northwestern University, MS, 1992, Northwestern University

CHOI, KEVIN Y., Affiliate Assistant Professor, 1998; DMD, 1993, Harvard University

COHEN, RACHELLE, Affiliate Assistant Professor, 2007; DMD, 2001, University of Connecticut, MSD, 2004, University of Washington

DAVIDSON, THOMAS G., Affiliate Associate Professor, 1975; DDS, 1963, University of Washington

ETEMAD-MOGHADAM, ALI, Affiliate Associate Professor, 1997; DDS, 1991, University of Washington, MS, 1995, University of Michigan

FLAKE, NATASHA M., Assistant Professor, 2007; DDS, 2005, University of Maryland, PhD, 2005, University of Maryland, MSD, 2007, University of Washington

FREEMAN, MARK A., Affiliate Associate Professor, 1980; DDS, 1980, Ohio State University, MSD, 1993, University of Washington

GABEL, WILLIS P., Affiliate Assistant Professor, 1999; DDS, 1989, University of Washington, MS, 1998, University of Detroit Mercy

GHARAI, SAMAN, Affiliate Assistant Professor, 2008; DDS, 1994, University of California (Los Angeles), MS, 2003, George Washington University

GUILD, ROBERT E., Professor Emeritus, 1951; PhD, 1955, University of Washington

HARBERT, HENRY L., Affiliate Associate Professor, 1972; DMD, 1967, University of Oregon

HARRINGTON, GERALD W., Professor Emeritus, 1969; DDS, 1959, St Louis

University, MSD, 1969, University of Washington

HERTL, NORBERT, Affiliate Associate Professor, 1981; DDS, 1973, Ohio State University, MDS, 1979, University of Washington

HOEPFINGER, LELAND J., Affiliate Associate Professor, 1974; DDS, 1969, University of Nebraska, campus unspecified, MSD, 1974, University of Washington

JOHNSON, JAMES D. \* Clinical Associate Professor, 2003; DDS, 1969, Northwestern University, MS, 1985, Northwestern University; Surgical and nonsurgical endodontics, pulpal/periradicular biology and pathology, instrumentation

KIM, A EDWARD, Affiliate Assistant Professor, 1978; DDS, 1978, Georgetown University

KOBATA, DENNIS H., Affiliate Professor, 1973; DDS, 1969, University of Southern California, MSD, 1973, University of Washington

KURITANI, RONALD H., Affiliate Assistant Professor, 1993; DDS, 1991, University of Maryland

LIN, KRISTINE J. YOON, Affiliate Assistant Professor, 1998; DDS, 1996, University of North Carolina, MS, 1998, Northwestern University, MS, 2001, University of Washington

LOVDAHL, PAUL E., Affiliate Professor, 1998; DDS, 1970, Marquette University, MSD, 1976, University of Washington

MANDEL, MATTHEW A., Affiliate Assistant Professor, 2002; DMD, 1968, University of Pennsylvania

MC CANN, GERALD F., Affiliate Associate Professor, 1976; DDS, 1974, University of Washington, MSD, 1976, University of Washington

MC GRAW, JAMES C., Affiliate Professor, 1969; DDS, 1966, Western Reserve

MUNSON, BOYD F., Affiliate Assistant Professor, 1991; DMD, 1986, Oregon Health Sciences University

MYERS, GARRY L., Affiliate Assistant Professor, 2007; DDS, 1985, University of Texas (San Antonio)

NATKIN, EUGENE, Professor Emeritus, 1962; DDS, 1957, New York University, MSD, 1962, University of Washington

ODELL, LYNNETTA J., Affiliate Assistant Professor, 2001; DMD, 1990, Oregon Health Sciences University

OSWALD, ROBERT J., Affiliate Professor, 1974; DDS, 1969, Medical College of Virginia

OVIIR, TIINA, Affiliate Associate Professor, 1999; DDS, 1986, University of Tartu (Estonia)

PATTEN, SIDNEY R., Affiliate Associate Professor, 1972; DDS, 1970, University of Washington, MSD, 1977, University of Washington

PILOT, THEODORE F., Affiliate Associate Professor, 1995; DDS, 1993, University of Washington, MSD, 1995, University of Washington

PITTS, DAVID LEROY \* Associate Professor, 1977; DDS, 1972, Indiana University, MSD, 1977, University of Washington; endodontics

PRATTEN, DON H., Affiliate Associate Professor, 1979; DMD, 1977, Southern Illinois University, MS, 1987, University of Maryland

RUDE, TOM J., Affiliate Associate Professor, 1994; DDS, 1994, University of Washington

SAMYN, JEFFREY A., Affiliate Assistant Professor, 1995; DDS, 1992, University of Illinois, MSD, 1994, University of Washington

SHORT, JEFFREY A., Affiliate Associate Professor, 1996; DDS, 1980, University of Washington

STEINER, DAVID R., Affiliate Professor, 1974; DDS, 1970, University of Washington, MSD, 1974, University of Washington

STEINER, JAMES C. \* Clinical Professor, 1966; DDS, 1956, Case Western Reserve University, MSD, 1966, University of Washington; normal sensory mechanisms of human dental pulp and pathologic alterations causing pain

SWIFT, MAUREEN L., Affiliate Assistant Professor, 1991; DDS, 1989, University of Iowa, MSD, 1991, University of Washington

TAYLOR, PATRICK E., Affiliate Associate Professor, 1998; MS, 1988, University of Washington

WEST, JOHN D., Affiliate Associate Professor, 1991; DDS, 1971, University of Washington, MSD, 1975, Boston University

WYNNE, RYAN W., Affiliate Assistant Professor, 2005; DDS, 2001, University of Washington

## Oral and Maxillofacial Surgery

ALCALDE, RAFAEL, Affiliate Assistant Professor, 1998; DDS, 1990, Central University (Venezuela)

ALEXANDER, ROBERT W., Affiliate Associate Professor, 2001; DMD, 1968, St. Louis University, MD, 1974, University of Florida

ASSAEL, LEON A, Affiliate Professor, 2005; DMD, 1975, Harvard University

AUDIA, FRANCO, Affiliate Assistant Professor, 2002; DDS, 1997, Loma Linda University, MS, 2001, Loma Linda University

BEIRNE, OWEN ROSS \* Professor, 1985; DMD, 1972, Harvard University, PhD, 1976, University of California (San Francisco); Basic and Clinical Biology of Bone Tissue Reconstruction, bone alloplasts, and anesthesia

BELL, RICHARD BRYAN, Affiliate Assistant Professor, 2005; DDS, 1995, Creighton University, MD, 1997, University of North Carolina

BROUNS, JOHN J.A., Affiliate Associate Professor, 2000; DDS, 1977, University of Nijmegen, MD, 1984, Utrecht University, PhD, 1992, University of Nijmegen

CHENEY, DANIEL, Affiliate Assistant Professor, 1969; DDS, 1961, Ohio State University

CRINZI, RICHARD A, Affiliate Assistant Professor, 1981; DDS, 1972, University of Washington, MS, 1977, University of Chicago

DIERKS, ERIC JACKSON, Affiliate Professor, 2005; DMD, 1974, University of Louisville, MD, 1979, University of Louisville

EGBERT, MARK A, Associate Professor, 1982; DDS, 1981, University of Washington

GALLIA, LOUIS J., Affiliate Assistant Professor, 1976; DMD, 1973, University of Pittsburgh, MS, 1973, University of Pittsburgh, MD, 1976, University of Washington

GEHRIG, JOHN D, Professor Emeritus, 1954; DDS, 1946, University of Minnesota, MSD, 1951, University of Minnesota

GUTTU, RONALD L, Affiliate Assistant Professor, 1978; DDS, 1976, University of Washington, MSD, 1981, University of Washington

HART, BRIAN T., Affiliate Assistant Professor, 1996; DDS, 1987, Georgetown University

HOHL, THOMAS H, Affiliate Associate Professor, 1971; DDS, 1971, Loyola University (Chicago)

ISDITH, KATHLEEN, Affiliate Assistant Professor, 1997; DDS, 1993, New York University

JONOV, CRAIG R., Affiliate Assistant Professor, 2002; DMD, 1990, University of Pittsburgh, MD, 1994, Medical College of Pennsylvania

KINNEY, LISA A, Associate Professor, 1996; DDS, 1982, Case Western Reserve University

KIYAK, H ASUMAN \* Professor, 1977; MA, 1974, Wayne State University, PhD, 1977, Wayne State University; geriatric dentistry, behavioral aspects of health care

LEBEDA, RICHARD R., Affiliate Assistant Professor, 2002; MD, 1992, University of Zurich (Switzerland)

LEONARD, GOARIK GALIA, Affiliate Assistant Professor, 1994; DDS, 1984, Yerevan Zoo-Veterinary Inst (Armenia), MD, 1984, Yerevan Zoo-Veterinary Inst (Armenia), PhD, 1990, Moscow Medical Academy (Russia)

MYALL, ROBERT W., Affiliate Professor, 1977; MD, 1975, University of British Columbia (Canada)

ODA, DOLPHINE \* Professor, 1985; MSC, 1980, University of Manitoba (Canada); Chemical and viral carcinogenesis and genetic alteration of oral cancer. In vitro oral and gastrointestinal cancer models

PAXTON, MARK C., Affiliate Assistant Professor, 2002; DDS, 1980, University of Washington

POTTER, BRYCE EARL, Affiliate Professor, 2005; DMD, 1967, Oregon Health Sciences University, MD, 1975, University of Washington

REED, JAMES E., Affiliate Assistant Professor, 2001; DDS, 1962, University of Texas (unspecified), MD, 1994, University of Cincinnati

STOELINGA, PAUL J. W., Affiliate Professor, 1972; DDS, 1964, Utrecht University, MSD, 1971, Catholic University of Nijmegen, MD, 1977, Utrecht University

TIDWELL, JOHN KENNETH, Affiliate Assistant Professor, 1988; DDS, 1988, University of California (Los Angeles)

TRIPPEL, DOUGLAS L., Affiliate Assistant Professor, 1983; DDS, 1980, University of Washington

VORONO, ANDREW ANTHONY, Affiliate Associate Professor, 2002; DDS, 1979, University of Southern California

WALTER, CHARLES H, Affiliate Assistant Professor, 1994; DDS, 1978, University of Iowa

WEST, ROGER A., Affiliate Professor, 1972; DMD, 1968, University of Oregon

WHELAN, MICHAEL F., Affiliate Assistant Professor, 1998; DDS, 1988, University of California (Los Angeles), MD, 1992, St. Louis University

WORTHINGTON, PHILIP, Professor Emeritus, 1974; MBChB, 1956, University of Liverpool (UK)

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## Oral Biology

BORDIN, SANDRA \* Adjunct Research Professor, 1973; PhD, 1966, University of Ferrara (Italy); regulation of connective tissue repair by immune-inflammatory complement components

BYERS, PETER H \* Adjunct Professor, 1974; MD, 1969, Case Western Reserve University; extracellular matrix synthesis, genetic disorders of collagen metabolism, secretion, human genetics, splicing

CHUNG, WHASUN O. \* Research Assistant Professor, 1999; MA, 1989, Maranatha Baptist College, PhD, 1999, University of Washington; Oral microbiology, Antimicrobial peptides, Host-microbial interactions

COX, TIMOTHY C. \* Adjunct Research Assoc Professor, 2006; PhD, 1994, University of Adelaide (Australia); craniofacial development and dysmorphology, mouse and chick model systems, molecular genetics, cell and developmental biology, primary epithelia

CUNNINGHAM, MICHAEL L. \* Adjunct Associate Professor, 1988; MD, 1988, University of Vermont, PhD, 1996, University of Washington; Molecular, Development, Craniofacial, Malformation, Human, Mouse, Craniosynostosis, Birth Defects

DALE-CRUNK, BEVERLY \* Professor Emeritus, 1968; PhD, 1968, University of Michigan; keratin biochemistry, epithelial differentiation, antimicrobial peptides

DARVEAU, RICHARD P. \* Professor, 1989; MS, 1977, Northern Illinois University, PhD,

1981, Washington State University; Innate host defense interactions between bacteria and their hosts

DOMMISCH, HENRIK, Affiliate Assistant Professor, 2006; DDS, 2002, University of Kiel (Germany), DMD, 2004, University of Kiel (Germany)

EYRE, DAVID R. \* Adjunct Professor, 1985; PhD, 1969, University of Leeds (UK); connective tissue biology, collagen chemistry, bone and cartilage metabolism

FOLCH, ALBERT \* Adjunct Associate Professor, 2000; PhD, 1994, University of Barcelona (Spain); Research in microfabricated systems for in-vitro cell biology and biotechnology

GEURTSSEN, WERNER K. \* Affiliate Professor, 2002; DDS, 1978, University of Mainz (Germany), DMD, 1979, University of Mainz (Germany), PhD, 1986, University of Mainz (Germany); Chemical-biological interactions of resin-modified and metallic restorative materials

GIACHELLI, CECILIA \* Adjunct Professor, 1988; PhD, 1987, University of Washington; adhesion molecules and vascular biology processes

GORDON, HERBERT P, Affiliate Associate Professor, 1966; DDS, 1954, University of Pittsburgh

HERRING, SUSAN W. \* Professor, 1990; PhD, 1971, University of Chicago; vertebrate functional morphology, relations between muscular function and skull growth

IZUTSU, KENNETH \* Professor, 1970; PhD, 1970, University of Washington; salivary gland physiology and pathophysiology

KING, GREGORY J. \* Adjunct Professor, 1996; DMD, 1969, Tufts University, MDentSci, 1976, Harvard University; bone remodeling, bone cells, mineral metabolism, bone paracrine/endocrine mechanisms

LE RESCHE, LINDAA \* Adjunct Professor, 1983; DSc, 1977, Johns Hopkins University; Epidemiology of pain, specifically gender and pain; nonverbal behavior (facial expression) related to pain; clinician-patient interaction and clinical decision making regarding pain

LI, XINGDE \* Adjunct Associate Professor, 2001; PhD, 1998, University of Pennsylvania; Biomedical optical imaging, spectroscopy and biophotonics

LUKEHART, SHEILAA \* Adjunct Professor, 1979; PhD, 1978, University of California (Los Angeles); Immunology of infectious

diseases; microbiology; sexually transmitted diseases

MORTON, THOMAS H \* Professor, 1975; DDS, 1972, Creighton University, MSD, 1975, University of Washington; oral pathology, oral medicine

NARAYANAN, A SAMPATH \* Adjunct Professor, 1971; MSC, 1963, University of Madras (India), PhD, 1967, University of Madras (India); Pathology, Periodontal diseases

POPOWICS, TRACY \* Associate Professor, 1997; PhD, 1997, Brown University; Functional morphology of mineralized tissues

PRESLAND, RICHARD B \* Associate Professor, 1989; MSC, 1982, University of Otago (New Zealand), PhD, 1987, University of Adelaide (Australia); Molecular biology and genetics of epidermal differentiation and epithelial disorders

RAMSAY, DOUGLAS S \* Adjunct Professor, 1985; DMD, 1983, University of Pennsylvania, PhD, 1988, University of Washington, MSW, 1990, University of Washington; behavioral medicine/dentistry, physiological psychology, orthodontics, pediatric dentistry

ROBERTS, FRANK A. \* Adjunct Associate Professor, 1996; DDS, 1990, University of Tennessee, PhD, 1996, University of Alabama; Periodontics

ROSE, TIMOTHY M \* Adjunct Professor, 1991; PhD, 1981, University of Geneva (Switzerland); molecular biology of tumor viruses, cell growth, differentiation, and transformation

SAMUDRALA, VAIKUNTANATH V \* Adjunct Associate Professor, 2001; PhD, 1997, University of Maryland; Modeling the structure and function of whole genomes

SOMERMAN, MARTHA J \* Adjunct Professor, 2002; MS, 1972, Hunter College, DDS, 1975, New York University, PhD, 1980, University of Rochester; Identifying genes/proteins modulating mineralization in vitro and in vivo

SREEBNY, LEO M, Affiliate Professor, 1957; DDS, 1945, University of Illinois, MS, 1950, University of Illinois, PhD, 1954, University of Illinois

STAYTON, PATRICK \* Adjunct Professor, 1992; PhD, 1989, University of Illinois, MS, 1989, University of Illinois; engineering proteins for biotechnology, biomaterials, and biomedical therapies/diagnostics

STERN, IRVING B, Affiliate Professor, 1959; DDS, 1946, New York University

VICINI, PAOLO \* Adjunct Associate Professor, 1996; PhD, 1996, Polytechnic of Milan (Italy); Computational, mathematical, and statistical approaches to the analysis of biological systems. Maximum likelihood and least squares parameter estimation for biomedical models. Pharmacokinetics and pharmacodynamics. Use of models to test hypotheses

VIEIRA, JEFFERY \* Adjunct Research Asst Professor, 2002; PhD, 1988, University of Minnesota; KSHV molecular biology, lytic activation, and tissue models for viral biology

WATAHA, JOHN C., Adjunct Professor, 2008; DMD, 1982, Oregon Health Sciences University, PhD, 1992, University of Michigan, Ann Arbor

WATSON, EILEEN L \* Professor, 1970; PhD, 1970, University of Utah; salivary gland pharmacology and regulation

WELLS, NORMA J., Adjunct Associate Professor, 1960; RDH, 1958, University of Washington, MPH, 1966, University of California (Los Angeles)

YAGER, PAUL \* Adjunct Professor, 1987; PhD, 1980, University of Oregon; physical chemistry, applications of biomembranes, biosensors, microfluidics, biomedical diagnostic instrumentation

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## Oral Medicine

CARLSON, ROY W, Affiliate Assistant Professor, 1993; DDS, 1970, University of Maryland

CHASTEEN, JOSEPH E, Associate Professor Emeritus, 1989; DDS, 1967, University of Michigan, MA, 1976, University of Michigan

CHEN, SSU-KUANG \* Professor, 1993; DDS, 1986, National Taiwan University, MSD, 1989, University of Washington, PhD, 1993, University of Washington; Oral Radiology

DRANGSHOLT, MARK T. \* Assistant Professor, 1985; DDS, 1984, University of Washington; Orofacial Pain

DWORKIN, SAMUEL F, Professor Emeritus, 1974; DDS, 1958, New York University, PhD, 1969, New York University

GOVIN, GLENN M., Lecturer, 1999; DDS, 1985, University of Texas (San Antonio), MPH, 1992, University of Texas (Houston)

HOLLENDER, LARS GOSTA, Professor Emeritus, 1984; DDS, 1958, University of

Lund (Sweden), Other -Foreign, 1964, University of Lund (Sweden)

IZUTSU, KENNETH \* Professor, 1970; PhD, 1970, University of Washington; salivary gland physiology and pathophysiology

KANAL, KALPANA M., Adjunct Assistant Professor, 2003; MS, 1991, University of Texas (unspecified), PhD, 1996, University of Texas (unspecified)

LE RESCHE, LINDAA \* Professor, 1983; DSc, 1977, Johns Hopkins University; Epidemiology of pain, specifically gender and pain; nonverbal behavior (facial expression) related to pain; clinician-patient interaction and clinical decision making regarding pain

MARTIN, MICHAEL D. \* Associate Professor, 1986; DMD, 1979, University of Kentucky, MPH, 1989, University of Washington, PhD, 1993, University of Washington, MSD, 1994, University of Washington; dental education in oral health care of persons with disability

MIDDAUGH, DAN, Professor Emeritus, 1967; DDS, 1961, University of Minnesota, MPH, 1972, University of Washington

MORTON, THOMAS H \* Professor, 1975; DDS, 1972, Creighton University, MSD, 1975, University of Washington; oral pathology, oral medicine

OMNELL, KARL-AKE, Professor Emeritus, 1981; DDS, 1950, Royal Dental School (Sweden), OD, 1957, University of Lund (Sweden)

PERSSON, GOSTARUTGER \* Adjunct Research Professor, 1985; DDS, 1967, University of Lund (Sweden), PhD, 1978, University of Lund (Sweden); diagnosis of periodontal diseases and the consecutive process of clinical decision making

SCHUBERT, MARK M \* Professor, 1974; DDS, 1974, University of Washington, MSD, 1981, University of Washington; oral medicine/oral oncology

SOMMERS, EARLE \* Clinical Associate Professor, 1972; DDS, 1971, Indiana University; diagnosis/management of orofacial pain, stomatitis, salivary gland disorders and dental management of sleep disorders

TRUELOVE, EDMOND L \* Professor, 1972; DDS, 1967, Indiana University, MSD, 1971, Indiana University; oral medicine, orofacial pain, stomatitis, and salivary gland disorders

WANG, I-CHUNG \* Adjunct Associate Professor, 2002; DDS, 1985, Chung Shan Medical University (Taiwan), MPH, 1992,

University of Alabama; Periodontal treatment modality; periodontal infection and systemic disease; dental implant

WANG, I-CHUNG \* Adjunct Associate Professor, 2002; MS, 1995, University of Alabama; Periodontal treatment modality; periodontal infection and systemic disease; dental implant

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## Orthodontics

BAKER, IRENA M., Affiliate Associate Professor, 1994; DDS, 1981, University of Zagreb (Yugoslavia)

BOLLEN, ANNE-MARIE \* Professor, 1990; DDS, 1984, University of Brussels (Belgium), MSD, 1986, University of Michigan, PhD, 1990, University of Michigan; Bone metabolism, skeletal growth and development

BROT, MICHELLE D, Affiliate Assistant Professor, 1997; PhD, 1992, University of Washington

BUNCE, JACQUELINE E., Affiliate Assistant Professor, 1995; DDS, 1995, University of Washington

CAMERON, DOUGLAS S., Affiliate Associate Professor, 2000; DDS, 1965, University of Washington, MSD, 1971, University of Washington

COHANIM, B. ROBERT, Affiliate Assistant Professor, 1996; DDS, 1988, University of California (Los Angeles), MS, 1991, University of California (Los Angeles)

CROUCH, DAVID L, Affiliate Professor, 1979; DDS, 1978, University of Washington, MSD, 1984, University of Washington

DECKER, JAY D, Affiliate Associate Professor, 1964; DDS, 1960, University of Washington, MSD, 1964, University of Washington

DENNY, JOHN M, Affiliate Assistant Professor, 2004; DDS, 1974, University of Washington, MS, 1987, Temple University

DRANGSHOLT, ROSS J, Affiliate Assistant Professor, 1992; DDS, 1992, University of Washington, MSD, 1997, University of Washington

FEY, MICHAEL R, Affiliate Associate Professor, 1977; DDS, 1975, University of Washington, MSD, 1978, University of Washington

GREY, KRISTINA A., Affiliate Assistant Professor, 2004; DDS, 1996, University of The Pacific, MS, 1998, University of Washington

GUNSOLUS, ROY M, Affiliate Professor, 1985; DDS, 1969, University of Washington

HAIRFIELD, W. MICHAEL, Affiliate Associate Professor, 1995; DDS, 1980, University of Washington, MS, 1987, University of North Carolina, MSD, 1992, University of Washington

HALL, STANTON H, Affiliate Professor, 1974; DDS, 1967, Northwestern University, MS, 1967, Northwestern University, PhD, 1974, University of Washington

HERRING, SUSAN W. \* Professor, 1990; PhD, 1971, University of Chicago; vertebrate functional morphology, relations between muscular function and skull growth

HUANG, GREG J. \* Associate Professor, 1989; DMD, 1987, University of Florida, MSD, 1989, University of Washington; Orthodontic outcomes, epidemiology, openbite, and TMD

IVE, JOHN C, Affiliate Professor, 1979; DDS, 1977, University of Washington, MSD, 1979, University of Washington

JOONDEPH, DONALD R \* Associate Professor Emeritus, 1969; DDS, 1967, Northwestern University, MS, 1969, Northwestern University; orthodontics

KING, GREGORY J. \* Professor, 1996; DMD, 1969, Tufts University, MDentSci, 1976, Harvard University; bone remodeling, bone cells, mineral metabolism, bone paracrine/endocrine mechanisms

KNIGHT, DOUGLAS J., Affiliate Assistant Professor, 1991; DDS, 1990, University of Washington

KOKICH, VINCENT G \* Affiliate Professor, 1974; DDS, 1971, University of Washington, MSD, 1974, University of Washington; orthodontics: craniofacial growth and development, sutural morphogenesis, premature sutural fusion

KOKICH, VINCENT O., Affiliate Assistant Professor, 1996; DMD, 1996, Tufts University

KOUDELA, CYNTHIA L., Affiliate Assistant Professor, 2007; DDS, 1984, University of California (Los Angeles), MSD, 1986, University of Washington

LITTLE, ROBERT M, Professor Emeritus, 1969; DDS, 1966, Northwestern University, MSD, 1970, University of Washington, PhD, 1974, University of Washington

MOFFETT, BENJAMIN C, Professor Emeritus, 1964; PhD, 1952, New York University

MOORE, JOHN W, Affiliate Professor, 1975; DDS, 1974, University of Washington, MSD, 1979, University of Washington

OGATA, RANDALL H., Affiliate Assistant Professor, 2003; DDS, 1991, University of Nebraska, campus unspecified, MS, 1994, University of Oklahoma

OMNELL, LENA M, Affiliate Professor, 1981; DDS, 1965, University of Lund (Sweden)

PETTIS, GAIL Y, Affiliate Assistant Professor, 1999; DDS, 1983, Meharry Medical College, MDS, 1987, Harvard University

RAFFERTY, KATHERINE L., Assistant Professor, 1997; MA, 1990, New York University, PhD, 1996, Johns Hopkins University

RAMSAY, DOUGLAS S \* Professor, 1985; DMD, 1983, University of Pennsylvania, PhD, 1988, University of Washington, MSW, 1990, University of Washington; behavioral medicine/dentistry, physiological psychology, orthodontics, pediatric dentistry

SHAPIRO, PETER A \* Clinical Professor, Salaried, 1973; DDS, 1970, Howard University, MSD, 1973, University of Washington; craniofacial biology, long-term evaluation of orthodontic treatment

SHELLER, BARBARA L \* Affiliate Professor, 1981; DDS, 1981, University of Washington

SINHA, PRAMOD, Affiliate Professor, 2006; MS, 1991, Marquette University, DDS, 1995, University of Oklahoma

SMALLEY, WARD M., Affiliate Professor, 1977; DDS, 1497, University of Washington, MSD, 1984, University of Washington, MSD, 1986, University of Washington

TAYLOR, DANIEL M., Affiliate Associate Professor, 1982; DDS, 1978, University of Southern California, MSD, 1980, University of Washington

TURPIN, DAVID L, Affiliate Professor, 1970; DDS, 1962, University of Iowa, MSD, 1966, University of Washington

VAN NESS, ALLAN L, Affiliate Associate Professor, 1973; DDS, 1966, University of Washington

VAUGHN, GREGORY A., Affiliate Assistant Professor, 2004; DDS, 1999, University of The Pacific

WALLEN, TERRY R, Affiliate Professor, 1974; DDS, 1972, University of Washington, MSD, 1974, University of Kentucky

WILLIAMS, BRYAN J., Affiliate Professor, 1978; DDS, 1974, University of Western Ontario (Canada), MSD, 1979, University of Washington, MEd, 1979, University of Washington

WOLOSHYN, HEATHER A., Affiliate Assistant Professor, 1986; DMD, 1986, University of Saskatchewan (Canada), MSD, 1993, University of Washington

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## Pediatric Dentistry

ATHERTON, DAVID R, Affiliate Assistant Professor, 1989; DDS, 1981, University of Washington

BERG, JOEL H. \* Professor, 2001; DDS, 1983, University of Iowa, MS, 1985, University of Iowa; Technologies in dental caries diagnosis and risk assessment in children

CHANG, YUSHAN S, Affiliate Assistant Professor, 2006; DDS, 2000, Taipei Medical University (Taiwan)

CHIGURUPATI, KAVITA, Affiliate Assistant Professor, 2000; MSD, 2001, University of Washington

CROLL, THEODORE P., Affiliate Professor, 2004; DDS, 1973, Temple University

CUNNINGHAM, MICHAEL L. \* Adjunct Associate Professor, 1988; MD, 1988, University of Vermont, PhD, 1996, University of Washington; Molecular, Development, Craniofacial, Malformation, Human, Mouse, Craniosynostosis, Birth Defects

DAVIS, JOHN M, Associate Professor Emeritus, 1966; DDS, 1961, University of Washington, MSD, 1967, University of Washington

DELECKI, CHRISTOPHER, Affiliate Assistant Professor, 1999; DDS, 1977, University of Michigan, MBA, 1984, City University, MPH, 1992, University of Michigan

DOMOTO, PETER K, Professor Emeritus, 1968; DDS, 1964, University of California (San Francisco), MPH, 1975, University of Washington

FEIGAL, ROBERT, Affiliate Professor, 2007; DDS, 1971, University of Minnesota, PhD, 1979, University of Minnesota

GRAHAM, ELINOR A., Adjunct Associate Professor, 1982; MD, 1970, University of Rochester, MPH, 1993, Johns Hopkins University

KAAKKO, TARJA T.H., Affiliate Assistant Professor, 1996; DDS, 1986, University of Kuopio (Finland)

KELLY, JOSEPH P., Affiliate Assistant Professor, 2003; DDS, 1993, Creighton University

KIM, SARA \* Adjunct Associate Professor, 1999; MA, 1990, George Washington University, PhD, 1999, University of Washington; Evaluation, assessment of educational technology and faculty development

LE, MAI T.H., Affiliate Assistant Professor, 2005; DDS, 1997, University of Washington, MSD, 2007, University of Washington

LEGGOTT, PENELOPE J \* Professor, 1993; MSC, 1980, University of Illinois; pediatric dentistry

LEWIS, CHARLOTTE W \* Adjunct Associate Professor, 1998; MNS, 1989, Cornell University, MD, 1994, University of California (San Francisco)

LUEDEMANN, AMY L., Affiliate Assistant Professor, 2005; DDS, 2005, University of Texas (Houston)

MANCL, LLOYD A. \* Adjunct Research Assoc Professor, 1992; MS, 1988, University of Washington, PhD, 1992, University of Washington; statistical methodology in periodontal disease and TMD research

MILGROM, PETER M \* Adjunct Professor, 1974; DDS, 1972, University of California (San Francisco); management of fearful and phobic dental patients, quality of dental care

MOURADIAN, WENDY ELYSE \* Professor, 1977; MS, 1973, Massachusetts Institute of Technology, MD, 1977, Columbia University; oral health in MCH population, quality of life, ethics

OSKOUIAN, RAMA, Affiliate Assistant Professor, 2003; DMD, 2000, University of Pennsylvania

PETERSON, DEVEREAUX \* Associate Professor, 1982; DMD, 1975, University of Pittsburgh, MEd, 1975, University of Pittsburgh, MSD, 1977, University of Pittsburgh, PhD, 1980, University of Pittsburgh; pedodontics, educational administration, and dental treatment for medically compromised patients

PETERSON, DEVEREAUX \* Associate Professor, 1982; PhD, 1980, University of Pittsburgh; pedodontics, educational administration, and dental treatment for medically compromised patients

POLSKY, ELLEN B., Affiliate Assistant Professor, 2008; DDS, 2003, Howard University

RAMSAY, DOUGLAS S \* Professor, 1985; DMD, 1983, University of Pennsylvania, PhD, 1988, University of Washington, MSW, 1990, University of Washington; behavioral medicine/dentistry, physiological psychology, orthodontics, pediatric dentistry

RIEDY, CHRISTINE A \* Adjunct Research Asst Professor, 1997; MS, 1995, University of Washington, PhD, 1997, University of Washington, MPH, 2002, University of Washington; Children's oral health - cultural diversity, dietary influences; symptom self-report in children

RIVARA, FREDERICK P. \* Adjunct Professor, 1978; MD, 1974, University of Pennsylvania, MPH, 1980, University of Washington; pediatric epidemiology and injury prevention and research

ROBERTS, MARILYN C \* Adjunct Professor, 1981; MS, 1977, University of Washington, PhD, 1978, University of Washington; antibiotic resistance genes, plasmids, sexually transmitted diseases, oral microbiology, heavy metal resistance in bacteria, mycobacterium, respiratory disease

ROBINS, LYNNE S \* Adjunct Associate Professor, 1999; PhD, 1990, University of Michigan; Patient communication, interprofessional communication, patient safety, faculty development, program evaluation, and cultural competence

SCHAAD, DOUGLAS C. \* Adjunct Associate Professor, 1981; MEd, 1974, University of Washington, PhD, 1986, University of Washington; Medical Education and Evaluation; Educational Assessment; Salmonid Recovery; Riparian Restoration

SHELLER, BARBARA L \* Affiliate Professor, 1981; DDS, 1981, University of Washington

THOMAS, JAMES M, Affiliate Assistant Professor, 2007; DDS, 2003, University of Michigan, MS, 2005, University of Michigan

TRAFICANTE, FRANK ROBERT, Affiliate Assistant Professor, 2007; DDS, 1984, University of Texas (Houston)

WEINSTEIN, PHILIP \* Adjunct Professor, 1971; MA, 1968, University of Kentucky, PhD, 1971, University of Kentucky; dental behavioral science, treatment and prevention of fear and pain, clinical assessment

WILLIAMS, BRYAN J., Affiliate Professor, 1978; DDS, 1974, University of Western

Ontario (Canada), MSD, 1979, University of Washington, MEd, 1979, University of Washington

WRIGHT, JEFFREY A., Adjunct Associate Professor, 1988; MD, 1978, University of Missouri (Kansas City)

YEA, YOO-LEE, Affiliate Assistant Professor, 2003; DDS, 2003, University of Michigan

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## Periodontics

AGNOS, PETER D., Affiliate Assistant Professor, 1976; DDS, 1973, University of Illinois

ANDEREGG, CHARLES R, Affiliate Assistant Professor, 1993; DDS, 1982, West Virginia University

BECKER, WILLIAM, Affiliate Professor, 1994; DDS, 1961, Marquette University, MSD, 1966, Baylor College of Medicine

BEIKLER, THOMAS, Associate Professor, 2006; MD, 1995, Ludwig-Maximilians University (Germany), DDS, 1999, Julius Maximilians University (Germany), PhD, 2004, Westfalian-Wilhelms-University, Germany

BORDIN, SANDRA \* Research Professor, 1973; PhD, 1966, University of Ferrara (Italy); regulation of connective tissue repair by immune-inflammatory complement components

BRADWAY, STEVE D., Affiliate Assistant Professor, 2000; DDS, 1981, University of Washington, PhD, 1991, State University of New York (Buffalo)

CHEN, CHIH-KUANG CASEY, Affiliate Associate Professor, 2005; DDS, 1980, National Taiwan University, PhD, 1990, State University of New York (Buffalo), DDS, 1992, Loma Linda University

COHEN, MICHAEL, Affiliate Assistant Professor, 2007; DDS, 1974, McGill University (Canada)

DARVEAU, RICHARD P. \* Professor, 1989; MS, 1977, Northern Illinois University, PhD, 1981, Washington State University; Innate host defense interactions between bacteria and their hosts

DIXON, DOUGLAS, Affiliate Assistant Professor, 2005; DMD, 1993, University of Pittsburgh, MSD, 2001, University of Washington, PhD, 2005, University of Washington

ENGEL, L DAVID, Affiliate Professor, 1972; DDS, 1967, University of Minnesota, MS,

1969, University of Washington, PhD, 1976, University of Washington

FLEMMIG, THOMAS F. \* Professor, 2005; DMD, 1985, Albert Ludwig Universitat (Germany), PhD, 1992, Julius Maximilians University (Germany), MBA, 2005, Duke University; Development of antimicrobial strategies for controlling oral biofilm infections

HUJOEL, PHILIPPE P \* Adjunct Professor, 1985; DDS, 1984, University of Brussels (Belgium), MSD, 1986, University of Washington, PhD, 1993, University of Washington; Epidemiology and randomized controlled trials in the dental research field

JANAKIEVSKI, JIM, Affiliate Assistant Professor, 2003; MS, 1991, University of Toronto (Canada), DDS, 1995, University of Toronto (Canada), MSD, 2004, University of Washington

JOHNSON, ROBERT H \* Professor Emeritus, 1981; DDS, 1962, McGill University (Canada), MSD, 1964, Indiana University; periodontics

KANTER, JEFFREY P., Affiliate Assistant Professor, 1994; DDS, 1985, Case Western Reserve University

LEE, KENNETH K. S., Affiliate Assistant Professor, 2004; DDS, 1966, McGill University (Canada)

MATHEWS, DAVID P., Affiliate Assistant Professor, 2005; DDS, 1969, University of California (Los Angeles)

MATSUMOTO, TOYOHICO, Affiliate Associate Professor, 1988; DDS, 1988, University of Missouri

MIZUHA, BYRON S., Affiliate Assistant Professor, 1977; DMD, 1971, University of Oregon, MSD, 1976, University of Washington

O'NEAL, ROBERT B. \* Associate Professor, 1995; DMD, 1971, University of South Carolina, MEd, 1974, Wayne State University, MS, 1977, Walter Reed Army Medical Center; The Repair and Regeneration of Dental Supporting Structures Utilizing Bio-engineering Principles

PAGE, ROY C, Professor Emeritus, 1964; DDS, 1957, University of Maryland, PhD, 1967, University of Washington

PERSSON, GOSTARUTGER \* Research Professor, 1985; DDS, 1967, University of Lund (Sweden), PhD, 1978, University of Lund (Sweden); diagnosis of periodontal diseases and the consecutive process of clinical decision making

RABIN, MARTIN A., Affiliate Assistant Professor, 2007; DMD, 1971, Tufts University

ROBERTS, FRANK A. \* Associate Professor, 1996; DDS, 1990, University of Tennessee, PhD, 1996, University of Alabama; Periodontics

ROBERTSON, PAUL B. \* Professor Emeritus, 1992; DDS, 1966, University of Texas (Houston), MS, 1972, University of Alabama; host-bacterial interactions in the etiology and pathogenesis of the periodontal diseases

ROBINOVITCH, MURRAY \* Professor Emeritus, 1962; DDS, 1961, University of Minnesota, PhD, 1967, University of Washington; salivary biochemistry and salivary anti-HIV activity

SCHULER, RALF F., Affiliate Assistant Professor, 2001; DDS, 1991, Friedrich Alexander University (Germany)

SELIPSKY, HERBERT, Affiliate Professor, 1972; HDD, 1967, University of Witwatersrand (S. Africa), MSD, 1973, University of Washington

SMITH, DENNIS H., Affiliate Professor, 1972; DDS, 1971, University of Southern California, MSD, 1975, University of Washington

SMITH, KIM W., Affiliate Associate Professor, 1992; DDS, 1986, Case Western Reserve University, MSD, 1988, Case Western Reserve University

SMITH-MACDONALD, ERIKA, Affiliate Assistant Professor, 2008; DDS, 1990, Universidad Tecnológica De Mexico, MS, 2000, University of Southern California

SOMERMAN, MARTHA J. \* Professor, 2002; MS, 1972, Hunter College, DDS, 1975, New York University, PhD, 1980, University of Rochester; Identifying genes/proteins modulating mineralization in vitro and in vivo

WANG, I-CHUNG \* Clinical Associate Professor, 2002; DDS, 1985, Chung Shan Medical University (Taiwan), MPH, 1992, University of Alabama, MS, 1995, University of Alabama; Periodontal treatment modality; periodontal infection and systemic disease; dental implant

ALBRIGHT, STEVEN J., Affiliate Professor, 1987; DDS, 1978, Marquette University

ALLEN, ROBERT D, Affiliate Assistant Professor, 1968; DDS, 1966, University of Washington

ANDERSON, HOWARD S, Affiliate Professor, 1954; DDS, 1951, University of Washington

AW, TAR C., Associate Professor, 1995; DDS, 1990, Northwestern University, MS, 1995, University of Michigan

BALES, DAVID J, Associate Professor Emeritus, 1983; DDS, 1957, University of Washington, MSD, 1972, Indiana University

BARRETT, ERNEST E, Affiliate Professor, 1971; DDS, 1969, University of Washington

BETHARDS, BILL, Affiliate Assistant Professor, 2001; DDS, 1976, University of Washington

BOLENDER, CHARLES L, Professor Emeritus, 1959; DDS, 1956, University of Iowa, MS, 1957, University of Iowa

BRUDVIK, JAMES S, Professor Emeritus, 1979; DDS, 1957, University of Minnesota

BUTSON, TIMOTHY J., Affiliate Associate Professor, 1994; DMD, 1982, University of Pennsylvania, MSD, 1992, University of Washington

CANFIELD, ROBERT C, Professor Emeritus, 1951; DDS, 1951, University of Washington

CARLSON, ROY W, Affiliate Assistant Professor, 1993; DDS, 1970, University of Maryland

CHANG, JASON H., Affiliate Assistant Professor, 2000; DDS, 1999, University of Detroit

CHITSWE, KINSEY, Affiliate Assistant Professor, 2004; MS, 1995, University of Illinois, DMD, 1998, University of Pennsylvania

CHUNG, KWOK-HUNG, Professor, 2006; DDS, 1979, National Defense Medical Center, MS, 1985, Northwestern University, PhD, 1987, Northwestern University

DAHL, RONALD D, Affiliate Professor, 1983; DDS, 1983, University of Washington

DAVIS, JOHN SULLIVAN, Affiliate Associate Professor, 1993; DDS, 1978, University of Washington

FAINE, MARY P, Associate Professor Emeritus, 1982; MS, 1975, University of Washington

FAN, PATRICE P., Affiliate Assistant Professor, 1998; DDS, 1988, Université de Paris VII, MS, 1992, University of Washington

FARRELL, CHARLES V., Affiliate Associate Professor, 1990; DMD, 1964, University of Oregon

FRANK, RICHARD P, Professor Emeritus, 1971; DDS, 1962, University of Iowa, MSD, 1968, University of Washington

GAMBORENA, JOSE IGNACIO, Affiliate Associate Professor, 2001; DDS, 1989, Odontologica Dominicana University, Dominican Republic, DMD, 1992, Autonomía de Nuevo León University, Mexico, MSD, 1996, University of Washington, FID, 1997, University of Texas

GEURTSEN, WERNER K. \* Affiliate Professor, 2002; DDS, 1978, University of Mainz (Germany), DMD, 1979, University of Mainz (Germany), PhD, 1986, University of Mainz (Germany); Chemical-biological interactions of resin-modified and metallic restorative materials

GROSS, ROBERT D, Affiliate Professor, 1967; DDS, 1954, University of Washington

HAMILTON, A IAN, Professor Emeritus, 1949; DDS, 1936, University of Toronto (Canada), MA, 1958, University of Washington, PhD, 1967, University of London, UK

HAMMOND, ROCKWELL JR., Affiliate Professor, 1985; DMD, 1979, University of Oregon

HANSON, GREGORY A., Affiliate Professor, 1976; DDS, 1970, University of Washington

HARPER, ROGER J, Affiliate Professor, 1977; DDS, 1975, Case Western Reserve University

HIGASHI, MICHAEL R., Affiliate Associate Professor, 1999; DDS, 1978, University of Washington

HUNGATE, WILLIAM P, Affiliate Professor, 1979; DDS, 1978, University of Washington

HUSSEY, GEORGE R., Affiliate Assistant Professor, 1969; DDS, 1969, University of Washington

ISQUITH, LOUIS, Affiliate Professor, 1972; DDS, 1969, University of Washington

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## Restorative Dentistry

ABOLOFIA, JEFF S, Affiliate Professor, 1976; DDS, 1975, University of Washington

- JOHNSON, CHRISTINE M., Affiliate Associate Professor, 1988; DDS, 1988, University of Washington
- JOHNSON, DENNIS T, Affiliate Assistant Professor, 1999; DDS, 1970, University of Washington
- JOHNSON, GLEN H \* Professor, 1978; MSE, 1977, University of Washington, DDS, 1978, University of Washington, MS, 1983, University of Michigan; instruction, clinical trials and laboratory research with dental bio materials
- JOHNSON, MARVIN A, Affiliate Professor, 1952; DDS, 1952, University of Washington
- KANT, KAREN S., Affiliate Assistant Professor, 1986; DDS, 1986, University of Washington
- KELLY, DENNIS W., Affiliate Associate Professor, 1989; DDS, 1954, University of Washington
- KEMPER, JAMES R., Affiliate Associate Professor, 1998; DDS, 1974, University of Washington
- KHAYAT, PHILIPPE G., Affiliate Associate Professor, 1995; DDS, 1979, Universite of Paris VII, MS, 1986, University of Washington
- KINZER, GREGG A, Affiliate Assistant Professor, 1998; DDS, 1995, University of Washington, MSD, 1998, University of Washington
- KIRSCHNER, WILLIAM E., Affiliate Professor, 1987; DDS, 1969, University of Washington
- KITCHEL, ALAN D., Affiliate Associate Professor, 1995; DDS, 1970, University of Washington
- KOIS, JOHN C., Affiliate Professor, 1985; DMD, 1977, University of Pennsylvania, MSD, 1982, University of Washington
- KUHL, LARRY V., Affiliate Assistant Professor, 2001; DDS, 1971, University of Iowa, MEd, 1987, George Washington University
- LEPE, XAVIER \* Associate Professor, 1993; DDS, 1980, University of Guadalajara (Mexico), MS, 1987, Loyola University (Chicago); Dental materials
- LEWIS, CHRISTOPHER S., Affiliate Professor, 1984; DDS, 1984, University of Washington
- LIBMAN, WARREN J., Affiliate Associate Professor, 1991; DDS, 1986, McGill University (Canada), MSD, 1990, University of Washington
- LORD, JAMES L, Affiliate Professor, 1965; DDS, 1964, University of Washington
- LOWE, RICHARD, Affiliate Professor, 1965; DDS, 1959, Case Western Reserve University, MSD, 1966, University of Washington
- MAEBO, RANDALL M., Affiliate Associate Professor, 1996; DDS, 1989, University of Washington
- MARINKOVICH, STEVEN P., Affiliate Assistant Professor, 1978; DDS, 1976, University of Washington
- MC COY, RICHARD B., Senior Lecturer, 1992; DDS, 1961, University of Washington, MS, 1973, Loma Linda University
- MC LEAN, KENNETH J, Affiliate Professor, 1974; DDS, 1960, University of Washington
- MCHUGH, JAMES W., Affiliate Associate Professor, 1976; DDS, 1973, University of Washington
- MILLER, ARBIE GLENN, Affiliate Assistant Professor, 1998; DDS, 1957, University of Washington
- MITCHELL, THOMAS W., Affiliate Assistant Professor, 1975; DDS, 1972, University of Washington
- MITRANI, RICARDO, Affiliate Assistant Professor, 2000; DDS, 1990, Universidad Tecnologica De Mexico, MSD, 2000, University of Washington
- MOBERLY, D. KENT, Affiliate Associate Professor, 1980; DMD, 1980, Southern Illinois University
- MORRISON, KENNETH N, Professor Emeritus, 1952; DDS, 1943, University of Toronto (Canada), MSD, 1952, University of Washington
- MUNK, ALAN M, Affiliate Associate Professor, 1976; DDS, 1975, University of Washington
- MURPHY, JEROME G., Affiliate Associate Professor, 1990; DDS, 1987, University of Washington
- NASH, RICHARD W., Affiliate Assistant Professor, 1986; DDS, 1976, University of Washington
- NESS, EARL M., Affiliate Assistant Professor, 1991; DDS, 1978, Northwest Dental College, MSD, 1991, University of Washington
- NGUYEN, DZUY M., Affiliate Assistant Professor, 1996; DDS, 1995, University of Washington
- NICHOLLS, JACK I, Professor Emeritus, 1965; MAS, 1960, University of British Columbia (Canada), PhD, 1966, Purdue University
- NORDLUND, DENNIS P, Affiliate Professor, 1978; DDS, 1976, University of Washington
- OSTLUND, LYLE E, Associate Professor Emeritus, 1950; DMD, 1947, University of Oregon, PhD, 1993, Johns Hopkins University
- PAULEY, CYNTHIA R., Affiliate Assistant Professor, 1994; DDS, 1992, University of The Pacific
- PHILLIPS, KEITH M. \* Assistant Professor, 1996; DMD, 1987, University of Pennsylvania, MSD, 1991, University of Washington; Dental implant prosthodontics and Dental materials
- PHILLIPS, SANDRA L., Senior Lecturer, 1988; MPA, 1985, University of Washington
- PIERCE, DONALD C, Affiliate Professor, 1972; DDS, 1957, University of Washington
- QUICKSTAD, THOMAS R., Affiliate Assistant Professor, 1991; DDS, 1984, University of Washington
- RAIGRODSKI, ARIEL J \* Associate Professor, 2004; DMD, 1991, Hebrew University (Israel), MS, 1999, Louisiana State University; Esthetic and implant restorative dentistry, ceramic materials and CAD/CAM technology
- ROBINSON, ROD D, Affiliate Professor, 1978; DDS, 1970, Northwestern University
- RUBENSTEIN, JEFFREY E. \* Professor, 1989; DMD, 1975, Tufts University, MS, 1980, University of Texas (Houston); maxillofacial and implant prosthodontics
- SAPP, CURTIS C., Affiliate Assistant Professor, 2003; DDS, 1977, University of Washington
- SHOR, ALEXANDER, Affiliate Assistant Professor, 2001; DDS, 1992, Latvia Medical Academy, DMD, 1997, University of Pennsylvania, MSD, 2001, University of Washington
- SMITH, DALE E, Professor Emeritus, 1960; DDS, 1952, University of Pittsburgh, MSD, 1962, University of Washington
- SMITH, DENNIS H., Affiliate Professor, 1972; DDS, 1971, University of Southern California, MSD, 1975, University of Washington



SPEAR, FRANK M., Affiliate Professor, 1985; DDS, 1979, University of Washington, MSD, 1985, University of Washington

TALABER, ATTILA F., Affiliate Professor, 1985; DMD, 1985, Tufts University

THOMS, LISA M., Affiliate Associate Professor, 1996; DDS, 1989, University of Southern California, MSD, 1993, University of Washington

TOOLSON, LEIGH \* Associate Professor Emeritus, 1970; DDS, 1967, University of Washington, MSD, 1977, University of Washington; removable prosthodontics

TOWNSEND, JOHN D, Lecturer, 1972; DDS, 1967, McGill University (Canada), MSD, 1973, University of Washington

TRENOR, MELVYN H. H., Affiliate Professor, 1978; DDS, 1972, University of Washington

TUCKER, RICHARD D., Affiliate Associate Professor, 1977; DDS, 1976, University of Washington

UHLMANSIEK, ROBERT R, Affiliate Professor, 1975; DDS, 1975, University of Washington

VITOUS, NELSON F, Affiliate Professor, 1973; DDS, 1970, University of Washington

WALLACE, MARC CHARLES, Affiliate Assistant Professor, 1999; DDS, 1983, University of Washington

WARE, THOMAS D, Affiliate Professor, 1967; DDS, 1964, University of Washington

WARNICK, MYRON E, Professor Emeritus, 1956; DDS, 1955, University of Alberta, Canada

WATAHA, JOHN C., Professor, 2008; DMD, 1982, Oregon Health Sciences University, PhD, 1992, University of Michigan, Ann Arbor

WEMER, FRED C, Affiliate Professor, 1974; DDS, 1973, University of Washington

WILLIAMS, GAYNE B, Affiliate Associate Professor, 1988; DDS, 1978, Ohio State University

WINTER, ROBERT R., Affiliate Assistant Professor, 1997; DDS, 1981, Marquette University

YAE, JOHN J., Affiliate Associate Professor, 1989; DDS, 1987, University of Washington

YORK, CARRIE K., Affiliate Assistant Professor, 1991; DDS, 1991, University of Washington

YUODELIS, RALPH A, Professor Emeritus, 1963; DDS, 1955, University of Alberta, Canada, MSD, 1964, University of Washington

ZHANG, HAI, Assistant Professor, 2004; DMD, 1992, West China University, PhD, 2002, University of Connecticut

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# College of Education

## Education

ABBOTT, ROBERT D \* Professor, 1975; MS, 1968, University of Washington, PhD, 1970, University of Washington; measurement, statistics and research design

AFFLECK, JAMES Q, Professor Emeritus, 1967; MA, 1963, San Francisco State, EdD, 1968, Columbia University

ANTONY, JAMES SOTO \* Associate Professor, 1997; MA, 1993, University of California (Los Angeles), PhD, 1996, University of California (Los Angeles); Identifying the factors that influence aspirations and success of professional occupations; special focus on post-secondary faculty careers

BANKS, JAMES A \* Professor, 1969; MA, 1967, Michigan State University, PhD, 1969, Michigan State University; social studies, multiethnic education

BASHEY, HUSAIN ISMAIL, Assistant Professor Emeritus, 1964; MA, 1955, University of Bombay, MA, 1960, Macmurray College, PhD, 1975, University of Oregon

BEADIE, NANCY ELIZABETH \* Associate Professor, 1993; MS, 1987, Syracuse University, PhD, 1989, Syracuse University; history of education

BEAL, JACK L, Associate Professor Emeritus, 1973; MS, 1962, University of Kansas, PhD, 1972, University of Nebraska

BELL, PHILIP L \* Associate Professor, 1998; MA, 1996, University of California (Berkeley), PhD, 1998, University of California (Berkeley); Cognition and learning, science education, argumentation, design of learning technologies

BERNINGER, VIRGINIA WISE \* Professor, 1986; MEd, 1970, University of Pittsburgh, PhD, 1981, Johns Hopkins University; educational psychology

BILLINGSLEY, FELIX F \* Professor Emeritus, 1977; MA, 1966, Western Washington College, PhD, 1974, University of Washington; special education (severely handicapped)

BOLTON, DALE LEROY, Professor Emeritus, 1962; MS, 1953, Oklahoma State University, PhD, 1958, University of Wisconsin (Madison)

BRAMMER, LAWRENCE M, Professor Emeritus, #VALUE!; MA, 1948, Stanford University, PhD, 1950, Stanford University

BRANDL, KLAUS K \* Adjunct Senior Lecturer, 1993; MA, 1987, University of Texas (unspecified), PhD, 1991, University of Texas (Austin); foreign language pedagogy, applied linguistics, foreign language teacher training, computer assisted language learning

BRANSFORD, JOHN D \* Professor, 2003; PhD, 1970, University of Minnesota; cognitive studies in education; how people learn, learning technologies

BROWN, ROBERT LEWIS, Associate Professor Emeritus, 1964; MEd, 1956, Trinity University, Texas, EdD, 1961, University of Arkansas

BROWN, SHARAN E \* Research Associate Professor, 1983; MA, 1979, Seattle University, JD, 1984, University of Puget Sound, EdD, 1991, University of Washington; Special Education Law

BROWN, WANDA M., Senior Lecturer, 2004; MA, 1999, Heritage University

BURGESS, CHARLES O, Professor Emeritus, 1964; MS, 1958, University of Wisconsin, PhD, 1962, University of Wisconsin (Madison)

CAMERON, CHERYLA, Adjunct Professor, 1979; MEd, 1978, University of Kentucky, PhD, 1986, University of Washington, JD, 1994, Seattle University

CATALANO, RICHARD F \* Adjunct Professor, 1979; MA, 1976, University of Washington, PhD, 1982, University of Washington; crime, violence and drug abuse prevention, promotion of positive youth development, Prevention/Intervention design and testing, Etiology of positive and problem development

CHENEY, DOUGLAS A. \* Associate Professor, 1996; MS, 1975, University of Oregon, PhD, 1992, University of Washington; Education, treatment and support of students with behavioral/ learning disabilities

CONTRERAS, FRANCES E \* Assistant Professor, 2004; MEd, 1995, Harvard University, PhD, 2003, Stanford University; Issues of equality and access for underrepresented students in the education pipeline

COPLAND, MICHAELA. \* Associate Professor, 2001; MEd, 1988, Western Washington University, PhD, 1999, Stanford University; Leadership in context of school reform, the principalship, research & development of problem-

based instructional materials in preparing students for educational leadership

DAVIS, CAROL \* Assistant Professor, 2005; MEd, 1989, University of Houston, EdD, 1992, University of Houston

DOI, JAMES I, Professor Emeritus, 1979; MA, 1950, University of Chicago, PhD, 1952, University of Chicago

DRISCOLL, JOHN P, Professor Emeritus, 1967; MS, 1950, University of California (Los Angeles), PhD, 1957, Pennsylvania State University

EDGAR, EUGENE BAYARD \* Professor, 1972; MA, 1968, George Peabody College, PhD, 1972, George Peabody College; special education (early childhood)

ELFERS, ANN M. \* Research Assistant Professor, 2000; MA, 1993, University of Belgrade (Serbia), PhD, 2000, University of Washington; teaching quality and the teacher workforce, particularly within the context of Washington state

EVANS, ELLIS D, Professor Emeritus, 1964; MEd, 1962, Indiana University, EdD, 1964, Indiana University

FINK, STEPHEN \* Affiliate Associate Professor, 2006; MA, 1978, California State University, Northridge, EdD, 1982, Brigham Young University; Educational Leadership

FORSTER, JERALD R., Professor Emeritus, 1966; PhD, 1966, University of Minnesota

FREDERIKSEN, JOHN R \* Professor, 2001; PhD, 1966, Princeton University, MA, 1966, Princeton University; Science education, educational assessment, educational technology, cognitive science, educational statistics

FREEHILL, MAURICE F, Professor Emeritus, 1962; MA, 1947, Stanford University, EdD, 1948, Stanford University

FREY, KARIN S. \* Research Associate Professor, 1975; PhD, 1978, University of Washington; Social-emotional development; adult-child & peer interaction; motivation; teacher development

GALLUCCI, CHRYSAN J. \* Research Assistant Professor, 2003; MEd, 1988, University of Washington, PhD, 2002, University of Washington

GAY, GENEVA \* Professor, 1989; MA, 1969, University of Akron, PhD, 1972, University of Texas (Austin); general

curriculum theory, multicultural education, and educating African American students

GEHRKE, NATHALIE J \* Professor, 1979; MA, 1972, Northwestern University, PhD, 1976, Arizona State University; curriculum

GINSBERG, MARGERY \* Associate Professor, 2004; MA, 1983, Colorado State University, PhD, 1989, University of Colorado (Boulder)

GOODLAD, JOHN I, Professor Emeritus, 1983; MA, 1946, University of British Columbia (Canada), PhD, 1949, University of Chicago, EdD, 1982, Eastern Michigan University

GRAY, CAROL A, Associate Professor Emeritus, 1970; MEd, 1968, Western Washington State College, PhD, 1971, University of Washington

HANSEN-KRENING, NANCY M, Associate Professor Emeritus, 1974; MEd, 1973, University of Oregon, PhD, 1974, University of Oregon

HARING, NORRIS GROVER, Professor Emeritus, 1965; MA, 1950, University of Nebraska, campus unspecified, EdD, 1956, Syracuse University

HARMON, DANA, Affiliate Assistant Professor, 2003; MEd, 1978, University of Washington, PhD, 1988, University of Washington

HAWKINS, JOHN D \* Adjunct Professor, 1976; MA, 1969, Northwestern University, PhD, 1975, Northwestern University; crime and delinquency, substance abuse, social development, research, prevention

HERRENKOHL, LESLIE R. \* Associate Professor, 1996; MA, 1991, Clark University, PhD, 1995, Clark University; Cognitive and social processes of students in preschool and elementary school settings

HILL, PAUL T. \* Adjunct Research Professor, 1993; MA, 1966, Ohio State University, PhD, 1972, Ohio State University; political science, public policy, effects of regulation, especially on schools

HONIG, MEREDITH I. \* Assistant Professor, 2006; PhD, 2001, Stanford University; Education policy

HORN, ILANA SEIDEL \* Assistant Professor, 2003; MA, 1998, University of California (Berkeley), PhD, 2002, University of California (Berkeley); Secondary mathematics education, equitable teaching and learning in high schools

HUDSON, ROXANNE \* Assistant Professor, 2006; MEd, 1994, Western Washing-

ton University, PhD, 2002, University of Florida; Special Education

HUNE, SHIRLEY \* Professor, 2007; PhD, 1979, George Washington University; American Civilization studies, secondary school education

HUNKINS, FRANCIS PETER, Professor Emeritus, 1966; MEd, 1963, Boston University, PhD, 1966, Kent State University

JAROLIMEK, JOHN, Professor Emeritus, 1962; MA, 1949, University of Minnesota, PhD, 1955, University of Minnesota

JEGATHEESAN, BRINDA I. \* Assistant Professor, 2006; MEd, 2000, University of Hawaii, PhD, 2005, University of Illinois; Early childhood special education

JENKINS, JOSEPH R \* Professor, 1978; PhD, 1967, University of Minnesota; special education (mildly handicapped)

JENSEN, JACQUELINE M, Affiliate Assistant Professor, 2003; MEd, 1994, Eastern Washington University

JONES, DIANE CARLSON \* Associate Professor, 1996; MA, 1969, University of Texas (unspecified), MA, 1977, Wayne State University MA, 1994, University of Southern California, PhD, 1999, University of Texas (unspecified); Multicultural issues in school psychology; Resilience in African American children

JONES, JANINE \* Assistant Professor, 2002; PhD, 1999, University of Texas (unspecified); Multicultural issues in school psychology; Resilience in African American children

JOSEPH, GAIL \* Assistant Professor, 2007; MEd, 1995, Western Washington University, PhD, 2001, University of Washington; Early Childhood/Special Education

KALTSOUNIS, THEODORE, Professor Emeritus, 1967; MA, 1959, University of Wichita, PhD, 1961, University of Illinois

KAZEMI, ELHAM \* Associate Professor, 1999; MA, 1997, University of California (Los Angeles), PhD, 1999, University of California (Los Angeles); Sociocultural analyses of learning; mathematics education; teacher education; school reform

KELLY, SAMUEL E, Associate Professor Emeritus, 1970; MA, 1960, Marshall University, PhD, 1971, University of Washington

KERDEMAN, DEBORAH \* Associate Professor, 1990; MA, 1981, Hebrew Union

College, MEd, 1981, University of Southern California, MA, 1988, Stanford University, PhD, 1991, Stanford University; philosophy of education, philosophy of social inquiry, and hermeneutics

KERR, DONNA H \* Professor, 1978; PhD, 1973, Columbia University; philosophy and education

KERR, STEPHEN T \* Professor, 1985; MA, 1969, Columbia University, PhD, 1975, University of Washington; information technology and telecommunications

KLOCKARS, ALAN J \* Professor, 1967; MA, 1963, Oregon State University, PhD, 1967, University of Washington; measurement, statistics and research design

KNAPP, MICHAEL S. \* Professor, 1990; MEd, 1976, Harvard University, MA, 1979, Stanford University, PhD, 1981, Stanford University; public policy in education; policy research; sociology of education

KUHL, PATRICIA K \* Adjunct Professor, 1976; MA, 1971, University of Minnesota, PhD, 1973, University of Minnesota; speech perception

LEWIS, JEFFREY L, Affiliate Assistant Professor, 2003; MA, 1983, University of Rochester, PhD, 1986, University of Rochester

LOTT, JOE \* Assistant Professor, 2007; MPA, 2000, Louisiana State University, PhD, 2005, Louisiana State University; Higher Education

LOVITT, THOMAS C, Professor Emeritus, 1966; MM, 1960, University of Kansas, EdD, 1966, University of Kansas

LOWENBRAUN, SHEILA, Professor Emeritus, 1968; MA, 1962, Columbia University, PhD, 1969, Columbia University

MADSEN, DAVID L, Professor Emeritus, 1962; MA, 1954, University of Chicago, PhD, 1961, University of Chicago

MAZZA, JAMES J. \* Professor, 1996; MS, 1990, University of Wisconsin (Madison), PhD, 1993, University of Wisconsin (Madison); educational psychology/child and adolescent mental health

MC CARTIN, ROSEMARIE E, Professor Emeritus, 1965; MA, 1960, Immaculate Heart College, Ca, PhD, 1964, University of Southern California

MCCUTCHEN, DEBORAH ELAINE \* Professor, 1986; MA, 1978, University of Pittsburgh, PhD, 1985, University of Pittsburgh; cognitive processes underlying reading and writing skills

MCDIARMID, GROVER W \* Professor, 2001; EdD, 1984, Harvard University; Teacher learning and development; relation of educational policy to teaching

MCDONALD, MORVA A. \* Assistant Professor, 2006; MA, 1999, Stanford University, PhD, 2003, Stanford University; Teacher education

MCINTYRE, JENNIFER J, Affiliate Assistant Professor, 2003; MSEd, 1997, University of Wisconsin

MELTZOFF, ANDREW N \* Adjunct Professor, 1974; PhD, 1976, Oxford University (UK); perceptual, cognitive & social development in infants, concept formation & memory in infancy and early childhood

MINSTRELL, JAMES, Affiliate Associate Professor, 2002; MS, 1966, University of Pennsylvania, PhD, 1978, University of Washington

MIZOKAWA, DONALD T, Professor Emeritus, 1973; MEd, 1969, University of Hawaii, PhD, 1974, Indiana University

MORISHIMA, JAMES K, Professor Emeritus, 1964; PhD, 1967, University of Washington

NEEL, RICHARD S \* Professor, 1972; MS, 1971, University of Southern California, PhD, 1972, University of Southern California; special education (behavior disorders, learning disabilities); education(social behavior, school reform)

NELSON, MARY LEE, Affiliate Associate Professor, 1990; MA, 1978, California State University, campus unspecified, PhD, 1989, University of Oregon

NERAD, MARESI \* Associate Professor, 2001; MA, 1973, Darmstadt University of Tech, Germany, PhD, 1988, University of California (Berkeley); Forces, forms, and condition of change in doctoral education locally, nationally, and internationally

NOLEN, SUSAN B. \* Professor, 1990; MEd, 1976, Lewis And Clark College, PhD, 1986, Purdue University; Achievement motivation in educational settings, development of motivation, relationship of motivation and learning

OLSWANG, STEVEN G \* Professor, 1977; JD, 1971, University of Illinois, PhD, 1977, University of Washington; higher education administration and policy, law, faculty government, collective bargaining

PARKER, WALTER C \* Professor, 1985; MA, 1978, University of Colorado (Denver), PhD, 1982, University of Washington; curriculum and instruction: social studies, democratic education

PECK, CHARLES A \* Professor, 2003; MA, 1976, Sonoma State University, PhD, 1984, University of California (Santa Barbara); Inclusion of children with disabilities in regular classrooms; program development in teacher education

PECKHAM, PERCY D, Professor Emeritus, 1968; MA, 1955, University of Denver, PhD, 1968, University of Colorado (Denver)

PLECKI, MARGARET L \* Associate Professor, 1994; MS, 1976, University of Illinois, PhD, 1991, University of California (Berkeley); school finance, economics of education, policy analysis, school choice, study of education reform

PORTIN, BRADLEY S \* Associate Professor, 1995; MEd, 1987, Seattle Pacific University, DPhil, 1995, Oxford University (UK); educational leadership, principalship, education policy and politics, and comparative education

ROZA, MARGUERITE Y.M. \* Research Associate Professor, 2003; MEd, 1993, University of Washington, PhD, 1995, University of Washington; education and state education finance

RYCKMAN, DAVID B, Professor Emeritus, 1969; EdD, 1966, University of Illinois

SANDALL, SUSAN R. \* Associate Professor, 1999; MS, 1977, University of Oregon, PhD, 1986, University of Washington; Effective intervention practices for very young children with disabilities and support services for their families

SAX, GILBERT, Professor Emeritus, 1965; MA, 1956, University of California (Los Angeles), PhD, 1958, University of Southern California

SCHWARTZ, ILENE SHARON \* Professor, 1991; MA, 1986, University of Kansas, PhD, 1989, University of Kansas; early childhood, autism, classroom-based interventions, and applied behavior analysis

SEBESTA, SAM L, Professor Emeritus, 1963; MA, 1960, Northwestern University, EdD, 1963, Stanford University

SMITH, JOHN P, Associate Professor Emeritus, 1969; MEd, 1963, University of Missouri, EdD, 1969, Stanford University

SMITH, TIMOTHY W, Affiliate Assistant Professor, 2003; MA, 1974, San Jose State University, PhD, 1989, California School of Professional Psychology

STANDAL, TIMOTHY \* Professor Emeritus, 1976; MEd, 1974, Western Washington

College, PhD, 1976, University of Minnesota; reading/language arts

STEVENS, REED R. \* Associate Professor, 1998; MA, 1993, University of California (Berkeley), PhD, 1999, University of California (Berkeley); Ethnography research on cognition, learning, social interaction, and technology use

STRITIKUS, TOM \* Associate Professor, 2000; MA, 1997, University of California (Berkeley), PhD, 2000, University of California (Berkeley); Second language development; ESL/bilingual education; literacy education policy as it relates to bilingual students

TAYLOR, CATHERINE S. \* Associate Professor, 1991; MSE, 1978, University of Kansas, PhD, 1986, University of Kansas; educational psychology

TAYLOR, EDWARD \* Associate Professor, 1994; MA, 1983, Gonzaga University, PhD, 1994, University of Washington; Leadership, critical theory and discourse concerning race in education and society

THALBERG, STANTON P, Associate Professor Emeritus, 1965; MA, 1959, University of Iowa, PhD, 1964, University of Iowa

THALBERG, STANTON P, Associate Professor Emeritus, 1965; PhD, 1964, University of Iowa

THOMPSON, MARIE D, Professor Emeritus, 1971; MA, 1968, University of Washington, PhD, 1970, University of Washington

TOSTBERG, ROBERT E, Professor Emeritus, 1962; MA, 1958, University of Wisconsin, PhD, 1960, University of Wisconsin (Madison)

VALENCIA, SHEILA DENISE W \* Professor, 1987; MEd, 1976, State University of New York (Buffalo), PhD, 1978, University of Colorado (Boulder); reading remediation, comprehension, instruction and assessment

VARGHESE, MANKA M. \* Assistant Professor, 2000; MS, 1994, University of Pennsylvania, PhD, 2000, University of Pennsylvania; Culturally and linguistically diverse students and preparation of their teachers

VASQUEZ, JAMES A, Associate Professor Emeritus, 1975; MA, 1971, University of California (Los Angeles), PhD, 1973, University of California (Los Angeles)

WASLEY, PATRICIA A \* Professor, 2000; MA, 1982, Western Washington University, EdD, 1989, University of Washington; Redesign of American High Schools,

teacher development and professionalism, and leadership designed to close the achievement gap

WEST, ELIZABETH A. \* Assistant Professor, 2006; MEd, 1994, University of Washington, PhD, 2003, University of Washington; Special Education/Teacher Education

WHITE, OWEN R \* Professor, 1973; MA, 1970, University of Oregon, PhD, 1971, University of Oregon; special education (severely handicapped)

WILLIAMS, DONALD T, Professor Emeritus, 1966; MA, 1957, Stanford University, PhD, 1963, Stanford University

WILLIAMS, RICHARD C., Professor Emeritus, 1990; MA, 1963, University of Minnesota, PhD, 1966, University of Minnesota

WILLIAMSON, JOY \* Associate Professor, 2007; MA, 1995, University of Illinois (Urbana), PhD, 1998, University of Illinois (Urbana); Higher Education

WINDSCHITL, MARKA \* Associate Professor, 1996; MS, 1993, Iowa State

University, PhD, 1995, Iowa State University; The impact of technology, constructivism, and epistemological beliefs on learning

WINEBURG, SAMUEL S., Affiliate Professor, 1989; PhD, 1990, Stanford University

ZUMETA, WILLIAM M. \* Professor, 1985; MPP, 1973, University of California (Berkeley), PhD, 1978, University of California (Berkeley); public policy analysis, higher education policy and finance, workforce policy

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# College of Engineering

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## Aeronautics and Astronautics

BOLLARD, R JOHN, Professor Emeritus, 1961; ME, 1949, Canterbury College, PhD, 1954, Purdue University

BREIDENTHAL, ROBERT E \* Professor, 1980; MS, 1974, California Institute of Technology, PhD, 1978, California Institute of Technology; turbulence, entrainment, mixing, vorticity

BRUCKNER, ADAM \* Professor, 1972; MA, 1968, Princeton University, PhD, 1972, Princeton University; space systems, space propulsion and power, planetary exploration, gas dynamics, heat transfer, energy conversion, astrobiology

CAMPBELL, MARK E., Affiliate Associate Professor, 1995; MS, 1993, Massachusetts Institute of Technology, PhD, 1996, Massachusetts Institute of Technology

CHAPPELLE, DOUGLAS E., Affiliate Associate Professor, 2001; MS, 1993, University of Washington

CHRISTIANSEN, WALTER H, Professor Emeritus, 1967; PhD, 1961, California Institute of Technology

DABIRI, DANA \* Assistant Professor, 2002; MS, 1987, University of California (Berkeley), PhD, 1992, University of California (San Diego); The study of fundamental fluid flows through new and advanced quantitative flow imaging techniques

DECHER, REINER, Professor Emeritus, 1967; SM, 1962, Massachusetts Institute of Technology, PhD, 1968, Massachusetts Institute of Technology

DEN HARTOG, DANIEL J., Affiliate Professor, 2005; MS, 1985, University of Wisconsin, PhD, 1989, University of Wisconsin

DEVASIA, SANTOSH \* Adjunct Professor, 2000; MS, 1990, University of California (Santa Barbara), PhD, 1993, University of California (Santa Barbara); Control theory and applications: nanotechnology, distributed systems, and biomedical systems

FERABOLI, PAOLO \* Assistant Professor, 2005; MS, 2002, University of Bologna (Italy), PhD, 2005, University of California (Santa Barbara); Materials structures

FURNESS, THOMAS A. \* Adjunct Professor, 1989; PhD, 1981, University of Southampton (UK); display systems

engineering, human factors, computer graphics, virtual reality, human computer interface design

FYFE, IAN M, Professor Emeritus, 1959; MME, 1954, University of Delaware, PhD, 1957, Stanford University

HERMANSON, JAMES C. \* Associate Professor, 1986; MS, 1980, California Institute of Technology, PhD, 1985, California Institute of Technology; Combustion, gas dynamics, fluid mechanics, microgravity science, and heat transfer

HERTZBERG, ABRAHAM, Professor Emeritus, 1993; MAeE, 1949, Cornell University

HOFFMAN, ALAN LOWELL \* Professor, 1989; PhD, 1967, California Institute of Technology; plasma physics and magnetic confinement fusion

HOLSAPPLE, KEITH A \* Professor, 1965; MS, 1964, University of Washington, PhD, 1965, University of Washington; solid mechanics, continuum mechanics, structure waves, finite element methods

HOUSEN, KEVIN R., Affiliate Professor, 2003; MS, 1979, University of Arizona, PhD, 1981, University of Arizona

JARBOE, THOMAS R. \* Professor, 1989; PhD, 1974, University of California (Berkeley); plasma physics and controlled fusion, magnetic reconnection and relaxation

KUROSAKA, MITSURU \* Professor, 1987; MS, 1961, University of Tokyo (Japan), PhD, 1968, California Institute of Technology; propulsion, turbo machinery, thermofluid mechanics, heat transfer and acoustics

LIN, KUEN-YUAN \* Professor, 1984; MSC, 1963, National Taiwan University, MA, 1967, Princeton University, PhD, 1970, Princeton University; composite materials, structural mechanics, finite element methods

LIVNE, ELI \* Professor, 1990; MSC, 1982, Israel Institute of Technology, PhD, 1990, University of California (Los Angeles); aeroelasticity, aeroservoelasticity, optimization, structural dynamics

LY, UY-LOI \* Associate Professor, 1988; MS, 1976, California Institute of Technology, PhD, 1983, Stanford University; robust controls, parameter optimization, model reduction, digital control, design integration

MATTICK, ARTHUR T. \* Associate Professor, 1975; MS, 1971, Massachusetts Institute of Technology, PhD, 1975, Massachusetts Institute of Technology; gas physics, gas lasers, energy conversion

MC MASTERS, JOHN H, Affiliate Professor, 1989; MS, 1962, University of Colorado (campus unspecified), PhD, 1975, Purdue University

MCGEER, BRIAN T., Affiliate Assistant Professor, 1997; MS, 1980, Stanford University, PhD, 1984, Stanford University

MESBAHI, MEHRAN \* Associate Professor, 2002; MS, 1991, University of Southern California, MS, 1995, University of Southern California, PhD, 1996, University of Southern California; Control and optimization theory and their applications to multiple spacecraft formation flying

MORGANSEN, KRISTIA. \* Assistant Professor, 2002; MS, 1996, Harvard University, PhD, 1999, Harvard University; Nonlinear control, underactuated mechanical systems and limited communication coordinated control

PARMETER, R REID, Professor Emeritus, 1963; MS, 1959, California Institute of Technology, PhD, 1963, California Institute of Technology

PEARSON, CARL E, Professor Emeritus, 1965; PhD, 1949, Brown University

RHINES, PETER B. \* Adjunct Professor, 1984; MS, 1964, Massachusetts Institute of Technology, ScB, 1964, Massachusetts Institute of Technology, PhD, 1967, Cambridge University (UK); the circulation of the oceans and evolution of climate

ROBERTSON, PAUL, Affiliate Associate Professor, 2004; MS, 1979, University of Washington

RUSSELL, DAVID A, Professor Emeritus, 1967; MSC, 1957, California Institute of Technology, PhD, 1961, California Institute of Technology

SCHMIDT, ECKART W., Affiliate Associate Professor, 1997; MS, 1962, University of Tübingen (Germany), PhD, 1964, University of Tübingen (Germany)

SHUMLAK, URI \* Professor, 1994; PhD, 1992, University of California (Berkeley); computational fluid dynamics, parallel computing, plasma physics, magneto-hydrodynamics, and electrical propulsion

SLOUGH, JOHN T. \* Research Associate Professor, 1998; MA, 1976, Columbia University, PhD, 1981, Columbia University; Plasma Physics, Nuclear Fusion and Space Propulsion

SWARTZ, DAVID D., Affiliate Associate Professor, 1998; MS, 1993, University of Utah, PhD, 1997, University of Utah

VAGNERS, JURIS \* Professor Emeritus, 1967; MS, 1963, Stanford University, PhD, 1967, Stanford University; Controls

VAUGHAN, CHARLES E., Affiliate Associate Professor, 1999; MA, 1975, University of Texas (Austin), PhD, 1985, Colorado State University

WINGLEE, ROBERT M \* Adjunct Professor, 1991; PhD, 1984, University of Sydney (Australia); space weather, energetic phenomena in sun/earth plasmas, excitation of waves, high energy particle acceleration, advanced spacecraft propulsion

ZUBE, DIETER M., Affiliate Assistant Professor, 2005; Diploma, 1990, University of Stuttgart (Germany), PhD, 1995, University of Stuttgart (Germany)

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## Chemical Engineering

ADLER, STUART B. \* Associate Professor, 2001; MS, 1989, University of California (Berkeley), PhD, 1993, University of California (Berkeley); Solid-state electrochemical engineering, fuel cells, advanced measurement and modeling techniques

ALLAN, G GRAHAM \* Professor, 1966; PhD, 1956, University of Glasgow (UK), DSc, 1971, University of Strathclyde (UK); creativity and innovation

BABB, ALBERT L, Professor Emeritus, 1952; MS, 1949, University of Illinois, PhD, 1951, University of Illinois

BANEYX, FRANCOIS \* Professor, 1992; PhD, 1991, University of Texas (Austin); biotechnology, protein technology, biochemical engineering

BERG, JOHN C. \* Professor, 1964; PhD, 1964, University of California (Berkeley); interfacial phenomena, surface and colloid science

BOWEN, J RAY, Professor Emeritus, 1981; MS, 1957, Massachusetts Institute of Technology, PhD, 1963, University of California (Berkeley)

BRYERS, JAMES D \* Adjunct Professor, 2004; MSC, 1976, University of Idaho, PhD, 1980, Rice University; Quantifying

the Processes Governing Bacterial Adhesion and Biofilm Formation

CAMPBELL, CHARLES T. \* Adjunct Professor, 1992; PhD, 1979, University of Texas (Austin); physical chemistry of solid surfaces, chemisorption, catalysis, and surface analysis

CAO, GUOZHONG \* Adjunct Associate Professor, 1996; MS, 1985, Shanghai Institute of Ceramics, China, MS, 1985, Shanghai Institute of Ceramics, China, PhD, 1991, Eindhoven University of Technology(Neth); Processing, characterization, and applications of ferroelectrics, piezoelectrics, organic/inorganic hybrids, and nanostructured materials

CASTNER, DAVID G. \* Professor, 1990; PhD, 1979, University of California (Berkeley); surface analysis characterization of biomedical and catalytic materials

DAVID, MORTON, Professor Emeritus, 1953; DEng, 1950, Yale University

DAVIS, E JAMES \* Professor Emeritus, 1983; PhD, 1960, University of Washington; transport in porous media, microparticle physics and chemistry, surface and colloid science

FINLAYSON, BRUCE A, Professor Emeritus, 1967; MS, 1963, Rice University, PhD, 1965, University of Minnesota

GAO, YE, Acting Instructor, 2007; MS, 1995, Dalian University of Technology (China), PhD, 2000, Dalian University of Technology (China)

GARLID, KERMIT L, Professor Emeritus, 1960; PhD, 1961, University of Minnesota

GUSTAFSON, RICHARD ROY \* Adjunct Professor, 1986; PhD, 1982, University of Washington; process modeling and optimization, fiber composites

HAYES, BRIAN \* Affiliate Assistant Professor, 1997; PhD, 1997, University of Washington; Research focuses on polymers and fiber-reinforced composites in aerospace and sporting goods industries

HEIDEGGER, WILLIAM J, Professor Emeritus, 1957; MSE, 1955, Princeton University, PhD, 1959, Princeton University

HODGSON, KEVIN T \* Professor, 1991; MS, 1980, Carnegie Mellon University, PhD, 1986, University of Washington; surface and colloid science, papermaking chemistry, secondary fiber recycling

HOLT, BRADLEY R \* Associate Professor, 1984; PhD, 1984, University of Wisconsin; process control, process design

HOMOLA, JIRI \* Affiliate Associate Professor, 1997; MS, 1988, Technical University of Prague (Czech), PhD, 1993, Academy of Science (Ussr); Guided-wave optics, photonic devices, optical chemical sensors and biosensors

HORBETT, THOMAS A \* Professor, 1970; PhD, 1970, University of Washington; interfacial proteins, cell interactions, foreign body reaction, nonfouling surfaces

JARVI, THOMAS D., Affiliate Assistant Professor, 2001; PhD, 1998, University of Washington

JENEKHE, SAMSON A. \* Professor, 2000; MS, 1980, University of Minnesota, MA, 1981, University of Minnesota, PhD, 1985, University of Minnesota; Polymer science; electronic and optoelectronic polymers; block copolymers; macromolecular self-assembly

JIANG, SHAOYI \* Professor, 1999; MS, 1988, Nanjing University of Technology (China), PhD, 1993, Cornell University; Interfacial phenomena, surface science, molecular simulation, and scanning probe microscopy

JOHANSON, LENNART N, Professor Emeritus, 1951; MS, 1943, University of Wisconsin, PhD, 1948, University of Wisconsin

KOCH, MELVIN V., Affiliate Professor, 1997; MS, 1964, University of Iowa, PhD, 1967, University of Iowa

KRIEGER-BROCKETT, BARBARA \* Associate Professor Emeritus, 1975; MS, 1972, Wayne State University, PhD, 1975, Wayne State University; reaction engineering, chemical kinetics and catalysis simulation

LIDSTROM, MARY E. \* Professor, 1977; MS, 1975, University of Wisconsin (Madison), PhD, 1977, University of Wisconsin (Madison); Genomic approaches to metabolic engineering of bacteria for commercial use

NGUYEN, FELIX NHANCHAU, Affiliate Assistant Professor, 2007; PhD, 2007, University of Washington

OVERNEY, RENE M \* Associate Professor, 1996; MS, 1989, University of Basel (Switzerland), PhD, 1992, University of Basel (Switzerland); Material and Processes in Confined Geometries

POZZO, DANILO C. \* Assistant Professor, 2007; PhD, 2006, Carnegie Mellon University, MS, 2006, Carnegie Mellon University; Nanomaterials, biomaterials, colloids and polymers Rheology of self-

assembled materials Neutron and x-ray scattering

PUN, SUZIE H \* Adjunct Assistant Professor, 2003; MS, 1998, California Institute of Technology, PhD, 2000, California Institute of Technology; Biomaterials and intracellular trafficking

RATNER, BUDDY D \* Professor, 1972; PhD, 1972, Polytechnic Institute of Brooklyn; synthesis and characterization of polymeric biomaterials

RIBE, FRED L, Professor Emeritus, 1977; PhD, 1951, University of Chicago

RICKER, NEIL L \* Professor, 1978; MS, 1972, University of California (Berkeley), PhD, 1978, University of California (Berkeley); chemical process design, simulation, and control

SARIKAYA, MEHMET \* Adjunct Professor, 1984; MS, 1979, University of California (Berkeley), PhD, 1982, University of California (Berkeley); Biomimetics, nanotechnology, biomaterials, tissue engineering, dental, magnetics, semiconductors, ceramics, metals, solution processing, biomineralization, electron microscopy, diffraction, spectroscopy, probe microscopy

SCHWARTZ, DANIEL T. \* Professor, 1991; MS, 1985, University of California (Davis), PhD, 1989, University of California (Davis); electrochemical engineering and electrolytic thin film science

SHEN, HONG \* Assistant Professor, 2005; MS, 1998, Tsinghua University (China), PhD, 2004, Cornell University; Nanomedicine, Immunobiosensing, System biology of pathogen recognition

SLEICHER, CHARLES A, Professor Emeritus, 1960; ScB, 1944, Brown University, MS, 1949, Massachusetts Institute of Technology, PhD, 1955, University of Michigan

STUVE, ERIC M \* Professor, 1985; MS, 1979, Stanford University, PhD, 1983, Stanford University; catalytic and electrochemical surface science

TYLER, BONNIE J., Affiliate Associate Professor, 2006; PhD, 1992, University of Washington

VAN SCHALKWIJK, WALTER A., Affiliate Professor, 2001; MSC, 1977, Carleton University (Canada), PhD, 1983, University of Ottawa (Canada)

WHITAKER, JOHN D., Affiliate Assistant Professor, 2006; PhD, 2003, University of Washington

WOODRUFF, GENE L, Professor Emeritus, 1965; MS, 1963, Massachusetts Institute of Technology, PhD, 1966, Massachusetts Institute of Technology

YAGER, PAUL \* Adjunct Professor, 1987; PhD, 1980, University of Oregon; physical chemistry, applications of biomembranes, biosensors, microfluidics, biomedical diagnostic instrumentation

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## Civil and Environmental Engineering

AHMED, KAMAL M., Affiliate Assistant Professor, 1999; MSC, 1988, Cairo University (Egypt), PhD, 1999, University of Washington

ARDUINO, PEDRO \* Associate Professor, 1997; MSCE, 1992, University of Puerto Rico, MSCE, 1996, Georgia Institute of Technology, PhD, 1996, Georgia Institute of Technology; Mechanics of Porous Media, Constitutive Modeling of Soils, Numerical Methods of Geomechanics

BENJAMIN, MARK M \* Professor, 1977; MS, 1973, Stanford University, PhD, 1979, Stanford University; chemistry of natural waters, chemical and biological treatment of water and wastewater

BENSON, CRAIG HERBERT, Professor, 2007; MSE, 1987, University of Texas (Austin), PhD, 1989, University of Texas (Austin)

BERMAN, JEFFREY WILLIAM \* Assistant Professor, 2006; MS, 2003, State University of New York (Buffalo), PhD, 2006, State University of New York (Buffalo); structures

BOGAN, RICHARD H, Professor Emeritus, 1954; MS, 1952, Massachusetts Institute of Technology, DSc, 1954, Massachusetts Institute of Technology

BOLTON, SUSAN M \* Adjunct Professor, 1992; MS, 1979, University of North Dakota, MS, 1985, New Mexico State University, PhD, 1991, New Mexico State University; hydrology, watershed management, stream restoration, ecological engineering

BOOTH, DEREK B \* Affiliate Professor, 1984; MS, 1980, Stanford University, PhD, 1984, University of Washington; Environmental geology, particularly human influences on hillslopes, runoff, and rivers

BRETT, MICHAEL T. \* Associate Professor, 1997; MSC, 1985, University of Maine,

PhD, 1990, University of Uppsala (Sweden); Eutrophication and food web and nutrient regulation of algal biomass and secondary production in lakes

BROWN, COLIN B, Professor Emeritus, 1969; PhD, 1962, University of Minnesota

BROWNING, JESSE H, Affiliate Professor, 1995; MPA, 1988, University of Southern California, PhD, 1995, University of Washington

BUCKNAM, RONALD E., Affiliate Professor, 1978; MS, 1960, University of Illinois (Urbana), PhD, 1964, University of Illinois (Urbana)

BURGES, STEPHEN J \* Professor, 1970; MS, 1968, Stanford University, PhD, 1970, Stanford University; surface and ground water hydrology, water resource systems analysis and design

CARLSON, DALE A., Professor Emeritus, 1955; MSCE, 1951, University of Washington, PhD, 1960, University of Wisconsin (Madison)

CHANG, YU-JUNG, Affiliate Assistant Professor, 1996; MSCE, 1992, University of Washington, PhD, 1996, University of Washington

CHENOWETH, HARRY H, Associate Professor Emeritus, 1946; MSCE, 1957, University of Washington

COOPER, JOYCE S. \* Adjunct Associate Professor, 1998; MS, 1992, Duke University, PhD, 1996, Duke University; Design for Environment and Industrial Ecology methodologies and models

COVERT, DAVID S \* Adjunct Research Professor, 1974; MS, 1971, University of Washington, PhD, 1974, University of Washington; atmospheric chemistry, aerosol physics and instrumentation

DAVIDSON, SEANA K \* Research Assistant Professor, 2001; PhD, 1999, University of California (San Diego); DNA and RNA based methods for the detection and analysis of bacteria; Host-bacteria interactions; Microbial ecology; Applications of laser scanning confocal microscopy; earthworm-bacterial interactions and applications

DEVRIES, PAUL E., Affiliate Assistant Professor, 2000; MSE, 1994, University of Washington, PhD, 2000, University of Washington

DOSSICK, CARRIE S \* Adjunct Assistant Professor, 2005; MS, 1998, Columbia University, PhD, 2001, Columbia University; Application and impact of emerging technologies on the construction process



DRAGOVICH, JEFF, Affiliate Assistant Professor, 2003; MSCE, 1990, University of Illinois, PhD, 1996, University of Illinois

EBERHARD, MARC O. \* Professor, 1989; MS, 1986, University of Illinois, PhD, 1989, University of Illinois; structural analysis and design, reinforced concrete, earthquake engineering, nondestructive testing

EIKUM, ARILD, Affiliate Professor, 1974; MSCE, 1967, University of Washington, PhD, 1973, University of Washington

ELIAS, ZIAD, Professor Emeritus, 1969; DSc, 1963, Massachusetts Institute of Technology

EVANS, ROGER J, Professor Emeritus, 1966; MSC, 1959, Brown University, PhD, 1965, University of California (Berkeley)

FELICE, CONRAD W., Affiliate Professor, 2001; MS, 1980, Air Force Institute of Technology, PhD, 1985, University of Utah

FERGUSON, JOHN F. \* Professor Emeritus, 1974; MS, 1964, Stanford University, PhD, 1970, Stanford University; chemical and biological processes in water and waste treatment and in natural water systems

GAWEL, JAMES \* Adjunct Associate Professor, 1999; ScB, 1990, Brown University, PhD, 1996, Massachusetts Institute of Technology; Environmental chemistry of metals; Limnology; and Biogeochemistry

GOLDBLATT, STEVEN M, Adjunct Associate Professor, 1982; JD, 1977, Golden Gate University

GOODCHILD, ANNE V. \* Assistant Professor, 2006; MS, 2002, University of California (Berkeley), PhD, 2005, University of California (Berkeley); Systems analysis approach to problems in freight transportation and logistics

HAMLET, ALAN F. \* Research Assistant Professor, 2007; MS, 1996, University of Washington, PhD, 2006, University of Washington; Integrated hydrological and water resources modeling. Impacts of climate variability and climate change on hydrology and water resources. Hydrologic and water resources modeling. Water resources planning and management

HAMMER, VERNON B, Professor Emeritus, 1947; MS, 1941, Harvard University

HARTZ, BILLY J, Professor Emeritus, 1955; MS, 1954, University of California (Berkeley), PhD, 1955, University of California (Berkeley)

HAWKINS, NEIL M, Affiliate Professor, 1968; MS, 1959, University of Illinois, PhD, 1961, University of Illinois

HOLTZ, ROBERT DEAN \* Professor Emeritus, 1988; MSCE, 1962, University of Minnesota, PhD, 1970, Northwestern University; geotechnical engineering

HORNER, RICHARD R. \* Adjunct Research Assoc Professor, 1981; MD, 1966, University of Pennsylvania, PhD, 1978, University of Washington; Effects of human activities on water resources in urban areas

HORNER-DEVINE, ALEXANDER \* Assistant Professor, 2004; MSc, 1998, Stanford University, DPhil, 2003, Stanford University; Environmental Fluid Mechanics using laboratory experiments and field observations

JACOBY, JEAN M., Affiliate Professor, 1986; MS, 1981, University of Washington, PhD, 1986, University of Washington

JANSSEN, DONALD J. \* Associate Professor, 1985; MS, 1980, University of Illinois, PhD, 1985, University of Illinois; construction materials, pavements

JESSUP, ANDREW T. \* Affiliate Associate Professor, 1992; MSE, 1988, Massachusetts Institute of Technology, PhD, 1990, Massachusetts Institute of Technology; applications of remote sensing to air-sea interaction

KENT, JOSEPH C, Associate Professor Emeritus, 1952; MS, 1948, Stanford University, PhD, 1952, University of California (Berkeley)

KINNEY, THOMAS C., Affiliate Professor, 2001; MS, 1966, University of Washington, PhD, 1979, University of Illinois (Urbana)

KORSHIN, GREGORY \* Professor, 1991; PhD, 1983, Chemical Engineering Institute (Russia); Environmental chemistry and engineering, aquatic chemistry, generation of halogenated organic compounds, speciation of heavy metals, XAFS studies of environmental systems, corrosion in drinking water, nuclear remediation technologies

KRAMER, STEVEN \* Professor, 1984; MEng, 1979, University of California (Berkeley), PhD, 1984, University of California (Berkeley); soil mechanics, foundation engineering, geotechnical earthquake engineering

KUDER, KATHERINE, Affiliate Assistant Professor, 2006; MS, 2002, Northwestern University, PhD, 2005, Northwestern University

LARSON, TIMOTHY \* Professor, 1976; MS, 1972, University of Washington, PhD, 1976, University of Washington; airborne particles, air quality modeling, and instrument development

LEHMAN, DAWN E \* Assistant Professor, 1998; MSCE, 1992, University of California (Berkeley), PhD, 1998, University of California (Berkeley); Investigation of the response of reinforced concrete structures to seismic loading using experimental and analytical methods

LETTENMAIER, DENNIS P \* Professor, 1976; MS, 1973, George Washington University, PhD, 1975, University of Washington; systems analysis and water resources planning

LOWES, LAURA N \* Associate Professor, 2000; PhD, 1999, University of California (Berkeley), MS, 1999, University of California (Berkeley); Numerical simulation of structural systems under dynamic and static loading

LUNDQUIST, JESSICA D. \* Assistant Professor, 2006; MS, 2000, University of California (San Diego), PhD, 2004, University of California (San Diego); environmental

MACKENZIE-HELNWEIN, PETER \* Research Assistant Professor, 2003; Diploma, 1991, Vienna University of Technology, PhD, 1997, Vienna University of Technology; Continuum mechanics, constitutive modeling, anisotropic material, contact mechanics, structural stability, nonlinear FE simulation

MAHONEY, JOE PAUL \* Professor, 1978; MSCE, 1970, Texas A&M University, PhD, 1979, Texas A&M University; construction materials, pavement systems, airport design

MATTOCK, ALAN, Professor Emeritus, 1964; MSC, 1949, University of London, UK, PhD, 1955, University of London, UK

MCCORMACK, EDWARD D \* Adjunct Research Asst Professor, 2005; MS, 1985, University of Washington, MS, 1985, University of Washington, PhD, 1997, University of Washington; Freight Transportation; Transportation and Technology; Transportation Infrastructure Protection; Land Use Transportation

MESCHKE, JOHN SCOTT \* Adjunct Assistant Professor, 2002; JD, 1993, University of Kansas, MS, 1996, Indiana University, PhD, 2001, University of North Carolina, Chapel Hill; Pathogen mobility, persistence, and detection in the environment

MILLER, GREGORY \* Professor, 1983; MSCE, 1981, Northwestern University,

PhD, 1984, Northwestern University; structural materials, solid mechanics, nonlinear dynamics

MILLER, WILLIAM, Associate Professor Emeritus, 1953; MSCE, 1952, University of Washington

MONTGOMERY, DAVID R \* Adjunct Professor, 1991; PhD, 1991, University of California (Berkeley); earth surface processes, especially those occurring in mountain drainage basins

MORGAN, MICHAEL S \* Adjunct Professor, 1974; DSc, 1972, Massachusetts Institute of Technology; applied respiratory, physiology and inhalation toxicology

MUENCH, STEPHEN T \* Assistant Professor, 2004; MSCE, 1998, University of Washington, PhD, 2004, University of Washington; Transportation construction; Construction information; Engineering training & education; Pavements

NECE, RONALD E, Professor Emeritus, 1959; MS, 1951, Lehigh University, DSc, 1958, Massachusetts Institute of Technology

NEMAT, KAMRAN M. \* Adjunct Associate Professor, 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); Civil engineering materials, concrete technology, mechanical behavior of concrete, fracture mechanics; concrete pavements

NIHAN, NANCY L \* Professor, 1973; MSCE, 1967, Northwestern University, PhD, 1970, Northwestern University; transportation planning and systems analysis

NOBLE, PETER \* Research Assistant Professor, 2001; MSC, 1984, Memorial University of Newfoundland, PhD, 1994, University of Saskatchewan (Canada); bioinformatics ecology microarrays artificial neural networks microbial ecology

PALMER, RICHARD \* Affiliate Professor, 1979; MS, 1973, Stanford University, PhD, 1979, Johns Hopkins University; civil engineering systems, computer methods, water resources planning and management

PETROFF, CATHERINE, Affiliate Assistant Professor, 1993; MS, 1983, Stanford University, PhD, 1993, California Institute of Technology

PILAT, MICHAEL J \* Professor Emeritus, 1967; MS, 1963, University of Washington, PhD, 1967, University of Washington; air

resources engineering (design of air-pollution-control equipment)

REED, DOROTHY \* Professor, 1983; MSE, 1977, Princeton University, PhD, 1980, Princeton University; structural and wind engineering

REIBER, STEVE H., Affiliate Professor, 1983; MHS, 1975, Johns Hopkins University, ME, 1977, University of Michigan, PhD, 1983, University of Utah

RICHEY, JEFFREY E \* Adjunct Professor, 1973; MSPH, 1970, University of North Carolina, PhD, 1973, University of California (Davis); quantitative problems of aquatic ecosystems, primary Amazon River, limnology

ROEDER, CHARLES W. \* Professor, 1977; MS, 1971, University of Illinois, PhD, 1977, University of California (Berkeley); structures and materials

ROJAS, EDDY \* Adjunct Associate Professor, 2001; MS, 1995, University of Colorado (Boulder), MA, 1997, University of Colorado (Boulder), PhD, 1997, University of Colorado (Boulder); Modeling, Simulation, and Visualization of Construction Engineering and Management Processes

ROSSANO, AUGUST T, Professor Emeritus, 1963; ScB, 1938, Massachusetts Institute of Technology, MS, 1941, Harvard University, DSc, 1954, Harvard University

RUTHERFORD, G SCOTT \* Professor, 1980; MSCE, 1968, Washington State University, PhD, 1974, Northwestern University; transportation planning and engineering, transit planning, demand forecasting

SAWHILL, ROY, Professor Emeritus, 1956; MEng, 1952, University of California (Berkeley)

SCHNEIDER, JERRY, Professor Emeritus, 1967; MCP, 1961, University of California (campus unspecified), PhD, 1966, University of Pennsylvania

SPYRIDAKIS, DIMITRIS, Associate Professor Emeritus, 1970; MS, 1959, University of Wisconsin, PhD, 1965, University of Wisconsin (Madison)

STAHL, DAVID A \* Professor, 2000; MS, 1975, University of Illinois (Urbana), PhD, 1978, University of Illinois (Urbana); Microbial Ecology and Biogeochemistry, Microbial Evolution and Systematics, Comparative Sequence Analysis

STANTON, JOHN F \* Professor, 1978; MSCE, 1975, Cornell University, PhD, 1978,

University of California (Berkeley); structural engineering, analysis and design

STEINEMANN, ANNE \* Professor, 2004; MS, 1985, University of California (Los Angeles), PhD, 1993, Stanford University; Drought, water management, environmental impacts, health effects of pollutants, sustainability

STENSEL, H. DAVID \* Professor, 1983; ME, 1968, Cornell University, PhD, 1971, Cornell University; biological wastewater treatment, fixed film reactors, mass transfer mechanics, modeling

STRAND, STUART E \* Research Professor, 1982; MS, 1975, Ohio State University, PhD, 1982, Pennsylvania State University; forest biotechnology, environmental pollution control

STRAUSSER, HOWARD, Associate Professor Emeritus, 1955; MSCE, 1950, Johns Hopkins University

SU, FENGGE, Acting Instructor, 2003; MS, 1998, Xinjiang University (China), PhD, 2001, Hobai University, Nanjing, China

SYLVESTER, ROBERT O, Professor Emeritus, 1938; MS, 1941, Harvard University

TAWRESEY, JOHN G, Affiliate Professor, 1985; MS, 1968, Cornell University, MBA, 1975, University of Washington

TERREL, RONALD L, Professor Emeritus, 1967; MSCE, 1961, Purdue University, PhD, 1967, University of California (Berkeley)

THOMPSON, PHILLIP L., Affiliate Assistant Professor, 2001; MS, 1992, University of Iowa, PhD, 1997, University of Iowa

TURKIYYAH, GEORGE \* Associate Professor, 1991; MS, 1986, Carnegie Mellon University, PhD, 1990, Carnegie Mellon University; computer-aided engineering, finite element modeling

VELICHENKO, OLEKSANDR, Affiliate Associate Professor, 2001; MSC, 1983, Dnepropetrovsk State University (Ukraine), PhD, 1988, Dnepropetrovsk Chemical Technology Institute, Ukraine

VERNEZ-MOUDON, ANNE \* Adjunct Professor, 1980; DSc, 1987, Ecole Polytechnique Federale De Lausanne; urban design, city form and neighborhood studies, design research

WADDELL, PAUL A \* Adjunct Professor, 1997; MS, 1981, University of Texas (Houston), PhD, 1989, University of Texas (Dallas); urban policy, regional planning,

growth management, land use, transportation, GIS

WANG, YINHAI \* Associate Professor, 1998; MSCE, 1991, Tsinghua University (China), PhD, 1998, University of Tokyo (Japan); Intelligent Transportation Systems, Traffic Modeling and Simulation, and Image Processing Intelligent Transportation Systems, Traffic Modeling and Simulation, and Image Processing

WELCH, EUGENE B, Professor Emeritus, 1962; MS, 1959, Michigan State University, PhD, 1967, University of Washington

WENK, EDWARD, Professor Emeritus, 1970; MS, 1947, Harvard University, PhD, 1950, Johns Hopkins University

WILSON, DENISE M \* Adjunct Associate Professor, 1991; MSEE, 1989, Georgia Institute of Technology, PhD, 1995, Georgia Institute of Technology; Distributed sensing systems design with emphasis on electronics interface

WOOD, ANDREW W \* Affiliate Assistant Professor, 2004; MSEE, 1995, University of Washington, PhD, 2003, University of Washington; Quantitative modeling, assessment and prediction in hydrology and water resources

WOOD, ERIC F., Affiliate Professor, 1993; MS, 1972, Massachusetts Institute of Technology, DSc, 1974, Massachusetts Institute of Technology

YEARSLEY, JOHN R., Affiliate Professor, 1976; MSME, 1966, University of Washington, MS, 1968, Massachusetts Institute of Technology, PhD, 1989, University of Washington

YEH, HARRY H \* Affiliate Professor, 1983; MS, 1977, Washington State University, PhD, 1983, University of California (Berkeley); fluid mechanics, water wave motions, coastal and hydraulic engineering

ZABINSKY, ZELDA \* Adjunct Professor, 1985; MS, 1984, University of Michigan, PhD, 1985, University of Michigan; operations research, applications in industrial engineering, optimization with stochastic elements

AGARWALA, ASEEM, Affiliate Assistant Professor, 2006; MEng, 1999, Massachusetts Institute of Technology, MS, 2002, University of Washington, PhD, 2006, University of Washington

AGRAWALA, MANEESH, Affiliate Assistant Professor, 2002; PhD, 2002, Stanford University

ALVERSON, GAIL A., Affiliate Professor, 1991; MS, 1988, University of Washington, PhD, 1990, University of Washington

ANDERSON, RICHARD J. \* Professor, 1986; PhD, 1985, Stanford University; parallel algorithms, computational geometry, combinatorial optimization

ANDERSON, THOMAS E. \* Associate Professor, 1997; MS, 1990, University of Washington, PhD, 1991, University of Washington; Local and wide area distributed systems, operating systems and networking

ATLAS, LES EUGENE \* Adjunct Professor, 1983; MS, 1978, Stanford University, PhD, 1984, Stanford University; time-frequency representations, digital signal processing applied to speech, audio, manufacturing

BACON, DAVE M \* Research Assistant Professor, 2006; PhD, 2001, University of California (Berkeley); quantum computing

BAER, JEAN-LOUP \* Professor Emeritus, 1969; MS, 1963, Grenoble (France), PhD, 1968, University of California (Los Angeles); computer system architecture, parallel processing

BALAZINSKA, MAGDALENA \* Assistant Professor, 2006; MS, 1999, Ecole Polytechnique De Montreal (Canada), PhD, 2005, Massachusetts Institute of Technology; databases and systems

BAUDISCH, PATRICK, Affiliate Assistant Professor, 2005; MA, 1994, Tech University of Darmstadt (Germany), PhD, 2001, Tech University of Darmstadt (Germany)

BEAME, PAUL W. \* Professor, 1987; MS, 1982, University of Toronto (Canada), PhD, 1987, University of Toronto (Canada); computational complexity, parallel computation, circuit-based complexity

BEN DOR, AMIR, Affiliate Assistant Professor, 1998; MSC, 1993, Technion Israel Institute of Technology, DSc, 1997, Technion Israel Institute of Technology

BENALOH, JOSH, Affiliate Associate Professor, 1999; MPhil, 1985, University of Chicago, MS, 1985, University of Chicago, PhD, 1987, Yale University

BENDER, EMILY R. MENON \* Adjunct Assistant Professor, 2003; MA, 1997, Stanford University, PhD, 2000, Stanford University; Computational linguistics (grammar engineering, software supporting language documentation); syntax; sociolinguistics

BERNSTEIN, PHILIP ALAN \* Affiliate Professor, 1996; MSC, 1972, University of Toronto (Canada), PhD, 1975, University of Toronto (Canada); Database systems, particularly for meta-data, and transaction processing

BERSHAD, BRIAN \* Professor, 1993; PhD, 1990, University of Washington, MS, 1990, University of Washington; operating systems, architecture, distributed systems, parallel systems

BILMES, JEFFREY A. \* Adjunct Associate Professor, 1999; MS, 1993, Massachusetts Institute of Technology, PhD, 1999, University of California (Berkeley); Speech & pattern recognition, learning, audio processing, high-performance computing, human-computer interfaces

BOHRINGER, KARL F. \* Adjunct Professor, 1998; MS, 1992, Cornell University, PhD, 1997, Cornell University; microelectromechanical systems (MEMS), applied microtechnology, micro spacecraft, distributed/ubiquitous microsystems

BOLOTSKI, JOSEPHINE AMMER \* Adjunct Assistant Professor, 2006; MEng, 1999, Massachusetts Institute of Technology, PhD, 2004, University of California (Berkeley)

BORNING, ALAN H \* Professor, 1980; MS, 1974, Stanford University, PhD, 1979, Stanford University; human-computer interaction; constraint-based languages and systems; programming languages; land use, transportation, and environmental modeling

BORRIELLO, GAETANO \* Professor, 1987; MS, 1980, Stanford University, PhD, 1988, Stanford University; Ubiquitous computing: devices, middleware, user interfaces

BRINKLEY III, JAMES F. \* Adjunct Professor, 1974; MD, 1974, University of Washington, PhD, 1984, Stanford University; computer applications in medicine and biology

CEZE, LUIS HENRIQUE DE BAR \* Assistant Professor, 2007; MEng, 2002, University of San Paulo (Brazil), PhD, 2007, University of Illinois; Computer architecture, including programming models and compiler support

CHAMBERLAIN, BRADFORD, Affiliate Assistant Professor, 2002; MS, 1995,

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## Computer Science and Engineering

ACHLIOPTAS, DIMITRIS, Affiliate Assistant Professor, 2000; MSC, 1995, University of Toronto (Canada), PhD, 1999, University of Toronto (Canada)

University of Washington, PhD, 2001, University of Washington

CHAMBERS, CRAIG D \* Professor, 1991; PhD, 1992, Stanford University; object-oriented language design and implementation

CHAUDHURI, SURAJIT, Affiliate Associate Professor, 2000; Mtech, 1984, Indian Institute of Technology (India), PhD, 1991, Stanford University

CHOUDHURY, TANZEEM, Affiliate Assistant Professor, 2004; MS, 1999, Massachusetts Institute of Technology, PhD, 2004, Massachusetts Institute of Technology

COHEN, MICHAEL F. \* Affiliate Professor, 1998; MS, 1985, Cornell University, PhD, 1992, University of Utah; Computer Graphics, Computer Vision, Computational Photography, Video/Image Compression, Collaboration Technologies

CORBATO, STEVEN C, Affiliate Associate Professor, 1998; PhD, 1989, University of Pennsylvania

CURLESS, BRIAN L. \* Associate Professor, 1998; MSEE, 1991, Stanford University, PhD, 1997, Stanford University; Computer graphics; 3D scanning; reconstruction; rendering

DAS, MANUVIR, Affiliate Assistant Professor, 2001; MS, 1993, University of Wisconsin (Madison), PhD, 1998, University of Wisconsin (Madison)

DE ROSE, ANTHONY DAVID, Affiliate Professor, 1985; PhD, 1985, University of California (Berkeley)

DELINE, ROBERT, Affiliate Professor, 2004; MS, 1993, University of Virginia, PhD, 1999, Carnegie Mellon University

DIORIO, CHRISTOPHER J \* Associate Professor, 1997; MSEE, 1984, California Institute of Technology, PhD, 1997, California Institute of Technology; designing silicon learning circuits modeled after neurobiology

DOMINGOS, PEDRO MORAIS DEL \* Associate Professor, 1999; MS, 1992, Technical University of Lisbon (Portugal), MS, 1994, University of California (Irvine), PhD, 1997, University of California (Irvine); Artificial intelligence, machine learning, data mining

DUCHAMP, THOMAS E. \* Adjunct Professor, 1979; MS, 1969, University of Illinois, PhD, 1976, University of Illinois; differential geometry, computer graphics

EBELING, WILLIAM H.C. \* Professor, 1986; MS, 1976, Southern Illinois University, PhD,

1986, Carnegie Mellon University; computer-aided design, VLSI architectures

EGGERS, SUSAN JANE \* Professor, 1989; PhD, 1989, University of California (Berkeley); compiler-directed parallelization, code and thread scheduling, trace driven methodology

ETZIONI, OREN \* Professor, 1991; MS, 1988, Carnegie Mellon University, PhD, 1991, Carnegie Mellon University; artificial intelligence, machine learning, integrated architectures, planning

FELSENSTEIN, JOSEPH \* Adjunct Professor, 1967; PhD, 1968, University of Chicago; estimation of evolutionary trees, models of long-term evolutionary processes, and theoretical population genetics

FISHKIN, KENNETH, Affiliate Professor, 2003; MS, 1983, University of California (Berkeley)

FOGARTY, JAMES A \* Assistant Professor, 2006; MS, 2005, Carnegie Mellon University, PhD, 2006, Carnegie Mellon University; Human-Computer Interaction, User Interface Software and Technology, and Ubiquitous Computing

FOX, DIETER \* Associate Professor, 2000; MSC, 1993, University of Bonn (Germany), PhD, 1998, University of Bonn (Germany); Main research: Artificial intelligence and mobile robotics More specifically: uncertainty, probabilistic state estimation

FRIEDMAN, BATYA \* Adjunct Professor, 1999; PhD, 1988, University of California (Berkeley); Value-sensitive design, social-cognitive and cultural aspects of information systems, HCI

GOLDE, HELLMUT, Professor Emeritus, 1959; MS, 1955, Stanford University, PhD, 1959, Stanford University

GRAY, TERENCE E, Affiliate Professor, 1989; PhD, 1978, University of California (Los Angeles)

GREEN, PHILIP \* Adjunct Professor, 1994; PhD, 1976, University of California (Berkeley); Mathematical and Computer Methods for Genome Analysis

GRIBBLE, STEVEN \* Associate Professor, 2000; MS, 1997, University of California (Berkeley), PhD, 2000, University of California (Berkeley); Distributed systems, scalable Internet infrastructure, mobility, and operating systems

GROSSMAN, DANIEL JOSEPH \* Assistant Professor, 2003; MS, 2001, Cornell University, PhD, 2003, Cornell University;

Programming language design and implementation

GURUSWAMI, VENKATESAN \* Associate Professor, 2002; MS, 1999, Indian Institute of Technology (India), PhD, 2001, Massachusetts Institute of Technology; Theoretical Computer Science, and specifically coding theory, approximation algorithms, computational complexity theory

HALEVY, ALON Y \* Affiliate Professor, 1998; PhD, 1993, Stanford University; data management, artificial intelligence

HANKS, STEVEN JOHN \* Adjunct Professor, 1989; MBA, 1983, University of Pennsylvania, MSEN, 1983, University of Pennsylvania, PhD, 1990, Yale University; Artificial intelligence and decision making under uncertainty

HARRISON, BEVERLY L, Affiliate Associate Professor, 2008; MAS, 1991, University of Toronto (Canada), PhD, 1997, University of Toronto (Canada)

HAUCK, SCOTT \* Adjunct Associate Professor, 1999; MS, 1992, University of Washington, PhD, 1995, University of Washington; FPGAs, Reconfigurable Computing, VLSI/CAD, Digital Logic, Adaptive Computing

HERTZMANN, AARON PHILLIP, Affiliate Assistant Professor, 2005; MS, 1998, New York University, PhD, 2001, New York University

HOOD, LEROY E., Affiliate Professor, 1991; MD, 1964, Johns Hopkins University, PhD, 1968, California Institute of Technology

HORVITZ, ERIC J., Affiliate Associate Professor, 1995; PhD, 1991, Stanford University, MD, 1994, Stanford University

JOHNSON, RONALD A., Adjunct Associate Professor, 1992; MA, 1972, University of Chicago, MS, 1975, University of Southern California

JONES, MICHAEL B, Affiliate Associate Professor, 2002; MS, 1988, Carnegie Mellon University, PhD, 1992, Carnegie Mellon University

KALET, IRA J \* Adjunct Professor, 1968; MA, 1966, Princeton University, PhD, 1968, Princeton University; computer simulation of radiation therapy, artificial intelligence, computer graphics

KARLIN, ANNA R. \* Professor, 1994; PhD, 1987, Stanford University; design and analysis of algorithms (probabilistic, online), operating systems, graphics and digital audio

- KAUTZ, HENRY A \* Affiliate Professor, 2000; MA, 1980, Johns Hopkins University, MS, 1982, University of Toronto (Canada), PhD, 1987, University of Rochester; artificial intelligence, technology applications in health care
- KEHL, THEODORE, Professor Emeritus, 1963; MS, 1958, University of Wisconsin, PhD, 1961, University of Wisconsin (Madison)
- KIM, YONGMIN \* Adjunct Professor, 1982; MS, 1979, University of Wisconsin (Madison), PhD, 1982, University of Wisconsin (Madison); computer architecture, imaging systems, medical imaging, computer graphics, multimedia, home healthcare, modeling and medical instrumentation
- KIMURA, GARY D., Affiliate Associate Professor, 1999; MS, 1981, University of Washington, PhD, 1984, University of Washington
- KLAVINS, ERIC \* Adjunct Assistant Professor, 2003; PhD, 1998, University of Michigan, MS, 1998, University of Michigan; Robotics, control theory, reactive systems and distributed algorithms
- KOHNO, TADAYOSHI \* Assistant Professor, 2006; MS, 2004, University of California (San Diego), PhD, 2006, University of California (San Diego); Cryptography and computer security
- KRISHNAMURTHY, ARVIND \* Research Assistant Professor, 2005; MS, 1994, University of California (Berkeley), PhD, 1999, University of California (Berkeley)
- LADNER, RICHARD E \* Professor, 1971; PhD, 1971, University of California (Berkeley); Theory of computation, design and analysis of algorithms, data compression, computer networks, computational complexity
- LAMACCHIA, BRIAN A, Affiliate Associate Professor, 2002; MS, 1991, Massachusetts Institute of Technology, PhD, 1996, Massachusetts Institute of Technology
- LAMARCA, ANTHONY, Affiliate Associate Professor, 2001; MS, 1992, University of Washington, PhD, 1996, University of Washington
- LANDAY, JAMES A \* Associate Professor, 2003; MS, 1993, Carnegie Mellon University, PhD, 1996, Carnegie Mellon University; Human-computer interaction: automated usability evaluation, demonstrational interfaces, ubiquitous computing, user interface design tools, and web design
- LARUS, JAMES R., Affiliate Associate Professor, 1999; MS, 1982, University of California (Berkeley), PhD, 1989, University of California (Berkeley)
- LAZOWSKA, EDWARD D \* Professor, 1977; MSC, 1974, University of Toronto (Canada), PhD, 1977, University of Toronto (Canada); Computer systems: modeling and analysis, design and implementation, distributed and parallel systems
- LEE, JAMES RUSSELL \* Assistant Professor, 2006; PhD, 2005, University of California (Berkeley); Applications of geometry and analysis in theoretical computer science
- LEVY, HENRY M \* Professor, 1983; MS, 1981, University of Washington; computer architecture, operating systems, distributed and parallel systems, object-oriented systems
- LEWIS, JOHN, Affiliate Professor, 1984; MA, 1968, University of California (Berkeley), PhD, 1977, Stanford University
- MANBER, UDI, Affiliate Professor, 2003; MSC, 1978, Technion Israel Institute of Technology, MS, 1981, University of Washington, PhD, 1982, University of Washington
- MANFERDELLI, JOHN L, Affiliate Professor, 2007; MA, 1975, University of California (Berkeley), PhD, 1979, University of California (Berkeley)
- MATSUOKA, YOKY \* Associate Professor, 2006; MS, 1995, Massachusetts Institute of Technology, PhD, 1998, Massachusetts Institute of Technology; Robotics, brain-machine interface
- MEILA-PREDOVICIU, MARINA \* Adjunct Associate Professor, 2000; MS, 1985, University Politehnica of Bucharest (Romania), PhD, 1999, Massachusetts Institute of Technology; Machine learning, data mining, belief networks, reasoning in uncertainty, algorithms
- MORRIS, MEREDITH JUNE, Affiliate Assistant Professor, 2008; ScB, 2001, Brown University, MS, 2003, Stanford University, PhD, 2006, Stanford University
- NOBLE, WILLIAM S \* Adjunct Associate Professor, 2002; MS, 1996, University of California (San Diego), PhD, 1998, University of California (San Diego); machine learning techniques for application to problems in molecular biology
- NOTKIN, DAVID S \* Professor, 1984; ScB, 1977, Brown University, PhD, 1984, Carnegie Mellon University; software engineering, evolution, environments, and systems; parallel systems and environments
- OLSON, MAYNARD V. \* Adjunct Professor, 1975; PhD, 1970, Stanford University; Methods and applications of large-scale DNA analysis
- OSKIN, MARK H. \* Associate Professor, 2001; MS, 2000, University of California (Davis), PhD, 2001, University of California (Davis); Computer architecture, quantum computation, dataflow models and architectural theory
- OSTENDORF, MARI \* Adjunct Professor, 1999; MSEE, 1981, Stanford University, PhD, 1985, Stanford University; Speech synthesis and understanding; spoken document retrieval; statistical pattern recognition
- PADMANABHAN, VENKATA N.Z \* Affiliate Assistant Professor, 1999; MS, 1995, University of California (Berkeley), PhD, 1998, University of California (Berkeley); Internet performance analysis, wireless networking and mobile computing
- PARIKH, TAPAN S \* Affiliate Assistant Professor, 2007; ScB, 1996, Brown University, MSC, 1999, University of Washington, PhD, 2007, University of Washington; use of computing to support sustainable economic development across the World
- PERLMAN, RADIA, Affiliate Professor, 2004; MS, 1976, Massachusetts Institute of Technology, PhD, 1988, Massachusetts Institute of Technology
- POPOVIC, ZORAN \* Associate Professor, 1999; MS, 1993, Carnegie Mellon University, PhD, 1999, Carnegie Mellon University; Computer graphics, especially character animation, motion editing, physically based modeling and modeling/simulation of natural phenomena
- RAO, RAJESH P.N. \* Associate Professor, 2000; MS, 1994, University of Rochester, PhD, 1998, University of Rochester; Computational neuroscience, machine learning, computer vision, robotics
- REGES, STUART THOMAS, Senior Lecturer, 2004; MS, 1982, Stanford University
- RUZZO, WALTER L \* Professor, 1977; PhD, 1978, University of California (Berkeley); computational biology
- SALESIN, DAVID HENRY \* Professor, 1992; ScB, 1983, Brown University, PhD, 1991, Stanford University; computer graphics, user interfaces, computational geometry

SCHWIKOWSKI, BENNO \* Affiliate Assistant Professor, 2000; MSC, 1994, University of Dusseldorf, Germany, PhD, 1998, University of Bonn (Germany); Systems Biology / Computational approaches, interaction networks, mass spectrometry

SCOTT, STEVEN L., Affiliate Professor, 2006; MS, 1988, University of Wisconsin (Madison), PhD, 1992, University of Wisconsin (Madison)

SEITZ, STEVEN M. \* Associate Professor, 2000; PhD, 1997, University of Wisconsin (Madison); Computer vision, computer graphics, and image-based scene modeling

SHAPIRO, LINDA G. \* Professor, 1986; MS, 1972, University of Iowa, PhD, 1974, University of Iowa; computer vision, artificial intelligence, pattern recognition, robotics

SHAW, ALAN CARY, Professor Emeritus, 1971; MS, 1962, Stanford University, PhD, 1968, Stanford University

SMITH, BURTON JORDAN, Affiliate Professor, 1989; MS, 1968, Massachusetts Institute of Technology, EE, 1969, Massachusetts Institute of Technology, DSc, 1972, Massachusetts Institute of Technology

SMITH, JOSHUA R. \* Affiliate Assistant Professor, 2005; MS, 1995, Massachusetts Institute of Technology, MA, 1997, University of Cambridge (UK), PhD, 1999, Massachusetts Institute of Technology; Sensor physics and signal processing; the use of RF signals for sensing, communication, and power transport. Personal Robotics; novel sensing techniques for robotic grasping

SNYDER, LAWRENCE \* Professor, 1983; PhD, 1973, Carnegie Mellon University; the theory, algorithms, languages, architecture, and VLSI issues of parallel computation

STEPP, MARTIN, Lecturer, 2004; MS, 2003, University of Arizona

STIBER, MICHAEL D \* Adjunct Associate Professor, 1997; MS, 1990, University of California (Los Angeles), PhD, 1992, University of California (Los Angeles); Scientific data management; computational neuroscience; biocomputing; neural networks; complex systems

STUETZLE, WERNER \* Adjunct Professor, 1984; PhD, 1977, Swiss Federal Institute of Technology; nonparametric methods in multivariate analysis, statistical applications of computer graphics

SUCIU, DAN \* Associate Professor, 2000; MS, 1982, Polytechnic University of Bucharest, Romania, MS, 1991, University of Bucharest (Romania), PhD, 1995, University of Pennsylvania; Databases with a focus on semistructured data and XML data management

SZELISKI, RICHARD STEPHEN, Affiliate Professor, 1998; MAS, 1981, University of British Columbia (Canada), PhD, 1988, Carnegie Mellon University

TANIMOTO, STEVEN L \* Professor, 1977; MSE, 1973, Princeton University, MA, 1974, Princeton University, PhD, 1975, Princeton University; image analysis, artificial intelligence, computer graphics, educational technology

TARCZY-HORNOCH, PETER \* Adjunct Professor, 1992; MD, 1989, Stanford University; Bioinformatics and clinical informatics: clinical systems and integrating genetic databases

TOMPA, MARTIN \* Professor, 1978; MS, 1975, University of Toronto (Canada), PhD, 1978, University of Toronto (Canada); computational complexity, computational biology

WELD, DANIEL SABEY \* Professor, 1988; MS, 1984, Massachusetts Institute of Technology, PhD, 1988, Massachusetts Institute of Technology; artificial intelligence, planning, model based reasoning

WETHERALL, DAVID JAMES \* Associate Professor, 1999; MS, 1994, Massachusetts Institute of Technology, PhD, 1998, Massachusetts Institute of Technology; Networks and distributed systems

WOBBROCK, JACOB O \* Adjunct Assistant Professor, 2006; MS, 2000, Stanford University, PhD, 2006, Carnegie Mellon University; Research interests are input techniques, interaction design, assistive technology, universal design, situational impairments, mobile computing, and most other areas of human-computer interaction (HCI)

YOUNG, PAUL R., Professor Emeritus, 1983; PhD, 1963, Massachusetts Institute of Technology

ZAHORJAN, JOHN \* Professor, 1980; ScB, 1975, Brown University, MS, 1976, University of Toronto (Canada), PhD, 1980, University of Toronto (Canada); computer systems, performance analysis, parallel programming models, scheduling and runtime support

ZBIKOWSKI, MARK JOSEPH, Affiliate Professor, 2006; SM, 1980, Yale University

ZHAO, FENG, Affiliate Professor, 2006; MS, 1988, Massachusetts Institute of Technology, PhD, 1992, Massachusetts Institute of Technology

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## Electrical Engineering

ACERO, ALEJANDRO \* Affiliate Professor, 2001; ME, 1987, Rice University, PhD, 1990, Carnegie Mellon University; speech Technology in industry

AFROMOWITZ, MARTIN \* Professor, 1974; MS, 1966, School of Engr And Applied Science (NY), PhD, 1969, Columbia University; microtechnology, solid-state and fiber-optics sensors, biomedical instrumentation

ALBRECHT, ROBERT W, Professor Emeritus, 1961; MS, 1958, University of Michigan, PhD, 1961, University of Michigan

ALEXANDRO, FRANK J, Professor Emeritus, 1964; MSEE, 1959, New York University, DSc, 1964, New York University

ALLSTOT, DAVID JAMES \* Professor, 1999; MSEE, 1974, Oregon State University, PhD, 1979, University of California (Berkeley); Design and simulation of RF and mixed-signal integrated circuits

AMIRPARVIZ, BABAK \* Assistant Professor, 2003; MSEE, 1997, University of Michigan, MS, 2001, University of Michigan, PhD, 2001, University of Michigan; Fabrication of nano and micro scale devices and systems, organic electronics and photonics, MEMS, self-assembly

ANDERSEN, JONNY, Professor Emeritus, 1967; MSEE, 1962, Massachusetts Institute of Technology, PhD, 1965, Massachusetts Institute of Technology

ARABSHAHI, PAYMAN \* Affiliate Associate Professor, 1996; MS, 1990, University of Washington, PhD, 1994, University of Washington; His specialization is in wireless communications and networking, sensor networks, signal processing, data mining and search, and biologically inspired systems

ATAL, BISHNU, Affiliate Professor, 2002; PhD, 1968, Polytechnic Institute of Brooklyn

ATLAS, LES EUGENE \* Professor, 1983; MS, 1978, Stanford University, PhD, 1984, Stanford University; time-frequency representations, digital signal processing applied to speech, audio, manufacturing

BASKARAN, RAJASHREE \* Affiliate Assistant Professor, 2006; MS, 2000, Cornell University, PhD, 2003, University of California (Santa Barbara); She does template based massively parallel assembly of microelectronic chips. She works in the area of advanced interconnects and novel packaging technologies for microprocessors

BERG, MARTIN C. \* Adjunct Associate Professor, 1986; MSME, 1978, University of Washington, PhD, 1986, Stanford University; digital control system design, control of structurally flexible electromechanical systems

BERNARD, GARY D \* Affiliate Professor, 1960; MSEE, 1960, University of Washington, PhD, 1965, University of Washington; advanced sensors for manufacturing, time-frequency classification, visual information processing

BILMES, JEFFREY A. \* Associate Professor, 1999; MS, 1993, Massachusetts Institute of Technology, PhD, 1999, University of California (Berkeley); Speech & pattern recognition, learning, audio processing, high-performance computing, human-computer interfaces

BJORKSTAM, JOHN L, Professor Emeritus, 1955; MS, 1952, University of Washington, PhD, 1958, University of Washington

BOHRINGER, KARL F. \* Professor, 1998; MS, 1992, Cornell University, PhD, 1997, Cornell University; microelectromechanical systems (MEMS), applied microtechnology, micro spacecraft, distributed/ubiquitous microsystems

BOLOTSKI, JOSEPHINE AMMER \* Assistant Professor, 2006; MEng, 1999, Massachusetts Institute of Technology, PhD, 2004, University of California (Berkeley)

BORRIELLO, GAETANO \* Adjunct Professor, 1987; MS, 1980, Stanford University, PhD, 1988, Stanford University; Ubiquitous computing: devices, middleware, user interfaces

BUSHNELL, LINDA \* Research Assistant Professor, 2000; MSEE, 1987, University of Connecticut, MA, 1989, University of California (Berkeley), PhD, 1994, University of California (Berkeley); Networked control systems, nonlinear control theory

CHAKRABORTY, SWAGATO \* Affiliate Assistant Professor, 2006; PhD, 2005, University of Washington, MS, 2005, University of Washington; he advises group members on computational electromagnetic techniques. He has worked closely with both and interacts directly with them on quadrature schemes, integral equation formulations, and variability modeling

CHEN, ANTAO \* Affiliate Associate Professor, 2004; MS, 1989, Beijing Institute of Tech (China), MS, 1994, University of Southern California; Dr. Chen's expertise is in photonics-the science and technology of the application of light, which incorporates optics, laser technology, electrical engineering, materials science, and information storage and processing

CHEN, ANTAO \* Affiliate Associate Professor, 2004; PhD, 1998, University of Southern California; Dr. Chen's expertise is in photonics-the science and technology of the application of light, which incorporates optics, laser technology, electrical engineering, materials science, and information storage and processing

CHEN, QINGLUN, Affiliate Associate Professor, 1999; MS, 1981, Chongqing University, China, PhD, 1990, University of Houston

CHIZECK, HOWARD JAY \* Professor, 1998; MS, 1976, Case Western Reserve University, DSc, 1982, Massachusetts Institute of Technology; Biologically inspired control systems for autonomous robotics, prosthetics, and rehabilitation

CHOU, PHILIP A., Affiliate Associate Professor, 1998; MS, 1983, University of California (Berkeley), PhD, 1998, Stanford University

CHRISTIE, RICHARD DUNSTAN \* Associate Professor, 1989; MSEE, 1974, Rensselaer Polytechnic Institute, PhD, 1989, Carnegie Mellon University; power systems analysis, expert systems applications, user interfaces

CRUM, LAWRENCE A. \* Research Professor, 1992; MS, 1965, Ohio University, PhD, 1967, Ohio University; physical acoustics, underwater acoustics, medical ultrasound, acoustic cavitation, sonoluminescence, lithotripsy

CWIK, THOMAS A., Affiliate Associate Professor, 1997; MSEE, 1981, University of Illinois, PhD, 1986, University of Illinois

DAILEY, DANIEL J \* Research Professor, 1988; MS, 1982, University of Washington, PhD, 1988, University of Washington; time series modeling of physical phenomena, optimization, distributed computing, networking

DALTON, LARRY R. \* Adjunct Professor, 1998; MS, 1966, Michigan State University, MA, 1971, Harvard University, PhD, 1971, Harvard University; Materials chemistry focused on producing next generation opto-electronic materials

DANIELS, PATRICIA D., Affiliate Professor, 1973; PhD, 1973, University of California (Berkeley)

DARLING, ROBERT B \* Professor, 1985; MS, 1982, Georgia Institute of Technology, PhD, 1985, Georgia Institute of Technology; semiconductor devices, solid state, optoelectronics, microelectronics

DENG, LI, Affiliate Professor, 2000; MSC, 1984, University of Wisconsin, PhD, 1986, University of Wisconsin

DESOUZA, KEVIN C \* Adjunct Assistant Professor, 2005; MBA, 2001, Illinois Institute of Technology, PhD, 2006, University of Illinois; Research interests are in the areas of knowledge management, government intelligence programs, national security issues, and crisis management

DING, KUNG-HAU, Affiliate Professor, 2006; MS, 1983, University of Washington, MS, 1985, University of Washington, PhD, 1989, University of Washington

DIORIO, CHRISTOPHER J \* Adjunct Associate Professor, 1997; MSEE, 1984, California Institute of Technology, PhD, 1997, California Institute of Technology; designing silicon learning circuits modeled after neurobiology

DOW, DANIEL G, Professor Emeritus, 1968; MS, 1953, University of Michigan, PhD, 1958, Stanford University

DUNHAM, SCOTT T. \* Professor, 1999; MSEE, 1980, Stanford University, PhD, 1985, Stanford University; Modeling and simulation of microfabrication processes and device behavior

EBELING, WILLIAM H.C. \* Adjunct Professor, 1986; MS, 1976, Southern Illinois University, PhD, 1986, Carnegie Mellon University; computer-aided design, VLSI architectures

EHRENBERG, JOHN E \* Affiliate Professor, 1972; MSEE, 1968, Massachusetts Institute of Technology, PhD, 1973, University of Washington; his primary areas of expertise are communication systems, signal process and underwater acoustics

EL-SHARKAWI, MOHAMED A. \* Professor, 1980; MS, 1977, University of British Columbia (Canada), PhD, 1980, University of British Columbia (Canada); analysis and control of power electronics, systems, and electric drives; artificial neural networks

FALK, ROBERT AARON, Affiliate Associate Professor, 1995; MS, 1974, University of Washington, PhD, 1979, University of Washington

FAZEL SARJOU, MARYAM \* Assistant Professor, 2007; MS, 1997, Stanford

University, PhD, 2002, Stanford University; The general area of my research is optimization, systems and control; in particular convex optimization and relaxation methods with a focus on applications in parsimonious modeling, engineering design, and systems biology

FOX, DIETER \* Adjunct Associate Professor, 2000; MSC, 1993, University of Bonn (Germany); PhD, 1998, University of Bonn (Germany); Main research: Artificial intelligence and mobile robotics More specifically: uncertainty, probabilistic state estimation

FURNESS, THOMAS A. \* Adjunct Professor, 1989; PhD, 1981, University of Southampton (UK); display systems engineering, human factors, computer graphics, virtual reality, human computer interface design

GIRI, JAY \* Affiliate Associate Professor, 1990; MS, 1971, State University of New York (Stony Brook), PhD, 1977, Clark University; power system analysis, software development and user interfaces for real-time power system control

GOLDSCHNEIDER, JILL, Affiliate Assistant Professor, 1998; MSC, 1991, University of Washington, PhD, 1997, University of Washington

GRAY, ANDREW A., Affiliate Assistant Professor, 2001; MS, 1997, Johns Hopkins University, PhD, 2000, University of Southern California

GUILFORD, EDWARD C, Professor Emeritus, 1959; MA, 1950, University of Utah, PhD, 1959, University of California (Berkeley)

GUPTA, MAYA R \* Assistant Professor, 2003; MSEE, 1999, Stanford University, PhD, 2003, Stanford University; Statistical signal and image processing including color engineering

HANNAFORD, BLAKE \* Professor, 1989; MS, 1982, University of California (Berkeley), PhD, 1985, University of California (Berkeley); haptic interfaces, robotics, biomechanics, bioengineering, controls, human-machine interaction

HARALICK, ROBERT M, Professor Emeritus, 1986; MSEE, 1967, University of Kansas, PhD, 1969, University of Kansas

HASSAN, AMER \* Affiliate Professor, 2001; MSEE, 1984, University of Kansas, PhD, 1988, University of Michigan, Ann Arbor

HAUCK, SCOTT \* Associate Professor, 1999; MS, 1992, University of Washington, PhD, 1995, University of Washington;

FPGAs, Reconfigurable Computing, VLSI/ CAD, Digital Logic, Adaptive Computing

HELMS, WARD J \* Associate Professor Emeritus, 1968; MS, 1963, University of Washington, PhD, 1968, University of Washington; VLSI analog and digital circuit design, integrated circuits, acoustics and audio, silicon compilers

HENDERSON, THOMAS R, Affiliate Assistant Professor, 2003; PhD, 1999, University of California (Berkeley)

HOWE, BRUCE M. \* Adjunct Research Assoc Professor, 1988; MS, 1978, Stanford University, PhD, 1986, University of California (San Diego); Ocean acoustic tomography, climate, and observatories

HUANG, XUECONG D. \* Affiliate Professor, 1997; MS, 1984, Tsinghua University (China), PhD, 1989, University of Edinburgh (UK); Speech recognition and synthesis, user interfaces, artificial intelligence, computational linguistics

HWANG, JENQ-NENG \* Professor, 1989; MSEE, 1983, National Taiwan University, PhD, 1988, University of Southern California; parallel architectures, signal and image processing, neural networks

ISHIMARU, AKIRA, Professor Emeritus, 1954; PhD, 1958, University of Washington

JANDHYALA, VIKRAM \* Associate Professor, 2000; MSEE, 1995, University of Illinois (Urbana), PhD, 1998, University of Illinois (Urbana); Computational and Applied Electromagnetics, High-Speed Circuit Applications of Field Solvers

JARUWATANADILOK, SERMSAK \* Research Assistant Professor, 2003; MSEE, 1997, Texas A&M University, PhD, 2003, University of Washington; electromagnetic remote sensing, wave propagation and imaging in random media, and communication in cluttered or unknown environments

JOHNSON, DAVID L, Professor Emeritus, 1955; PhD, 1955, Purdue University

KIM, JAE H. \* Affiliate Associate Professor, 2000; MSC, 1978, Seoul National University (Korea), PhD, 1987, University of Florida; tactical mobile networking and wireless communications, specifically communications on-the-move (COTM), mobile routing, network mobility management, TCP enhancement over satellite, recently more on cross-layer protocol design for MANET and sensor networks

KIM, YONGMIN \* Professor, 1982; MS, 1979, University of Wisconsin (Madison), PhD, 1982, University of Wisconsin

(Madison); computer architecture, imaging systems, medical imaging, computer graphics, multimedia, home healthcare, modeling and medical instrumentation

KINAHAN, PAUL E. \* Adjunct Professor, 2001; MS, 1988, University of British Columbia (Canada), PhD, 1994, University of Pennsylvania; Medical imaging

KIRCHHOFF, KATRIN \* Research Associate Professor, 1999; MA, 1996, Universität Bielefeld (Germany), PhD, 1999, Universität Bielefeld (Germany); Research area: automatic speech and language processing, human-computer interfaces, machine learning

KLAVINS, ERIC \* Assistant Professor, 2003; PhD, 1998, University of Michigan, MS, 1998, University of Michigan; Robotics, control theory, reactive systems and distributed algorithms

KLUTE, GLENN K. \* Affiliate Associate Professor, 1999; MS, 1990, Pennsylvania State University, PhD, 1999, University of Washington; Biomechanics, artificial limbs, and biomimetic control systems

KOHN, WOLF \* Affiliate Professor, 2002; MSEE, 1976, Massachusetts Institute of Technology, PhD, 1978, Massachusetts Institute of Technology; Enterprise Control and Operations Research

KUGA, YASUO \* Professor, 1983; MS, 1979, University of Washington, PhD, 1983, University of Washington; microwave and millimeter-wave remote sensing, optics, and electromagnetics

LADNER, RICHARD E \* Adjunct Professor, 1971; PhD, 1971, University of California (Berkeley); Theory of computation, design and analysis of algorithms, data compression, computer networks, computational complexity

LAURITZEN, PETER O, Professor Emeritus, 1965; MS, 1958, Stanford University, PhD, 1961, Stanford University

LEWELLEN, THOMAS \* Adjunct Professor, 1972; PhD, 1972, University of Washington; My areas of specialization are centered on technologies for imaging of gamma rays for medical applications. The work includes: 1) investigation of basic gamma ray interactions in scintillators and solid state detectors; 2) design and fabrication of el

LI, MINGYAN, Affiliate Assistant Professor, 2006; MD, 1999, University of Adelaide (Australia), PhD, 2006, University of Washington

LI, XINGDE \* Adjunct Associate Professor, 2001; PhD, 1998, University of Pennsylvania



nia; Biomedical optical imaging, spectroscopy and biophotonics

LIN, CHING-YUNG \* Affiliate Assistant Professor, 2004; MS, 1993, National Taiwan University, MS, 1993, National Taiwan University, PhD, 2000, Columbia University; focused on multimodality signal analysis and complex network analysis, with applications on machine learning, distributed computing, embedded vision system, social computing and security

LIN, LIH-YUAN \* Associate Professor, 2003; PhD, 1996, University of California (Los Angeles), MS, 1996, University of California (Los Angeles); Photonics and MEMS for advanced communication and bio-engineering

LIU, HUI \* Associate Professor, 1998; MS, 1992, Portland State University, PhD, 1995, University of Texas (Austin); Wireless system and network design: DSP and VLSI for communications, numerical computing; statistical signal processing

LUBY, JAMES C \* Affiliate Assistant Professor, 1987; MSEE, 1978, Colorado State University, PhD, 1984, University of Washington; signal processing, underwater acoustics, computer simulation, adaptive array processing, tracking

MALVAR, HENRIQUE S., Affiliate Professor, 1999; MSEE, 1979, Universidade Federal do Rio de Janeiro (Brazil), PhD, 1986, Massachusetts Institute of Technology

MAMISHEV, ALEXANDER V \* Associate Professor, 1999; MS, 1994, Texas A&M University, PhD, 1999, Massachusetts Institute of Technology; sensors, non-destructive testing, power, MEMS, inverse problems, optimization

MATSUOKA, YOKY \* Adjunct Associate Professor, 2006; MS, 1995, Massachusetts Institute of Technology, PhD, 1998, Massachusetts Institute of Technology; Robotics, brain-machine interface

MATULA, THOMAS J. \* Affiliate Assistant Professor, 1997; MS, 1990, Washington State University, PhD, 1993, Washington State University; Cavitation phenomena as it pertains to thresholds, sonoluminescence and sonochemistry

MELDRUM, DEIRDRE R. \* Affiliate Professor, 1992; MS, 1984, Rensselaer Polytechnic Institute, PhD, 1992, Stanford University; genomics

MIGUEL, AGNIESZKA C. \* Affiliate Assistant Professor, 2004; MS, 1996, Florida Atlantic University, PhD, 2001, University of Washington; data compression area

MITCHELL, GORDON LYNN, Affiliate Professor, 1974; PhD, 1974, University of Washington

MORGANSEN, KRISTIA. \* Adjunct Assistant Professor, 2002; MS, 1996, Harvard University, PhD, 1999, Harvard University; Nonlinear control, underactuated mechanical systems and limited communication coordinated control

MORITZ, WILLIAM E, Professor Emeritus, 1973; MS, 1966, Stanford University, PhD, 1969, Stanford University

NELSON, BRIAN A. \* Research Associate Professor, 1987; MS, 1983, University of Wisconsin, PhD, 1987, University of Wisconsin (Madison); fusion plasma physics, plasma processing of materials, data acquisition software

NIKITIN, PAVEL \* Affiliate Assistant Professor, 2002; MS, 1998, Utah State University, PhD, 2002, Carnegie Mellon University; his general expertise as RF/microwave engineering (antennas, propagation, systems). his specific expertise is RFID (radio frequency identification)

OSTENDORF, MARI \* Professor, 1999; MSEE, 1981, Stanford University, PhD, 1985, Stanford University; Speech synthesis and understanding; spoken document retrieval; statistical pattern recognition

OTIS, BRIAN P \* Assistant Professor, 2005; MS, 2002, University of California (Berkeley), PhD, 2005, University of California (Berkeley); Ultra-low power integrated circuit design and analysis for wireless sensors

PADMANABHAN, VENKATA N.Z \* Affiliate Assistant Professor, 1999; MS, 1995, University of California (Berkeley), PhD, 1998, University of California (Berkeley); Internet performance analysis, wireless networking and mobile computing

PATHAK, SAYAN DEV \* Affiliate Assistant Professor, 2001; MS, 1997, University of Washington, PhD, 2000, University of Washington; Advanced medical image processing algorithms

PECKOL, JAMES \* Senior Lecturer, 1995; MS, 1975, University of Washington, PhD, 1985, University of Washington; Computer architecture, hardware/software co-development for embedded systems, and generic computing with applications of AI

PEDEN, IRENE CARSWELL, Professor Emeritus, 1961; MS, 1958, Stanford University, PhD, 1962, Stanford University

PITTON, JAMES W \* Affiliate Assistant Professor, 2000; MSEE, 1986, University

of Michigan, PhD, 1994, University of Washington; signal and image processing, digital communications, ocean acoustics and speech processing

POOVENDRAN, RAADHAKRISHNAN \* Associate Professor, 2000; MSEE, 1991, University of Michigan, Ann Arbor, PhD, 1999, University of Maryland; Computer Networks, Network security, Cryptography, Network Algorithms Image and Signal Processing, Communication Theory

PORTER, ROBERT P, Professor Emeritus, 1985; MSEE, 1965, Massachusetts Institute of Technology, PhD, 1970, Northeastern University

RISKIN, EVE A \* Professor, 1990; MSEE, 1984, Stanford University, MS, 1986, Stanford University, PhD, 1990, Stanford University; image compression and processing, and signal processing

RITCEY, JAMES A. \* Professor, 1985; MS, 1980, Syracuse University, PhD, 1985, University of California (San Diego); communications, signal processing, radar/sonar

ROSEN, JACOB \* Research Associate Professor, 1997; MSC, 1993, Tel Aviv University (Israel), PhD, 1997, Tel Aviv University (Israel); Human Centered Robotics, Medical Robotics, Rehabilitation Robotics, Human Machine Interfaces, Surgical Robotics, Exoskeleton, Medical Simulation, Biomechanics

ROY, SUMIT \* Professor, 1998; MA, 1985, University of California (Santa Barbara), MSEE, 1985, University of California (Santa Barbara), PhD, 1988, University of California (Santa Barbara); Performance analysis of communications networks; statistical & numerical computing

SAHR, JOHN D. \* Professor, 1991; PhD, 1990, Cornell University; radar remote sensing, ionospheric physics; signal processing; wireless communications

SAMPIGETHAYA, RADHAKRISHN \* Affiliate Assistant Professor, 2007; MS, 2002, University of Washington, PhD, 2007, University of Washington; Security and privacy of information technologies and applications in emerging wireless networks, high assurance of next-generation air and road transportation systems

SECHEN, CARL M. \* Affiliate Professor, 1992; MS, 1980, Massachusetts Institute of Technology, PhD, 1987, University of California (Berkeley); design and computer-aided design of digital integrated circuits and systems

SHAPIRO, LINDA G. \* Professor, 1986; MS, 1972, University of Iowa, PhD, 1974,

University of Iowa; computer vision, artificial intelligence, pattern recognition, robotics

SHI, CHUAN JIN \* Professor, 1998; MSC, 1988, Fudan University (China), MAS, 1991, University of Waterloo (Canada), PhD, 1994, University of Waterloo (Canada); VLSI and VLSI-CAD, optimization

SIGELMANN, RUBEN S., Professor Emeritus, 1958; MS, 1961, University of Washington, PhD, 1963, University of Washington

SINANAN, MIKA N. \* Adjunct Professor, 1980; MD, 1980, Johns Hopkins University; Surgical education, biorobotic surgical instrument development, and clinical procedure development for minimally invasive surgery

SMITH, JOSHUA R. \* Affiliate Assistant Professor, 2005; MS, 1995, Massachusetts Institute of Technology, MA, 1997, University of Cambridge (UK), PhD, 1999, Massachusetts Institute of Technology; Sensor physics and signal processing; the use of RF signals for sensing, communication, and power transport. Personal Robotics; novel sensing techniques for robotic grasping

SOMA, MANI \* Professor, 1982; MSEE, 1977, Stanford University, PhD, 1980, Stanford University; computer-aided design, device modeling, I.C. technology and design, bioengineering

SPINDEL, ROBERT C., Professor Emeritus, 1987; MS, 1966, Yale University, MPhil, 1968, Yale University, PhD, 1971, Yale University

STRUNZ, KAI \* Affiliate Assistant Professor, 2002; MSEE, 1996, University of Saarlandes (Germany), PhD, 2001, University of Saarlandes (Germany); Power and energy systems, power electronics, simulation of electric circuits

SUN, MING-TING \* Professor, 1996; MS, 1981, University of Texas (Arlington), PhD, 1985, University of California (Los Angeles); multimedia/video processing/networking VLSI

TANIMOTO, STEVEN L. \* Adjunct Professor, 1977; MSE, 1973, Princeton University, MA, 1974, Princeton University, PhD, 1975, Princeton University; image analysis, artificial intelligence, computer graphics, educational technology

TAYA, MINORU \* Adjunct Professor, 1986; MS, 1973, Northwestern University, PhD, 1977, Northwestern University; composite materials, elasticity and plasticity, impact physics, fracture theory

THOMAS, JOHN R., Affiliate Assistant Professor, 2006; MSEE, 1998, University of Washington, PhD, 2006, University of Washington

THORSOS, ERIC I. \* Affiliate Associate Professor, 2001; MS, 1966, University of California (Davis), PhD, 1972, Massachusetts Institute of Technology; rough surface scattering, numerical simulation and theory, underwater acoustics

TRIPATHI, ALOK \* Affiliate Assistant Professor, 2001; MSC, 1998, Indian Institute of Science (India), PhD, 1999, Oregon State University

TSANG, LEUNG \* Professor, 1983; MS, 1973, Massachusetts Institute of Technology, PhD, 1976, Massachusetts Institute of Technology; wave propagation and scattering, remote sensing and optics

VAEZY, SHAHRAM \* Adjunct Associate Professor, 1996; PhD, 1991, University of Washington; Therapeutic Ultrasound, Image-Guided Therapy, Three Dimensional Visualization and Computation

VENKATA, SUBRAHMANYAM S., Affiliate Professor, 1979; MSEE, 1966, Indian Institute of Technology (India), PhD, 1971, University of South Carolina

VIVEKANANDAN, J. \* Affiliate Associate Professor, 1994; MTech, 1981, Indian Institute of Technology (India), PhD, 1986, Colorado State University; modeling and observations of atmospheric remote sensing; RF, scattering, wave propagation, radar, radiometer, and remote sensing

WILSON, DENISE M. \* Associate Professor, 1991; MSEE, 1989, Georgia Institute of Technology, PhD, 1995, Georgia Institute of Technology; Distributed sensing systems design with emphasis on electronics interface

WINEBRENNER, DALE P. \* Adjunct Research Professor, 1986; MS, 1980, University of California (San Diego), PhD, 1985, University of Washington; optical and radiowave propagation and scattering, remote sensing of planetary surfaces and subsurfaces, optical probing for life and biogenic materials in extreme environments

YEE, SINCLAIR S., Professor Emeritus, 1966; MS, 1961, University of California (Berkeley), PhD, 1965, University of California (Berkeley)

ZABINSKY, ZELDA \* Adjunct Professor, 1985; MS, 1984, University of Michigan, PhD, 1985, University of Michigan; operations research, applications in industrial engineering, optimization with stochastic elements

ZICK, GREGORY L., Professor Emeritus, 1974; MS, 1972, University of Michigan, PhD, 1974, University of Michigan

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## Industrial Engineering

ATMAN, CYNTHIA J. \* Professor, 1998; MS, 1983, Ohio State University, PhD, 1990, Carnegie Mellon University; Engineering education issues and developing cognitive models of engineering design

BEAMON, BENITA M. \* Associate Professor, 1999; MS, 1990, Cornell University, PhD, 1994, Georgia Institute of Technology; Production, material handling, and transportation systems

BEAUCHAMP, NORMAN J., Adjunct Professor, 2002; MD, 1990, Michigan State University

BRAYMAN, VLADIMIR M., Affiliate Assistant Professor, 2003; MS, 1996, University of Washington, PhD, 2003, University of Washington

DRUI, ALBERT B., Associate Professor Emeritus, 1959; MS, 1957, Washington University

EMERY, ASHLEY F. \* Adjunct Professor, 1961; MS, 1958, University of California (Berkeley), PhD, 1961, University of California (Berkeley); bioengineering, energy conservation in buildings and air conditioning

FURNESS, THOMAS A. \* Professor, 1989; PhD, 1981, University of Southampton (UK); display systems engineering, human factors, computer graphics, virtual reality, human computer interface design

GANTER, MARK \* Adjunct Professor, 1986; MS, 1981, University of Wisconsin, PhD, 1985, University of Wisconsin (Madison); solid modeling, computer graphics, kinematics and automated manufacturing

GHATE, ARCHIS VIJAY \* Assistant Professor, 2006; MS, 2003, Stanford University, PhD, 2006, University of Michigan; operations research (mathematical programming, randomized algorithms, computational game theory)

HARALDSDOTTIR, ASLAUG \* Affiliate Associate Professor, 1989; MS, 1982, Oklahoma State University, PhD, 1987, University of Michigan; Air traffic management operational concepts, advanced automation technologies, performance modeling

HEIM, JOSEPH A., Affiliate Associate Professor, 1993; MEng, 1975, University of Louisville, MSIE, 1987, Purdue University, PhD, 1990, Purdue University

IVERSON, SCOTT CHRISTIAN, Affiliate Associate Professor, 1983; MA, 1972, San Jose State University, PhD, 1974, University of Colorado (campus unspecified)

JOHNSON, PETER W \* Adjunct Associate Professor, 2001; PhD, 1998, University of California (Berkeley), MS, 1998, University of California (Berkeley); Developing hardware and software tools for exposure assessment research, measuring muscle fatigue with electrical stimulation, upper extremity biomechanics and ergonomics

KAPUR, KAILASH C. \* Professor, 1992; MTech, 1965, Indian Institute of Technology (India), MS, 1967, University of California (Berkeley), PhD, 1969, University of California (Berkeley); quality/reliability engineering, system design/optimization, total quality/reliability management

KLASTORIN, THEODORE \* Adjunct Professor, 1974; PhD, 1973, University of Texas (Austin); operations management, facility location, project management, waiting lines, logistics, inventory

KOHN, WOLF \* Affiliate Professor, 2002; MSEE, 1976, Massachusetts Institute of Technology, PhD, 1978, Massachusetts Institute of Technology; Enterprise Control and Operations Research

KUMAR, VIPIN \* Adjunct Associate Professor, 1988; MS, 1972, University of Rhode Island, MBA, 1974, University of Rhode Island, PhD, 1988, Massachusetts Institute of Technology; manufacturing, polymer processing, microcellular plastics, design theory and methodology

KUTTNER, BRIAN, Affiliate Associate Professor, 1999; MS, 1974, Hebrew University (Israel), PhD, 1978, University of Michigan, Ann Arbor

MASTRANGELO, CHRISTINA M. \* Associate Professor, 2002; MS, 1990, Arizona State University, PhD, 1993, Arizona State University; Multivariate quality control, linear models, data mining, semiconductor manufacturing

MIYATA, EDWIN SEIICHI, Affiliate Professor, 1992; MSME, 1976, University of Washington, PhD, 1991, University of Washington

MOINZADEH, KAMRAN \* Adjunct Professor, 1984; MS, 1982, Stanford University, PhD, 1985, Stanford University; operations

management, production management, inventory, quality and supply chain management

NIHAN, NANCY L \* Adjunct Professor, 1973; MSCE, 1967, Northwestern University, PhD, 1970, Northwestern University; transportation planning and systems analysis

RAMEY, JUDITH A \* Adjunct Professor, 1983; MA, 1971, University of Texas (unspecified), PhD, 1983, University of Texas (unspecified); computer documentation, online documentation, user interface design and usability testing

RAMULU, M \* Adjunct Professor, 1982; MTech, 1976, Indian Institute of Technology (India), PhD, 1982, University of Washington; manufacturing processes, production engineering, applied mechanics, fatigue and fracture mechanics

REINHALL, PER G \* Adjunct Professor, 1982; MS, 1978, California Institute of Technology, PhD, 1982, California Institute of Technology; nonlinear dynamics, vibrations

STORCH, RICHARD \* Professor, 1977; MS, 1968, Massachusetts Institute of Technology, PhD, 1978, University of Washington; ship production, large scale assembly and manufacturing systems, statistical quality control, design for production

TURKIYAH, GEORGE \* Adjunct Associate Professor, 1991; MS, 1986, Carnegie Mellon University, PhD, 1990, Carnegie Mellon University; computer-aided engineering, finite element modeling

TUTTLE, MARK E \* Adjunct Professor, 1985; MS, 1978, Michigan Technological University, PhD, 1984, Virginia Polytechnic Institute and State University; experimental stress analysis, composite materials, adhesion mechanics, viscoelasticity, applied solid mechanics

YEN, JOYCE WEN-HWEI \* Affiliate Assistant Professor, 2000; MS, 1997, University of Michigan, Ann Arbor, PhD, 2000, University of Michigan, Ann Arbor; stochastic programming, decision-making under uncertainty, resource allocation under uncertainty

ZABINSKY, ZELDA \* Professor, 1985; MS, 1984, University of Michigan, PhD, 1985, University of Michigan; operations research, applications in industrial engineering, optimization with stochastic elements

ZAK, YEVGENIY J. (EUGENE), Affiliate Associate Professor, 1999; MS, 1973, Moscow Aviation Institute, Russia, MS, 1976, Moscow State University (Russia),

PhD, 1981, Moscow Inst of Physics & Tech (Russia)

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## Materials Science and Engineering

ALLAN, G GRAHAM \* Adjunct Professor, 1966; PhD, 1956, University of Glasgow (UK), DSc, 1971, University of Strathclyde (UK); creativity and innovation

BORDIA, RAJENDRA KUMAR \* Professor, 1991; MS, 1981, Cornell University, PhD, 1986, Cornell University; processing and mechanical properties of ceramics, polymer and ceramic composites

BRUSH, LUCIEN N \* Associate Professor, 1990; ME, 1984, Carnegie Mellon University, PhD, 1988, Carnegie Mellon University; computational modeling of solidification, modeling studies of materials processing

CAHN, JOHN WERNER, Affiliate Professor, 1984; PhD, 1953, University of California (Berkeley)

CAO, GUOZHONG \* Professor, 1996; MS, 1985, Shanghai Institute of Ceramics, China, PhD, 1991, Eindhoven University of Technology(Neth); Processing, characterization, and applications of ferroelectrics, piezoelectrics, organic/inorganic hybrids, and nanostructured materials

CHAMBERS, SCOTT A., Affiliate Professor, 1992; PhD, 1977, Oregon State University

CHIKYOW, TOYOHIRO, Affiliate Assistant Professor, 1994; MS, 1985, Waseda University (Japan), PhD, 1989, Waseda University (Japan)

DAS, K BHAGWAN, Affiliate Professor, 1978; MSC, 1956, Osmania University (India), MS, 1961, Purdue University, MSME, 1963, University of Illinois, PhD, 1971, University of Washington

DOGAN, FATIH, Affiliate Professor, 1990; MS, 1984, Technische Universitat (Germany), PhD, 1989, Technische Universitat (Germany)

DUNHAM, SCOTT T. \* Adjunct Professor, 1999; MSEE, 1980, Stanford University, PhD, 1985, Stanford University; Modeling and simulation of microfabrication processes and device behavior

FISCHBACH, DAVID B, Professor Emeritus, 1969; MS, 1951, Yale University, PhD, 1955, Yale University

FLINN, BRIAN D. \* Research Associate Professor, 1991; MS, 1986, Colorado

School of Mines, PhD, 1991, University of California (Santa Barbara); structure-processing-property relationships in structural materials

HENAGER, CHARLES H, Affiliate Professor, 1988; PhD, 1983, University of Washington

INOUE, KANRYU, Affiliate Professor, 1993; MS, 1971, Osaka University (Japan), PhD, 1977, Osaka University (Japan)

JANG, SEI-HUM, Acting Instructor, 2000; PhD, 1993, Michigan State University

JEN, ALEX K-Y. \* Professor, 1999; PhD, 1984, University of Pennsylvania; Organic Materials/Polymer Chemistry, Functional Materials, Optical Sciences

KRISHNAN, KANNAN \* Professor, 2001; MS, 1980, State University of New York (Stony Brook), PhD, 1984, University of California (Berkeley); Integrated nanostructures and thin films for novel functionalities and devices

KUMAR, VIPIN \* Adjunct Associate Professor, 1988; MS, 1972, University of Rhode Island, MBA, 1974, University of Rhode Island, PhD, 1988, Massachusetts Institute of Technology; manufacturing, polymer processing, microcellular plastics, design theory and methodology

LUSCOMBE, CHRISTINE K. \* Assistant Professor, 2006; MSC, 2000, University of Cambridge (UK), MA, 2003, University of Cambridge (UK), PhD, 2005, University of Cambridge (UK); Design and synthesis of novel organic materials (polymers and macromolecules) for photovoltaic and biosensing applications. Soft lithography for micro-fabrication and nano-fabrication of optoelectronic devices

MAYER, GEORGE \* Research Professor, 1998; MME, 1963, University of Oklahoma, PhD, 1967, Massachusetts Institute of Technology; Mechanical behavior of materials, biomimetics, durability, nanocrystalline materials, materials processing

MILLER, ALAN D, Associate Professor Emeritus, 1957; PhD, 1967, University of Washington

OHUCHI, FUMIO \* Professor, 1992; MS, 1974, Sophia University (Japan), PhD, 1981, University of Florida; nucleation and growth of thin film materials, surface science, glass, device applications

PAKHOMOV, ALEXANDRE \* Research Assistant Professor, 2002; MS, 1981, Leningrad Polytechnic Institute (Russia), PhD, 1991, Ioffe Physico Technical Institute (Russia); Magnetic semiconduc-

tors and dielectrics; Magnetotransport; Nanomaterials; Magnetic and dielectric relaxation

POLONIS, DOUGLAS H, Professor Emeritus, 1955; MA, 1953, University of Toronto (Canada), PhD, 1955, University of British Columbia (Canada)

RAO, Y KRISHNA \* Professor, 1976; PhD, 1965, University of Pennsylvania; chemical and extractive metallurgy, ore dressing

RATNER, BUDDY D \* Adjunct Professor, 1972; PhD, 1972, Polytechnic Institute of Brooklyn; synthesis and characterization of polymeric biomaterials

SARIKAYA, MEHMET \* Professor, 1984; MS, 1979, University of California (Berkeley), PhD, 1982, University of California (Berkeley); Biomimetics, nanotechnology, biomaterials, tissue engineering, dental, magnetics, semiconductors, ceramics, metals, solution processing, biomineralization, electron microscopy, diffraction, spectroscopy, probe microscopy

SCHWARTZ, DANIEL T. \* Adjunct Professor, 1991; MS, 1985, University of California (Davis), PhD, 1989, University of California (Davis); electrochemical engineering and electrolytic thin film science

SCOTT, WILLIAM D, Professor Emeritus, 1965; MS, 1959, University of California (Berkeley), PhD, 1961, University of California (Berkeley)

STANG, ROBERT GEORGE, Associate Professor Emeritus, 1973; MS, 1965, University of California (Los Angeles), PhD, 1972, Stanford University

STOEBE, THOMAS GAINES, Professor Emeritus, 1966; MS, 1963, Stanford University, PhD, 1965, Stanford University

TAYA, MINORU \* Adjunct Professor, 1986; MS, 1973, Northwestern University, PhD, 1977, Northwestern University; composite materials, elasticity and plasticity, impact physics, fracture theory

WHITTEMORE, OSGOOD J, Professor Emeritus, 1964; MS, 1941, University of Washington, PhD, 1950, Iowa State University

ZHANG, MIQIN \* Associate Professor, 1999; MAS, 1993, University of Victoria (Canada), PhD, 1999, University of California (Berkeley); Biomaterials, tissue engineering, BioMEMS, bionanotechnology, surface modification, drug delivery

## Mechanical Engineering

ADEE, BRUCE H \* Associate Professor, 1970; MS, 1968, University of California (Berkeley), PhD, 1972, University of California (Berkeley); vessel safety and stability, floating structures, waves, ship resistance, model testing

ALEXANDER, DANIEL, Professor Emeritus, 1954; MS, 1954, University of Washington, PhD, 1977, Washington State University

ALISEDA, ALBERTO \* Assistant Professor, 2006; MS, 1998, Universidad Politecnica, MSC, 2000, University of California (San Diego), PhD, 2004, University of California (San Diego); Fluid mechanics. Multi-phase, turbulence, biofluids

ANDERSON, RHONDA L. \* Affiliate Associate Professor, 2003; PhD, 1999, Rice University; Synthesis, characterization, and evaluation of physical and chemical properties of advanced materials and composite structures

AO, PING \* Research Associate Professor, 1990; MA, 1985, University of Illinois, PhD, 1990, University of Illinois; Dynamics of topological singularities, quantum tunneling and coherence, systems biology, mainly DNA chips and information pathways

ATMAN, CYNTHIA J. \* Adjunct Professor, 1998; MS, 1983, Ohio State University, PhD, 1990, Carnegie Mellon University; Engineering education issues and developing cognitive models of engineering design

BALISE, PETER, Professor Emeritus, 1950; MS, 1950, Massachusetts Institute of Technology

BERG, MARTIN C. \* Associate Professor, 1986; MSME, 1978, University of Washington, PhD, 1986, Stanford University; digital control system design, control of structurally flexible electromechanical systems

BODOIA, JOHN R, Associate Professor Emeritus, 1964; MS, 1957, Carnegie Institute of Technology, PhD, 1959, Carnegie Institute of Technology

BOHRINGER, KARL F. \* Adjunct Professor, 1998; MS, 1992, Cornell University, PhD, 1997, Cornell University; microelectromechanical systems (MEMS), applied microtechnology, micro spacecraft, distributed/ubiquitous microsystems

CAO, GUOZHONG \* Adjunct Associate Professor, 1996; MS, 1985, Shanghai Institute of Ceramics, China, PhD, 1991,

- Eindhoven University of Technology(Neth); Processing, characterization, and applications of ferroelectrics, piezoelectrics, organic/inorganic hybrids, and nanostructured materials
- CHALK, WILLIAM, Associate Professor Emeritus, 1957; MSME, 1961, University of Washington
- CHALUPNIK, JAMES, Professor Emeritus, 1964; MS, 1960, University of Texas (unspecified), PhD, 1964, University of Texas (Austin)
- CHING, RANDAL PRESTON \* Research Associate Professor, 1992; MSME, 1988, University of Washington, PhD, 1992, University of Washington; Orthopaedic biomechanisms related to injury prevention, injury mechanisms and injury repair
- CHUNG, JAEHYUN \* Assistant Professor, 2005; MS, 1997, Sungkyunkwan University (Korea), PhD, 2004, Northwestern University; Nanomanufacturing, molecular assembly and bio/chemical sensors
- COOPER, JOYCE S. \* Associate Professor, 1998; MS, 1992, Duke University, PhD, 1996, Duke University; Design for Environment and Industrial Ecology methodologies and models
- CORLETT, RICHARD, Professor Emeritus, 1964; MME, 1958, Rensselaer Polytechnic Institute, PhD, 1963, Harvard University
- DABIRI, DANA \* Adjunct Assistant Professor, 2002; MS, 1987, University of California (Berkeley), PhD, 1992, University of California (San Diego); The study of fundamental fluid flows through new and advanced quantitative flow imaging techniques
- DALY, COLIN H., Professor Emeritus, 1966; PhD, 1966, University of Strathclyde (UK)
- DAY, EMMETT E, Professor Emeritus, 1947; MS, 1947, Massachusetts Institute of Technology
- DEPEW, CREIGHTON, Professor Emeritus, 1960; MS, 1957, University of California (Berkeley), PhD, 1960, University of California (Berkeley)
- DEVASIA, SANTOSH \* Professor, 2000; MS, 1990, University of California (Santa Barbara), PhD, 1993, University of California (Santa Barbara); Control theory and applications: nanotechnology, distributed systems, and biomedical systems
- EISINGER, KARLHEINZ, Affiliate Associate Professor, 1997; MSME, 1972, Seattle University, PhD, 1977, University of Washington
- EMERY, ASHLEY F \* Professor, 1961; MS, 1958, University of California (Berkeley), PhD, 1961, University of California (Berkeley); bioengineering, energy conservation in buildings and air conditioning
- FABIEN, BRIAN C. \* Professor, 1993; MSME, 1983, Columbia University, MPhil, 1990, Columbia University, PhD, 1990, Columbia University; kinematics, modeling and simulation of physical systems, optimal control
- FIREY, JOSEPH C, Professor Emeritus, 1954; MSME, 1941, University of Wisconsin
- FORSTER, FRED \* Associate Professor Emeritus, 1974; MS, 1968, Stanford University, PhD, 1972, Stanford University; fluid mechanics, acoustics, biomedical applications, micro-fluidics
- FRIDLEY, JAMES \* Professor, 1988; MS, 1980, Michigan State University, PhD, 1984, University of Washington; forest engineering systems design, interactive computer simulation
- FURNESS, THOMAS A. \* Adjunct Professor, 1989; PhD, 1981, University of Southampton (UK); display systems engineering, human factors, computer graphics, virtual reality, human computer interface design
- GALLE, KURT R, Professor Emeritus, 1960; MSME, 1949, Purdue University, PhD, 1951, Purdue University
- GANTER, MARK \* Professor, 1986; MS, 1981, University of Wisconsin, PhD, 1985, University of Wisconsin (Madison); solid modeling, computer graphics, kinematics and automated manufacturing
- GAO, DAYONG \* Professor, 2004; PhD, 1991, Concordia College; Cryopreservation of living cells and tissues; Artificial organs; Biotechnology and Bioinstrument
- GARBINI, JOSEPH \* Professor, 1979; MS, 1973, University of Washington, PhD, 1977, University of Washington; systems and controls analysis, instrumentation, manufacturing automation
- GESSNER, FREDERICK B \* Professor Emeritus, 1967; MSME, 1960, Purdue University, PhD, 1964, Purdue University; fluid mechanics, turbulence
- HAHN, MICHAEL E., Affiliate Assistant Professor, 2008; MS, 2000, Iowa State University, PhD, 2003, University of Oregon
- HANDA, PAUL Y., Affiliate Professor, 2000; MSC, 1972, Punjab Agriculture University (India), PhD, 1975, University of Otago (New Zealand)
- HANNAFORD, BLAKE \* Adjunct Professor, 1989; MS, 1982, University of California (Berkeley), PhD, 1985, University of California (Berkeley); haptic interfaces, robotics, biomechanics, bioengineering, controls, human-machine interaction
- HASHISH, MOHAMED AHMED, Affiliate Professor, 2005; PhD, 1977, Concordia University
- HERMANSON, JAMES C. \* Adjunct Associate Professor, 1986; MS, 1980, California Institute of Technology, PhD, 1985, California Institute of Technology; Combustion, gas dynamics, fluid mechanics, microgravity science, and heat transfer
- HOLT, RICHARD, Associate Professor Emeritus, 1954; MS, 1957, University of Washington
- HYMAN, BARRY \* Professor Emeritus, 1975; MS, 1961, St Louis University, PhD, 1965, Virginia Polytechnic Institute and State University; energy policy, industrial energy use and emissions patterns, technology and public policy, engineering design
- JESSUP, ANDREW T. \* Affiliate Associate Professor, 1992; MSE, 1988, Massachusetts Institute of Technology, PhD, 1990, Massachusetts Institute of Technology; applications of remote sensing to air-sea interaction
- JORGENSEN, JENS E, Professor Emeritus, 1968; SB, 1959, Massachusetts Institute of Technology, SM, 1963, Massachusetts Institute of Technology, DSc, 1969, Massachusetts Institute of Technology
- KAPUR, KAILASH C. \* Adjunct Professor, 1992; MTech, 1965, Indian Institute of Technology (India), MS, 1967, University of California (Berkeley), PhD, 1969, University of California (Berkeley); quality/reliability engineering, system design/optimization, total quality/reliability management
- KIELING, WILLIAM C, Associate Professor Emeritus, 1956; MSME, 1959, University of Washington
- KIPPENHAN, CHARLES J, Professor Emeritus, 1963; MSME, 1946, State University of Iowa, PhD, 1948, University of Iowa
- KLAVINS, ERIC \* Adjunct Assistant Professor, 2003; PhD, 1998, University of Michigan, MS, 1998, University of Michigan; Robotics, control theory, reactive systems and distributed algorithms

KLUTE, GLENN K. \* Affiliate Associate Professor, 1999; MS, 1990, Pennsylvania State University, PhD, 1999, University of Washington; Biomechanics, artificial limbs, and biomimetic control systems

KOBAYASHI, ALBERT S \* Professor Emeritus, 1958; MS, 1952, University of Washington, PhD, 1958, Illinois Institute of Technology; fracture mechanics, experimental stress analysis, finite element analysis, biomechanics

KOSALY, GEORGE \* Professor Emeritus, 1980; Diploma, 1957, Eotvos Lorand University (Hungary), ScB, 1968, Hungarian Academy of Sciences, PhD, 1974, Eotvos Lorand University (Hungary), DSc, 1979, Hungarian Academy of Sciences; reactor dynamics (especially noise), two-phase flow characterization, theory of turbulent flow, applications of theory of stochastic processes in physics and engineering

KRAMLICH, JOHN C. \* Professor, 1991; MS, 1975, Washington State University, PhD, 1980, Washington State University; heterogenous combustion, pollutant formation and control from thermal systems, waste remediation

KREMER, DOUGLAS M., Affiliate Assistant Professor, 2007; PhD, 2002, University of Maryland

KUMAR, VIPIN \* Associate Professor, 1988; MS, 1972, University of Rhode Island, MBA, 1974, University of Rhode Island, PhD, 1988, Massachusetts Institute of Technology; manufacturing, polymer processing, microcellular plastics, design theory and methodology

KUNZELMAN, KARYN S, Affiliate Associate Professor, 1991; PhD, 1991, University of Texas (Southwestern)

LEDoux, WILLIAM R. \* Affiliate Associate Professor, 2000; MS, 1993, University of Pennsylvania, PhD, 1999, University of Pennsylvania; Foot biomechanics, soft tissue testing, and computational modeling

LI, JIANGYU \* Assistant Professor, 2006; MS, 1996, University of Colorado (Boulder), MS, 1998, University of Colorado (Boulder), PhD, 1998, University of Colorado (Boulder)

LI, WEI \* Associate Professor, 2000; MEng, 1993, Asian Institute of Technology (Thailand), MS, 1995, Florida Agriculture And Mech University, PhD, 1999, University of Michigan; Manufacturing, ultrasonic material processing, welding, porous polymer fabrication, sensing, diagnosis

LIANG, YUANCHANG \* Research Assistant Professor, 2002; MS, 1997, Lehigh University, PhD, 2002, University of

Washington; active materials such as shape memory alloys (SMA) and ferromagnetic SMA

MALTE, PHILIP C \* Professor, 1979; MSE, 1966, University of Michigan, PhD, 1971, University of Michigan; combustion, thermodynamics, fluid mechanics

MAMISHEV, ALEXANDER V \* Adjunct Associate Professor, 1999; MS, 1994, Texas A&M University, PhD, 1999, Massachusetts Institute of Technology; sensors, non-destructive testing, power, MEMS, inverse problems, optimization

MASON, GREGORY, Affiliate Assistant Professor, 1992; MSME, 1984, Georgia Institute of Technology, PhD, 1992, University of Washington

MATSUOKA, YOKY \* Adjunct Associate Professor, 2006; MS, 1995, Massachusetts Institute of Technology, PhD, 1998, Massachusetts Institute of Technology; Robotics, brain-machine interface

MC CORMICK, NORMAN J. \* Professor Emeritus, 1966; MS, 1961, University of Illinois, PhD, 1965, University of Michigan; radiative transfer and optical oceanography, reliability and risk analysis, mechanical engineering design

MC FERON, DEAN E, Professor Emeritus, 1958; MSME, 1948, University of Colorado (campus unspecified), PhD, 1956, University of Illinois

MESCHER, ANN M. \* Associate Professor, 1996; MS, 1992, Ohio State University, PhD, 1995, Ohio State University

MORRISON, JAMES B, Professor Emeritus, 1946; MSME, 1954, University of Washington

NELSON, ALAN C., Affiliate Associate Professor, 1986; MA, 1976, University of California (Berkeley), PhD, 1980, University of California (Berkeley)

NELSON, HAROLD G, Affiliate Associate Professor, 2002; MArch, 1975, University of California (Berkeley), PhD, 1979, University of California (Berkeley)

NICHOLS, KENNETH M. \* Affiliate Associate Professor, 1998; MS, 1985, Brigham Young University, PhD, 1987, Brigham Young University; Optimization of combustion processes in the forest products industry

NICOL, DAVID G \* Affiliate Assistant Professor, 1996; MSME, 1988, University of Washington, PhD, 1995, University of Washington; Combustion modeling, including computational fluid mechanics and chemical reactor networks

NUCKLEY, DAVID J. \* Affiliate Assistant Professor, 2002; PhD, 2002, University of Washington; The Biology and Mechanics of the Maturing and Aging Spine

O'DONNELL, MATTHEW \* Adjunct Professor, 2006; PhD, 1976, University of Notre Dame; ultrasound imaging; new imaging modalities in biomedicine, including ultrafast optics, in vivo microscopy, catheter imaging of coronary arteries, optoacoustic arrays, and elasticity and molecular imaging

PRATT, DAVID T, Professor Emeritus, 1981; MS, 1962, University of California (Berkeley), PhD, 1968, University of California (Berkeley)

RAMULU, M \* Professor, 1982; MTech, 1976, Indian Institute of Technology (India), PhD, 1982, University of Washington; manufacturing processes, production engineering, applied mechanics, fatigue and fracture mechanics

REINHALL, PER G \* Professor, 1982; MS, 1978, California Institute of Technology, PhD, 1982, California Institute of Technology; nonlinear dynamics, vibrations

RILEY, JAMES J \* Professor, 1983; PhD, 1971, Johns Hopkins University; fluid mechanics, especially turbulent flows

ROSEN, JACOB \* Adjunct Research Assoc Professor, 1997; MSC, 1993, Tel Aviv University (Israel), PhD, 1997, Tel Aviv University (Israel); Human Centered Robotics, Medical Robotics, Rehabilitation Robotics, Human Machine Interfaces, Surgical Robotics, Exoskeleton, Medical Simulation, Biomechanics

SANDERS, JOAN ELIZABETH \* Adjunct Associate Professor, 1992; MSME, 1985, Northwestern University, PhD, 1991, University of Washington; soft tissue biomechanics and tissue adaptation to mechanical stress

SANDWITH, COLIN J \* Research Associate Professor Emeritus, 1966; PhD, 1966, Oregon State University; corrosion, material science, design, manufacturing

SCHEIBE, ROBERT, Affiliate Associate Professor, 1996; MSME, 1982, University of Wisconsin, PhD, 1996, University of Washington

SEIBEL, ERIC J. \* Research Associate Professor, 1996; MS, 1984, University of California (Berkeley), PhD, 1996, University of Washington; Opto-mechanics and scanning for image acquisition, display and biomedical sensing

SENGUPTA, GAUTAM, Affiliate Professor, 1993; PhD, 1970, University of Southampton (UK)

SHEKARRIZ, ALIREZA, Affiliate Associate Professor, 2002; MS, 1984, University of Portland, PhD, 1988, Washington State University

SHEN, I-YEU (STEVE) \* Professor, 1993; MS, 1986, National Taiwan University, PhD, 1991, University of California (Berkeley); linear and nonlinear vibrations, disk and machine dynamics, damping and vibration control

SHERRER, ROBERT E, Associate Professor Emeritus, 1960; MSME, 1953, University of Wisconsin, PhD, 1958, University of Wisconsin (Madison)

SHUMAN, TEODORA RUTAR \* Affiliate Assistant Professor, 2000; MSME, 1994, University of Washington, PhD, 2000, University of Washington; Kinetics of NOx formation in lean-premixed-prevaporized combustion of hydrocarbon fuels

SHUMLAK, URI \* Adjunct Professor, 1994; PhD, 1992, University of California (Berkeley); computational fluid dynamics, parallel computing, plasma physics, magneto-hydrodynamics, and electrical propulsion

SIDLES, JOHN ARTHUR \* Adjunct Professor, 1984; PhD, 1982, University of Washington; Seeing molecules (i.e., quantum-coherent instrumentation); and regenerating cartilage (i.e., natural history of healing.)

SNIADECKI, NATHAN JOHN \* Assistant Professor, 2007; PhD, 2003, University of Maryland, MS, 2003, University of Maryland; engineering of micro- and nanofabricated measurement tools for the understanding of cell mechanics and mechanotransduction

STIPE, CHRISTOPHER B., Affiliate Assistant Professor, 2004; MS, 2001, University of California (Berkeley), PhD, 2003, University of California (Berkeley)

STORTI, DUANE W \* Associate Professor, 1983; MS, 1981, Cornell University, PhD, 1983, Cornell University; nonlinear dynamics and vibrations, dynamical systems, perturbations and bifurcations

TAGGART, RAYMOND, Professor Emeritus, 1959; PhD, 1956, Queen's University (UK)

TAYA, MINORU \* Professor, 1986; MS, 1973, Northwestern University, PhD, 1977, Northwestern University; composite materials, elasticity and plasticity, impact physics, fracture theory

TUTTLE, MARK E \* Professor, 1985; MS, 1978, Michigan Technological University, PhD, 1984, Virginia Polytechnic Institute and State University; experimental stress

analysis, composite materials, adhesion mechanics, viscoelasticity, applied solid mechanics

WANG, WEI-CHIH \* Research Assistant Professor, 1997; MSEE, 1992, University of Washington, PhD, 1996, University of Washington; MEMS, Optomechanical Sensors, Biomedical Instrumentation

WILSON, WILLIAM R.D. \* Professor Emeritus, 1999; PhD, 1967, Queen's University of Belfast (Ireland); Manufacturing and tribology, particularly friction, lubrication and surface generation in metal forming

ZABINSKY, ZELDA \* Adjunct Professor, 1985; MS, 1984, University of Michigan, PhD, 1985, University of Michigan; operations research, applications in industrial engineering, optimization with stochastic elements

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## Technical Communication

ATMAN, CYNTHIA J. \* Adjunct Professor, 1998; MS, 1983, Ohio State University, PhD, 1990, Carnegie Mellon University; Engineering education issues and developing cognitive models of engineering design

BEREANO, PHIL \* Professor Emeritus, 1975; JD, 1965, Columbia University, MRP, 1971, Cornell University; technology assessment, social values, public policy technology: social values, citizen participation

BOYD, SUZANNE M, Affiliate Assistant Professor, 2002; MA, 2000, University of Washington

BRAINARD, SUZANNE GAGE \* Affiliate Associate Professor, 1996; MA, 1968, Ohio State University, PhD, 1972, Ohio State University; Mentoring; program evaluation; gender; workforce, diversity, and engineering and science

CECCARELLI, LEAH M. \* Adjunct Associate Professor, 1996; MA, 1992, Northwestern University, PhD, 1995, Northwestern University; rhetoric of science, rhetorical criticism

CONEY, MARY B \* Professor Emeritus, 1975; MA, 1963, University of Illinois, PhD, 1973, University of Washington; writing style and theories of technical communication, rhetoric

DAILEY, DANIEL J \* Adjunct Research Professor, 1988; MS, 1982, University of Washington, PhD, 1988, University of

Washington; time series modeling of physical phenomena, optimization, distributed computing, networking

FARKAS, DAVID K. \* Professor, 1983; MA, 1969, University of Chicago, PhD, 1976, University of Minnesota; advisory interface of computer systems, interactive multimedia, information design

FREEL, TRACEY ANN, Affiliate Assistant Professor, 2004; MS, 2004, University of Washington

FURNESS, THOMAS A. \* Adjunct Professor, 1989; PhD, 1981, University of Southampton (UK); display systems engineering, human factors, computer graphics, virtual reality, human computer interface design

HASELKORN, MARK P \* Professor, 1985; MA, 1973, University of Michigan, PhD, 1977, University of Michigan, MA, 1980, University of Michigan; real-time information systems, human/machine interaction, the computer in technical communication

KASONIC, KAREN E., Lecturer, 2001; MS, 2001, University of Washington

KATO, MASASHI \* Senior Lecturer, 1991; MA, 1980, University of Washington; Technology enhanced language teaching and learning

KOLKO, BETH E \* Associate Professor, 2000; MA, 1991, University of Texas (Austin), PhD, 1994, University of Texas (Austin); Computer-mediated communication; virtual worlds; cross-cultural issues in information and communication technologies

RAMEY, JUDITH A \* Professor, 1983; MA, 1971, University of Texas (unspecified), PhD, 1983, University of Texas (unspecified); computer documentation, online documentation, user interface design and usability testing

SPYRIDAKIS, JAN \* Professor, 1977; MAT, 1972, University of Washington, PhD, 1986, University of Washington; Comprehension and Usability, Document Design, Web Design, Research Methods

TSUTSUI, MICHIO \* Associate Professor, 1990; MA, 1980, University of Illinois, PhD, 1984, University of Illinois; technical Japanese, computer-aided instruction, international technical communication, linguistics

URNS, JENNIFER A. \* Associate Professor, 1999; MS, 1990, University of Virginia, PhD, 1999, Georgia Institute of Technology; User-centered design, engineering education, expertise, design cognition

WHITE, MYRON, Professor Emeritus,  
1947; PhD, 1958, University of Washing-  
ton

WILLIAMS, THOMAS R \* Associate  
Professor, 1977; MCP, 1981, University of  
Washington, PhD, 1988, University of  
Washington; text and visual information  
processing, document design, interactive  
multimedia

ZACHRY, MARK R \* Associate Professor,  
2006; MA, 1992, Arizona State University,  
PhD, 1998, Iowa State University;  
Organizational communication

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# College of Forest Resources

## Forest Resources

ACKER, STEVEN, Affiliate Associate Professor, 2004; PhD, 1988, University of Wisconsin

AGEE, JAMES K \* Professor Emeritus, 1978; MS, 1968, University of California (Berkeley), PhD, 1973, University of California (Berkeley); management of natural systems, forest ecology, fire ecology

ALLAN, G GRAHAM \* Professor, 1966; PhD, 1956, University of Glasgow (UK), DSc, 1971, University of Strathclyde (UK); creativity and innovation

AMMIRATI, JOSEPH F \* Adjunct Professor, 1979; MA, 1967, San Francisco State, PhD, 1972, University of Michigan; mycology, taxonomy and ecology of fungi

ANTONELLI, ARTHUR LOUIS, Affiliate Professor, 1998; MS, 1969, Central Washington University, PhD, 1974, University of Idaho

ANTOS, JOSEPH \* Affiliate Associate Professor, 1992; MA, 1977, University of Montana, PhD, 1984, Oregon State University; Terrestrial plant ecology, especially of forest understory plants

AUBRY, KEITH B \* Affiliate Professor, 1983; MF, 1977, Yale University, PhD, 1983, University of Washington; Ecology, management, and conservation of terrestrial vertebrates

BAKKER, JONATHAN \* Assistant Professor, 2006; MSC, 1996, University of Regina (Saskatchewan), PhD, 2005, Northern Arizona University; Ecological restoration; Sustainable ecosystem management

BARBOUR, JAMIE, Affiliate Associate Professor, 1996; MS, 1983, University of Washington, PhD, 1990, University of Washington

BARE, B BRUCE \* Professor, 1969; MS, 1965, University of Minnesota, PhD, 1969, Purdue University; harvest scheduling, biometry, forest land management, taxation, finance, management science, forest valuation, forest policy

BIGLEY, RICHARD E., Affiliate Assistant Professor, 1994; MSC, 1981, University of British Columbia (Canada), PhD, 1988, University of British Columbia (Canada)

BILBY, ROBERT E \* Affiliate Professor, 1994; PhD, 1979, Cornell University; The

ecology of stream ecosystems and their response to land use impacts

BISSON, PETER A, Affiliate Professor, 1988; MS, 1969, Oregon State University, PhD, 1975, Oregon State University

BOLTON, SUSAN M \* Professor, 1992; MS, 1979, University of North Dakota, MS, 1985, New Mexico State University, PhD, 1991, New Mexico State University; hydrology, watershed management, stream restoration, ecological engineering

BRADLEY, GORDON A \* Professor, 1972; MLA, 1972, University of California (Berkeley), PhD, 1986, University of Michigan; Forest land use planning, Conservation area planning and design

BRIGGS, DAVID G \* Professor, 1980; MF, 1968, Yale University, PhD, 1980, University of Washington; operations research in forest products industries

BROWN, SALLY L. \* Research Associate Professor, 1998; MS, 1993, University of Maryland, PhD, 1996, University of Maryland; Soils scientist working on restoration of metal contaminated sites, land application of residuals and bioavailability of contaminants in soils

BRUBAKER, LINDA B \* Professor Emeritus, 1973; MS, 1967, University of Michigan, PhD, 1973, University of Michigan; dendrochronology, forest ecology, quaternary paleocology

BRYANT, BENJAMIN S, Professor Emeritus, 1949; DF, 1951, Yale University

BURA, RENATA \* Assistant Professor, 2006; MSC, 2000, University of Toronto (Canada), PhD, 2004, University of British Columbia (Canada); Bioconversion of lignocellulosic biomass; Biomaterials from lignin and plant components

CAMPBELL, ROGER, Affiliate Professor, 1996; PhD, 1973, University of Hawaii

CAREY, ANDREW, Affiliate Professor, 1984; MS, 1974, Virginia Polytechnic Institute and State University, PhD, 1978, Colorado State University

CHALKER-SCOTT, LINDA \* Affiliate Associate Professor, 1997; MS, 1981, Oregon State University, PhD, 1988, Oregon State University; Environmental stress physiology of woody plants

CHRISMAN, RAY WALDO, Affiliate Professor, 2007; PhD, 1976, Purdue University

COHEN, MICHAEL F., Affiliate Assistant Professor, 2004; PhD, 1996, University of California (Davis)

COLE, DALE W, Professor Emeritus, 1960; MS, 1957, University of Wisconsin (Madison), PhD, 1963, University of Washington

CONQUEST, LOVEDAY L \* Adjunct Professor, 1976; MS, 1972, Stanford University, PhD, 1975, University of Washington; statistics in forestry, fisheries, and environmental pollution monitoring

DE BELL, DEAN S, Affiliate Professor, 1977; MF, 1964, Duke University, PhD, 1970, Duke University

DOTY, SHARON L \* Assistant Professor, 2001; PhD, 1995, University of Washington; Molecular biology of pollutant degradation by cottonwood trees

DOWDLE, BARNEY, Professor Emeritus, 1962; MF, 1958, Yale University, PhD, 1962, Yale University

DRIVER, CHARLES H, Professor Emeritus, 1965; MSF, 1950, University of Georgia, PhD, 1954, Louisiana State University

DUNWIDDIE, PETER W, Affiliate Professor, 1998; MS, 1976, University of Wisconsin, PhD, 1983, University of Washington

EASTIN, IVAN \* Professor, 1992; MSC, 1985, Michigan Technological University, MSC, 1989, University of Washington, PhD, 1992, University of Washington; marketing strategies and international trade of forest products

EDMONDS, ROBERT L \* Professor, 1973; MSF, 1968, University of Washington, PhD, 1971, University of Washington; forest soil microbiology, biology of forest diseases, aerobiology

ETTL, GREGORY J \* Associate Professor, 2006; MAT, 1989, University of Washington, PhD, 1995, University of Washington; Sustainable forestry; Forest ecology; Silviculture

EWING, KERN \* Professor, 1990; MA, 1970, Texas Technological University, MS, 1978, University of Washington, PhD, 1982, University of Washington; wetland plant ecology, restoration ecology, ecosystem management

FARNUM, PETER, Affiliate Professor, 2003; PhD, 1977, University of Washington

FIMBEL, ROBERT ALAN, Affiliate Assistant Professor, 2005; MSC, 1981, Colorado

- State University, PhD, 1992, Rutgers University
- FORD, E DAVID \* Professor, 1985; PhD, 1968, University College, London (UK); forest ecology and ecophysiology, modeling, spatial statistics, philosophy of science, plant structure and function, analysis of ecological systems
- FRANKLIN, JERRY F. \* Professor, 1986; MS, 1961, Oregon State University, PhD, 1966, Washington State University; forest ecosystem analysis, vegetation patterns, tree mortality in natural landscapes
- FRIDLEY, JAMES \* Professor, 1988; MS, 1980, Michigan State University, PhD, 1984, University of Washington; forest engineering systems design, interactive computer simulation
- FRITSCHEN, LEO J, Professor Emeritus, 1966; MS, 1958, Kansas State University, PhD, 1960, Iowa State University
- FULLER, WILLIAM S, Affiliate Associate Professor, 1982; MS, 1967, University of Washington
- GALLUCCI, VINCENT \* Adjunct Professor, 1972; MS, 1966, State University of New York (Buffalo), PhD, 1971, North Carolina State University; biomathematics and population dynamics
- GAOLACH, BRADLEY W., Affiliate Assistant Professor, 2003; MS, 1995, North Carolina State University, PhD, 2001, University of Washington
- GARA, ROBERT I \* Professor Emeritus, 1968; MS, 1962, Oregon State University, PhD, 1964, Oregon State University; bark beetle, forest insect ecology, forest insect behavior, international forestry
- GAYALDO, PERRY R, Affiliate Assistant Professor, 2002; MS, 1996, University of Washington, PhD, 2002, University of Washington
- GLAWE, DEAN \* Affiliate Professor, 2003; MS, 1978, Washington State University, PhD, 1982, Washington State University; Forest pathology; Plant Pathology; Mycology; biology and taxonomy of Erysiphales, Pyrenomyces, and Deuteromycetes; and taxonomic databases
- GOLD, WARREN G. \* Adjunct Associate Professor, 1991; MS, 1983, Utah State University, PhD, 1988, Utah State University; Ecology, restoration, and recreational impacts in arctic and alpine ecosystems
- GREULICH, FRANCIS E \* Professor, 1977; MS, 1967, University of California (Berkeley), PhD, 1976, University of California (Berkeley); forest engineering, statistics, operations research
- GRUE, CHRISTIAN E \* Adjunct Associate Professor, 1989; PhD, 1977, Texas A&M University, MS, 1977, Northern Arizona University; wildlife toxicology, wildlife and fisheries science
- GUSTAFSON, RICHARD ROY \* Professor, 1986; PhD, 1982, University of Washington; process modeling and optimization, fiber composites
- HALPERN, CHARLES \* Research Professor, 1991; PhD, 1987, Oregon State University; plant community ecology, plant succession, effects of forest management on understory composition/structure, montane/subalpine meadow ecology
- HANLEY, DONALD P \* Professor, 1983; MSF, 1973, University of Montana, PhD, 1981, University of Idaho; extension forestry, small-forest management, forestry continuing education
- HARRINGTON, CONSTANCE A., Affiliate Associate Professor, 2000; MS, 1975, State University of New York (Syracuse), PhD, 1985, University of Washington
- HARRISON, ROBERT B. \* Professor, 1987; MS, 1981, University of New Hampshire, PhD, 1985, Auburn University; forest soil chemistry and fertility, mineral cycling, carbon sequestration, long-term forest productivity, organic waste utilization, tropical soils
- HATHEWAY, WILLIAM H, Professor Emeritus, 1969; ScB, 1948, University of Chicago, MS, 1952, University of Chicago, MF, 1954, Harvard University, PhD, 1956, Harvard University
- HAYNES, RICHARD W, Affiliate Professor, 1986; MS, 1969, Virginia Polytechnic Institute and State University, PhD, 1975, North Carolina State University
- HESSBURG, PAUL, Affiliate Professor, 2003; PhD, 1984, Oregon State University
- HINCKLEY, THOMAS M \* Professor, 1980; PhD, 1971, University of Washington; forest tree physiology and autecology, subalpine ecosystems, water stress problems
- HODGSON, KEVIN T \* Professor, 1991; MS, 1980, Carnegie Mellon University, PhD, 1986, University of Washington; surface and colloid science, papermaking chemistry, secondary fiber recycling
- HORNER, RICHARD R. \* Adjunct Research Assoc Professor, 1981; MD, 1966, University of Pennsylvania, PhD, 1978, University of Washington; Effects of human activities on water resources in urban areas
- HRUTFIORD, BJORN F, Professor Emeritus, 1959; MSC, 1954, Washington State University, PhD, 1959, University of North Carolina
- JOHNSON, DARRYL R., Affiliate Associate Professor, 2001; MA, 1970, South Dakota State University
- JOHNSON, JAY A \* Professor, 1980; MS, 1970, State University of New York (Syracuse), PhD, 1973, University of Washington; mechanical and physical properties of wood and wood composite materials, wood quality
- JOHNSON, JON D., Affiliate Associate Professor, 1998; MS, 1977, University of Minnesota, PhD, 1981, Oregon State University
- KAPLAN, RACHEL, Affiliate Professor, 1997; MA, 1960, University of Michigan, Ann Arbor, PhD, 1962, University of Michigan, Ann Arbor
- KAPLAN, STEPHEN, Affiliate Professor, 1997; MA, 1960, University of Michigan, Ann Arbor, PhD, 1962, University of Michigan, Ann Arbor
- KEARNEY, ANNE \* Affiliate Assistant Professor, 1997; MS, 1993, University of Michigan, Ann Arbor, PhD, 1996, University of Michigan, Ann Arbor; Cognitive factors in environmental perception, decision making and problem solving
- KIFFNEY, PETER M. \* Affiliate Associate Professor, 1999; MS, 1989, University of California (Davis), PhD, 1995, Colorado State University; community and ecosystem ecology, effects of natural and anthropogenic disturbance on stream ecosystems, ecotoxicology, food web ecology, and climate change
- LANCASTER, E. PETER, Affiliate Professor, 2007; MSC, 1971, Oregon State University, PhD, 1975, State University of New York (Syracuse)
- LAWLER, JOSHUA J \* Assistant Professor, 2007; MS, 1997, Utah State University, PhD, 2000, Utah State University; Landscape ecology; conservation biology
- LEE, ROBERT G \* Professor Emeritus, 1978; MFS, 1969, Yale University, PhD, 1973, University of California (Berkeley); natural resource sociology, multiresource management, development/change of forestry institutions
- LEHMKUHL, JOHN F., Affiliate Associate Professor, 1999; MS, 1981, University of Montana, PhD, 1989, University of Washington

LIPPKE, BRUCE R \* Professor, 1990; MSEE, 1959, New Mexico State University, MSIE, 1966, University of California (Berkeley); international trade and environmental linkages, investment analysis, economics of forest industry

LITTKE, WILLIS R, Affiliate Assistant Professor, 1989; MS, 1974, Western Washington University, PhD, 1982, University of Washington

MANUWAL, DAVID \* Professor, 1972; MS, 1968, University of Montana, PhD, 1972, University of California (Los Angeles); effect of forest management on birds and mammals, characteristics of high-elevation bird communities

MARZLUFF, JOHN M. \* Professor, 1997; MSC, 1983, Northern Arizona University, PhD, 1987, Northern Arizona University; Behavior, ecology, and conservation of birds and mammals

MCKEAN, WILLIAM T \* Professor Emeritus, 1974; PhD, 1970, University of Washington; pulp and paper science, chemical engineering

MCKENZIE, DONALD \* Affiliate Assistant Professor, 2002; MFA, 1979, University of California (Los Angeles), MS, 1994, University of Washington, PhD, 1998, University of Washington; Landscape and fire ecology, climatic change, tree species biogeography, and air-quality modeling

MICHAELIS, LYNN O., Affiliate Professor, 1993; MA, 1972, Washington State University, PhD, 1975, Washington State University

MIYATA, EDWIN SEIICHI, Affiliate Professor, 1992; MSME, 1976, University of Washington, PhD, 1991, University of Washington

NADKARNI, NALINI, Affiliate Associate Professor, 1992; PhD, 1983, University of Washington

NAIMAN, ROBERT J \* Professor, 1988; MA, 1971, University of California (Los Angeles), PhD, 1974, Arizona State University; forest stream ecosystems, aquatic landscape dynamics

NELSON, CARA R, Affiliate Assistant Professor, 2008; MS, 1997, University of Wisconsin (Madison), PhD, 2004, University of Washington

OLIVER, CHADWICK D, Affiliate Professor, 1975; MFS, 1970, Yale University, PhD, 1975, Yale University

PAUN, DOROTHY A \* Associate Professor, 1993; MBA, 1984, Catholic University of Leuven (Belgium), PhD, 1993, University

of Oregon; product bundling; financial performance analyses; international countertrade; buyer-seller partnerships; forest products marketing; Chinese business options; integrating e-business and international education; and models for innovative higher education

PEARSON, SCOTT F, Affiliate Associate Professor, 2000; MS, 1988, University of Michigan, PhD, 1997, University of Washington

PEPLOW, DANIEL, Affiliate Assistant Professor, 2005; MS, 1999, University of Washington, PhD, 2003, University of Washington

PEREZ-GARCIA, JOHN \* Professor, 1990; MS, 1982, University of Puerto Rico, DF, 1990, Yale University; analysis of trade policy, global trade modeling

PETERSON, DAVID L \* Professor, 1989; MS, 1977, University of Illinois, PhD, 1980, University of Illinois; environmental stress on tree growth and forest ecosystems, subalpine forests, global climate change

PETRUNCIO, MARKIAN D., Affiliate Assistant Professor, 1998; MS, 1985, North Carolina State University, PhD, 1994, University of Washington

PICKFORD, STEWART G, Professor Emeritus, 1973; MSF, 1966, University of Washington, PhD, 1972, University of Washington

RAEDEKE, KENNETH J \* Affiliate Professor, 1979; PhD, 1979, University of Washington; wildlife biology and conservation, population dynamics

RAPHAEL, MARTIN G, Affiliate Professor, 1999; MS, 1976, University of California (Berkeley), PhD, 1980, University of California (Berkeley)

REICHARD, SARAH E. \* Associate Professor, 1995; MS, 1989, University of Washington, PhD, 1994, University of Washington; Biology of both introduced invasive and native rare species

RESTANI, MARCO, Affiliate Assistant Professor, 1998; MS, 1989, Montana State University, PhD, 1997, Utah State University

RICHEY, JEFFREY E \* Professor, 1973; MSPH, 1970, University of North Carolina, PhD, 1973, University of California (Davis); quantitative problems of aquatic ecosystems, primary Amazon River, limnology

RICKER, NEIL L \* Adjunct Professor, 1978; MS, 1972, University of California (Berkeley), PhD, 1978, University of California (Berkeley); chemical process design, simulation, and control

ROBERTSON, IAIN M \* Adjunct Associate Professor, 1982; MLA, 1975, University of Pennsylvania; designing with plants, planning and design of botanical gardens/arboreta

ROCHFORD, REGINA M, Affiliate Assistant Professor, 2001; MFS, 1978, Yale University, PhD, 1995, University of Washington

ROSENBLATT, ROGER A \* Adjunct Professor, 1971; MPH, 1971, Harvard University, MD, 1971, Harvard University; research into the organization and delivery of health services, rural health policy

ROYZEN, ZINOVY YETIM, Affiliate Associate Professor, 1995; MSME, 1975, Kaliningrad State Technical University

RUSSELL, KENELM W, Affiliate Associate Professor, 1973; MS, 1963, University of Minnesota

RUSTAGI, KRISHNA P, Associate Professor Emeritus, 1973; MSC, 1953, Agra University, India, MF, 1971, Yale University, PhD, 1973, Yale University

RYAN, CLARE \* Associate Professor, 1997; MS, 1990, University of Michigan, Ann Arbor, PhD, 1996, University of Michigan, Ann Arbor; Natural resource policy and administration, environmental conflict management, water policy

SCHIESS, PETER \* Professor, 1975; MS, 1968, Swiss Federal Institute of Technology, PhD, 1975, University of Washington; forest engineering, mechanical harvest operations, forest road design and construction

SCHREUDER, GERARD FRITZ \* Professor Emeritus, 1971; MS, 1960, Wageningen University (The Netherlands), MS, 1967, University of North Carolina, PhD, 1968, Yale University; forest economics and statistics

SINGH, JAIDEV, Affiliate Assistant Professor, 2001; MBA, 1990, Panjab University (India), MA, 1992, University of Kentucky, PhD, 2001, University of Washington

SKALSKI, JOHN R. \* Adjunct Professor, 1987; MS, 1976, Oregon State University, MS, 1978, Cornell University, PhD, 1985, Cornell University; environmental sampling and effects assessment on wild populations, parameter estimation

SMITH, DANIEL B., Affiliate Assistant Professor, 1997; PhD, 1991, University of Idaho, MSC, 1995, University of Washington

SPRUGEL, DOUGLAS GEORGE \* Professor, 1984; PhD, 1974, Yale University, MPhil, 1974, Yale University; community and ecosystem ecology, tree ecophysiology, subalpine systems

STEINEMANN, ANNE \* Adjunct Professor, 2004; MS, 1985, University of California (Los Angeles), PhD, 1993, Stanford University; Drought, water management, environmental impacts, health effects of pollutants, sustainability

STETTLER, REINHARD F., Professor Emeritus, 1963; Diploma, 1955, Swiss Federal Institute of Technology, PhD, 1963, University of California (Berkeley)

STRAND, STUART E \* Research Professor, 1982; MS, 1975, Ohio State University, PhD, 1982, Pennsylvania State University; forest biotechnology, environmental pollution control

TABER, RICHARD D, Professor Emeritus, 1968; MS, 1949, University of Wisconsin, PhD, 1951, University of California (Berkeley)

TERRY, THOMAS A, Affiliate Professor, 1999; MF, 1969, Duke University, PhD, 1978, North Carolina State University

THOMAS, DAVID P, Professor Emeritus, 1946; MA, 1948, University of Washington

THORUD, DAVID B, Professor Emeritus, 1981; PhD, 1964, University of Minnesota

TORGERSEN, CHRISTIAN E. \* Assistant Professor, 2006; MS, 1996, Oregon State University, PhD, 2002, Oregon State University; Landscape ecology; Aquatic ecology; Remote sensing; spatial analysis

TOTH, SANDOR F. \* Assistant Professor, 2007; MSC, 1994, University of Forestry and Wood Sciences, MS, 2002, Shinshu University (Japan), PhD, 2005, Pennsylvania State University; Forest management

planning: spatially explicit harvest models, multiple-criteria forest planning. Operations research: integer programming, multiple-criteria optimization and decision support systems. The economics of non-timber forest benefits

TRUDELL, STEVEN A., Affiliate Assistant Professor, 2004; MA, 1974, University of California (Santa Barbara), PhD, 2004, University of Washington

TUKEY, HAROLD B, Professor Emeritus, 1980; MS, 1956, Michigan State University, PhD, 1958, Michigan State University

TURNBLOM, ERIC \* Associate Professor, 1994; MSC, 1986, University of British Columbia (Canada), PhD, 1994, University of Minnesota; forest growth modeling, quantitative stand dynamics, and natural resources inventory

VAN PELT, R, Affiliate Assistant Professor, 1995; MS, 1991, University of Washington, PhD, 1995, University of Washington

VAN VOLKENBURGH, ELIZABETH \* Adjunct Professor, 1982; PhD, 1980, University of Washington; leaf growth and development, photobiology and electrophysiology

VANBLARICOM, GLENN R. \* Adjunct Associate Professor, 1993; PhD, 1978, University of California (San Diego); aquatic wildlife, ecology of marine communities, wildlife-fisheries interactions

VANDER HAEGEN, W. MATTHEW, Affiliate Associate Professor, 2005; MS, 1987, University of Massachusetts, PhD, 1991, University of Maine

VOGT, DANIEL \* Associate Professor, 2000; MS, 1976, New Mexico State University, PhD, 1987, University of Washington; Soil ecology, nutrient cycling, carbon sequestration, ecosystem biomass and productivity

VOGT, KRISTIINA \* Professor, 1976; MS, 1974, New Mexico State University, PhD, 1976, New Mexico State University; Decision support systems, human landscapes, linking social-natural sciences, energy technologies

WAGGENER, THOMAS R, Professor Emeritus, 1966; MF, 1963, University of Washington, MA, 1965, University of Washington, PhD, 1966, University of Washington

WEST, STEPHEN D \* Professor, 1979; MS, 1974, University of Alaska, PhD, 1979, University of California (Berkeley); Wildlife Ecology and Conservation; Research focus on small mammals, bats, and amphibians in the Pacific Northwest

WHITE, TIMOTHY A., Affiliate Assistant Professor, 2001; MS, 1978, University of Illinois (Urbana), PhD, 1989, North Carolina State University

WOTT, JOHN A \* Professor Emeritus, 1981; MS, 1966, Cornell University, PhD, 1968, Cornell University; public horticulture, horticultural education, public gardens and administration, urban horticulture, plant propagation, urban forestry

YAHIAOUI, AMAR, Affiliate Associate Professor, 1995; MS, 1976, University of Washington, PhD, 1984, University of Washington

ZABOWSKI, DARLENE \* Professor, 1992; MS, 1983, University of Washington, PhD, 1988, University of Washington; forest soils and their productivity, soil genesis, biogeochemical cycling of soils

ZOBRIST, KEVIN W, Affiliate Assistant Professor, 2008; MS, 2001, University of Washington

# The Information School

## The Information School

BARKER, SCOTT F, Senior Lecturer, 1999; MS, 1987, Syracuse University

BARZILAI-NAHON, KARINE \* Assistant Professor, 2004; MSC, 2000, Tel Aviv University (Israel), PhD, 2001, Tel Aviv University (Israel)

BENNE, MAE M, Professor Emeritus, 1965; MS, 1955, University of Illinois

BOIKO, ROBERT B., Senior Lecturer, 2000; MS, 1985, University of Utah; general surgery

BORNING, ALAN H \* Adjunct Professor, 1980; MS, 1974, Stanford University, PhD, 1979, Stanford University; human-computer interaction; constraint-based languages and systems; programming languages; land use, transportation, and environmental modeling music education

BORRIELLO, GAETANO \* Adjunct Professor, 1987; MS, 1980, Stanford University, PhD, 1988, Stanford University; Ubiquitous computing: devices, middleware, user interfaces

BROOKS, TERENCE A \* Associate Professor, 1986; MLS, 1971, McGill University (Canada), MBA, 1975, York University (Canada), PhD, 1981, University of Texas (Austin); information storage and retrieval, query language design, bibliometrics, relevance research

BRUCE, HARRY \* Professor, 1998; MLibr, 1993, University of New S. Wales (Australia), PhD, 1996, University of New South Wales (Australia); Human factors in information and communication technology

CARLYLE, ALLYSON \* Associate Professor, 1996; MLS, 1986, University of California (Los Angeles), PhD, 1994, University of California (Los Angeles); Online catalog use and design, conceptual foundations of descriptive cataloging

CLEMENTS, DARLEENA., Lecturer, 2007; MLIS, 2006, University of Washington

CRANDALL, MICHAEL D., Senior Lecturer, 2002; MLS, 1986, University of Washington

DESOUZA, KEVIN C \* Assistant Professor, 2005; MBA, 2001, Illinois Institute of Technology, PhD, 2006, University of Illinois; Research interests are in the areas of knowledge management, government intelligence programs, national security issues, and crisis management

DUMAIS, SUSAN, Affiliate Professor, 2002; PhD, 1979, Indiana University; rheumatology

EFTHIMIADIS, EFTHIMIS \* Associate Professor, 1997; MSC, 1984, City University, London (England), PhD, 1992, City University, London (England); User-centered design and evaluation of information retrieval systems. rheumatology

EISENBERG, MICHAEL. \* Professor, 1998; MLS, 1973, State University of New York (Albany), PhD, 1986, Syracuse University; Information problem-solving; use of information and information technology; information science

ENDICOTT, BARBARA E., Senior Lecturer, 2004; MS, 1987, Seattle Pacific University, PhD, 2005, University of Idaho

FIDEL, RAYA \* Professor, 1982; MLS, 1976, Hebrew University (Israel), PhD, 1982, University of Maryland; information systems, systems analysis, user interaction, classification research

FISHER, KAREN E \* Associate Professor, 1999; MLIS, 1991, University of Western Ontario (Canada), PhD, 1997, University of Western Ontario (Canada); Information behavior: how people need, seek, give and use information in different contexts

FOOT, KIRSTEN A \* Adjunct Associate Professor, 2001; MA, 1990, Wheaton College, PhD, 1999, University of California (San Diego); technology and society, political communication, Web studies, NGO networks

FRIEDMAN, BATYA \* Professor, 1999; PhD, 1988, University of California (Berkeley); Value-sensitive design, social-cognitive and cultural aspects of information systems, HCI. Japan, agriculture, internal migration, regional geography

FULLER, SHERRILYNNE \* Professor, 1988; MLS, 1968, Indiana University, PhD, 1984, University of Southern California; Analysis, representation and mapping of research findings (data mining.)

FUSCO, LISA M., Lecturer, 2001; MLS, 1997, Kent State University

GRUDIN, JONATHAN T., Affiliate Professor, 1999; MS, 1973, Purdue University, MA, 1979, University of California (San Diego), PhD, 1981, University of California (San Diego)

HARRISON, BEVERLY L, Affiliate Associate Professor, 2008; MAS, 1991, Univer-

sity of Toronto (Canada), PhD, 1997, University of Toronto (Canada)

HAZELTON, PENELOPE A \* Adjunct Professor, 1985; JD, 1975, Lewis And Clark College, MLL, 1976, University of Washington; law librarianship, legal bibliography, computer-assisted legal research, law, Indian law

HENDRY, DAVID \* Assistant Professor, 2002; MSC, 1989, University of Guelph (Canada), PhD, 1996, The Robert Gordon University (Scotland); Design and evaluation of information systems; human-computer interaction. vitreoretinal diseases

HIATT, PETER, Professor Emeritus, 1974; MLS, 1957, Rutgers University, PhD, 1963, Rutgers University

HILL, TRENT G., Senior Lecturer, 2002; MA, 1988, Duke University, PhD, 1994, Duke University, MLIS, 2002, University of Washington

HOTCHKISS, MARY A \* Adjunct Senior Lecturer, 1989; MLS, 1978, Catholic University of America, JD, 1983, Washington University, LLM, 1985, George Washington University; Federal legislative process and public policy; federal information policy; and access to justice issues. social studies

JANES, JOSEPH W. \* Associate Professor, 1998; MLS, 1983, Syracuse University, PhD, 1989, Syracuse University; Evolution of models of practice of digital reference

JOHNSON, RONALD A., Associate Professor, 1992; MA, 1972, University of Chicago, MS, 1975, University of Southern California

KAHN, PETER H. \* Adjunct Associate Professor, 2000; MA, 1984, University of California (Berkeley), PhD, 1988, University of California (Berkeley); Moral development; developmental psychology and the human relationship with nature

KIM, JEFFREY Y. \* Senior Lecturer, 2000; MS, 1986, University of California (Riverside), PhD, 2000, University of California (Irvine); Computer-Supported Cooperative Work, Ubiquitous Computing, Biomedical Informatics

LEVY, DAVID M \* Professor, 2000; MS, 1974, Stanford University, PhD, 1979, Stanford University; Digital documents and libraries; information and the quality of life

MASON, ROBERT M \* Professor, 2005; MS, 1965, Massachusetts Institute of

Technology, PhD, 1973, Georgia Institute of Technology

MCDONALD, DAVID W \* Assistant Professor, 2002; MS, 1992, California State University, Hayward, MS, 1995, University of California (Irvine), PhD, 2000, University of California (Irvine); Computer-Supported Cooperative Work, Human-Computer Interaction, Technology and Society Medical Physics, X-rays, Mammography, Radiation Dosimetry and Radiation Safety

METOYER, CHERYL \* Associate Professor, 2003; MA, 1969, Immaculate Heart College, Ca, PhD, 1976, Indiana University; Medical Physics, X-rays, Mammography, Radiation Dosimetry and Radiation Safety

MIGNON, EDMOND, Associate Professor Emeritus, 1964; MA, 1952, Syracuse University, MLS, 1959, University of Washington, PhD, 1976, University of California (Berkeley)

MOORE, ADAM DANIEL \* Assistant Professor, 2003; MA, 1993, Ohio State University, PhD, 1997, Ohio State University; Philosophy of Law, Applied Ethics, Information Policy, Political Theory, Privacy

NELSON, BRYCE E., Affiliate Professor, 1983; MAT, 1969, Northwestern University, PhD, 1981, University of Washington

NELSON, JEROLD A, Assistant Professor Emeritus, 1971; MA, 1964, University of Minnesota, PhD, 1971, University of California (Berkeley)

OH, SAM GYUN, Affiliate Professor, 2005; MLS, 1983, Villanova University, PhD, 1995, Syracuse University

PEJTERSEN, ANNE LISE MARK, Affiliate Professor, 2002; PhD, 1971, University of Copenhagen (Denmark)

PRATT, WANDA \* Associate Professor, 2002; MS, 1991, University of Texas (Austin), PhD, 1999, Stanford University; Medical informatics, information retrieval, user interfaces, and natural language processing

RAMEY, JUDITH A \* Adjunct Professor, 1983; MA, 1971, University of Texas (unspecified), PhD, 1983, University of Texas (unspecified); computer documentation, online documentation, user interface design and usability testing

SAXTON, MATTHEW \* Senior Lecturer, 2000; MLS, 1994, University of California (Los Angeles), PhD, 2000, University of California (Los Angeles); Evaluation of Information Services, Intermediation Theory, Collection Management, Information Competency. Japanese language

SCHOLL, HANS JOCHEN \* Assistant Professor, 2003; MBA, 1997, Grad Sch of Business Admin Zurich Switze, PhD, 2002, State University of New York (Albany); Information Dynamics; Complex Systems; Information Management; Electronic Government; Firm Performance

SKELLEY, GRANT T, Associate Professor Emeritus, 1969; MA, 1952, University of Washington, MLIB, 1952, University of Washington, PhD, 1968, University of California (Berkeley)

SOPER, MARY E, Assistant Professor Emeritus, 1972; MS, 1963, University of Illinois, PhD, 1972, University of Illinois

SUTTON, STUART A \* Associate Professor, 1999; MA, 1968, San Francisco State, JD, 1981, Golden Gate University, LLM, 1982, University of California (Berkeley), MLS, 1987, University of California (Berkeley)

TAYLOR, HAZEL A \* Assistant Professor, 2005; MSC, 1978, University of Otago (New Zealand), PhD, 2004, Queensland University of Technology (Australia); IT project management and knowledge management, tacit knowledge elicitation. Yugoslav literature, Slavic literary theory

TENNIS, JOSEPH T. \* Assistant Professor, 2007; MLIS, 1999, Indiana University, PhD, 2005, University of Washington; Research focus is classification theory; The evaluation of classification practices and structures in order to improve existing systems and future system design

WEIBEL, STUART L, Affiliate Associate Professor, 2006; PhD, 1977, Ohio State University

WILSON, LIZABETH A., Affiliate Professor, 1992; MS, 1978, University of Illinois

WOBBROCK, JACOB O \* Assistant Professor, 2006; MS, 2000, Stanford University, PhD, 2006, Carnegie Mellon University; Research interests are input techniques, interaction design, assistive technology, universal design, situational impairments, mobile computing, and most other areas of human-computer interaction (HCI)

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# Interdisciplinary Graduate Degree Programs

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## Astrobiology

AGOL, ERIC \* Assistant Professor, 2003; PhD, 1997, University of California (Santa Barbara); Black holes, gravitational lensing, extrasolar planets, and accretion

BROWNLIE, DONALD E \* Professor, 1971; PhD, 1971, University of Washington; origin of the solar system, comets, interplanetary dust

BRUCKNER, ADAM \* Professor, 1972; MA, 1968, Princeton University, PhD, 1972, Princeton University; space systems, space propulsion and power, planetary exploration, gas dynamics, heat transfer, energy conversion, astrobiology

BUICK, ROGER \* Professor, 2001; PhD, 1986, University of West Australia; Astrobiology, paleontology, stratigraphy, early earth evolution

DEMING, JODY W \* Professor, 1988; PhD, 1981, University of Maryland; evolution and ecology of marine bacteria in the pressurized ocean

KELLEY, DEBORAH S. \* Professor, 1992; MSC, 1987, University of Washington, PhD, 1990, Dalhousie University (Canada); Marine geology, volcanic-hosted submarine hydrothermal systems, sulfide-microbial habitats

LEIGH, JOHNA. \* Professor, 1985; MS, 1979, University of Illinois, PhD, 1983, University of Illinois; bacterial physiology, biochemistry, genetics

MORGANSEN, KRISTIA. \* Assistant Professor, 2002; MS, 1996, Harvard University, PhD, 1999, Harvard University; Nonlinear control, underactuated mechanical systems and limited communication coordinated control

STAHL, DAVID A \* Adjunct Professor, 2000; MS, 1975, University of Illinois (Urbana), PhD, 1978, University of Illinois (Urbana); Microbial Ecology and Biogeochemistry, Microbial Evolution and Systematics, Comparative Sequence Analysis

STALEY, JAMES T \* Professor Emeritus, 1971; MS, 1963, Ohio State University, PhD, 1967, University of California (Davis); freshwater bacteriology, microbial ecology, general microbiology

SULLIVAN, WOODRUFF T \* Professor, 1973; PhD, 1971, University of Maryland; radio astronomy, galactic and extragalactic structure, history of astronomy

WARREN, STEPHEN G \* Professor, 1981; MA, 1969, Harvard University, PhD, 1973, Harvard University; atmospheric radiation, climatology, glaciology

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## Biomedical Structure and Design

AITCHISON, JOHN \* Affiliate Associate Professor, 2004; PhD, 1992, McMaster University (Canada); Yeast model systems to address cell biology of nucleocytoplasmic exchange and metabolic function of peroxisomes

ANDERSEN, NIELS \* Professor, 1968; PhD, 1967, Northwestern University; bioorganic and biophysical chemistry, natural products synthesis and structure elucidation, biorecognition phenomena

ATKINS, WILLIAM M. \* Professor, 1991; MA, 1982, Harvard University, PhD, 1988, University of Illinois; protein engineering

BAKER, DAVID \* Professor, 1993; PhD, 1989, University of California (Berkeley); protein folding

CATALANO, CARLOS E. \* Professor, 2006; PharmD, 1983, University of California (San Francisco), PhD, 1987, University of California (San Francisco); Mechanistic enzymology, genome replication and packaging

CLARK, JOHN I \* Professor, 1982; PhD, 1974, University of Washington; biophysical and structural properties of cytoplasm and membranes, cell aging, differentiation and opacification in the lens

DAGGETT, VALERIE D. \* Adjunct Professor, 1993; PhD, 1990, University of California (San Francisco); Computational and Integrative Bioengineering, Molecular Bioengineering and Nanotechnology

FAN, ERKANG \* Research Associate Professor, 1996; PhD, 1993, University of Pittsburgh; Organic and Combinatorial Chemistry, Structure-Based Drug Design, Molecular Recognition

GELB, MICHAEL H. \* Professor, 1985; PhD, 1982, Yale University; mechanistic enzymology, bioorganic and medicinal chemistry

GONEN, TAMIR \* Assistant Professor, 2005; PhD, 2002, University of Auckland (New Zealand); Structure and function of membrane proteins in native lipid bilayer environments

HOL, WILHELMUS G.J. \* Professor, 1992; MS, 1966, Technical University (Eindhoven), PhD, 1971, University of Groningen (Netherlands); protein crystallography, drug design, vaccine development, and protein engineering

KLEVIT, RACHEL E \* Professor, 1983; DPhil, 1981, Oxford University (UK); protein structure & function; molecular recognition; protein NMR

MALY, DUSTIN JAMES \* Assistant Professor, 2006; PhD, 2002, University of California (Berkeley); Biological Chemistry

PARSON, WILLIAM W \* Professor, 1967; PhD, 1965, Case Western Reserve University; bioenergetics, with particular emphasis on photosynthesis, picosecond spectroscopy

SCHIEF JR, WILLIAM R. \* Research Assistant Professor, 1999; MS, 1992, University of Washington, PhD, 1999, University of Washington; HIV vaccine design, Computational Protein Design, Immunogen Design for Influenza, Malaria

STAYTON, PATRICK \* Professor, 1992; MS, 1989, University of Illinois, PhD, 1989, University of Illinois; engineering proteins for biotechnology, biomaterials, and biomedical therapies/diagnostics

STENKAMP, RONALD E \* Professor, 1975; MS, 1971, University of Washington, PhD, 1975, University of Washington; crystallography, metalloproteins, protein engineering, blood clotting proteins

VARANI, GABRIELE \* Professor, 2001; PhD, 1987, University of Milan (Italy); Structural basis of RNA-protein recognition and drug design

XU, WENQING \* Associate Professor, 1999; MS, 1988, Chinese Academy of Sciences (China), PhD, 1995, Massachusetts Institute of Technology; Structural studies of proteins involved in cancer, immune dysfunction and neuronal diseases

ZHENG, NING \* Associate Professor, 2002; PhD, 1997, University of Texas (Southwestern); Structural Biology And Protein Crystallography

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## Health Services Administration

CONRAD, DOUGLAS A \* Professor, 1977; MHA, 1973, University of Washington, MBA, 1977, University of Chicago, PhD, 1978, University of Chicago; alternative vertical and horizontal market structures in health care, hospital and health administration, cost effectiveness of dental treatment

COOMBS, JOHN B. \* Professor, 1972; MD, 1972, Cornell University; Health care outcomes, rural health policy, healthcare workforce issues and applied nutrition

DOWLING, WILLIAM L \* Professor, 1974; MBA, 1961, University of Chicago, MA, 1970, University of Michigan, PhD, 1971, University of Michigan; Health services research and applied behavioral science in Pediatric Dentistry

GREMBOWSKI, DAVID \* Professor, 1980; MA, 1975, Washington State University, PhD, 1982, University of Washington; Health services research, survey research, program evaluation, performance of health care systems, prevention, access to health care, quality of health care

HEREFORD, JAMES F \* Affiliate Assistant Professor, 2002; MS, 1989, Montana State University; Use and impact of organizational improvement frameworks on health care operations

KATZ, AARON \* Senior Lecturer, 1993; Certificate of Public Health, 1975, University of Toronto (Canada); public policy in the health sector, U.S. and international

KOPJAR, BRANKO \* Associate Professor, 1997; MD, 1987, University of Zagreb (Yugoslavia), MSC, 1991, University of Zagreb (Yugoslavia), PhD, 1996, University of Oslo (Norway); Clinical outcomes research, clinical studies, quality of care, health systems reform, injury prevention

KUSZLER, PATRICIA CAROL \* Professor, 1994; MD, 1978, Mayo Medical School/ Graduate School, JD, 1991, Yale University; law and medicine: health care finance and regulation; medical malpractice; biotechnology and law

MARTIN, DIANE P \* Professor, 1973; MA, 1972, Temple University, PhD, 1979, University of Washington; health care organization and behavior; benefits and insurance; and quality, cost and outcomes of care

MASTROIANNI, ANNA C. \* Associate Professor, 1998; JD, 1986, University of Pennsylvania, MPH, 1997, University of Washington; Law, ethics and policy genetics, reproduction, human subjects research

MASUDA, DAVID, Lecturer, 1997; MD, 1980, University of North Dakota, MS, 1996, University of Wisconsin (Madison)

MC CORMICK, THOMAS R. \* Senior Lecturer Emeritus, 1974; MDiv, 1960, Drake University, DMin, 1976, Southern Methodist University; biomedical ethics, particularly relating to neonatology, and problems related to death and dying

NORRIS, THOMAS E. \* Professor, 1988; MD, 1973, University of Texas (Galveston); Clinical applications, health policy and health workforce needs

POINTER, DENNIS \* Clinical Professor, 2001; PhD, 1971, University of Iowa

RICHARDSON, MARY L., Professor Emeritus, 1978; MHA, 1978, University of Washington, PhD, 1984, University of Washington

RODRIGUEZ, HECTOR P. \* Assistant Professor, 2007; MPH, 1998, University of California (Berkeley), PhD, 2007, Harvard University; Health policy, organizational analysis, team performance research

ROSS, AUSTIN, Professor Emeritus, 1977; MPH, 1955, University of California (Berkeley)

STILLMAN, DENNIS, Senior Lecturer, 1988; MHA, 1979, University of Washington

THOMPSON, JOHN R. \* Senior Lecturer, 1989; MSW, 1976, University of Washington; Public health workforce development; community assessment; public and personal health policy development

WALKER, EDWARD A., Professor, 1983; MM, 1979, Catholic University of America, MD, 1983, University of Washington

WATTS, CAROLYN A. \* Professor, 1975; MA, 1974, Johns Hopkins University, PhD, 1976, Johns Hopkins University; health economics and policy

WELTON, WILLIAM E. \* Senior Lecturer, 2001; MHA, 1972, University of Michigan, DPH, 1999, University of Michigan

WICKIZER, THOMAS M. \* Professor, 1976; MSW, 1974, University of Washington, MPH, 1979, Northwestern University, MA, 1987, University of Michigan, PhD, 1989, University of Michigan; health promotion evaluation

ZIERLER, BRENDA \* Associate Professor, 1996; PhD, 1996, University of Washington; Research in patient with venous thromboembolism; clinical outcomes, process outcomes (care delivery methods), patient satisfaction, and provider satisfaction

## Molecular and Cellular Biology

ADEREM, ALAN A. \* Affiliate Professor, 1996; PhD, 1979, University of Capetown (South Africa); signal transduction and the cytoskeleton

AITCHISON, JOHN \* Affiliate Associate Professor, 2004; PhD, 1992, McMaster University (Canada); Yeast model systems to address cell biology of nucleocytoplasmic exchange and metabolic function of peroxisomes

ASBURY, CHARLES L \* Assistant Professor, 2004; MS, 1993, Tulane University, PhD, 1999, University of Washington; molecular basis of biological motion; biophysics of kinetochore-microtubule attachments

ASBURY, CHARLES L \* Assistant Professor, 2004; PhD, 1999, University of Washington; molecular basis of biological motion; biophysics of kinetochore-microtubule attachments

BAJJALIEH, SANDRA M. \* Associate Professor, 1995; MS, 1983, University of Illinois, PhD, 1989, University of Wisconsin (Madison); molecular neurobiology

BAKER, DAVID \* Adjunct Professor, 1993; PhD, 1989, University of California (Berkeley); protein folding

BALIGA, NITIN, Affiliate Assistant Professor, 2005; MS, 1994, Goa University (India), PhD, 2000, University of Massachusetts

BARRIA-ROMAN, ANDRES \* Assistant Professor, 2005; PhD, 1998, University of Chile; Role and regulation of glutamate receptors during synaptic plasticity

BEAVO, JOSEPH A \* Professor, 1977; PhD, 1970, Vanderbilt University; roles and molecular mechanisms of cyclic nucleotide phosphodiesterase regulation of cell function

BEDALOV, ANTONIO \* Adjunct Assistant Professor, 1996; DSc, 1998, University of Zagreb (Yugoslavia); Hematology Oncology



- BENDICH, ARNOLD J \* Professor Emeritus, 1969; PhD, 1969, University of Washington; The structure and replication of chromosomal DNA molecules in bacteria, mitochondria, chloroplasts and the nucleus. Analytical methods include fluorescence microscopy of individual DNA molecules and pulsed-field gel electrophoresis of in-gel prepared DNA
- BERETTA, LAURA, Affiliate Associate Professor, 2006; MS, 1984, University of Paris (France), PhD, 1989, University of Paris (France)
- BERG, CELESTE A \* Professor, 1990; MS, 1981, Yale University, PhD, 1986, Yale University; Drosophila developmental genetics: Cell communication and cell migration during oogenesis. Patterning and cell polarity. Drosophila immune system
- BEVAN, MICHAEL J. \* Professor, 1990; MSC, 1968, University of London, UK, PhD, 1972, National Inst For Medical Research (UK); T lymphocyte development and specificity
- BIGGINS, SUSAN \* Affiliate Assistant Professor, 2000; PhD, 1995, Princeton University
- BLAU, CARL A. \* Professor, 1989; MD, 1986, Ohio State University; Focus on regulating the fate of genetically modified cells, in vivo
- BOMSZTYK, KAROL \* Professor, 1983; MD, 1977, University of Rochester; role of cytokine-induced protein kinases in the regulation of gene expression
- BORNFELDT, KARIN E \* Professor, 1991; PhD, 1991, Linköping University (Sweden); Cardiovascular disease in diabetes, focusing on vascular muscle cells
- BOTHWELL, MARK ALLEN \* Professor, 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology
- BOWEN-POPE, DANIEL \* Professor, 1979; PhD, 1979, University of California (Berkeley); gene regulation, growth factors and receptors
- BREWER, BONITA J \* Professor, 1979; PhD, 1979, University of Washington; replication of chromosomes, plasmids, and mitochondrial DNA in yeast
- BROCKERHOFF, SUSAN E. \* Associate Professor, 1996; PhD, 1993, University of Washington; Retinal cone photoreceptor function in zebrafish
- BUCK, LINDA B. \* Affiliate Professor, 2003; PhD, 1980, University of Texas (unspecified); Mechanisms underlying odor and pheromone perception and aging
- BUMGARNER, ROGER E. \* Associate Professor, 1992; MS, 1983, Eastern Illinois University, PhD, 1988, University of Arizona; DNA array technology for evaluation of gene expression in microbial systems
- BYERS, PETER H \* Professor, 1974; MD, 1969, Case Western Reserve University; extracellular matrix synthesis, genetic disorders of collagen metabolism, secretion, human genetics, splicing
- CAMPBELL, DANIEL \* Affiliate Assistant Professor, 2004; PhD, 1998, University of California (Berkeley); Understanding the relationship between lymphocyte trafficking and function
- CAMPBELL, LEE ANN \* Professor, 1985; MS, 1979, Pennsylvania State University, PhD, 1982, Pennsylvania State University; molecular biology and pathogenic mechanisms of chlamydiae
- CARLSON, STEVEN S. \* Professor, 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology of synaptic transmission
- CARTER, WILLIAM G \* Affiliate Professor, 1976; PhD, 1974, University of California (Davis); elucidation of components in cell attachment and cell spreading in normal cells
- CATTOLICO, ROSE A. \* Professor, 1975; MA, 1968, Temple University, PhD, 1973, State University of New York (Stony Brook); plastid replication, nucleic acid biochemistry in synchronized unicellular algae
- CHAMBERLAIN, JEFFREY S \* Professor, 2000; PhD, 1985, University of Washington; Gene therapy for muscular dystrophy
- CHAMPOUX, JAMES J \* Professor, 1972; PhD, 1970, Stanford University; DNA replication, tumor virology
- CHAVKIN, CHARLES \* Professor, 1984; PhD, 1982, Stanford University; cell and molecular mechanisms of psychoactive opiate drugs to understand normal and pathophysiology
- CHIN, MICHAEL T, Associate Professor, 2006; MD, 1991, University of Rochester, PhD, 1988, University of Rochester, MD, 1991, University of Rochester
- CLARK, JOHN I \* Professor, 1982; PhD, 1974, University of Washington; biophysical and structural properties of cytoplasm and membranes, cell aging, differentiation and opacification in the lens
- CLURMAN, BRUCE E. \* Associate Professor, 1998; MD, 1989, Cornell University, PhD, 1988, Cornell University, MD, 1989, Cornell University; Cell cycle control in normal and neoplastic cells
- COLLINS, STEVEN J \* Professor, 1980; MD, 1973, Columbia University; retinoic acid receptors and the pathogenesis of malignancy
- COOKSON, BRAD T \* Associate Professor, 1991; MD, 1991, Washington University, PhD, 1991, Washington University, MD, 1991, Washington University; Cellular Immune Response to Intracellular Bacteria; Microbial Pathogenesis; Clinical Microbiology
- COOPER, JONATHAN A. \* Affiliate Professor, 1987; MA, 1973, University of Cambridge (UK), PhD, 1976, University of Warwick (UK); regulation of cellular metabolism and proliferation by protein phosphorylation
- COOPER, MARK S \* Associate Professor, 1990; PhD, 1985, University of California (Berkeley); cellular physiology and cell motility in developing tissues
- COREY, LAWRENCE \* Professor, 1975; MD, 1971, University of Michigan; laboratory medicine: diagnosis, therapy, and pathogenesis of viral infections, AIDS virus
- CUNNINGHAM, MICHAEL L. \* Associate Professor, 1988; MD, 1988, University of Vermont, PhD, 1996, University of Washington; Molecular, Development, Craniofacial, Malformation, Human, Mouse, Craniosynostosis, Birth Defects
- DAVIS, TRISHA NELL \* Professor, 1987; PhD, 1983, Yale University; control of the cell cycle, chromosome segregation, proteomics
- DE LA IGLESIA, HORACIO O. \* Assistant Professor, 2003; MA, 1991, University of Buenos Aires (Argentina), PhD, 1997, University of Massachusetts; Neural Basis of Circadian Rhythms
- DETWILER, PETER B \* Professor, 1976; PhD, 1970, Georgetown University; physiology of photoreceptors
- DISTECHE, CHRISTINE M \* Professor, 1980; Lic.Med., 1970, University of Liege (Belgium), PhD, 1976, University of Liege (Belgium); molecular genetics of sex chromosomes, X inactivation, human and mouse cytogenetics
- DUDLEY, AIMEE M, Affiliate Assistant Professor, 2008; PhD, 1999, Harvard Medical School

- DUFFY, PATRICK E \* Affiliate Associate Professor, 2001; MD, 1986, Duke University; malaria pathogenesis and vaccine development, parasite adhesion, and functional genomics
- EDGAR, BRUCE A \* Affiliate Assistant Professor, 1987; PhD, 1987, University of Washington
- EISENMAN, ROBERT M \* Affiliate Professor, 1976; PhD, 1971, University of Chicago; viral oncology, oncogenes, retrovirus multiplication
- ELKON, KEITH B \* Professor, 2001; MD, 1974, University of Witwatersrand (S. Africa); Molecular and genetic mechanisms of systemic autoimmunity and apoptosis
- EMERMAN, MICHAEL \* Affiliate Professor, 1994; PhD, 1986, University of Wisconsin; Molecular biology of the human immunodeficiency virus
- FANG, FERRIC C. \* Professor, 2001; MD, 1983, Harvard University; Bacterial pathogenesis with focus on macrophage-salmonella interactions
- FARR, ANDREW G \* Professor, 1982; PhD, 1975, University of Chicago; cell interactions governing lymphocyte production and function
- FAUSTMAN, ELAINE M. \* Professor, 1981; PhD, 1981, Michigan State University; developmental toxicology, risk assessment methodologies, toxicology of N-nitroso compounds
- FAUSTO, NELSON \* Professor, 1994; MD, 1960, Universidade de Sao Paulo; Liver regeneration, tumor biology, carcinogenesis, growth factors
- FERO, MATTHEW L., Associate Professor, 1993; MD, 1990, University of California (Irvine)
- FERRE-D'AMARE, ADRIAN RIU \* Affiliate Associate Professor, 2000; PhD, 1994, Rockefeller University; Structural biology of RNA, X-ray crystallography, biological catalysis
- FIELDS, STANLEY \* Professor, 1995; MA, 1978, Cambridge University (UK), PhD, 1981, Cambridge University (UK); Yeast Molecular Biology and Genetics
- FINK, PAMELA J. \* Professor, 1990; PhD, 1981, Massachusetts Institute of Technology; T cell differentiation, tolerance induction, molecular and cellular immunology
- FROEHNER, STANLEY C \* Professor, 2000; PhD, 1973, California Institute of Technology; Molecular mechanisms of synapse formation and muscle disease
- FURLONG, CLEMENT E. \* Research Professor, 1977; PhD, 1968, University of California (Davis)
- GALE, MICHAEL J \* Associate Professor, 1994; PhD, 1994, University of Washington; Virus-host interactions that control innate defenses and immunity to infection; genetic and functional analysis of the innate immune antiviral response; interferon biology; immune control of the replication and pathogenesis of hepatitis C virus, West Nile
- Galitski, TIMOTHY P. \* Affiliate Assistant Professor, 2001; PhD, 1996, University of Utah; Functional genomics and genetics of microbial development
- GALLOWAY, DENISE A \* Research Professor, 1982; PhD, 1976, City University of New York; viral pathogenesis and neoplasia
- GARDNER, RICHARD G. \* Assistant Professor, 2006; PhD, 2000, University of California (San Diego); Studies of ubiquitin-mediated regulation in the nucleus including: nuclear protein quality control and its role in protecting against protein aggregation diseases; regulation of chromatin structure in telomere silencing, gene activation, and DNA repair; a
- GEHALLE, ADAM PHILIP \* Professor, 1988; MD, 1978, Duke University; Translational regulation of viral and cellular gene expression
- GELB, MICHAEL H. \* Professor, 1985; PhD, 1982, Yale University; mechanistic enzymology, bioorganic and medicinal chemistry
- GIACHELLI, CECILIA \* Professor, 1988; PhD, 1987, University of Washington; adhesion molecules and vascular biology processes
- GONEN, TAMIR \* Assistant Professor, 2005; PhD, 2002, University of Auckland (New Zealand); Structure and function of membrane proteins in native lipid bilayer environments
- GOODLETT, DAVID R. \* Associate Professor, 2002; MS, 1988, Auburn University, PhD, 1991, Auburn University; Bioanalytical laboratory developing separation and MS methods for biological problems
- GORDON, SHARONA E. \* Associate Professor, 1993; PhD, 1993, Brown University; Molecular Mechanisms of Ion Channel Gating in Visual and Olfactory Transduction
- GOTTSCHLING, DANIEL E \* Affiliate Professor, 1996; MS, 1980, University of Colorado (campus unspecified), PhD, 1984, University of Colorado (campus unspecified); Dissection of telomere attributes and understanding telomerase in *S. Cerevisiae*
- GOVERMAN, JOAN M \* Professor, 1992; PhD, 1981, University of California (Los Angeles); immune recognition and tolerance, autoimmunity, T cell development, activation, antibody diversity
- GRADY, WILLIAM M., Associate Professor, 2004; MD, 1990, University of Michigan
- GREENBERG, E. PETER \* Professor, 2005; MS, 1972, University of Iowa, PhD, 1977, Harvard University; Molecular basis of social activities in bacteria: quorum sensing and biofilms
- GROSS, TED S \* Professor, 2000; MS, 1985, Pennsylvania State University, PhD, 1993, State University of New York (Stony Brook); Biomedical Engineering in Orthopaedic Surgery
- GROUDINE, MARK \* Professor, 1976; MD, 1975, University of Pennsylvania, PhD, 1976, University of Pennsylvania; chromatin structure and gene activity
- HAGUE, CHRIS \* Assistant Professor, 2005; PhD, 2002, Creighton University; Pharmacological and molecular characterization of G-protein coupled receptors
- HAHN, STEVEN M. \* Affiliate Professor, 1994; PhD, 1984, Brandeis University; transcription initiation in yeast
- HALL, BENJAMIN D \* Professor Emeritus, 1963; MA, 1956, Harvard University, PhD, 1959, Harvard University; molecular genetics of yeast and higher plants
- HAMERMAN, JESSICA A. \* Affiliate Assistant Professor, 2007; PhD, 2001, University of Washington; Macrophage and dendritic cell activation, macrophage and dendritic cell responses to infection with bacteria and viruses, regulation of inflammatory responses
- HARWOOD, CAROLINE \* Professor, 2005; MA, 1976, Boston University, PhD, 1982, University of Massachusetts; Genomics of environmental bacteria. Bacterial sensing and response
- HAUSCHKA, STEPHEN D \* Professor, 1966; PhD, 1966, Johns Hopkins University

sity; regulation of skeletal muscle differentiation, growth factor-receptor signal mechanisms and the control of muscle gene expression

HEINECKE, JAY W \* Professor, 1981; MD, 1981, Washington University; The role of oxidative stress in the pathogenesis of human disease

HENIKOFF, STEVEN \* Affiliate Associate Professor, 1977; PhD, 1977, Harvard University

HEVNER, ROBERT F \* Associate Professor, 2000; MD, 1992, University of Michigan, PhD, 1992, University of Michigan, MD, 1992, University of Michigan; Cerebral cortex development and axon guidance

HILLE, BERTIL \* Professor, 1968; PhD, 1967, Rockefeller University; receptors and ion channels of excitable membranes; Cell signaling; intracellular calcium dynamics; nerve, muscle, synapse, epithelia, pituitary, reproductive cells

HILLE, MERRILL \* Professor, 1969; PhD, 1965, Rockefeller University; developmental biology, gastrulation in sea urchin embryos, translational regulation during meiosis

HOCKENBERRY, DAVID M. \* Professor, 1994; MD, 1982, Washington University; gastroenterology

HOL, WILHELMUS G.J. \* Professor, 1992; MS, 1966, Technical University (Eindhoven), PhD, 1971, University of Groningen (Netherlands); protein crystallography, drug design, vaccine development, and protein engineering

HOOD, LEROY E., Affiliate Professor, 1991; MD, 1964, Johns Hopkins University, PhD, 1968, California Institute of Technology

HORWITZ, MARSHALL S \* Professor, 1988; MD, 1990, University of Washington, PhD, 1988, University of Washington, MD, 1990, University of Washington; Inherited white blood cell disorders, including leukemia

HURLEY, JAMES BRYANT \* Professor, 1985; PhD, 1979, University of Illinois; molecular basis of vision

IRITANI, BRIAN M \* Associate Professor, 1992; DVM, 1988, Washington State University, PhD, 1997, University of Washington; Investigation of the Role of Oncogenes in Lymphocyte Development

JEROME, KEITH R \* Associate Professor, 1993; PhD, 1992, Duke University, MD,

1993, Duke University; Viral inhibition of apoptosis and viral immune modulation/ evasion

KAEBERLEIN, MATT R \* Assistant Professor, 2003; PhD, 2002, Massachusetts Institute of Technology; Molecular mechanisms of aging and age-associated disease

KAJA, MURALI KRISHNA \* Associate Professor, 2001; MSC, 1988, University of Hyderabad (India), PhD, 1995, Indian Institute of Technology (India); Anti-viral Immunity, Immunological Memory, Lymphoid Homeostasis and Vaccines

KAPPE, STEFAN H. I. \* Affiliate Assistant Professor, 2004; MS, 1991, University of Bonn (Germany), PhD, 1998, University of Notre Dame

KATZE, MICHAEL GERALD \* Professor, 1987; MS, 1978, Hahnemann Medical College, PhD, 1980, Hahnemann Medical College; regulation of viral gene expression at the translational level

KEMP, CHRISTOPHER JAMES \* Affiliate Professor, 1996; MS, 1984, Oregon State University, PhD, 1989, University of Wisconsin (Madison); Genetic and environmental influence on multistage cancer in the mouse

KENNEDY, BRIAN K. \* Associate Professor, 2001; PhD, 1996, Massachusetts Institute of Technology; Control of DNA replication; cell cycle; tumor suppressor function; aging

KIEM, HANS-PETER, Associate Professor, 1992; MD, 1987, University of Ulm (Germany)

KIMELMAN, DAVID \* Professor, 1989; PhD, 1985, Harvard University; molecular biology of early development in the frog, *Xenopus laevis*

KING, MARY-CLAIRE \* Professor, 1995; PhD, 1973, University of California (Berkeley); genetic analysis of complex human phenotypes, human diversity and evolution

KLEVIT, RACHEL E \* Professor, 1983; DPhil, 1981, Oxford University (UK); protein structure and function; molecular recognition; protein NMR

LA SPADA, ALBERT R \* Associate Professor, 1993; PhD, 1993, University of Pennsylvania, MD, 1993, University of Pennsylvania; Molecular basis of neurodegenerative disease

LAFLAMME, MICHAEL A. \* Assistant Professor, 1999; PhD, 1998, Emory

University, MD, 1999, Emory University; Stem cell biology, cardiac repair, cardiac electrophysiology

LAGUNOFF, MICHAEL \* Associate Professor, 2001; PhD, 1995, University of Chicago; Molecular Virology of Kaposi's Sarcoma-associated herpesvirus

LAIRD, CHARLES D \* Professor, 1968; PhD, 1966, Stanford University; cell and developmental biology, human genetics

LAMPE, PAUL D \* Adjunct Research Assoc Professor, 1996; PhD, 1984, University of Minnesota; regulation of intercellular communication via gap junctions

LEIGH, JOHNA. \* Professor, 1985; MS, 1979, University of Illinois, PhD, 1983, University of Illinois; bacterial physiology, biochemistry, genetics

LERNMARK, AKE, Professor, 1988; MD, 1970, University of Umea, PhD, 1971, University of Umea

LI, WEIQING \* Assistant Professor, 2005; MS, 1989, Shanghai University (China), PhD, 1998, University of Colorado (Boulder); Insulin and Steroid Signaling in *C. elegans* Development and Aging

LIDSTROM, MARY E. \* Professor, 1977; MS, 1975, University of Wisconsin (Madison), PhD, 1977, University of Wisconsin (Madison); Genomic approaches to metabolic engineering of bacteria for commercial use

LINGAPPA, JAISRI \* Associate Professor, 1999; PhD, 1985, Harvard University, MD, 1987, University of Massachusetts; Cell biology of virus assembly; host proteins involved in assembly of HIV and other viruses

LINIAL, MAXINE L \* Research Professor, 1970; PhD, 1970, Tufts University; retroviral replication and genetics, retroviral transformation

LOEB, LAWRENCE A \* Professor, 1978; MD, 1961, New York University, PhD, 1967, University of California (Berkeley); DNA replication, cancer and AIDS

MAIZELS, NANCY \* Professor, 2000; PhD, 1974, Harvard University; Recombination and repair in mammalian cells, especially activated B cells

MALIK, HARMIT S \* Affiliate Assistant Professor, 2004; MS, 1999, University of Rochester, PhD, 1999, University of Rochester; Genetic conflict mediated by rapidly evolving genes, centromeres and heterochromatin

MANOIL, COLIN C. \* Professor, 1986; PhD, 1979, Stanford University; molecular genetics, protein localization in bacteria

MC KNIGHT, G STANLEY \* Professor, 1976; PhD, 1976, Stanford University; phosphorylation; gene expression and neuro/endocrine physiology in mice using genetic approaches

MCEL RATH, MARGARET JULIANA \* Professor, 1990; PhD, 1978, Medical University of South Carolina, MD, 1980, Medical University of South Carolina; T cell immunity in HIV-1 Infection; understanding immune mechanisms that contribute to the control and prevention of HIV infection

MERZ, ALEXEY \* Assistant Professor, 2004; PhD, 2000, Oregon Health Sciences University; Molecular mechanisms of cell membrane organization, with emphasis on lysosomes

MILLER, SAMUEL I \* Professor, 1995; MD, 1979, Baylor College of Medicine; Salmonella pathogenesis and bacterial-eucaryotic cell interactions

MOENS, CECILIA B \* Affiliate Associate Professor, 1998; PhD, 1993, University of Toronto (Canada); Development of segmentation and segment identity in the vertebrate hindbrain

MONNAT, RAYMOND J \* Professor, 1976; MD, 1976, University of Chicago; somatic mutation, somatic cell molecular genetics, human genetic disease

MOODY, WILLIAM J \* Professor, 1982; PhD, 1977, Stanford University; single cell electrophysiology, development of electrical properties in embryos

MOON, RANDALL T. \* Professor, 1985; PhD, 1982, University of Washington; embryonic development; signal transduction; cancer biology

MORRIS, DAVID R \* Professor, 1966; PhD, 1964, University of Illinois; biosynthesis and biological function of polyamines, regulation of growth of eukaryotic and prokaryotic cells

MOSELEY, STEPHEN L. \* Professor, 1985; MS, 1978, Catholic University of America, PhD, 1981, University of Washington; molecular basis of pathogenesis in *E. coli* diarrhea

MOUGOUS, JOSEPH D \* Assistant Professor, 2007; PhD, 2004, University of California (Berkeley); protein secretion and bacterial pathogenesis

MULLINS, JAMES I. \* Professor, 1994; PhD, 1978, University of Minnesota; retroviruses and AIDS, molecular virology

MURRY, CHARLES E. \* Professor, 1989; PhD, 1989, Duke University, MD, 1989, Duke University; Myocardial infarction, heart regeneration, skeletal/cardiac muscle differentiation, intercellular junctions

NATHANSON, NEIL \* Professor, 1979; PhD, 1975, Brandeis University; neurobiology; molecular analysis of neural signal transduction by muscarinic and neurokinin receptors

NELSON, JENNIFER L. \* Affiliate Assistant Professor, 2004; MS, 1996, University of Washington, PhD, 1999, University of Washington; statistical methods for measuring agreement; cardiovascular and infectious disease epidemiology

NELSON, PETER S. \* Professor, 1993; MD, 1986, University of Kansas; The study of human carcinogenesis using tools of genomics and bioinformatics

NEMHAUSER, JENNIFER L \* Assistant Professor, 2006; PhD, 2000, University of California (Berkeley); Regulation of plant growth Biology, Developmental biology, Genetics and genomics, Plant biology

NEUMAIER, JOHN F. \* Associate Professor, 1990; PhD, 1989, University of Washington, MD, 1990, University of Washington; Neurobiology of stress and depression; regulation of serotonin receptors

OLSON, JAMES M. \* Associate Professor, 1991; MD, 1991, University of Michigan; Brain tumor and Huntington's disease pathogenesis and drug discovery

OSHIMA, JUNKO \* Research Associate Professor, 1992; MD, 1984, University of Tsukuba (Japan), PhD, 1992, Boston University; Genetic mechanism of aging and progeroid syndromes

OVERBAUGH, JULIE MAUREEN \* Affiliate Professor, 1988; PhD, 1983, University of Colorado (campus unspecified); molecular mechanisms of virus-host cell interactions/retroviral pathogenesis/aids

PALLANCK, LEO J. \* Associate Professor, 1997; MS, 1989, Albert Einstein College of Medicine, PhD, 1992, Albert Einstein College of Medicine; Genetic and Molecular analysis of symptomatic transmission in *Drosophila melanogaster*

PALMITER, RICHARD D \* Professor, 1974; PhD, 1969, Stanford University; regulation of gene expression in transgenic mice

PARICHY, DAVID M \* Associate Professor, 2005; PhD, 1997, University of California (Davis)

PARKHURST, SUSAN M. \* Affiliate Associate Professor, 1994; PhD, 1985, Johns Hopkins University; Developmental, Genetic, and Molecular Analysis of *Drosophila* embryogenesis

PARKS, WILLIAM C, Professor, 2004; PhD, 1982, Medical College of Wisconsin

PARSONS, MARILYN \* Adjunct Professor, 1986; PhD, 1979, Stanford University; parasite cell biology

PAULOVICH, AMANDA G., Assistant Professor, 2005; PhD, 1996, University of Washington, MD, 1998, University of Washington

PEICHEL, CATHERINE L. \* Affiliate Assistant Professor, 2003; PhD, 1998, Princeton University; Genetic and molecular analysis of reproductive isolation in threespine sticklebacks.

PHILLIPS, PAUL \* Assistant Professor, 2004; PhD, 1999, University of London, UK; Rapid dopamine neurotransmission during motivated behaviors and addictions

PLYMATE, STEPHEN R, Professor, 1972; MD, 1968, University of Nebraska, campus unspecified, MS, 1968, University of Nebraska

PORTER, PEGGY L. \* Associate Professor, 1987; MD, 1987, University of New Mexico; Identifying and understanding the molecular events associated with the initiation and progression of human cancer

PRESTON, BRADLEY D \* Professor, 2002; PhD, 1983, University of Wisconsin; causes and consequences of mutation in human disease

PRIESS, JAMES R. \* Affiliate Associate Professor, 1993; PhD, 1983, University of Colorado (Boulder); reliability models, fault trees

RABINOVITCH, PETER S. \* Professor, 1980; MD, 1979, University of Washington, PhD, 1980, University of Washington; cellular aging, preneoplastic disease, cell cycle abnormalities, DNA change

RAIBLE, DAVID W. \* Professor, 1995; PhD, 1989, University of Pennsylvania; vertebrate embryology and development of the nervous system

RAMAKRISHNAN, LALITA \* Associate Professor, 2001; MD, 1983, Baroda Medical College (India), PhD, 1990, Tufts University; Contributions of Mycobacteria and hosts to maintenance of chronic tuberculosis

- RAWLINGS, DAVID J \* Professor, 2001; MD, 1984, University of North Carolina; Expertise in clinical immunology, signal transduction, and B cell developmental biology to identify altered signaling events contributing to B lineage diseases
- REH, THOMAS A. \* Professor, 1989; PhD, 1981, University of Wisconsin; regeneration and development of central nervous system
- REID, BRIAN J \* Professor, 1983; PhD, 1975, University of Washington, MD, 1980, University of Washington; clonal evolution, cancer prevention and cancer risk prediction in Barrett's esophagus
- REUVENI, ZIPORA \* Professor, 1979; MSC, 1975, Weizmann Institute For Science (Israel), PhD, 1979, University of Windsor (Canada); myogenesis during growth development and regeneration of skeletal muscle
- RIDDIFORD, LYNN M \* Professor Emeritus, 1973; PhD, 1961, Cornell University; insect development and physiology, invertebrate endocrinology
- RIEKE, FREDERICK MARTIN \* Associate Professor, 1997; PhD, 1991, University of California (Berkeley); Sensory signal processing and computation
- ROBERTS, JAMES MICHAEL \* Affiliate Associate Professor, 1989; PhD, 1984, Columbia University, MD, 1984, Columbia University; how cyclin-kinase complexes regulate events necessary for chromosomal DNA replication
- ROBERTS, MARILYN C \* Professor, 1981; MS, 1977, University of Washington, PhD, 1978, University of Washington; antibiotic resistance genes, plasmids, sexually transmitted diseases, oral microbiology, heavy metal resistance in bacteria, mycobacterium, respiratory disease
- ROHRSCHEIDER, LARRY R \* Affiliate Professor, 1978; PhD, 1973, University of Wisconsin (Madison); control of growth, differentiation, transformation by the c-fms proto-oncogene
- ROSE, TIMOTHY M \* Professor, 1991; PhD, 1981, University of Geneva (Switzerland); molecular biology of tumor viruses, cell growth, differentiation, and transformation
- ROTH, MARK \* Affiliate Professor, 1994; PhD, 1988, University of Colorado (Boulder); nuclear proteins involved in the regulation of gene expression
- RUDENSKY, ALEXANDER Y. \* Professor, 1992; MS, 1979, Second Moscow State Medical Institute, PhD, 1986, Gabrichevsky Institute For Epi & Micro; antigen processing and presentation, T-cell recognition, T cell development
- RUOHOLA-BAKER, HANNELE \* Professor, 1993; MSC, 1984, University of Helsinki (Finland), PhD, 1989, University of Helsinki (Finland); oogenesis, developmental genetics
- RUSSELL, DAVID WILLIAM \* Professor, 1991; PhD, 1988, Rockefeller University, MD, 1989, Cornell University; Vectors for gene therapy
- RUTHERFORD, SUZANNE L., Affiliate Assistant Professor, 1999; PhD, 1995, University of California (San Diego)
- SALAMA, NINA \* Affiliate Assistant Professor, 2001; PhD, 1995, Stanford University; Genetics and Pathogenesis of Helicobacter pylori infection of the stomach
- SAMUDRALA, VAIKUNTANATH V \* Associate Professor, 2001; PhD, 1997, University of Maryland; Modelling the structure and function of whole genomes
- SANTANA, LUIS F \* Assistant Professor, 2001; MS, 1992, University of Hawaii, PhD, 1996, University of Maryland; Molecular studies of calcium signaling in cardiac and smooth muscle
- SCHARENBERG, ANDREW M. \* Associate Professor, 2000; MD, 1990, University of North Carolina; Function and cell biology of cation channels expressed in non-excitable cells
- SCHNAPP, LYNN M., Associate Professor, 2000; ScB, 1982, Massachusetts Institute of Technology, MD, 1986, University of Pennsylvania
- SCHUBIGER, GEROLDA \* Professor, 1972; Diploma, 1957, Teachers Training College, Zurich, PhD, 1968, University of Zurich (Switzerland); developmental biology of insects, embryonic determination in Drosophila, pattern formation in imaginal disks
- SCHWARTZ, STEPHEN MARC \* Professor, 1990; MPH, 1984, Yale University, PhD, 1990, University of Washington; cancer epidemiology, neuroepidemiology, reproductive epidemiology, epidemiologic methods
- SCHWINN, DEBRA A \* Professor, 2007; MD, 1983, Stanford University; ANESTHESIOLOGY, GENOME SCIENCES, PHARMACOLOGY
- SHERMAN, DAVID R. \* Affiliate Associate Professor, 1998; PhD, 1987, Vanderbilt University; Molecular genetics, microbiology and biochemistry of pathogenic mycobacteria
- SHMULEVICH, ILYA \* Affiliate Associate Professor, 2006; MS, 1993, Purdue University, PhD, 1997, Purdue University; Computational and systems biology, genomics, bioinformatics; signal and image processing
- SIMON, JULIAN A. \* Affiliate Associate Professor, 1996; MA, 1984, Columbia University, MPhil, 1986, Columbia University; Identification and characterization of new anticancer agents
- SIMON, JULIAN A. \* Affiliate Associate Professor, 1996; PhD, 1991, Columbia University; Identification and characterization of new anticancer agents
- SMITH, GERALD R \* Affiliate Professor, 1983; PhD, 1970, Massachusetts Institute of Technology; molecular biology of genetic recombination and regulation of gene expression
- SMITH, JOSEPH \* Adjunct Research Asst Professor, 2003; PhD, 1994, Washington University; Antigenic variation and cytoadherence of Plasmodium falciparum-infected erythrocytes
- SMITH, KELLY D. \* Assistant Professor, 1996; PhD, 1996, University of Iowa, MD, 1996, University of Iowa; Innate immune system regulation of infectious and inflammatory disorders
- STAMATATOS, LEONIDAS \* Adjunct Associate Professor, 2001; MSC, 1983, University of Paris (France), PhD, 1988, McGill University (Canada); Structure/function analysis of the HIV envelope and vaccine-development
- STEINER, ROBERTA \* Professor, #VALUE!; PhD, 1975, University of Oregon; Neuroendocrinology/Neuroscience/Endocrinology
- STELLA, NEPHI \* Associate Professor, 1999; PhD, 1995, University of Lausanne (Switzerland); Microglia cells activation: Involvement of endogenous cannabinoid ligands and their allied receptors
- STENKAMP, RONALD E \* Professor, 1975; MS, 1971, University of Washington, PhD, 1975, University of Washington; crystallography, metalloproteins, protein engineering, blood clotting proteins
- STETSON, DANIEL B \* Assistant Professor, 2008; PhD, 2002, University of California (San Francisco); Nucleic acid detection in host defense and autoimmunity; biology of antiviral responses

- STODDARD, BARRY L. \* Affiliate Professor, 1994; PhD, 1990, Massachusetts Institute of Technology; Physical and Structural Studies of Biological Macromolecules
- STORM, DANIEL R. \* Professor, 1978; MS, 1967, University of Washington, PhD, 1971, University of California (Berkeley); molecular basis of neuroplasticity; cAMP and Ca<sup>2+</sup> signal transduction systems in the CNS
- STRONG, ROLAND K. \* Affiliate Professor, 1994; PhD, 1990, Harvard University; Structural immunology: analysis of the functions of proteins mediating immune responses through the study of their structures by molecular biology, solution biochemistry and x-ray crystallography
- STUART, KENNETH DANIEL \* Affiliate Professor, 1985; MA, 1965, Wesleyan University, PhD, 1969, University of Iowa; molecular biology of parasites
- SWALLA, BILLIE J. \* Associate Professor, 1999; MS, 1983, University of Iowa, PhD, 1988, University of Iowa; How developmental and evolutionary processes influence animal body plans
- TANIGUCHI, TOSHIYASU \* Affiliate Assistant Professor, 2008; MD, 1990, University of Tokyo (Japan), PhD, 1999, University of Tokyo (Japan); Fanconi anemia and cancer susceptibility, DNA repair and cell cycle checkpoints, drug sensitivity and resistance in cancer chemotherapy
- TAPSCOTT, STEPHEN J. \* Professor, 1986; MD, 1982, University of Pennsylvania, PhD, 1982, University of Pennsylvania, MD, 1982, University of Pennsylvania; Molecular and developmental biology
- TEMPEL, BRUCE L. \* Professor, 1988; PhD, 1983, Princeton University; molecular neurobiology/neurogenetics, especially potassium channel gene structure and function
- TEWARI, MUNEESH, Assistant Professor, 2008; PhD, 1997, University of Michigan, MD, 1997, University of Michigan
- THOMAS, JAMES H. \* Professor, 1988; PhD, 1985, Massachusetts Institute of Technology; genetics of development and the nervous system in nematodes
- TORII, KEIKO \* Associate Professor, 1999; MS, 1989, University of Tsukuba (Japan), PhD, 1993, University of Tsukuba (Japan); Arabidopsis Developmental Genetics; Receptor-mediated Signal Transduction in Higher Plants
- TRASK, BARBARA J. \* Professor, 1992; MS, 1979, Leiden University (The Netherlands), PhD, 1985, Leiden University (The Netherlands); in situ hybridization, analytical cytogenetics, analysis of large-scale DNA polymorphism
- TRAXLER, BETH A. \* Associate Professor, 1992; PhD, 1987, Carnegie Mellon University; bacterial physiology, genetics, and membrane protein biochemistry
- TRUMAN, JAMES W. \* Professor Emeritus, 1973; MA, 1969, Harvard University, PhD, 1970, Harvard University; hormones and invertebrate behavior, insect physiology, circadian rhythms
- TSUKIYAMA, TOSHIO \* Affiliate Associate Professor, 1999; DVM, 1987, Obihiro University of Agriculture and Veterinary Medicine, Japan, MS, 1987, Obihiro University of Agriculture and Veterinary Medicine, Japan, PhD, 1991, University of Horishima (Japan)
- VAN VOORHIS, WESLEY C. \* Professor, 1986; PhD, 1983, Rockefeller University, MD, 1984, Cornell University; infectious diseases
- VARANI, GABRIELE \* Professor, 2001; PhD, 1987, University of Milan (Italy); Structural basis of RNA-protein recognition and drug design
- VASIOUKHIN, VALERI \* Affiliate Assistant Professor, 2002; PhD, 1992, Academy of Science (Ussr)
- VERLINDE, CHRISTOPHE \* Associate Professor, 1992; PhD, 1988, Catholic University of Leuven (Belgium); Structure-based drug design & protein crystallography
- VIEIRA, JEFFERY \* Research Assistant Professor, 2002; PhD, 1988, University of Minnesota; KSHV molecular biology, lytic activation, and tissue models for viral biology
- WAKIMOTO, BARBARA T. \* Professor, 1984; PhD, 1981, Indiana University; developmental genetics, gene expression and chromosome organization in eukaryotes
- WANG, EDITH H. \* Associate Professor, 1996; MA, 1987, Columbia University, MPhil, 1988, Columbia University, PhD, 1991, Columbia University; Regulation of genes that control cellular proliferation and differentiation
- WARREN, EDUS HOUSTON, Associate Professor, 1993; PhD, 1988, Harvard University, MD, 1991, Harvard University
- WATERSTON, ROBERT H. \* Professor, 2002; PhD, 1972, University of Chicago, MD, 1972, University of Chicago; The organization and function of metazoan genomes
- WEINER, ALAN \* Professor, 2000; PhD, 1973, Harvard University; Genome structure; function of small nuclear and cytoplasmic RNA species
- WEINMANN, AMY S. \* Assistant Professor, 2003; PhD, 2000, University of California (Los Angeles); Understanding mechanisms of transcriptional regulation in the immune system
- WHITE, THEODORE C. \* Professor, 1996; PhD, 1984, University of Michigan; molecular mechanisms of virulence and drug resistance in pathogenic yeasts
- WILSON, CHRISTOPHER B. \* Professor, 1979; MD, 1972, University of California (Los Angeles); immunology, infectious diseases
- WOLF, NORMAN S. \* Professor, 1968; DVM, 1953, Kansas State University, PhD, 1960, Northwestern University; hematopoietic stem cell dynamics and transplantation in radiation biology
- WONG, RACHEL O. \* Professor, 2006; PhD, 1986, Australian National University; Development of the visual system and research on mutant and transgenic zebra fish and mice using advanced imaging methods
- WORDEMAN, LINDA \* Professor, 1994; PhD, 1988, University of California (Berkeley); mitosis and myofibril formation
- XIA, ZHENGUI \* Professor, 1997; MS, 1985, Wuhan University (China), PhD, 1991, University of Washington; neuronal apoptosis, neuronal gene regulation
- XU, WENQING \* Associate Professor, 1999; MS, 1988, Chinese Academy of Sciences (China), PhD, 1995, Massachusetts Institute of Technology; Structural studies of proteins involved in cancer, immune dysfunction and neuronal diseases
- YOUNG, ELTON \* Professor, 1969; PhD, 1967, California Institute of Technology; regulation of gene activity in the yeast *Saccharomyces cerevisiae*
- ZAGOTTA, WILLIAM N. \* Professor, 1993; PhD, 1989, Stanford University; molecular mechanisms of ion channel function
- ZHENG, NING \* Associate Professor, 2002; PhD, 1997, University of Texas (Southwestern); Structural Biology And Protein Crystallography

ZHU, TUOFU \* Associate Professor, 1997; MD, 1984, Tiangxi (Jiangxi) Medical School, China, PhD, 1990, Peking Union Medical College (China); HIV-1 pathogenesis, host genetics, therapy, and vaccine

ZIEGLER, STEVEN F. \* Affiliate Professor, 1984; PhD, 1984, University of California (Los Angeles); Genetic and molecular analysis of immune system function

## Near and Middle Eastern Studies

ANDREWS, WALTER G \* Research Professor, 1968; MA, 1963, University of Michigan, MA, 1965, University of Michigan, PhD, 1970, University of Michigan; Ottoman and Modern Turkish literature and literary history; literary theory

BACHARACH, JERE L \* Professor Emeritus, 1967; MA, 1962, Harvard University, PhD, 1967, University of Michigan; history of the Near East

BARZILAI, GAD \* Professor, 2004; MA, 1982, Bar-Ilan University (Israel), PhD, 1988, Hebrew University (Israel); Middle East Studies; international law

BRAME, MICHAEL \* Professor Emeritus, 1971; PhD, 1970, Massachusetts Institute of Technology; syntax, phonology, structure of Arabic and English

BRAVMANN, RENE A. \* Professor, 1968; MA, 1963, Indiana University, PhD, 1971, Indiana University; African art

BROWN, JONATHAN AC, Assistant Professor, 2006; PhD, 2006, University of Chicago

CHIROT, DANIEL \* Professor, 1974; PhD, 1973, Columbia University; comparative ethnic conflict, social change, post-communist societies, historical and political sociology

CIRTAUTAS, ILSE D \* Professor, 1968; PhD, 1958, University of Hamburg (Germany); Turkic languages and literatures

CLOSE, ANGELA E. \* Professor, 1995; MA, 1974, Cambridge University (UK), PhD, 1976, Cambridge University (UK); Archaeology; Lithic Analysis; Prehistory of North Africa; human origins

DEYOUNG, TERRI LYNN \* Associate Professor, 1991; MA, 1981, American University in Cairo, PhD, 1988, University of California (Berkeley); Arabic language and literature

ELKHAFAIFI, HUSSEIN M. \* Assistant Professor, 2004; MA, 1977, University of Utah, PhD, 1985, University of Utah; Second language acquisition; teaching Arabic as a second/foreign language

FRIEDMAN, KATHIE \* Associate Professor, 1987; MA, 1979, State University of New York (Binghamton), PhD, 1992, State University of New York (Binghamton); sociology of gender, immigration, race, and ethnicity in the U.S

GOLDBERG, ELLIS \* Professor, 1985; MA, 1970, University of California (Berkeley), PhD, 1983, University of California (Berkeley); political economy of the Middle East, comparative politics

GREEN, JAMES W \* Senior Lecturer Emeritus, 1981; MA, 1964, Ohio State University, PhD, 1972, University of Washington; Comparative religion, visual anthropology, cross-cultural mental health, comparative study of death; West Indies, Pakistan

HEER, NICHOLAS L. \* Professor Emeritus, 1965; PhD, 1955, Princeton University; Arabic language and literature, Islamic theology and philosophy

JAFFEE, MARTIN S. \* Professor, 1987; MA, 1974, Florida State University, PhD, 1980, Brown University; rabbinic religion and literature in late antiquity

KARTSONIS, ANNA D. \* Professor, 1983; MA, 1968, New York University, PhD, 1982, New York University; Byzantine and medieval art

KASABA, RESAT \* Professor, 1985; MA, 1979, State University of New York (Binghamton), PhD, 1986, State University of New York (Binghamton); historical sociology, world systems, social change in the Middle East

KURU, SELIM SIRRI \* Associate Professor, 1999; MA, 1993, Bogazici University (Istanbul), PhD, 2000, Harvard University; Ottoman, Turkish, Language, Literature

LOMBARDI, CLARK B \* Assistant Professor, 2004; JD, 1998, Columbia University, PhD, 2001, Columbia University; Islamic law; U.S. and comparative constitutional law; law and development

LOPEZ, SHAUN T \* Assistant Professor, 2006; MA, 1995, University of Utah, PhD, 2004, University of Michigan; Middle Eastern Studies - Modern Period

MACKAY, PIERRE A, Professor Emeritus, 1966; MA, 1959, University of California (campus unspecified), PhD, 1964, University of California (campus unspecified)

MCLAREN, BRIAN \* Assistant Professor, 2001; MSC, 1986, Columbia University, PhD, 2001, Massachusetts Institute of Technology; History/theory of architecture, modernism, fascism, postcolonial studies, Africa, Middle East

MIGDAL, JOEL S \* Professor, 1980; MA, 1968, Harvard University, PhD, 1972, Harvard University; state and society in the Third World; Middle East politics

MURRAY, JAMES W \* Professor, 1973; PhD, 1973, Massachusetts Institute of Technology; marine geochemistry, aquatic chemistry

NOEGEL, SCOTT B. \* Professor, 1995; MA, 1993, Cornell University, PhD, 1994, Cornell University; Ancient Near Eastern Languages, Literatures, Cultures and History

OSANLOO, ARZOO \* Adjunct Assistant Professor, 2002; PhD, 2002, Stanford University; Anthropology and Law, Human Rights, Gender and Islam, Theories of the State: socio-legal constructions of women's rights within Iran's Islamic republican state

PAPAN-MATIN, FIROOZEH \* Assistant Professor, 2005; MA, 1991, California State University, Northridge, MA, 1995, University of California (Los Angeles); Iranian Studies, Persian Language and Literature, Medieval Islamic Mysticism in Iran

SALEHI-ESFAHANI, HAIDEH \* Senior Lecturer, 1990; PhD, 1985, University of Pennsylvania; Institutional Development in the Transition Economies of Central Asia

SCHUYLER, PHILIP D \* Associate Professor, 1999; MA, 1974, University of Washington, PhD, 1979, University of Washington; Near Eastern musics and cultures; contemporary music and art in the US

SCHWARZ, FLORIAN \* Assistant Professor, 2005; MA, 1993, University of Tübingen (Germany), PhD, 1998, University of Tübingen (Germany)

SOKOLOFF, NAOMI B. \* Professor, 1985; MA, 1979, Princeton University, PhD, 1980, Princeton University; Hebrew language and literature

WALKER, JOEL T \* Associate Professor, 1997; MA, 1994, Princeton University, PhD, 1998, Princeton University; History and archaeology of the late antique Near East

WILLIAMS, MICHAELA \* Professor, 1976; MA, 1970, Miami University (Ohio), PhD, 1977, Harvard University; early Christianity and religions of antiquity

ZUMBRUNNEN, CRAIG \* Professor, 1975; MS, 1968, California Institute of Technology, PhD, 1973, University of California (Berkeley); resource analysis, Russia and NIS, environment, mathematical programming

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## Neurobiology and Behavioral

AYLWARD, ELIZABETH H. \* Professor, 1997; MA, 1976, University of Connecticut, PhD, 1982, Cornell University; Structural and functional magnetic resonance imaging of neurological/neuropsychiatric disorders

BAJJALIEH, SANDRA M. \* Associate Professor, 1995; MS, 1983, University of Illinois, PhD, 1989, University of Wisconsin (Madison); molecular neurobiology

BARRIA-ROMAN, ANDRES \* Assistant Professor, 2005; PhD, 1998, University of Chile; Role and regulation of glutamate receptors during synaptic plasticity

BASKIN, DENIS G. \* Research Professor, 1979; PhD, 1969, University of California (Berkeley); neuroendocrinology; obesity; CNS regulation of body weight; histochimistry; expression of receptors for insulin, leptin, and other peptides in the CNS

BEAVO, JOSEPH A \* Professor, 1977; PhD, 1970, Vanderbilt University; roles and molecular mechanisms of cyclic nucleotide phosphodiesterase regulation of cell function

BEECHER, MICHAEL D \* Professor, 1978; MA, 1965, Boston University, PhD, 1970, Boston University; animal behavior, animal communication, sensory processes

BERGER, ALBERT J \* Professor, 1977; MA, 1965, Princeton University, PhD, 1967, Princeton University, PhD, 1976, University of California (San Francisco); neural and chemical control of respiration, neurobiology, synaptic transmission

BERMINGHAM-MCDONOGH, O \* Associate Professor, 1998; PhD, 1987, University of California (Los Angeles); Development and regeneration of sensory systems, particularly the auditory system

BERNSTEIN, ILENE L \* Professor, 1972; MA, 1967, Columbia University, PhD, 1972, University of California (Los Angeles); neurobiology of taste aversion learning; developmental and genetic contributions to taste preference in rats and humans

BINDER, MARC D \* Professor, 1978; MS, 1972, University of Southern California, PhD, 1974, University of Southern California; organization of spinal reflexes

BOSMA, MARTHA \* Associate Professor, 1987; PhD, 1986, University of California (Los Angeles); electrophysiological and secretory development of central nervous system neurons

BOTHWELL, MARK ALLEN \* Professor, 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology

BRENOWITZ, ELIOT A. \* Professor, 1987; PhD, 1982, Cornell University; animal behavior, neuroethology, neuroendocrinology, animal communication

BRINKLEY III, JAMES F. \* Professor, 1974; MD, 1974, University of Washington, PhD, 1984, Stanford University; computer applications in medicine and biology

BUCK, LINDA B. \* Affiliate Professor, 2003; PhD, 1980, University of Texas (unspecified); Mechanisms underlying odor and pheromone perception and aging

BUCK, STEVEN L. \* Professor, 1976; MA, 1974, University of California (San Diego), PhD, 1976, University of California (San Diego); human visual psychophysics, color vision, animal learning

CARLSON, STEVEN S. \* Professor, 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology of synaptic transmission

CATTERALL, WILLIAM A \* Professor, 1977; PhD, 1972, Johns Hopkins University; molecular biology of ion channels, molecular pharmacology and neurobiology

CHAVKIN, CHARLES \* Professor, 1984; PhD, 1982, Stanford University; cell and molecular mechanisms of psychoactive opiate drugs to understand normal and pathophysiology

CHIU, DANIEL T. \* Professor, 2000; PhD, 1998, Stanford University; Development of biophysical and bioanalytical tools for applications in proteomics

CHUDLER, ERIC H \* Research Associate Professor, 1991; MS, 1983, University of Washington, PhD, 1985, University of Washington; Neuroscience for kids

CLARK, JOHN I \* Professor, 1982; PhD, 1974, University of Washington; biophysical and structural properties of cytoplasm and membranes, cell aging, differentiation and opacification in the lens

COOPER, JONATHAN A. \* Affiliate Professor, 1987; MA, 1973, University of Cambridge (UK), PhD, 1976, University of Warwick (UK); regulation of cellular metabolism and proliferation by protein phosphorylation

COOPER, MARK S \* Associate Professor, 1990; PhD, 1985, University of California (Berkeley); cellular physiology and cell motility in developing tissues

COVEY, ELLEN \* Professor, 1996; MS, 1976, University of Houston, PhD, 1980, Duke University; Structure and function of the central auditory system

DACEY, DENNIS M. \* Professor, 1986; PhD, 1983, University of Chicago; the neural basis of vision and the organization of primate retina

DAGGETT, VALERIE D. \* Professor, 1993; PhD, 1990, University of California (San Francisco); Computational and Integrative Bioengineering, Molecular Bioengineering and Nanotechnology

D'AMBROSIO, RAIMONDO \* Associate Professor, 1995; PhD, 1995, University of Milan (Italy); Neuronal and glial cell physiology and pathophysiology in the posttraumatic and the epileptic brain

DANIEL, THOMAS L. \* Adjunct Professor, 1984; MS, 1978, University of Wisconsin, PhD, 1982, Duke University; functional morphology, biomechanics, mechanics and energetics of animal locomotion

DE LA IGLESIA, HORACIO O. \* Assistant Professor, 2003; MA, 1991, University of Buenos Aires (Argentina), PhD, 1997, University of Massachusetts; Neural Basis of Circadian Rhythms

DETWILER, PETER B \* Professor, 1976; PhD, 1970, Georgetown University; physiology of photoreceptors

DIAZ, JAIME \* Professor, 1978; MA, 1972, University of California (Los Angeles), PhD, 1975, University of California (Los Angeles); psychological brain development, neurophysiology, developmental psychopharmacology, effects of drugs on behavioral development

DIORIO, CHRISTOPHER J \* Associate Professor, 1997; MSEE, 1984, California Institute of Technology, PhD, 1997, California Institute of Technology; designing silicon learning circuits modeled after neurobiology

FAIRHALL, ADRIENNE L \* Assistant Professor, 2003; MS, 1993, Weizmann Institute For Science (Israel), PhD, 1997, Weizmann Institute For Science (Israel);



- Computational and systems neuroscience: adaptive information processing in sensory systems
- FETZ, EBERHARD \* Professor, 1967; PhD, 1966, Massachusetts Institute of Technology; cortical regulation of movement
- FOLCH, ALBERT \* Associate Professor, 2000; PhD, 1994, University of Barcelona (Spain); Research in microfabricated systems for in-vitro cell biology and biotechnology
- FROEHNER, STANLEY C \* Professor, 2000; PhD, 1973, California Institute of Technology; Molecular mechanisms of synapse formation and muscle disease
- FUCHS, ALBERT F \* Professor, 1969; MS, 1961, Drexel Institute of Technology, PhD, 1966, Johns Hopkins University; oculomotor physiology, vision
- GARDEN, GWENNA A. \* Associate Professor, 2000; PhD, 1994, University of Washington, MD, 1994, University of Washington; The study of molecular pathways involved in neuronal degeneration
- GARDNER, RICHARD G. \* Assistant Professor, 2006; PhD, 2000, University of California (San Diego); Studies of ubiquitin-mediated regulation in the nucleus including: nuclear protein quality control and its role in protecting against protein aggregation diseases; regulation of chromatin structure in telomere silencing, gene activation, and DNA repair; a
- GORDON, SHARONA E. \* Associate Professor, 1993; PhD, 1993, Brown University; Molecular Mechanisms of Ion Channel Gating in Visual and Olfactory Transduction
- HAGUE, CHRIS \* Assistant Professor, 2005; PhD, 2002, Creighton University; Pharmacological and molecular characterization of G-protein coupled receptors
- HEVNER, ROBERT F \* Associate Professor, 2000; PhD, 1992, University of Michigan, MD, 1992, University of Michigan; Cerebral cortex development and axon guidance
- HILLE, BERTIL \* Professor, 1968; PhD, 1967, Rockefeller University; receptors and ion channels of excitable membranes; Cell signaling; intracellular calcium dynamics; nerve, muscle, synapse, epithelia, pituitary, reproductive cells
- HORNER, PHILIP J \* Associate Professor, 2001; MS, 1992, Ohio State University, PhD, 1995, Ohio State University; Stem cell biology and adult neural regeneration
- HORWITZ, GREGORY \* Assistant Professor, 2007; MS, 1997, Stanford University, PhD, 1999, Stanford University; neural basis of color perception
- HUME, CLIFFORD \* Assistant Professor, 1996; PhD, 1988, Cornell University, MD, 1996, Cornell University; Inner ear development and hearing rehabilitation
- HURLEY, JAMES BRYANT \* Professor, 1985; PhD, 1979, University of Illinois; molecular basis of vision
- JAGADEESH, BHARATHI \* Assistant Professor, 1999; PhD, 1993, Northwestern University; Neural basis of visual learning and memory
- KIM, JEANSOK J \* Associate Professor, 2003; MA, 1989, University of California (Los Angeles), PhD, 1991, University of California (Los Angeles); Neurobiology of learning & memory, emotion, and stress
- KUHL, PATRICIA K \* Professor, 1976; MA, 1971, University of Minnesota, PhD, 1973, University of Minnesota; speech perception
- LA SPADA, ALBERT R \* Associate Professor, 1993; PhD, 1993, University of Pennsylvania, MD, 1993, University of Pennsylvania; Molecular basis of neurodegenerative disease
- LATTEMANN, DIANNE \* Research Professor, 1981; MS, 1977, Loyola University (campus unspecified), PhD, 1981, University of California (San Francisco); Effect of Regulatory Peptides on Feeding and Behavior and Metabolism
- LI, WEIQING \* Assistant Professor, 2005; MS, 1989, Shanghai University (China), PhD, 1998, University of Colorado (Boulder); Insulin and Steroid Signaling in *C. elegans* Development and Aging
- MATSUOKA, YOKY \* Associate Professor, 2006; MS, 1995, Massachusetts Institute of Technology, PhD, 1998, Massachusetts Institute of Technology; Robotics, brain-machine interface
- MC KNIGHT, G STANLEY \* Professor, 1976; PhD, 1976, Stanford University; phosphorylation; gene expression and neuro/endocrine physiology in mice using genetic approaches
- MIZUMORI, SHERI J \* Professor, 2000; MS, 1983, University of California (Berkeley), PhD, 1985, University of California (Berkeley); Plasticity of neural and behavioral function during learning and memory
- MOELLER, THOMAS \* Research Associate Professor, 1998; MSC, 1992, Rupprechts
- Karl University, PhD, 1996, Free University Berlin; Cell physiology of microglial cells / brain macrophages
- MOENS, CECILIA B \* Affiliate Associate Professor, 1998; PhD, 1993, University of Toronto (Canada); Development of segmentation and segment identity in the vertebrate hindbrain
- MONTINE, THOMAS J \* Professor, 2002; PhD, 1988, University of Rochester, MD, 1991, McGill University (Canada); Causes, consequences, and prevention of oxidative damage to brain
- MOODY, WILLIAM J \* Professor, 1982; PhD, 1977, Stanford University; single cell electrophysiology, development of electrical properties in embryos
- MOON, RANDALL T. \* Professor, 1985; PhD, 1982, University of Washington; embryonic development; signal transduction; cancer biology
- MORRISON, RICHARD S \* Professor, 1994; PhD, 1982, University of California (Los Angeles); Genetic pathways regulating neuronal cell death in disease and injury. Genomic and proteomic analysis of brain tumors
- MURRAY, SCOTT O. \* Assistant Professor, 2005; MA, 1997, University of Hawaii, PhD, 2002, University of California (Davis)
- NATHANSON, NEIL \* Professor, 1979; PhD, 1975, Brandeis University; neurobiology; molecular analysis of neural signal transduction by muscarinic and neurokinin receptors
- NEUMAIER, JOHN F. \* Associate Professor, 1990; PhD, 1989, University of Washington, MD, 1990, University of Washington; Neurobiology of stress and depression; regulation of serotonin receptors
- O'DONNELL, SEAN \* Associate Professor, 1996; PhD, 1993, University of Wisconsin (Madison); genotypic and endocrine effects on social organization and division of labor in insects, evolution of social behavior
- OLAVARRIA, JAIME F \* Associate Professor, 1990; MD, 1974, State University of Chile, PhD, 1984, University of California (Berkeley); neurophysiological and neuroanatomical basis of vision, comparative organization of mammalian visual cortex, development & plasticity of cortical connections
- OLSON, JAMES M. \* Associate Professor, 1991; MD, 1991, University of Michigan; Brain tumor and Huntington's disease pathogenesis and drug discovery

- OSTERHOUT, LEE E \* Professor, 1991; MS, 1987, Tufts University, PhD, 1990, Tufts University; psycholinguistics, cognitive psychophysiology
- PALLANCK, LEO J. \* Associate Professor, 1997; MS, 1989, Albert Einstein College of Medicine, PhD, 1992, Albert Einstein College of Medicine; Genetic and Molecular analysis of symptomatic transmission in *Drosophila melanogaster*
- PALMER, JOHN C. \* Research Professor, 2005; PhD, 1984, University of Michigan; Behavioral studies and models of attention in visual perception and memory
- PALMITER, RICHARD D \* Professor, 1974; PhD, 1969, Stanford University; regulation of gene expression in transgenic mice
- PASUPATHY, ANITHA \* Assistant Professor, 2006; MS, 1994, McGill University (Canada), PhD, 2001, Johns Hopkins University; Novel approaches to the study of shape recognition in higher level visual areas of the primate brain
- PEICHEL, CATHERINE L. \* Affiliate Assistant Professor, 2003; PhD, 1998, Princeton University; Genetic and molecular analysis of reproductive isolation in threespine sticklebacks. sticklebacks
- PERKEL, DAVID J \* Professor, 2000; PhD, 1992, University of California (San Francisco); Neural mechanisms of learning; focus on vocal learning in songbirds
- PERLMUTTER, ROGER M., Affiliate Professor, 1984; PhD, 1979, Washington University, MD, 1979, Washington University
- PHILLIPS, PAUL \* Assistant Professor, 2004; PhD, 1999, University of London, UK; Rapid dopamine neurotransmission during motivated behaviors and addictions
- POOLOS, NICHOLAS P \* Associate Professor, 2001; PhD, 1991, Stanford University, MD, 1991, Stanford University; Cellular neurophysiology of epilepsy; physiology of neuronal dendrites
- RAIBLE, DAVID W. \* Professor, 1995; PhD, 1989, University of Pennsylvania; vertebrate embryology and development of the nervous system
- RANSOM, BRUCE ROBERT \* Professor, 1995; PhD, 1972, Washington University, MD, 1972, Washington University; neurology, neuroscience research
- RAO, RAJESH P.N. \* Associate Professor, 2000; MS, 1994, University of Rochester, PhD, 1998, University of Rochester; Computational neuroscience, machine learning, computer vision, robotics
- RASKIND, WENDY H \* Professor, 1978; PhD, 1977, University of Washington, MD, 1978, University of Washington; Molecular genetics of neurodegenerative and behavioral disorders
- REH, THOMAS A. \* Professor, 1989; PhD, 1981, University of Wisconsin; regeneration and development of central nervous system
- RIDDIFORD, LYNN M \* Professor Emeritus, 1973; PhD, 1961, Cornell University; insect development and physiology, invertebrate endocrinology
- RIEKE, FREDERICK MARTIN \* Associate Professor, 1997; PhD, 1991, University of California (Berkeley); Sensory signal processing and computation
- ROBINSON, FARREL R. \* Associate Professor, 1986; PhD, 1982, Brown University; Study of the cerebellum via monkey eye movements
- RUBEL, EDWIN W. \* Professor, 1986; MS, 1967, Michigan State University, PhD, 1969, Michigan State University; developmental neurobiology, with special emphasis on vertebrate auditory system development
- RUOHOLA-BAKER, HANNELE \* Professor, 1993; MSC, 1984, University of Helsinki (Finland), PhD, 1989, University of Helsinki (Finland); oogenesis, developmental genetics
- SANTANA, LUIS F \* Assistant Professor, 2001; MS, 1992, University of Hawaii, PhD, 1996, University of Maryland; Molecular studies of calcium signaling in cardiac and smooth muscle
- SCOTT, JOHN D., Acting Instructor, 2002; MD, 1998, Georgetown University
- SHADLEN, MICHAEL N. \* Professor, 1995; PhD, 1985, University of California (Berkeley), MD, 1988, Brown University; neurobiology of vision and cognition
- SHEA-BROWN, ERIC T. \* Assistant Professor, 2007; MS, 2001, Princeton University, PhD, 2004, Princeton University; Mathematical Biology Computational Neuroscience
- SHERK, HELEN \* Professor, 1982; PhD, 1978, Massachusetts Institute of Technology; neural mechanisms underlying vision, especially visual guidance during locomotion
- SISNEROS, JOSEPH A. \* Assistant Professor, 2003; MA, 1989, California State University, Long Beach, PhD, 1999, Florida Institute of Technology; Sensory neurobiology, animal physiology and behavioral biology
- SPAIN, WILLIAM \* Professor, 1978; MD, 1977, Columbia University; signal transduction in the central nervous system
- STEINER, ROBERT A \* Professor, #VALUE!; PhD, 1975, University of Oregon; Neuroendocrinology/Neuroscience/Endocrinology
- STELLA, NEPHI \* Associate Professor, 1999; PhD, 1995, University of Lausanne (Switzerland); Microglia cells activation: Involvement of endogenous cannabinoid ligands and their allied receptors
- STONE, JENNIFER \* Research Associate Professor, 1993; PhD, 1993, Boston University
- STORM, DANIEL R \* Professor, 1978; MS, 1967, University of Washington, PhD, 1971, University of California (Berkeley); molecular basis of neuroplasticity; cAMP and Ca<sup>2+</sup> signal transduction systems in the CNS
- SULLIVAN, JANE M \* Assistant Professor, 2002; PhD, 1990, University of Utah; Cellular and molecular mechanisms controlling synaptic transmission and plasticity
- SWALLA, BILLIE J. \* Associate Professor, 1999; MS, 1983, University of Iowa, PhD, 1988, University of Iowa; How developmental and evolutionary processes influence animal body plans
- TAPSCOTT, STEPHEN J. \* Professor, 1986; PhD, 1982, University of Pennsylvania, MD, 1982, University of Pennsylvania; Molecular and developmental biology
- TEMPEL, BRUCE L. \* Professor, 1988; PhD, 1983, Princeton University; molecular neurobiology/neurogenetics, especially potassium channel gene structure and function
- TERMAN, GREGORY W. \* Associate Professor, 1987; MA, 1981, University of California (Los Angeles), PhD, 1985, University of California (Los Angeles), MD, 1987, University of Miami (Florida)
- THOMAS, JAMES H \* Professor, 1988; PhD, 1985, Massachusetts Institute of Technology; genetics of development and the nervous system in nematodes
- TRUMAN, JAMES W \* Professor Emeritus, 1973; MA, 1969, Harvard University, PhD,

1970, Harvard University; hormones and invertebrate behavior, insect physiology, circadian rhythms

VAN GELDER, RUSSELL \* Professor, 2008; PhD, 1994, Stanford University, MD, 1994, Stanford University; Ocular inflammation, circadian cycles in the eye and uveitis

WONG, RACHEL O \* Professor, 2006; PhD, 1986, Australian National University; Development of the visual system and research on mutant and transgenic zebra fish and mice using advanced imaging methods

XIA, ZHENGUI \* Professor, 1997; MS, 1985, Wuhan University (China), PhD, 1991, University of Washington; neuronal apoptosis, neuronal gene regulation

ZAGOTTA, WILLIAM N. \* Professor, 1993; PhD, 1989, Stanford University; molecular mechanisms of ion channel function

ZHANG, JING \* Adjunct Assistant Professor, 2002; MS, 1987, Second Military Medical University, China, PhD, 1995, Duke University; Pathogenesis and Biomarkers of Parkinson's disease

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## Nutritional Sciences

AHMAD, SUHAIL, Associate Professor, 1976; MBBS, 1968, University of Allahabad (India)

AUSTIN, MELISSA A. \* Professor, 1988; MS, 1975, University of California (Los Angeles), PhD, 1985, University of California (Berkeley); Genetic epidemiology of lipoproteins, coronary heart disease and cancer

BERESFORD, SHIRLEY A. \* Professor, 1987; MSC, 1971, University of Sussex (UK), MA, 1973, University of Cambridge (UK); cancer prevention, especially dietary factors; diet and exercise in disease prevention

BERNSTEIN, ILENE L \* Professor, 1972; MA, 1967, Columbia University, PhD, 1972, University of California (Los Angeles); neurobiology of taste aversion learning; developmental and genetic contributions to taste preference in rats and humans

BORNFELDT, KARIN E \* Professor, 1991; PhD, 1991, Linköping University (Sweden); Cardiovascular disease in diabetes, focusing on vascular muscle cells

BRUEMMER, BARBARA \* Senior Lecturer, 1998; MS, 1983, University of Washington, PhD, 1993, University of Washington;

Anitoxidant supplementation; body weight and mortality following cancer therapy

CHAIT, ALAN \* Professor, 1975; MBChB, 1967, University of Capetown (South Africa), MSC, 1973, University of London, UK, MD, 1974, University of Capetown (South Africa); clinical nutrition with special emphasis on lipid metabolism

CHAN, LINGTAK-NEANDER \* Associate Professor, 2004; PharmD, 1996, University of Washington; antioxidant & micronutrient dispositions in acute illnesses; energy expenditure & drug/nutrient kinetics after bariatric surgery; clinical nutrition

CHESNUT, CHARLES, Professor, 1966; MD, 1966, University of Florida

COOMBS, JOHN B. \* Professor, 1972; MD, 1972, Cornell University; Health care outcomes, rural health policy, healthcare workforce issues and applied nutrition

CUMMINGS, DAVID E. \* Associate Professor, 1993; MD, 1987, Harvard University; Genetic determinants of obesity. Interplay between body weight and reproduction

DREWNOWSKI, ADAM \* Professor, 1998; MA, 1971, Oxford University (UK), PhD, 1977, Rockefeller University; Taste and psychology of food choice in disease prevention

DUNCAN, GLEN E \* Assistant Professor, 2003; MS, 1994, Ball State University, PhD, 1997, University of Tennessee; Prevention and treatment of insulin resistance and type 2 diabetes

EDWARDS, KAREN L. \* Associate Professor, 1997; MS, 1991, California State University, campus unspecified, PhD, 1996, University of Washington; Understanding genetic susceptibility to complex diseases, particularly diabetes and cardiovascular disease

HEINECKE, JAY W \* Professor, 1981; MD, 1981, Washington University; The role of oxidative stress in the pathogenesis of human disease

HEITKEMPER, MARGARET M \* Professor, 1975; MN, 1975, University of Washington, PhD, 1981, University of Illinois; gastroenterology, enteral nutrition, gerontology

JOHNSON, DONNA \* Associate Professor, 1991; MS, 1979, Syracuse University, PhD, 1995, University of Washington; Maternal and child nutrition promotion and services in communities

JURKOVICH, GREGORY J., Professor, 1988; MD, 1978, University of Minnesota

KESTIN, MARK, Affiliate Associate Professor, 1990; MS, 1983, Deakin University (Australia), PhD, 1990, Flinders University (Australia)

KIRK, ELIZABETH \* Assistant Professor, 1996; PhD, 1995, University of Washington; Interrelationships among obesity, atherosclerosis, and diabetes

KIYAK, H ASUMAN \* Professor, 1977; MA, 1974, Wayne State University, PhD, 1977, Wayne State University; geriatric dentistry, behavioral aspects of health care

KNOPP, ROBERT H, Professor, 1974; MD, 1964, Cornell University

KOEPSSELL, THOMAS D \* Professor, 1972; MD, 1972, Harvard University, MPH, 1979, University of Washington; chronic diseases, applying epidemiologic concepts to medical practice

KRATZ, MARIO \* Research Assistant Professor, 2003; MS, 1996, University of Bonn (Germany), PhD, 2002, University of Bonn (Germany); Nutrition intervention studies on obesity as well as the molecular and metabolic links between obesity and associated diseases (type 2 diabetes mellitus, cardiovascular disease, certain types of cancer)

KRISTAL, ALAN R. \* Professor, 1987; MS, 1976, Framingham State College, MPH, 1979, Northwestern University; nutritional epidemiology, dietary behavior, nutrition intervention, and cancer control

LAMPE, JOHANNA W \* Research Professor, 1998; PhD, 1990, University of Minnesota, MS, 1990, University of Minnesota; Dietary modulation of chronic disease: biomarkers of intake and risk

LEBOEUF, RENEE C. \* Research Professor, 1987; MS, 1973, Oregon State University, PhD, 1977, State University of New York (Buffalo), PhD, 1985, Harvard University, MD, 1987, University of Massachusetts; genetic and nutritional regulation of proteins involved in lipid transport

LERNMARK, AKE, Professor, 1988; MD, 1970, University of Umea, PhD, 1971, University of Umea

LIPKIN, EDWARD W. \* Associate Professor, 1981; PhD, 1976, Case Western Reserve University, MD, 1978, Case Western Reserve University; Cardiovascular risks in diabetes and outcomes of weight loss in Type 2 Diabetes; investigation of disorders of bone and mineral metabolism

MARLATT, G ALAN \* Professor, 1972; PhD, 1968, Indiana University; cognitive-

behavior therapy and assessment, addictive behaviors, relapse prevention, harm reduction, health psychology

MC CANN, BARBARA S., Professor, 1986; MS, 1982, Rutgers University, PhD, 1984, Rutgers University

PETERS, ULRIKE \* Research Assistant Professor, 2004; MA, 1988, University of Kiel (Germany), PhD, 1998, University of Kiel (Germany), MPH, 1999, University of North Carolina; Nutritional, Molecular, and Genetic Epidemiology of Cancer

POTTER, JOHN D \* Professor, 1995; MBBS, 1971, University of Queensland (Australia), PhD, 1984, University of Queensland (Australia); Epidemiology, biology, and prevention of cancer, particularly colon cancer

REES, JANE, Lecturer, 1973; MS, 1972, University of Washington

ROSENFELD, MICHAEL E. \* Professor, 1982; MS, 1978, University of Vermont, PhD, 1981, University of Wisconsin (Madison); mechanisms of atherogenesis and macrophage gene expression

SCHWARTZ, MICHAEL W \* Professor, 1983; MD, 1983, Rush Medical College; Neuroendocrine mechanisms governing food intake and body weight, and the pathogenesis of obesity

SCOTT, C RONALD, Professor, 1964; MD, 1959, University of Washington

SHELL-DUNCAN, BETTINA \* Associate Professor, 1995; MS, 1988, University of Wisconsin, PhD, 1994, Pennsylvania State University; health assessment in traditional societies, including immunity, nutrition, and anthropological demography

SWISSHELM, KAREN \* Affiliate Associate Professor, 1993; PhD, 1989, University of Washington; Cancer Genetics Cytogenetics

TRAHMS, CRISTINE M \* Senior Lecturer, 1973; MS, 1972, University of Washington; growth and development of young children: metabolic disorders, special health care needs

ULRICH, CORNELIAM. \* Associate Professor, 2000; MS, 1992, Oregon State University, PhD, 1998, University of Washington; Molecular and Nutritional Epidemiology, Pharmacogenetics

WEIGLE, DAVID S \* Professor, 1981; MD, 1978, Harvard University; Animal and human studies of appetite regulation and energy balance

WHITE, J EMILY \* Professor, 1982; ScB, 1968, Brown University, MS, 1978, University of Washington, PhD, 1982, University of Washington; cancer epidemiology and prevention

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## Pathobiology

DUFFY, PATRICK E \* Affiliate Associate Professor, 2001; MD, 1986, Duke University; malaria pathogenesis and vaccine development, parasite adhesion, and functional genomics

FRIED, MICHAL \* Affiliate Assistant Professor, 2003; MS, 1987, Ben-Gurion University, PhD, 1991, Hebrew University (Israel); molecular basis of maternal malaria and malaria pathogenesis in early childhood

KAPPE, STEFAN H. I. \* Affiliate Assistant Professor, 2004; MS, 1991, University of Bonn (Germany), PhD, 1998, University of Notre Dame

KENNY, GEORGE E \* Professor Emeritus, 1961; MS, 1957, University of North Dakota, PhD, 1961, University of Minnesota; antigenic structure

KURATH, GAEL \* Affiliate Associate Professor, 1994; MS, 1980, Oregon State University, PhD, 1984, Oregon State University; Molecular biology and evolution of RNA viruses that infect fish

OVERBAUGH, JULIE MAUREEN \* Affiliate Professor, 1988; PhD, 1983, University of Colorado (campus unspecified); molecular mechanisms of virus-host cell interactions/retroviral pathogenesis/aids

ROBERTS, MARILYN C \* Professor, 1981; MS, 1977, University of Washington, PhD, 1978, University of Washington; antibiotic resistance genes, plasmids, sexually transmitted diseases, oral microbiology, heavy metal resistance in bacteria, mycobacterium, respiratory disease

ROSENFELD, MICHAEL E. \* Professor, 1982; MS, 1978, University of Vermont, PhD, 1981, University of Wisconsin (Madison); mechanisms of atherogenesis and macrophage gene expression

SMALL, PETER \* Affiliate Associate Professor, 2003; MD, 1985, University of Florida; nature and consequences of genetic variability with the species *M. tuberculosis*

WHITE, THEODORE C \* Professor, 1996; PhD, 1984, University of Michigan; molecular mechanisms of virulence and drug resistance in pathogenic yeasts

## Quantitative Ecology and Resource Management

AGEE, JAMES K \* Professor Emeritus, 1978; MS, 1968, University of California (Berkeley), PhD, 1973, University of California (Berkeley); management of natural systems, forest ecology, fire ecology

ANDERSON, JAMES J \* Research Professor, 1981; PhD, 1977, University of Washington; Research and computer models for management of Columbia River fisheries Studying mortality processes of juvenile salmon

BARE, B BRUCE \* Professor, 1969; MS, 1965, University of Minnesota, PhD, 1969, Purdue University; harvest scheduling, biometry, forest land management, taxation, finance, management science, forest valuation, forest policy

BASSINGTHWAIGHTE, JAMES \* Professor, 1975; MD, 1955, University of Toronto (Canada), PhD, 1964, Mayo Medical School/Graduate School; computer analysis of transport mechanisms in blood and tissues

BOLTON, SUSAN M \* Professor, 1992; MS, 1979, University of North Dakota, MS, 1985, New Mexico State University, PhD, 1991, New Mexico State University; hydrology, watershed management, stream restoration, ecological engineering

BRIGGS, DAVID G \* Professor, 1980; MF, 1968, Yale University, PhD, 1980, University of Washington; operations research in forest products industries

BROWN, GARDNER, Professor Emeritus, 1965; PhD, 1964, University of California (Berkeley)

CONQUEST, LOVEDAY L \* Professor, 1976; MS, 1972, Stanford University, PhD, 1975, University of Washington; statistics in forestry, fisheries, and environmental pollution monitoring

CULLEN, ALISON \* Associate Professor, 1995; MS, 1989, Harvard University, DSC, 1992, Harvard University; Environmental science, policy, quantitative decision making and management

DANIEL, THOMAS L. \* Adjunct Professor, 1984; MS, 1978, University of Wisconsin, PhD, 1982, Duke University; functional morphology, biomechanics, mechanics and energetics of animal locomotion

FELSENSTEIN, JOSEPH \* Professor, 1967; PhD, 1968, University of Chicago;

estimation of evolutionary trees, models of long-term evolutionary processes, and theoretical population genetics

FORD, E DAVID \* Professor, 1985; PhD, 1968, University College, London (UK); forest ecology and ecophysiology, modeling, spatial statistics, philosophy of science, plant structure and function, analysis of ecological systems

FRANCIS, ROBERT C \* Professor Emeritus, 1980; MS, 1966, University of California (Santa Barbara), PhD, 1970, University of Washington; fisheries management, marine ecosystem dynamics, fisheries oceanography, climate change

GALLUCCI, VINCENT \* Professor, 1972; MS, 1966, State University of New York (Buffalo), PhD, 1971, North Carolina State University; biomathematics and population dynamics

GNEITING, TILMANN J. \* Professor, 1997; MA, 1992, Boston University, PhD, 1997, Bayreuth University (Germany); Spatial and environmental statistics, positive definite functions

GOODREAU, STEVEN M. \* Assistant Professor, 2001; MA, 1998, Pennsylvania State University, PhD, 2001, Pennsylvania State University; HIV, social network analysis, population genetics, sexual behavior, Peru

GREULICH, FRANCIS E \* Professor, 1977; MS, 1967, University of California (Berkeley), PhD, 1976, University of California (Berkeley); forest engineering, statistics, operations research

GRUNBAUM, DANIEL \* Associate Professor, 1991; MSME, 1987, University of Washington, PhD, 1991, Cornell University; Marine ecology, zooplankton population biology, biomechanics, mathematical biology, conservation biology

GUTTORG, PETER \* Professor, 1980; MA, 1976, University of California (Berkeley), PhD, 1980, University of California (Berkeley); point processes, stochastic models, applications to hydrology, environmental and atmospheric science

HILBORN, RAY \* Professor, 1987; PhD, 1974, University of British Columbia (Canada); population dynamics and resource policy

HORNE, JOHN K \* Research Associate Professor, 2001; MSC, 1988, Dalhousie University (Canada), PhD, 1995, Memorial University of Newfoundland; Uses acoustic techniques to examine scale-dependent distributions and predator-prey interactions of aquatic organisms

JOHNSON, JAY A \* Professor, 1980; MS, 1970, State University of New York (Syracuse), PhD, 1973, University of Washington; mechanical and physical properties of wood and wood composite materials, wood quality

KOT, MARK \* Associate Professor, 1989; MS, 1979, Cornell University, MS, 1984, University of Arizona, PhD, 1987, University of Arizona, MS, 1987, University of Arizona; mathematical ecology, nonlinear dynamics, and population biology

LESCHINE, THOMAS M \* Professor, 1983; MA, 1970, University of Pittsburgh, PhD, 1975, University of Pittsburgh; marine pollution management, ocean policy studies

PERCIVAL, DONALD B \* Professor, 1984; MA, 1976, George Washington University, PhD, 1983, University of Washington; time series and signal analysis, computational environments, statistics of clocks

PUNT, ANDRE \* Professor, 1992; MSC, 1988, University of Capetown (South Africa), PhD, 1991, University of Capetown (South Africa); Population dynamics and risk analysis for marine renewable resources

RUESINK, JENNIFER \* Associate Professor, 1998; MPhil, 1991, Cambridge University (UK), PhD, 1996, University of Washington; Marine intertidal ecology, especially community dynamics, food webs, introduced species

SAMPSON, PAUL D \* Research Professor, 1981; ScB, 1973, Brown University, MS, 1974, Brown University, PhD, 1979, University of Michigan; spatial statistics and environmetrics, morphometrics, statistical consulting

SCHREUDER, GERARD FRITZ \* Professor Emeritus, 1971; MS, 1960, Wageningen University (The Netherlands), MS, 1967, University of North Carolina, PhD, 1968, Yale University; forest economics and statistics

SKALSKI, JOHN R. \* Professor, 1987; MS, 1976, Oregon State University, MS, 1978, Cornell University, PhD, 1985, Cornell University; environmental sampling and effects assessment on wild populations, parameter estimation

TOTH, SANDOR F. \* Assistant Professor, 2007; MSC, 1994, University of Forestry and Wood Sciences, MS, 2002, Shinshu University (Japan), PhD, 2005, Pennsylvania State University; Forest management planning: spatially explicit harvest models, multiple-criteria forest planning. Opera-

tions research: integer programming, multiple-criteria optimization and decision support systems. The economics of non-timber forest benefits

TURNBLOM, ERIC \* Associate Professor, 1994; MSC, 1986, University of British Columbia (Canada), PhD, 1994, University of Minnesota; forest growth modeling, quantitative stand dynamics, and natural resources inventory

ZEH, JUDITH \* Adjunct Research Professor, 1965; MS, 1969, University of Washington, PhD, 1979, University of Washington; estimation of whale population size and dynamics, statistics in infectious disease research

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## Quaternary Research Center

ATWATER, BRIAN F \* Affiliate Professor, 1986; MS, 1974, Stanford University, PhD, 1980, University of Delaware; Quaternary geology, earthquake hazards

CLOSE, ANGELA E. \* Adjunct Professor, 1995; MA, 1974, Cambridge University (UK), PhD, 1976, Cambridge University (UK); Archaeology; Lithic Analysis; Prehistory of North Africa; human origins

FITZHUGH, J. BEN \* Adjunct Associate Professor, 1997; MA, 1992, University of Michigan, PhD, 1996, University of Michigan; Archaeology, Anthropology, evolutionary ecology, complex hunter-gatherers, social evolution, settlement systems; North Pacific Rim, Alaska, Russian Far East

GILLESPIE, ALAN R. \* Professor, 1985; MS, 1977, California Institute of Technology, PhD, 1982, California Institute of Technology; landscape evolution, paleoclimate, geochronology, and applications of remote sensing

HARTMANN, DENNIS L \* Adjunct Professor, 1977; MA, 1973, Princeton University, PhD, 1975, Princeton University; climate theory, dynamic meteorology, radiation and remote sensing

MONTGOMERY, DAVID R \* Adjunct Professor, 1991; PhD, 1991, University of California (Berkeley); earth surface processes, especially those occurring in mountain drainage basins

NITTROUER, CHARLES \* Adjunct Professor, 1978; MS, 1974, University of Washington, PhD, 1978, University of Washington; geological oceanography, continental-margin sedimentation

QUAY, PAUL D \* Professor, 1977; MPhil, 1975, Columbia University, PhD, 1977, Columbia University; chemical oceanography, stable isotope geochemistry, ocean tracers and mixing

RICHEY, JEFFREY E \* Adjunct Professor, 1973; MSPH, 1970, University of North Carolina, PhD, 1973, University of California (Davis); quantitative problems of aquatic ecosystems, primary Amazon River, limnology

SHREVE, RONALD L., Adjunct Research Professor, 2000; PhD, 1959, California Institute of Technology

SLETTEN, RONALD S \* Adjunct Research Assoc Professor, 1995; MSE, 1987, University of Washington, PhD, 1995, University of Washington; Environmental and low temperature geochemistry focusing on the arctic and antarctic

STONE, JOHN O.H. \* Assistant Professor, 1998; PhD, 1986, Cambridge University (UK); Quaternary dating and geomorphological studies with cosmic-ray-produced isotopes

STUIVER, MINZE, Professor Emeritus, 1969; PhD, 1958, University of Groningen (Netherlands)

SWANSON, TERRY W \* Adjunct Senior Lecturer, 1994; MA, 1989, University of California (Davis), PhD, 1994, University of Washington; geo-chronology

WADDINGTON, EDWIN D \* Adjunct Professor, 1984; MSC, 1973, University of Alberta, Canada, PhD, 1981, University of British Columbia (Canada); glacier and ice sheet modeling, interpretation of ice sheet stratigraphy

WARREN, STEPHEN G \* Adjunct Professor, 1981; MA, 1969, Harvard University, PhD, 1973, Harvard University; atmospheric radiation, climatology, glaciology

BAE, CHRISTINE \* Associate Professor, 1996; MRP, 1986, State University of New York (Albany), PhD, 1994, University of Southern California; Transportation; environmental planning; land use; planning methodologies; socioeconomic impact analysis

BEYERS, WILLIAM B \* Adjunct Professor, 1966; PhD, 1967, University of Washington; regional science, economic geography, location theory, regional analysis, environment of the Pacific Northwest

BEYERS, WILLIAM B \* Professor, 1966; PhD, 1967, University of Washington; regional science, economic geography, location theory, regional analysis, environment of the Pacific Northwest

BLANCO, HILDA J. \* Professor, 1996; MRP, 1984, University of California (Berkeley), PhD, 1989, University of California (Berkeley); Factors influencing urban sprawl; the implications of cognitive science and evolutionary theory for public policy and planning

BOOTH, DEREK B \* Affiliate Professor, 1984; MS, 1980, Stanford University, PhD, 1984, University of Washington; Environmental geology, particularly human influences on hillslopes, runoff, and rivers

BORN, BRANDEN M \* Assistant Professor, 2003; MS, 1998, University of Wisconsin (Madison), PhD, 2003, University of Wisconsin (Madison); Land use/regional planning, planning processes, social justice, food systems

BORNING, ALAN H \* Professor, 1980; MS, 1974, Stanford University, PhD, 1979, Stanford University; human-computer interaction; constraint-based languages and systems; programming languages; land use, transportation, and environmental modeling

BRADLEY, GORDON A \* Adjunct Professor, 1972; MLA, 1972, University of California (Berkeley), PhD, 1986, University of Michigan; Forest land use planning, Conservation area planning and design

BRADLEY, GORDON A \* Professor, 1972; MLA, 1972, University of California (Berkeley), PhD, 1986, University of Michigan; Forest land use planning, Conservation area planning and design

CAMPBELL, CHRISTOPHER D \* Assistant Professor, 2000; MA, 1994, University of California (Los Angeles), PhD, 2002, University of California (Los Angeles)

DELISLE, JAMES R \* Associate Professor, 2002; MS, 1976, University of Wisconsin (Madison), PhD, 1981, University of

Wisconsin (Madison); Real estate decision-making and investment in a managed growth environment

DREWNOWSKI, ADAM \* Professor, 1998; MA, 1971, Oxford University (UK), PhD, 1977, Rockefeller University; Taste and psychology of food choice in disease prevention

HANDCOCK, MARK S. \* Professor, 2000; PhD, 1989, University of Chicago; Statistical methodology for the social sciences, spatial statistics, demography

HARRINGTON, JAMES W. \* Professor, 1997; MA, 1980, University of Washington, PhD, 1983, University of Washington; roles of industrial change and labor processes in sub-national, regional economic development

HILL, KRISTINA, Affiliate Associate Professor, 1997; MLA, 1990, Harvard University, PhD, 1997, Harvard University

HOU, JEFFREY \* Associate Professor, 2001; MLArch, 1993, University of Pennsylvania, MArch, 1994, University of California (Berkeley), PhD, 2001, University of California (Berkeley); Community design, cultural landscape, grassroots actions, environmental planning and activism

KAHN, MIRIAM \* Professor, 1986; MA, 1974, Bryn Mawr College, PhD, 1980, Bryn Mawr College; museum exhibits, cultural representations, senses of place, tourism, Pacific Islands (Papua New Guinea, French Polynesia)

KLEIT, RACHEL G. \* Associate Professor, 1999; MA, 1993, Tufts University, PhD, 1999, University of North Carolina, Chapel Hill; housing policy; urban and social policy; social networks and poverty

LAYTON, DAVID F \* Associate Professor, 2001; MA, 1993, University of Washington, PhD, 1995, University of Washington; Environmental and Natural Resource Economics and Policy; Non-market Valuation; Discrete Choice Econometrics

LEE, ROBERT G \* Professor Emeritus, 1978; MFS, 1969, Yale University, PhD, 1973, University of California (Berkeley); natural resource sociology, multiresource management, development/change of forestry institutions

MANZO, LYNNE C \* Associate Professor, 2001; MA, 1988, City University of New York, PhD, 1994, City University of New York; Environment and behavior, place attachment, place identity, the politics of place

## Urban Design and Planning

ABRAMSON, DANIEL B \* Assistant Professor, 2001; MArch, 1992, Massachusetts Institute of Technology, MCP, 1992, Massachusetts Institute of Technology, PhD, 1998, Tsinghua University (China); Comparative urban design, historic preservation and neighborhood planning

ALBERTI, MARINA \* Associate Professor, 1996; PhD, 1992, Massachusetts Institute of Technology; Environmental planning, urban ecology, impact assessment, geographic information systems, conflict management

MARZLUFF, JOHN M. \* Professor, 1997; MSC, 1983, Northern Arizona University, PhD, 1987, Northern Arizona University; Behavior, ecology, and conservation of birds and mammals

MILLER, DONALD H \* Professor, 1970; MCP, 1960, University of California (Berkeley), PhD, 1972, University of California (Berkeley); urbanization processes, urban spatial structure, planning theory and evaluation, public service planning, consumer behavior and demand for public services

MONTGOMERY, DAVID R \* Professor, 1991; PhD, 1991, University of California (Berkeley); earth surface processes, especially those occurring in mountain drainage basins

MUGERAUER, ROBERT \* Professor, 2000; PhD, 1973, University of Texas (Austin); Sustainability; Impact of Information Technology; Values, Social and Cultural Factors in Design and Planning -Theory and Current Research Methods

NAIMAN, ROBERT J \* Professor, 1988; MA, 1971, University of California (Los Angeles), PhD, 1974, Arizona State University; forest stream ecosystems, aquatic landscape dynamics

NYERGES, TIMOTHY L. \* Professor, 1985; MA, 1976, Ohio State University, PhD, 1980, Ohio State University; GIS, spatial decision support, urban, transportation, environment, groupware

PRAKASH, VIKRAMADITYA \* Professor, 1996; MA, 1989, Cornell University, PhD, 1994, Cornell University; Non-western, Asian, Indian Architecture; cultural and postcolonial studies; LeCorbusier; modernism

PURCELL, MARK H. \* Associate Professor, 1999; MA, 1995, University of California (Los Angeles), PhD, 1998, University of California (Los Angeles); Urban political economy, urban geography, democracy, citizenship

RUTHERFORD, G SCOTT \* Professor, 1980; MSCE, 1968, Washington State University, PhD, 1974, Northwestern University; transportation planning and engineering, transit planning, demand forecasting

RYAN, CLARE \* Associate Professor, 1997; MS, 1990, University of Michigan, Ann Arbor, PhD, 1996, University of Michigan, Ann Arbor; Natural resource policy and administration, environmental conflict management, water policy

STREATFIELD, DAVID C \* Professor Emeritus, 1971; Diparch, 1956, Brighton Collge of Arts, MLA, 1965, University of Pennsylvania; regional landscape planning, environmental history, landscape studies, historic landscape preservation, landscape theory

VERNEZ-MOUDON, ANNE \* Professor, 1980; DSc, 1987, Ecole Polytechnique Federale De Lausanne; urban design, city form and neighborhood studies, design research

WADDELL, PAUL A \* Professor, 1997; MS, 1981, University of Texas (Houston), PhD, 1989, University of Texas (Dallas); urban policy, regional planning, growth management, land use, transportation, GIS

WADDELL, PAUL A \* Professor, 1997; MS, 1981, University of Texas (Houston), PhD, 1989, University of Texas (Dallas); urban policy, regional planning, growth management, land use, transportation, GIS

ZERBE, RICHARD O. \* Professor, 1975; PhD, 1969, Duke University; law and economics, cost-benefit analysis, economic history, environmental regulation

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# Interschool or Intercollege Programs

## Bioengineering

AEBERSOLD, RUDOLF HANS, Affiliate Professor, 1993; PhD, 1983, University of Basel (Switzerland)

AFROMOWITZ, MARTIN \* Adjunct Professor, 1974; MS, 1966, School of Engr And Applied Science (NY), PhD, 1969, Columbia University; microtechnology, solid-state and fiber-optics sensors, biomedical instrumentation

ALLAN, CHRISTOPHER H \* Adjunct Associate Professor, 1998; MD, 1992, Northwestern University; include wound repair and regeneration, tissue engineering, and application of these fields to extremity injuries

AUTH, DAVID C, Affiliate Professor, 1969; MS, 1966, Georgetown University, PhD, 1969, Georgetown University

BAKER, DANIEL R., Affiliate Assistant Professor, 1998; MSE, 1986, University of Michigan, PhD, 1993, University of Utah

BAKER, DAVID \* Adjunct Professor, 1993; PhD, 1989, University of California (Berkeley); protein folding

BANEYX, FRANCOIS \* Adjunct Professor, 1992; PhD, 1991, University of Texas (Austin); biotechnology, protein technology, biochemical engineering

BARRETT, PETER HUGH RUSSEL, Affiliate Associate Professor, 1988; PhD, 1989, University of Adelaide (Australia)

BASHEIN, GERARD \* Adjunct Professor, 1974; MS, 1964, Carnegie Mellon University, PhD, 1969, Carnegie Mellon University, MD, 1974, University of New Mexico; automation techniques in anesthesia, transesophageal ultrasonic cardiac assessment for operating-room monitoring

BASIJL, DAVID A., Affiliate Assistant Professor, 2002; MS, 1992, University of Washington, PhD, 1997, University of Washington

BASSINGTHWAIGHTE, JAMES \* Professor, 1975; MD, 1955, University of Toronto (Canada), PhD, 1964, Mayo Medical School/Graduate School; computer analysis of transport mechanisms in blood and tissues

BEARD, DANIEL A \* Affiliate Assistant Professor, 2001; MS, 1997, University of Washington

BLYAKHMAN, FELIX A., Affiliate Professor, 1996; MS, 1979, Ural State University

(Russia), PhD, 1986, Medical Academy, Krasnodar, Russia, DSc, 1996, Institute of Transplantation & Artificial Organs, Russia

BRUCKNER, ADAM \* Adjunct Professor, 1972; MA, 1968, Princeton University, PhD, 1972, Princeton University; space systems, space propulsion and power, planetary exploration, gas dynamics, heat transfer, energy conversion, astrobiology

BRYERS, JAMES D \* Professor, 2004; MSC, 1976, University of Idaho, PhD, 1980, Rice University; Quantifying the Processes Governing Bacterial Adhesion and Biofilm Formation

BURKE, JAMES V. \* Adjunct Professor, 1985; PhD, 1983, University of Illinois; optimization, nonsmooth analysis

BURNS, DAVID H, Affiliate Associate Professor, 1985; PhD, 1984, University of Washington

CALDWELL, JAMES H \* Adjunct Professor, 1970; MD, 1970, University of Missouri; positron emission tomography imaging of myocardial oxygenation, metabolism and sympathetic function

CAMPBELL, ALLISON A., Affiliate Associate Professor, 2000; PhD, 1991, State University of New York (Buffalo)

CASTNER, DAVID G. \* Professor, 1990; PhD, 1979, University of California (Berkeley); surface analysis characterization of biomedical and catalytic materials

CHING, RANDAL PRESTON \* Adjunct Research Assoc Professor, 1992; MSME, 1988, University of Washington, PhD, 1992, University of Washington; Orthopaedic biomechanisms related to injury prevention, injury mechanisms and injury repair

CHIZECK, HOWARD JAY \* Adjunct Professor, 1998; MS, 1976, Case Western Reserve University, DSc, 1982, Massachusetts Institute of Technology; Biologically inspired control systems for autonomous robotics, prosthetics, and rehabilitation

CHUDLER, ERIC H \* Research Associate Professor, 1991; MS, 1983, University of Washington, PhD, 1985, University of Washington; Neuroscience for kids

COBELLI, CLAUDIO, Affiliate Professor, 2000; Diploma, 1970, University of Padova, Italy

CONLEY, KEVIN E \* Adjunct Professor, 1988; PhD, 1983, University of Wisconsin

(Madison), MS, 1983, University of Wisconsin; muscle metabolism and energetics in vivo

CRUM, LAWRENCE A. \* Research Professor, 1992; MS, 1965, Ohio University, PhD, 1967, Ohio University; physical acoustics, underwater acoustics, medical ultrasound, acoustic cavitation, sonoluminescence, lithotripsy

DAGER, STEPHEN R \* Adjunct Professor, 1979; MD, 1978, University of Nebraska; application of functional brain imaging techniques to investigate neuropsychiatric disorders and studying the biology of psychiatric disorders

DAGGETT, VALERIE D. \* Professor, 1993; PhD, 1990, University of California (San Francisco); Computational and Integrative Bioengineering, Molecular Bioengineering and Nanotechnology

DANIEL, THOMAS L. \* Adjunct Professor, 1984; MS, 1978, University of Wisconsin, PhD, 1982, Duke University; functional morphology, biomechanics, mechanics and energetics of animal locomotion

DARLING, ROBERT B \* Adjunct Professor, 1985; MS, 1982, Georgia Institute of Technology, PhD, 1985, Georgia Institute of Technology; semiconductor devices, solid state, optoelectronics, microelectronics

FARE, THOMAS L., Affiliate Professor, 2000; MS, 1983, University of Pennsylvania, PhD, 1985, University of Pennsylvania

FOLCH, ALBERT \* Associate Professor, 2000; PhD, 1994, University of Barcelona (Spain); Research in microfabricated systems for in-vitro cell biology and biotechnology

FRANZA, B. ROBERT, Affiliate Professor, 1997; MD, 1979, Georgetown University

GABER, BRUCE P., Affiliate Professor, 1994; PhD, 1968, University of Southern California

GAMBLE, LARA J. \* Research Assistant Professor, 2004; PhD, 1996, University of Washington; Surface modification and characterization of model biomedical systems including microarrays

GAO, DAYONG \* Adjunct Professor, 2004; PhD, 1991, Concordia College; Cryopreservation of living cells and tissues; Artificial organs; Biotechnology and Bioinstrument



- GAO, XIAOHU \* Assistant Professor, 2005; PhD, 2004, Indiana University; Molecular Bioengineering and Nanotechnology Medical Imaging and Image-Guided Therapy
- GIACHELLI, CECILIA \* Professor, 1988; PhD, 1987, University of Washington; adhesion molecules and vascular biology processes
- GOMBOTZ, WAYNE R, Affiliate Assistant Professor, 1990; MS, 1985, University of Washington, PhD, 1988, University of Washington
- GREEN, PHILIP \* Adjunct Professor, 1994; PhD, 1976, University of California (Berkeley); Mathematical and Computer Methods for Genome Analysis
- GROSS, TED S \* Adjunct Professor, 2000; MS, 1985, Pennsylvania State University, PhD, 1993, State University of New York (Stony Brook); Biomedical Engineering in Orthopaedic Surgery
- GUY, ARTHUR W, Professor Emeritus, 1955; MSEE, 1957, University of Washington, PhD, 1966, University of Washington
- HANNAFORD, BLAKE \* Adjunct Professor, 1989; MS, 1982, University of California (Berkeley), PhD, 1985, University of California (Berkeley); haptic interfaces, robotics, biomechanics, bioengineering, controls, human-machine interaction
- HAUSCHKA, STEPHEN D \* Adjunct Professor, 1966; PhD, 1966, Johns Hopkins University; regulation of skeletal muscle differentiation, growth factor-receptor signal mechanisms and the control of muscle gene expression
- HAYNOR, DAVID R \* Adjunct Professor, 1979; PhD, 1971, University of California (Berkeley), MD, 1979, Harvard University; Medical image processing and segmentation; image deformation; functional MRI; expression arrays
- HESS, HENRY, Affiliate Assistant Professor, 1998; MSC, 1996, Technische Universität (Germany), PhD, 1999, Free University Berlin
- HLASTALA, MICHAEL P \* Adjunct Professor, 1970; PhD, 1969, State University of New York (Buffalo); respiratory physiology, inert gas analysis of respiratory function
- HOFFMAN, ALLAN S \* Professor Emeritus, 1970; MS, 1955, Massachusetts Institute of Technology, DSc, 1957, Massachusetts Institute of Technology; synthesis, characterization, and biological interaction of biomaterials, mechanics of natural tissues, applied polymers
- HOOD, LEROY E., Affiliate Professor, 1991; MD, 1964, Johns Hopkins University, PhD, 1968, California Institute of Technology
- HORBETT, THOMAS A \* Professor, 1970; PhD, 1970, University of Washington; interfacial proteins, cell interactions, foreign body reaction, nonfouling surfaces
- HUNTSMAN, LEE L \* Professor, 1968; PhD, 1968, University of Pennsylvania; mechanics of heart and heart muscle, cardiovascular system assessment, new measurement techniques
- HWANG, JOO HA, Adjunct Assistant Professor, 1997; MD, 1997, University of Chicago
- JIANG, SHAOYI \* Adjunct Professor, 1999; MS, 1988, Nanjing University of Technology (China), PhD, 1993, Cornell University; Interfacial phenomena, surface science, molecular simulation, and scanning probe microscopy
- KATZE, MICHAEL GERALD \* Adjunct Professor, 1987; MS, 1978, Hahnemann Medical College, PhD, 1980, Hahnemann Medical College; regulation of viral gene expression at the translational level
- KIM, YONGMIN \* Professor, 1982; MS, 1979, University of Wisconsin (Madison), PhD, 1982, University of Wisconsin (Madison); computer architecture, imaging systems, medical imaging, computer graphics, multimedia, home healthcare, modeling and medical instrumentation
- KINAHAN, PAUL E. \* Adjunct Professor, 2001; MS, 1988, University of British Columbia (Canada), PhD, 1994, University of Pennsylvania; Medical imaging
- KUSHMERICK, MARTIN J. \* Professor, 1988; MD, 1963, University of Pennsylvania, PhD, 1966, University of Pennsylvania; muscle contraction, magnetic resonance, metabolic imaging NMR spectroscopy
- LAFLAMME, MICHAELA. \* Adjunct Assistant Professor, 1999; PhD, 1998, Emory University, MD, 1999, Emory University; Stem cell biology, cardiac repair, cardiac electrophysiology
- LEWIS, THOMAS N. \* Affiliate Assistant Professor, 2003; MS, 1988, Georgia Institute of Technology, PhD, 1994, Georgia Institute of Technology; BioAcoustics, ultrasound enhanced drug delivery, underwater hearing in animals
- LI, XINGDE \* Associate Professor, 2001; PhD, 1998, University of Pennsylvania; Biomedical optical imaging, spectroscopy and biophotonics
- LI, ZHENG, Affiliate Assistant Professor, 1994; MS, 1991, State University of New York (Buffalo), PhD, 1995, State University of New York (Buffalo)
- LIDSTROM, MARY E. \* Adjunct Professor, 1977; MS, 1975, University of Wisconsin (Madison), PhD, 1977, University of Wisconsin (Madison); Genomic approaches to metabolic engineering of bacteria for commercial use
- LINKER, DAVID T. \* Adjunct Associate Professor, 1993; MD, 1976, Stanford University, MSE, 1982, University of Washington; diagnostic ultrasound in cardiology and cardiovascular pathophysiology
- MAKI, GARY, Affiliate Professor, 2003; MSEE, 1968, University of Missouri, PhD, 1969, University of Missouri
- MANAGULI, RAVI A. \* Affiliate Assistant Professor, 2000; MS, 1996, University of Nevada (Las Vegas), PhD, 2000, University of Washington; Computer architecture, Medical imaging modalities such as ultrasound, CT and MRI, signal processing, and medical image processing
- MANKOFF, DAVID A. \* Adjunct Professor, 1990; PhD, 1988, University of Pennsylvania, MD, 1988, University of Pennsylvania; Research focuses on cancer imaging to explore in vivo cancer biology
- MATSEN, FREDERICK A \* Adjunct Professor, 1971; MD, 1968, Baylor College of Medicine; orthopaedics, bone and joint research, robotics
- MATSUOKA, YOKY \* Adjunct Associate Professor, 2006; MS, 1995, Massachusetts Institute of Technology, PhD, 1998, Massachusetts Institute of Technology; Robotics, brain-machine interface
- MCCULLOCH, ANDREW D., Affiliate Professor, 2000; COP, 1983, University of Auckland (New Zealand), PhD, 1986, University of Auckland (New Zealand)
- MEDINA, JOHN J., Affiliate Associate Professor, 1988; PhD, 1988, University of Washington
- MINOSHIMA, SATOSHI \* Adjunct Professor, 2000; MD, 1987, Chiba University (Japan), PhD, 1994, Chiba University (Japan); Functional Brain Imaging / Image Processing and Statistics
- MOEHRING, MARK A., Affiliate Assistant Professor, 2001; MSEE, 1989, University of Washington, PhD, 1994, University of Washington
- MURRY, CHARLES E. \* Professor, 1989; PhD, 1989, Duke University, MD, 1989,

Duke University; Myocardial infarction, heart regeneration, skeletal/cardiac muscle differentiation, intercellular junctions

NEILS, CHRISTOPHER, Lecturer, 2001; MS, 1998, University of Texas (Austin), PhD, 2000, University of Texas (Austin)

NELSON, ALAN C., Affiliate Associate Professor, 1986; MA, 1976, University of California (Berkeley), PhD, 1980, University of California (Berkeley)

NESTOROV, IVAN ALEXANDROV \* Affiliate Professor, 2005; MSC, 1983, Technical University (Bulgaria), PhD, 1990, Academy of Science (Ussr); developing and implementing engineering approaches and mathematical models for integration of pharmacokinetic (PK) and pharmacodynamic (PD) information during the drug research and development process

NICKERSON, DEBORAH A \* Adjunct Professor, 1992; PhD, 1978, University of Tennessee; automating the identification and typing of human DNA variations

O'DONNELL, MATTHEW \* Professor, 2006; PhD, 1976, University of Notre Dame; An expert in ultrasound imaging; new imaging modalities in biomedicine, including ultrafast optics, in vivo microscopy, catheter imaging of coronary arteries, optoacoustic arrays, and elasticity and molecular imaging

PATHAK, SAYAN DEV \* Affiliate Assistant Professor, 2001; MS, 1997, University of Washington, PhD, 2000, University of Washington; Advanced medical image processing algorithms

POLLACK, GERALD H \* Professor, 1968; PhD, 1968, University of Pennsylvania; muscular contraction

PUN, SUZIE H \* Assistant Professor, 2003; MS, 1998, California Institute of Technology, PhD, 2000, California Institute of Technology; Biomaterials and intracellular trafficking

QIAN, HONG \* Adjunct Professor, 1999; PhD, 1989, Washington University; Mathematical, physical chemistry and biology, statistical physics, stochastic mathematics and modeling

RATNER, BUDDY D \* Professor, 1972; PhD, 1972, Polytechnic Institute of Brooklyn; synthesis and characterization of polymeric biomaterials

RATNER, DANIEL M. \* Assistant Professor, 2007; PhD, 2004, Massachusetts Institute of Technology; Engineered Biomaterials and Tissue Bioengineering, Molecular Bioengineering and Nanotechnology

REGNIER, MICHAEL \* Associate Professor, 1997; MS, 1983, Portland State University, PhD, 1991, University of Southern California; Mechanics, kinetics and computational modeling of cardiac/skeletal muscle contraction

REH, THOMAS A. \* Adjunct Professor, 1989; PhD, 1981, University of Wisconsin; regeneration and development of central nervous system

RENEMAN, ROBERT S., Affiliate Professor, 1985; MD, 1959, University of Amsterdam (Netherlands), PhD, 1968, University of Utrecht (Netherlands)

RUBINSTEIN, JAY T. \* Professor, 2004; MS, 1983, Brown University, MD, 1987, University of Washington, PhD, 1988, University of Washington

SANDERS, JOAN ELIZABETH \* Associate Professor, 1992; MSME, 1985, Northwestern University, PhD, 1991, University of Washington; soft tissue biomechanics and tissue adaptation to mechanical stress

SAURO, HERBERT M \* Associate Professor, 2007; MSC, 1982, University of York (UK), PhD, 1986, Oxford University (UK); Computational and Integrative Bioengineering

SCATENA, MARTA \* Research Assistant Professor, 2001; PhD, 1992, University of Padova, Italy; To understand how the extracellular matrix regulates the angiogenesis process

SCHENKMAN, KENNETH A. \* Adjunct Associate Professor, 1991; MD, 1986, Indiana University; Oxygen transport in tissue Muscle oxygenation Myocardial performance Optical spectroscopy Mitochondrial function

SCHWARTZ, STEPHEN MARK \* Adjunct Professor, 1967; MD, 1967, Boston University, PhD, 1973, University of Washington; vascular biology, atherosclerosis, molecular basis of lineage, developmental biology, cell kinetics

SEIBEL, ERIC J. \* Adjunct Research Assoc Professor, 1996; MS, 1984, University of California (Berkeley), PhD, 1996, University of Washington; Opto-mechanics and scanning for image acquisition, display and biomedical sensing

SETER, PETER DANA, Affiliate Professor, 2000; MS, 1976, North Carolina State University, PhD, 1980, University of Illinois (Urbana)

SHEEHAN, FLORENCE, Adjunct Research Professor, 1980; MD, 1975, University of Chicago

SHEN, TUENG T \* Adjunct Assistant Professor, 2003; PhD, 1994, Massachusetts Institute of Technology, MD, 1997, Harvard University; corneal tissue engineering for the treatment of corneal blindness. She has a particular interest in raising the public awareness of the importance of tissue donation

SHMULEVICH, ILYA \* Affiliate Associate Professor, 2006; MS, 1993, Purdue University, PhD, 1997, Purdue University; Computational and systems biology, genomics, bioinformatics; signal and image processing

SPELMAN, FRANCISA, Professor Emeritus, 1977; MSEE, 1968, University of Washington, PhD, 1975, University of Washington

SPENCER, MERRILL P., Affiliate Associate Professor, 1968; MD, 1945, Baylor College of Medicine

STAYTON, PATRICK \* Professor, 1992; MS, 1989, University of Illinois, PhD, 1989, University of Illinois; engineering proteins for biotechnology, biomaterials, and biomedical therapies/diagnostics

TENCER, ALLAN FRED \* Adjunct Professor, 1988; MEng, 1973, McGill University (Canada), PhD, 1981, McGill University (Canada); biomechanics of joints, orthopaedic trauma implants, controlled release of substances for bone formation

THOMAS, WENDY \* Assistant Professor, 2003; PhD, 2003, University of Washington, MS, 2003, University of Washington; mechanical regulation of protein structure and function

TRASK, BARBARA J \* Adjunct Professor, 1992; MS, 1979, Leiden University (The Netherlands), PhD, 1985, Leiden University (The Netherlands); in situ hybridization, analytical cytogenetics, analysis of large-scale DNA polymorphism

VAEZY, SHAHRAM \* Associate Professor, 1996; PhD, 1991, University of Washington; Therapeutic Ultrasound, Image-Guided Therapy, Three Dimensional Visualization and Computation

VAN DER VUSSE, GER, Affiliate Professor, 1985; MS, 1971, University of Amsterdam (Netherlands), PhD, 1975, Erasmus University (Netherlands)

VERDUGO, PEDRO \* Professor Emeritus, 1969; MD, 1965, University of Chile; microrheology, biomechanics, polymer gel physics, laser spectroscopy, cell biology

VESSELLE, HUBERT J. \* Adjunct Associate Professor, 1997; MS, 1986, Case Western Reserve University, PhD, 1990,

Case Western Reserve University, MD, 1991, Case Western Reserve University; Nuclear Medicine and Abdominal Imaging

VICINI, PAOLO \* Associate Professor, 1996; PhD, 1996, Polytechnic of Milan (Italy); Computational, mathematical, and statistical approaches to the analysis of biological systems. Maximum likelihood and least squares parameter estimation for biomedical models. Pharmacokinetics and pharmacodynamics. Use of models to test hypotheses

VINEY, CHRISTOPHER, Affiliate Professor, 1987; PhD, 1983, Cambridge University (UK), MA, 1984, Cambridge University (UK)

VOGEL, VIOLA \* Affiliate Professor, 1990; Diploma, 1984, Johann Wolfgang Goethe Universität Frankfurt am Main (Germany), Doct, 1987, Goethe Universität (Germany); molecular assemblies and Langmuir-Blodgett films, liquid interfaces, non-linear optics, microscopy

WEIGL, BERNHARD H, Affiliate Associate Professor, 1995; MSC, 1991, University of Graz (Austria), PhD, 1993, University of Graz (Austria)

YAGER, PAUL \* Professor, 1987; PhD, 1980, University of Oregon; physical chemistry, applications of biomembranes, biosensors, microfluidics, biomedical diagnostic instrumentation

YUAN, CHUN \* Adjunct Professor, 1991; PhD, 1988, University of Utah; magnetic resonance imaging in medical application

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## Global Health

BRENTLINGER, PAULA \* Clinical Assistant Professor, 2002; MD, 1979, University of California (Davis), MPH, 1986, Harvard University; Primary health services, malaria, and HIV/AIDS in developing countries

CAMPBELL, LEE ANN \* Adjunct Professor, 1985; MS, 1979, Pennsylvania State University, PhD, 1982, Pennsylvania State University; molecular biology and pathogenic mechanisms of chlamydiae

CANGELOSI, GERARDA. \* Affiliate Associate Professor, 1985; PhD, 1983, University of California (Davis); molecular biology of tuberculosis

CARTER, WILLIAM G \* Affiliate Professor, 1976; PhD, 1974, University of California (Davis); elucidation of components in cell attachment and cell spreading in normal cells

CELUM, CONNIE L. \* Professor, 1987; MD, 1984, University of California (San Francisco), PhD, 1989, University of Washington; Prevention and vaccine trials to reduce HIV acquisition and transmission

DOWNER, ANN E. \* Senior Lecturer, 1982; MS, 1984, University of Washington

DUFFY, PATRICK E \* Affiliate Associate Professor, 2001; MD, 1986, Duke University; malaria pathogenesis and vaccine development, parasite adhesion, and functional genomics

FREITAG, NANCY E. \* Affiliate Associate Professor, 2000; PhD, 1989, University of California (Los Angeles); Bacterial pathogenesis and regulation of gene expression

FRIED, MICHAL \* Affiliate Assistant Professor, 2003; MS, 1987, Ben-Gurion University, PhD, 1991, Hebrew University (Israel); molecular basis of maternal malaria and malaria pathogenesis in early childhood

GAKIDOU, EMMANUELA \* Associate Professor, 2007; MS, 1997, Harvard University, PhD, 2001, Harvard University; health inequities, the impact of expanding health care to the poor in Mexico; measuring inequalities in child and adult mortality

GLOYD, STEPHEN S. \* Professor, 1973; MD, 1973, University of Chicago, MPH, 1983, Harvard University; political economy, epidemiology, and primary health care in developing countries

HAIGWOOD, NANCY L. \* Affiliate Professor, 1994; PhD, 1980, University of North Carolina, Chapel Hill; Host immunity in the control and prevention of AIDS

HAKOMORI, SEN-ITIROH \* Professor Emeritus, 1967; MD, 1951, Tohoku Imperial University (Japan), DrMedSci, 1956, Tohoku Imperial University (Japan); membrane biochemistry and glycoproteins

HANSEN, JOHN D. \* Affiliate Associate Professor, 2004; PhD, 1996, Oregon State University; comparative immunology, including the overall evolution of immunity

HOLMES, KING K. \* Professor, 1967; MD, 1963, Cornell University, PhD, 1967, University of Hawaii; clinical epidemiology and pathogenesis of infectious diseases

KAPPE, STEFAN H. I. \* Affiliate Assistant Professor, 2004; MS, 1991, University of Bonn (Germany), PhD, 1998, University of Notre Dame

KOELLE, DAVID \* Adjunct Associate Professor, 1989; MD, 1985, University of

Washington; Viral immunology, immune evasion, and vaccine design for viral infections

KURATH, GAEL \* Affiliate Associate Professor, 1994; MS, 1980, Oregon State University, PhD, 1984, Oregon State University; Molecular biology and evolution of RNA viruses that infect fish

KURTH, ANN E. \* Associate Professor, 2003; MPH, 1987, Columbia University, MN, 1990, Yale University, PhD, 2003, University of Washington; HIV/sexually transmitted infection screening and prevention

LAMPE, PAUL D \* Adjunct Research Assoc Professor, 1996; PhD, 1984, University of Minnesota; regulation of intercellular communication via gap junctions

LEBOEUF, RENEE C. \* Adjunct Research Professor, 1987; MS, 1973, Oregon State University, PhD, 1977, State University of New York (Buffalo), PhD, 1985, Harvard University, MD, 1987, University of Massachusetts; genetic and nutritional regulation of proteins involved in lipid transport

LIM, STEPHEN SZE-PING \* Assistant Professor, 2007; PhD, 2005, Monash University (Australia); improving health information systems in developing countries; innovative analysis of existing data for policy making; engaging decision makers in translating research results into tangible health policies

LINGAPPA, JAIRAM R. \* Assistant Professor, 1991; PhD, 1987, Harvard University, MD, 1991, University of California (San Francisco); evaluating safety and efficacy of non-vaccine prevention interventions

LINGAPPA, JAISRI \* Associate Professor, 1999; PhD, 1985, Harvard University, MD, 1987, University of Massachusetts; Cell biology of virus assembly; host proteins involved in assembly of HIV and other viruses

LINIAL, MAXINE L \* Adjunct Research Professor, 1970; PhD, 1970, Tufts University; retroviral replication and genetics, retroviral transformation

LOGERFO SR., JAMES P \* Professor, 1971; MD, 1968, University of Rochester, MPH, 1974, University of Washington; quality-of-care assessment

LUKEHART, SHEILA A \* Adjunct Professor, 1979; PhD, 1978, University of California (Los Angeles); Immunology of infectious diseases; microbiology; sexually transmitted diseases

MCEL RATH, MARGARET JULIANA \* Adjunct Professor, 1990; PhD, 1978, Medical University of South Carolina, MD, 1980, Medical University of South Carolina; T cell immunity in HIV-1 Infection; understanding immune mechanisms that contribute to the control and prevention of HIV infection

MURRAY, CHRISTOPHER J \* Professor, 2007; DPhil, 1987, Oxford University (UK), MD, 1991, Harvard University; development of methods and empirical studies to strengthen the basis for population health measurement

O'MALLEY, GABRIELLE E. \* Clinical Assistant Professor, 2004; MA, 1989, Johns Hopkins University, PhD, 2000, University of Washington; adult learning and transfer of learning, commercial sex worker health interventions, and operations research

PARSONS, MARILYN \* Adjunct Professor, 1986; PhD, 1979, Stanford University; parasite cell biology

PFEIFFER, JAMES T. \* Associate Professor, 2004; MA, 1989, University of California (Los Angeles), PhD, 1997, University of California (Los Angeles), MPH, 1997, University of California (Los Angeles); Pentecostalism and public health in Africa; AIDS treatment in Mozambique

POLYAK, STEPHEN J. \* Adjunct Research Assoc Professor, 1993; PhD, 1993, McMaster University (Canada); Virology-Infectious Disease, Hepatology Hepatitis C Molecular Biology

RATHOD, PRADIPSINH K. \* Adjunct Professor, 2001; PhD, 1982, Oregon Health Sciences University; Study of malaria chemotherapy and drug resistance using genomics tools

REED, STEPHEN G. \* Adjunct Research Professor, 1993; PhD, 1979, University of Montana; Vaccine and diagnostic development, with emphasis on antigen discovery and nature of specific immune responses to infection with macrophage pathogens

ROBERTS, MARILYN C \* Adjunct Professor, 1981; MS, 1977, University of Washington, PhD, 1978, University of Washington; antibiotic resistance genes, plasmids, sexually transmitted diseases, oral microbiology, heavy metal resistance in bacteria, mycobacterium, respiratory disease

SHELL-DUNCAN, BETTINA \* Adjunct Associate Professor, 1995; MS, 1988, University of Wisconsin, PhD, 1994, Pennsylvania State University; health assessment in traditional societies, including immunity, nutrition, and anthropological demography

SHERMAN, DAVID R. \* Affiliate Associate Professor, 1998; PhD, 1987, Vanderbilt University; Molecular genetics, microbiology and biochemistry of pathogenic mycobacteria

SHERRIS, JACQUELINE R, Affiliate Assistant Professor, 1989; MS, 1979, Purdue University, PhD, 1980, Purdue University

SMALL, PETER \* Affiliate Associate Professor, 2003; MD, 1985, University of Florida; nature and consequences of genetic variability with the species *M. tuberculosis*

SMITH, JOSEPH \* Adjunct Research Asst Professor, 2003; PhD, 1994, Washington University; Antigenic variation and cytoadherence of *Plasmodium falciparum*-infected erythrocytes

STAMATATOS, LEONIDAS \* Adjunct Associate Professor, 2001; MSC, 1983, University of Paris (France), PhD, 1988, McGill University (Canada); Structure/function analysis of the HIV envelope and vaccine-development

STERGACHIS, ANDREAS S \* Professor, 1980; MS, 1976, University of Minnesota, PhD, 1979, University of Minnesota; pharmacoeconomics, pharmacy administration

STUART, KENNETH DANIEL \* Affiliate Professor, 1985; MA, 1965, Wesleyan University, PhD, 1969, University of Iowa; molecular biology of parasites

VAN VOORHIS, WESLEY C \* Adjunct Professor, 1986; PhD, 1983, Rockefeller University, MD, 1984, Cornell University; infectious diseases

WASSERHEIT, JUDITH N. \* Professor, 2001; MD, 1978, Harvard University, MPH, 1989, Johns Hopkins University; sexually transmitted disease (STD) research, policy development and program implementation in the US and in developing countries

WHITE, THEODORE C \* Adjunct Professor, 1996; PhD, 1984, University of Michigan; molecular mechanisms of virulence and drug resistance in pathogenic yeasts

ZUNT, JOSEPH R. \* Associate Professor, 1991; MD, 1991, University of Minnesota, MPH, 1998, University of Washington; effects of HIV, HTLV-I, and HTLV-II infection upon the nervous system, retroviral co-infection and viral meningoencephalitis in Peru

# School of Law

## School of Law

ALLEN, CRAIG H., Professor, 1996; JD, 1989, University of Washington

ANDERSEN, WILLIAM, Professor Emeritus, 1964; LLM, 1958, Yale University

ANDERSON, HELENA., Assistant Professor, 1994; JD, 1984, University of Washington

ANDERSON, ROBERT T \* Associate Professor, 2000; JD, 1983, University of Minnesota; Native American sovereignty, hunting and fishing rights, and natural resource issues

ANDREWS, THOMAS R \* Professor, 1985; MA, 1973, Northwestern University, JD, 1979, University of Pennsylvania; Professional responsibility in legal practice, community property, decedents' estates, torts, property

ARONSON, ROBERT H \* Professor, 1975; JD, 1973, University of Pennsylvania; evidence, criminal law, professional responsibility, law and literature

BARZILAI, GAD \* Adjunct Professor, 2004; MA, 1982, Bar-Ilan University (Israel), PhD, 1988, Hebrew University (Israel); Middle East Studies; international law

BOXX, KAREN E., Associate Professor, 1996; JD, 1983, University of Washington

BROWN, SHARAN E \* Adjunct Research Assoc Professor, 1983; MA, 1979, Seattle University, JD, 1984, University of Puget Sound, EdD, 1991, University of Washington; Special Education Law

CALANDRILLO, STEVE P \* Professor, 2000; JD, 1998, Harvard University; law & economics, law & medicine, contract law

COBB, THOMAS DILLON, Lecturer, 2004; MALS, 1993, Reed College, MA, 1997, University of Chicago

COBB, THOMAS DILLON, Lecturer, 2004; JD, 2001, University of Minnesota

COVINGTON, WILLIAM EDWARD, Assistant Professor, 2003; JD, 1977, University of Michigan

DONALDSON, SAMUELA \* Associate Professor, 1995; JD, 1993, University of Arizona, LLM, 1994, University of Florida; Federal taxation (income, estate, gift)

DRAKE, DWIGHT JULIAN, Acting Associate Professor, 2004; JD, 1973, University of Washington

EDDY, JONATHAN, Professor, 1979; JD, 1969, University of Washington

EMORY, MEADE, Professor Emeritus, 1995; LLM, 1962, Boston University

GOLD, JULIA ANN, Senior Lecturer, 1995; JD, 1983, University of South Carolina

GOMULKIEWICZ, ROBERT W. \* Professor, 1997; JD, 1987, University of Washington, MA, 1987, University of Washington; Intellectual property licensing and legal protection for software

HAZELTON, PENELOPE A \* Professor, 1985; JD, 1975, Lewis And Clark College, MLL, 1976, University of Washington; law librarianship, legal bibliography, computer-assisted legal research, law, Indian law

HICKS, GREGORY A. \* Professor, 1984; JD, 1978, University of Texas (Austin); Property in land and natural resources and also on natural resources policy, including water and common pool resources

HOTCHKISS, MARY A \* Senior Lecturer, 1989; MLS, 1978, Catholic University of America, JD, 1983, Washington University, LLM, 1985, George Washington University; Federal legislative process and public policy; federal information policy; and access to justice issues

HOWARD, MAUREENA, Assistant Professor, 1996; JD, 1986, University of Washington

HUME, LINDA S. \* Professor, 1972; JD, 1970, University of California (Los Angeles); commercial transactions, property, equal rights

HUSTON, JOHN, Professor Emeritus, 1967; LLD, 1952, University of Washington, LLM, 1955, New York University

JAY, STEWART M \* Professor, 1980; JD, 1976, Harvard University; constitutional law, legal history, legal philosophy, federal courts

JECKER, NANCY A.S. \* Adjunct Professor, 1986; MA, 1982, Stanford University, MA, 1984, University of Washington, PhD, 1986, University of Washington; philosophical and ethical aspects of health care delivery and policy

JUNKER, JOHN M \* Professor, 1964; JD, 1962, University of Chicago; criminal law and procedure

KALTSOUNIS, SARAH FARLEY, Lecturer, 2006; MEd, 2000, University of Washing-

ton, JD, 2003, University of Washington

KANG'ARA, SYLVIA W, Assistant Professor, 2006; LLM, 1998, Harvard University, SJD, 2003, Harvard University

KELLY, LISA A., Professor, 2002; JD, 1982, University of Pennsylvania

KIRTLEY, ALAN \* Associate Professor, 1984; JD, 1972, Indiana University; negotiation, mediation, alternative dispute resolution generally, and clinical legal education

KNIGHT, W.H. JR., Professor, 2001; JD, 1979, Columbia University

KUSZLER, PATRICIA CAROL \* Professor, 1994; MD, 1978, Mayo Medical School/ Graduate School, JD, 1991, Yale University; law and medicine: health care finance and regulation; medical malpractice; biotechnology and law

LASTER, DANIEL, Associate Professor, 2003; JD, 1983, University of Michigan

LIU, CHANG B, Affiliate Professor, 1984; LLM, 1977, University of Washington, PhD, 1983, University of Washington

LOFTUS, ELIZABETH F, Affiliate Professor, 1973; MA, 1967, Stanford University, PhD, 1970, Stanford University

LOMBARDI, CLARK B \* Assistant Professor, 2004; JD, 1998, Columbia University, PhD, 2001, Columbia University; Islamic law; U.S. and comparative constitutional law; law and development

MARANVILLE, DEBORAH \* Professor, 1989; JD, 1975, Harvard University; Unemployment compensation (& gender, & globalization), teaching (& gender, & technology, & experiential learning)

MASTROIANNI, ANNA C. \* Associate Professor, 1998; JD, 1986, University of Pennsylvania, MPH, 1997, University of Washington; Law, ethics and policy genetics, reproduction, human subjects research

MC CANN, MICHAEL W \* Adjunct Professor, 1982; MA, 1976, University of California (Berkeley), PhD, 1983, University of California (Berkeley); American government and politics, public law, political theory

MCGINNIS, KATHLEEN M., Senior Lecturer, 1994; JD, 1984, University of California (Berkeley)

MCMURTRIE, JACQUELINE \* Associate Professor, 1989; JD, 1983, University of Michigan; Criminal Law, Evidence, Clinical Law Program, Innocence Project Northwest

MILLER, PAUL STEVEN \* Professor, 2004; JD, 1998, Harvard University; Disability law and history; employment discrimination; and genetics and the law

MORRIS, ARVAL, Professor Emeritus, 1955; MA, 1952, University of Colorado (campus unspecified), JD, 1955, University of Colorado (Boulder), LLM, 1958, Yale University, LLD, 1972, Colorado College

MYHRE, THEODORE A., Lecturer, 2007; MA, 1991, Drew University, MA, 1994, Boston College, JD, 2000, Seattle University

NGUGI, JOEL M \* Assistant Professor, 2004; LLM, 1999, Harvard University, SJD, 2002, Harvard University; Law and Development; Third World Approaches to International Law; and Contract Theory

NICOLAS, PETER, Professor, 2000; MPP, 1992, University of Michigan, JD, 1999, Harvard University

O'CONNOR, SEAN M. \* Associate Professor, 2002; MA, 1995, Arizona State University, JD, 1998, Stanford University; Legal issues of commercializing science and technology

OLSWANG, STEVEN G \* Adjunct Professor, 1977; JD, 1971, University of Illinois, PhD, 1977, University of Washington; higher education administration and policy, law, faculty government, collective bargaining

O'NEILL, KATHLEEN M. \* Associate Professor, 1993; JD, 1980, Columbia University; Copyright law, contract law, legal rhetoric, law & literature and learning theory

PEKKANEN, SAADIA \* Adjunct Associate Professor, 2004; MA, 1988, Columbia University, PhD, 1996, Harvard University; International political economy, international law, Japan, Japanese foreign policy

RAMASASTRY, ANITA G. \* Associate Professor, 1996; MA, 1989, University of Sydney (Australia), JD, 1992, Harvard University

RIVIN, BETH E. \* Research Associate Professor, 1996; MD, 1982, East Carolina University, MPH, 1985, Harvard University; Public health program development and evaluation

ROBINSON-DORN, MICHAEL JAY \* Assistant Professor, 2003; JD, 1991, Cornell University; Environmental and natural resources law, administrative law, clinical law

SCHNAPPER, ERIC, Professor, 1995; MA, 1963, Johns Hopkins University

SCHUMACHER, SCOTT A, Assistant Professor, 2000; JD, 1980, Seattle University, LLM, 1991, New York University

SMITH, FRANK W, Professor Emeritus, 1968; LLM, 1968, Harvard University

STOEBUCK, WILLIAM B, Professor Emeritus, 1967; MA, 1953, Indiana University, JD, 1959, University of Washington, SJD, 1973, Harvard University

TAKENAKA, TOSHIKO \* Professor, 1993; LLM, 1990, University of Washington, PhD, 1992, University of Washington; U.S. patent and intellectual property law; international and comparative intellectual property law

TAYLOR, VERONICA \* Professor, 2001; LLM, 1992, University of Washington; Asian and Comparative Law

TOWNSEND, MICHAEL E. \* Associate Professor, 1992; MA, 1978, University of Michigan, PhD, 1982, Yale University, JD, 1989, Yale University; law and science; intellectual property; use of quantitative methods

VAUGHN, LEA B. \* Professor, 1984; JD, 1978, University of Michigan; labor law, alternate dispute resolution, civil procedure

WALSH, WALTER J. \* Associate Professor, 1996; LLM, 1989, Yale University

WATTS, KATHRYN A, Assistant Professor, 2007; JD, 2001, Northwestern University

WHITENER, RON, Assistant Professor, 1999; JD, 1994, University of Washington

WHITING, SUSAN H. \* Adjunct Associate Professor, 1994; PhD, 1995, University of Michigan; political economy of development in post-1949 China

WINN, JANE K \* Professor, 2002; JD, 1987, Harvard University; Technology law; electronic commerce law; comparative law European Union China

WOLCHER, LOUIS E. \* Professor, 1986; JD, 1973, Harvard University; contracts, critical legal studies, torts, remedies, philosophy of law

ZANG, DONGSHENG \* Assistant Professor, 2005; LLM, 1996, Harvard University, SJD, 2004, Harvard University; Chinese Law, Comparative Law Seminar, International Business Transactions

ZERBE, RICHARD O. \* Adjunct Professor, 1975; PhD, 1969, Duke University; law and economics, cost-benefit analysis, economic history, environmental regulation

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# School of Medicine

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## Anesthesiology

ANDERSON, CORRIE, Professor, 2001; MS, 1985, Boston University

ARTRU, ALAN A, Professor, 1980; MD, 1975, Medical College of Wisconsin

ATLI, AYSEL, Assistant Professor, 2003; MD, 1994, University of Istanbul (Turkey)

BASHEIN, GERARD \* Professor, 1974; MS, 1964, Carnegie Mellon University, PhD, 1969, Carnegie Mellon University, MD, 1974, University of New Mexico; automation techniques in anesthesia, transesophageal ultrasonic cardiac assessment for operating-room monitoring

BHANANKER, SANJAY M., Assistant Professor, 2002; MBBS, 1987, Goa University (India), MD, 1992, Goa University (India)

BISHOP, MICHAEL J, Professor, 1979; MD, 1974, University of California (San Diego)

BOWDLE, T. ANDREW, Professor, 1981; MD, 1980, University of Washington, PhD, 1983, University of Washington

BRAMHALL, JOHN S., Associate Professor, 1995; PhD, 1976, Aston University (England), MD, 1991, University of California (San Diego)

BUCKLEY, F. PETER, Associate Professor, 1977; MBBS, 1968, St. Bartholomew's Hosp Med School (UK)

CAHANA, ALEX, Professor, 2008; MD, 1990, Sackler School of Medicine (Israel), MAS, 2005, University of Lausanne (Switzerland)

CHADWICK, HEATHCLIFF S., Associate Professor, 1980; MD, 1976, University of Oregon

CHAVKIN, CHARLES \* Adjunct Professor, 1984; PhD, 1982, Stanford University; cell and molecular mechanisms of psychoactive opiate drugs to understand normal and pathophysiology

CHENEY, FREDERICK W, Professor Emeritus, 1964; MD, 1960, Tufts University

CHUDLER, ERIC H \* Adjunct Research Assoc Professor, 1991; MS, 1983, University of Washington, PhD, 1985, University of Washington; Neuroscience for kids

CULLEN, BRUCE F., Professor Emeritus, 1972; MD, 1966, University of California (Los Angeles)

DAVIES, JOANNA M., Assistant Professor, 2001; MBBS, 1991, London Hospital Medical College (UK), Fellow of the Royal College of Anesthetists, 1998, London Hospital Medical College (UK)

DEEM, STEVEN A., Associate Professor, 1992; MD, 1984, Southern Illinois University

DEMBO, GREGORY, Assistant Professor, 2000; MD, 1978, First Leningrad Medical Institute, Russia

DOMINO, KAREN B., Professor, 1986; MA, 1974, University of New Mexico, MD, 1978, University of Michigan

DUNBAR, PETER J., Associate Professor, 1991; MBChB, 1978, University of Aberdeen (UK)

EDWARDS, WILLIAM T., Associate Professor, 1990; PhD, 1968, Massachusetts Institute of Technology, MD, 1975, University of Massachusetts

EISSES, MICHAEL J., Assistant Professor, 1996; MD, 1995, University of Washington

FALK VAN ROOYEN, INGE, Assistant Professor, 2001; MBChB, 1992, University of Stellenbosch (So Africa)

FITZGIBBON, DERMOT R., Associate Professor, 1992; MBChB, 1983, University College (Ireland)

FLACK, SEAN H., Assistant Professor, 2004; MBChB, 1992, University of Capetown (South Africa)

FREUND, FELIX G., Professor Emeritus, 1963; MD, 1948, University of Buenos Aires (Argentina)

FREUND, PETER, Professor Emeritus, 1975; MD, 1975, Columbia University, MD, 1975, Columbia University

GUSTIN, ALLEN N, Assistant Professor, 2007; MD, 1996, Medical University of South Carolina

HORNBEIN, THOMAS F, Professor Emeritus, 1963; MD, 1956, Washington University

JARDINE, DAVID, Associate Professor, 1987; MD, 1980, Johns Hopkins University

JOFFE, DENISE C, Associate Professor, 2006; MD, 1986, McGill University (Canada)

JONMARKER, CHRISTER S.R., Associate Professor, 2000; MD, 1975, University of Lund (Sweden)

KARL, HELEN W., Associate Professor, 1990; MD, 1976, University of Virginia

KENT, CHRISTOPHER D, Assistant Professor, 2005; MD, 1988, University of Saskatchewan (Canada)

KIM, JERRY HYUN, Acting Instructor, 2006; MD, 2002, Thomas Jefferson University

KUNDU, ANJANA, Assistant Professor, 2003; MBBS, 1991, Medical College And Hospital (India), DArts, 1995, Seth Gs Medical College (India), MD, 2002, Medical College of Wisconsin

LAM, ARTHUR M, Professor, 1986; MD, 1974, University of Western Ontario (Canada)

LANDAU-CAHANA, RUTH, Professor, 2008; MD, 1989, University of Geneva (Switzerland)

LANG, JOHN D, Associate Professor, 2006; MD, 1988, American University of The Caribbean

LEE, LORRI A., Associate Professor, 1995; MD, 1989, West Virginia University

LIU, YULIANG, Acting Instructor, 2006; MD, 1993, China Medical University (China), MS, 1999, Peking Union Medical College (China), MS, 2002, University of Alabama

LOESER, JOHN D, Professor, 1962; MD, 1961, New York University

LOMBAARD, STEFAN A., Assistant Professor, 2004; MBChB, 1992, University of Pretoria (South Africa)

LYNN, ANNE, Professor, 1975; MD, 1975, Stanford University

MARTAY, KENNETH, Associate Professor, 1999; MD, 1987, University of Freiburg (Germany)

MARTIN, LYNN D, Professor, 1994; MD, 1982, University of Washington

METZNER, IULIA IRINA, Assistant Professor, 2003; MD, 1986, Timisoara University of Med & Pharm (Romania)

MORGAN, PHILIP G, Professor, 2008; MS, 1975, University of Colorado (Boulder), MD, 1980, University of Colorado (Denver)

ORR, ROSEMARY J, Associate Professor, 1969; MBBS, 1967, Queen's University of Belfast (Ireland)

OTTO, CATHERINE M., Adjunct Professor, 1982; MD, 1979, University of Washington

OXORN, DONALD C., Associate Professor, 1998; MD, 1978, McGill University (Canada)

PAVLIN, D JANET, Professor, 1971; MSC, 1966, University of Manitoba (Canada), MD, 1969, University of Manitoba (Canada)

PAVLIN, EDWARD G, Professor, 1971; MD, 1968, University of Manitoba (Canada)

PEARLMAN, ALAN S, Adjunct Professor, 1978; MD, 1970, Harvard University

PETERSON, GENE N., Assistant Professor, 1983; PhD, 1980, University of Leeds (UK), MD, 1982, University of Chicago

PITTAWAY, ANDREW J, Assistant Professor, 2002; MBBS, 1991, University of Nottingham (UK)

ROOKE, G. ALEC, Affiliate Professor, 1982; MD, 1980, University of Washington, PhD, 1985, University of Washington

ROSS, BRIAN K, Professor, 1983; MS, 1973, Idaho State University, PhD, 1975, University of North Dakota, MD, 1983, University of Washington

ROZET, IRENA, Assistant Professor, 2002; MD, 1985, Academy of Medicine of Latvia

RUBENS, DANIEL D, Assistant Professor, 1999; MBBS, 1992, University of New South Wales (Australia)

SCHENKMAN, KENNETH A. \* Associate Professor, 1991; MD, 1986, Indiana University; Oxygen transport in tissue Muscle oxygenation Myocardial performance Optical spectroscopy Mitochondrial function

SCHWID, HOWARD A, Professor, 1986; MD, 1982, University of Wisconsin (Madison)

SCHWINN, DEBRA A \* Professor, 2007; MD, 1983, Stanford University; ANESTHESIOLOGY, GENOME SCIENCES, PHARMACOLOGY

SEDENSKY, MARGARET M, Professor, 2008; MS, 1975, University of Colorado (Boulder), MD, 1980, University of Colorado (Denver)

SHARAR, SAMUEL R, Professor, 1983; MD, 1983, University of Washington

SHARMA, DEEPAK, Acting Assistant Professor, 2007; MBBS, 1997, University of Rajasthan, MD, 2003, University of Rajasthan

SIVARAJAN, MURALI, Professor, 1971; MBBS, 1967, Jawaharlal Inst of Postgr Med Educ & Res

SOULAKVELIDZE, IRAKLI, Assistant Professor, 2001; MD, 1979, Tbilisi State Medical Institute, PhD, 1987, Moscow State University (Russia)

SOUTER, KAREN J., Associate Professor, 2002; MBBS, 1985, St. Bartholomew's Hosp Med School (UK), MS, 1999, University of East Anglia (UK), MBChB, 1984, University of Edinburgh (UK)

TERMAN, GREGORY W. \* Associate Professor, 1987; MA, 1981, University of California (Los Angeles), PhD, 1985, University of California (Los Angeles), MD, 1987, University of Miami (Florida)

THOMPSON, DOUGLAS R, Acting Assistant Professor, 2008; MD, 2005, University of California (San Diego)

TREGGIARI, MIRIAM, Associate Professor, 1999; MD, 1990, University of Pavia (Italy), MD, 1999, University of Geneva (Switzerland), MPH, 2002, University of Washington

TURK, DENNIS C, Professor, 1996; MA, 1975, University of Waterloo (Canada), PhD, 1978, University of Waterloo (Canada)

UNADKAT, JASHVANT D \* Adjunct Professor, 1985; PhD, 1982, University of Manchester (UK); mechanisms of transport of anti-HIV drugs across placenta, CSF-blood barrier, and intestine

VAN NORMAN, GAIL, Professor, 1986; MD, 1981, University of Washington

VATER, YOURI L., Associate Professor, 1999; MD, 1977, Riga High Medical School (Israel), PhD, 1988, Riga High Medical School (Israel)

VAVILALA, MONICA S., Associate Professor, 1994; MD, 1991, University of Texas (Houston)

VITIN, ALEXANDER A., Assistant Professor, 2003; MD, 1981, Kharkov State Medical University (Ukraine), PhD, 1985, Kharkov State Medical University (Ukraine)

WARD, RICHARD J, Professor Emeritus, 1963; MD, 1949, St Louis University

WENDER, REGINA, Acting Instructor, 2002; PhD, 2000, University of Washington, MD, 2002, University of Washington

ZIMMERMAN, JERRY J., Professor, 1998; PhD, 1975, University of Wisconsin (Madison), MD, 1979, University of Wisconsin (Madison)

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## Biological Structure

BAILEY, RAYMOND, Affiliate Professor, 2008; MA, 1969, California State University, Long Beach, PhD, 1973, Johns Hopkins University

BAJORATH, JURGEN, Affiliate Professor, 1995; PhD, 1988, Free University Berlin

BASKIN, DENIS G. \* Research Professor, 1979; PhD, 1969, University of California (Berkeley); neuroendocrinology; obesity; CNS regulation of body weight; histochimistry; expression of receptors for insulin, leptin, and other peptides in the CNS

BERMINGHAM-MCDONOGH, O \* Associate Professor, 1998; PhD, 1987, University of California (Los Angeles); Development and regeneration of sensory systems, particularly the auditory system

BRINKLEY III, JAMES F. \* Professor, 1974; MD, 1974, University of Washington, PhD, 1984, Stanford University; computer applications in medicine and biology

BRODERSON, STEVAN H \* Assistant Professor, 1967; PhD, 1967, State University of New York (Buffalo); lipid histochemistry

CLARK, JOHN I \* Professor, 1982; PhD, 1974, University of Washington; biophysical and structural properties of cytoplasm and membranes, cell aging, differentiation and opacification in the lens

CONLEY, DAVID M., Affiliate Assistant Professor, 1987; MS, 1987, Washington State University

CUNNINGHAM, MICHAEL L. \* Adjunct Associate Professor, 1988; MD, 1988, University of Vermont, PhD, 1996, University of Washington; Molecular, Development, Craniofacial, Malformation, Human, Mouse, Craniosynostosis, Birth Defects

DACEY, DENNIS M. \* Professor, 1986; PhD, 1983, University of Chicago; the neural basis of vision and the organization of primate retina

DE SANTIS, MARK E., Affiliate Professor, 1984; MS, 1966, Creighton University, PhD, 1970, University of California (Los Angeles)



EROSCHENKO, VICTOR P, Affiliate Professor, 1984; MS, 1970, University of California (Davis), PhD, 1973, University of California (Davis)

FAN, ERKANG \* Research Associate Professor, 1996; PhD, 1993, University of Pittsburgh; Organic and Combinatorial Chemistry, Structure-Based Drug Design, Molecular Recognition

FARR, ANDREW G \* Professor, 1982; PhD, 1975, University of Chicago; cell interactions governing lymphocyte production and function

FLOERCHINGER, STEVEN L., Affiliate Professor, 1996; MD, 1987, University of Washington

GADDUM-ROSSE, PENELOPE, Associate Professor Emeritus, 1966; PhD, 1965, University of Liverpool (UK)

GEHRIG, JOHN D, Professor Emeritus, 1954; DDS, 1946, University of Minnesota, MSD, 1951, University of Minnesota

GOODMAN, ANTHONY ALLEN, Affiliate Professor, 2000; MD, 1965, Cornell University

GRANEY, DANIEL O \* Professor, 1966; MA, 1962, University of California (San Francisco), PhD, 1965, University of California (San Francisco); gross anatomy, electron microscopy, intestinal absorption

HARRIS, ROGER M \* Associate Professor Emeritus, 1982; PhD, 1975, University of Washington; neuro-anatomical recovery from spinal cord injury

HENDRICKSON, ANITA E \* Professor Emeritus, 1964; PhD, 1964, University of Washington; neuroanatomy, morphology and development of primate visual system

HERRING, SUSAN W. \* Adjunct Professor, 1990; PhD, 1971, University of Chicago; vertebrate functional morphology, relations between muscular function and skull growth

HINTERBERGER, TIMOTHY J., Affiliate Assistant Professor, 1996; MS, 1981, University of Illinois (Urbana), PhD, 1987, University of Illinois (Urbana)

HOL, WILHELMUS G.J. \* Professor, 1992; MS, 1966, Technical University (Eindhoven), PhD, 1971, University of Groningen (Netherlands); protein crystallography, drug design, vaccine development, and protein engineering

JAKOBOVITS, REX, Affiliate Assistant Professor, 2003; MS, 1994, University of Washington, PhD, 1999, University of Washington

JENSEN, LYLE H, Professor Emeritus, 1947; PhD, 1944, University of Washington

KALET, IRA J \* Adjunct Professor, 1968; MA, 1966, Princeton University, PhD, 1968, Princeton University; computer simulation of radiation therapy, artificial intelligence, computer graphics

KOEHLER, JAMES K, Professor Emeritus, 1963; MS, 1958, University of California (Berkeley), PhD, 1961, University of California (Berkeley)

LEFCORT, FRANCES B., Affiliate Assistant Professor, 1996; PhD, 1988, University of California (San Francisco)

LI, WEIQING \* Assistant Professor, 2005; MS, 1989, Shanghai University (China), PhD, 1998, University of Colorado (Boulder); Insulin and Steroid Signaling in *C. elegans* Development and Aging

MC KEAN, THOMAS A, Affiliate Professor, 1984; PhD, 1968, University of Oregon

MERRITT, ETHAN ALLEN \* Research Associate Professor, 1989; MS, 1975, Stanford University, PhD, 1980, University of Wisconsin; X-ray crystallography and structure-based drug design

MOENS, CECILIA B \* Affiliate Associate Professor, 1998; PhD, 1993, University of Toronto (Canada); Development of segmentation and segment identity in the vertebrate hindbrain

MULLIGAN, KATHLEEN A., Senior Lecturer, 1987; PhD, 1985, University of New South Wales (Australia)

NAMEROFF, MARK A, Associate Professor Emeritus, 1970; MD, 1965, University of Pennsylvania, PhD, 1966, University of Pennsylvania

PADEN, CHARLES MC KENZIE, Affiliate Associate Professor, 1989; MA, 1975, University of Colorado (campus unspecified), PhD, 1978, University of Colorado (campus unspecified)

PASUPATHY, ANITHA \* Assistant Professor, 2006; MS, 1994, McGill University (Canada), PhD, 2001, Johns Hopkins University; Novel approaches to the study of shape recognition in higher level visual areas of the primate brain

PATTON, DOROTHY L, Adjunct Professor, 1981; MS, 1973, University of Puget Sound, PhD, 1981, University of Washington

PHILLIPS, DWIGHT E, Affiliate Professor, 1984; PhD, 1971, Tulane University

PITTACK, CATRIN, Senior Lecturer, 1996; PhD, 1995, University of Washington

PRESS, OLIVER W. \* Adjunct Professor, 1982; PhD, 1977, University of Washington, MD, 1979, University of Washington; treatment of hematologic malignancies with monoclonal antibody immunoconjugates

PROTHERO, JOHN W, Associate Professor Emeritus, 1965; PhD, 1960, University of Western Ontario (Canada)

RAIBLE, DAVID W. \* Professor, 1995; PhD, 1989, University of Pennsylvania; vertebrate embryology and development of the nervous system

REH, THOMAS A. \* Professor, 1989; PhD, 1981, University of Wisconsin; regeneration and development of central nervous system

REUVENI, ZIPORA \* Professor, 1979; MSC, 1975, Weizmann Institute For Science (Israel), PhD, 1979, University of Windsor (Canada); myogenesis during growth development and regeneration of skeletal muscle

ROBINSON, FARREL R. \* Associate Professor, 1986; PhD, 1982, Brown University; Study of the cerebellum via monkey eye movements

ROSE, JAMES D., Affiliate Professor, 1999; PhD, 1970, Indiana University

ROSSE, CORNELIUS, Professor Emeritus, 1967; MBChB, 1964, University of Bristol (UK), MD, 1974, University of Bristol (UK), DSc, 1983, University of Bristol (UK)

RUSOFF, ANNE CHRISTINE, Affiliate Associate Professor, 1986; PhD, 1977, University of Colorado (campus unspecified)

SAGE, E HELENE \* Affiliate Professor, 1977; PhD, 1977, University of Utah; molecular and cell biology

SHAFFER, GAVRIELA, Affiliate Assistant Professor, 2008; MSC, 1995, Tel Aviv University (Israel), PhD, 2002, Hebrew University (Israel)

SHERK, HELEN \* Professor, 1982; PhD, 1978, Massachusetts Institute of Technology; neural mechanisms underlying vision, especially visual guidance during locomotion

STENKAMP, DEBORAH L., Affiliate Associate Professor, 2003; PhD, 1993, Johns Hopkins University

STENKAMP, RONALD E \* Professor, 1975; MS, 1971, University of Washington, PhD,

1975, University of Washington; crystallography, metalloproteins, protein engineering, blood clotting proteins

SUNDSTEN, JOHN WALLIN, Associate Professor Emeritus, 1964; PhD, 1961, University of California (Los Angeles)

VAN GELDER, RUSSELL \* Adjunct Professor, 2008; PhD, 1994, Stanford University, MD, 1994, Stanford University; Ocular inflammation, circadian cycles in the eye and uveitis

WHITE, SUSAN R., Affiliate Professor, 1987; PhD, 1971, Indiana University

WONG, RACHEL O \* Professor, 2006; PhD, 1986, Australian National University; Development of the visual system and research on mutant and transgenic zebra fish and mice using advanced imaging methods

XU, WENQING \* Associate Professor, 1999; MS, 1988, Chinese Academy of Sciences (China), PhD, 1995, Massachusetts Institute of Technology; Structural studies of proteins involved in cancer, immune dysfunction and neuronal diseases

YAN, QI, Affiliate Assistant Professor, 1998; MD, 1984, Hengyang Medical School, China, MS, 1989, Hunan Medical University, China, PhD, 1998, University of Washington

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## Comparative Medicine

BRABB, THEA L. \* Clinical Associate Professor, 1992; DVM, 1985, University of Illinois, PhD, 1999, University of Washington; The role of infectious agents in mouse models of autoimmunity

BUETOW, BERNARD S., Affiliate Assistant Professor, 1996; DVM, 1989, University of Illinois, PhD, 2003, University of Washington

DENNIS, MELVIN B. \* Professor Emeritus, 1977; DVM, 1961, Washington State University; comparative medicine, including animal models and experimental surgery

DI GIACOMO, RONALD F. \* Professor Emeritus, 1974; DVM, 1965, University of Pennsylvania, MPH, 1974, University of Washington; Infectious disease epidemiology, molecular epidemiology, zoonoses

GRAHAM, JENNIFER E, Affiliate Assistant Professor, 2004; DVM, 1999, Auburn University

GRANILLO, CAROLE R, Affiliate Assistant Professor, 2001; DVM, 1996, North Carolina State University, MS, 1999, Ohio State University

GROSSMANN, ANGELIKA \* Affiliate Associate Professor, 1985; DVM, 1978, Freie University of Berlin (Germany), PhD, 1982, Freie University of Berlin (Germany); immunosenescence in humans and mice; immunotoxicology; transmembrane signaling in T-lymphocytes

HARGIS, ANN M., Affiliate Associate Professor, 1990; DVM, 1973, Colorado State University, MS, 1976, Colorado State University

IRITANI, BRIAN M \* Associate Professor, 1992; DVM, 1988, Washington State University, PhD, 1997, University of Washington; Investigation of the Role of Oncogenes in Lymphocyte Development

JOHNSON, DAVID K., Affiliate Professor, 2002; DVM, 1963, Michigan State University, MS, 1968, Texas A&M University

KNOWLES, DONALD P, Affiliate Professor, 2005; DVM, 1982, University of Illinois, PhD, 1988, Washington State University

KRAMER, ROBERT W., Affiliate Assistant Professor, 1995; DVM, 1987, University of California (Davis)

LADIGES, WARREN C. \* Professor, 1975; DVM, 1971, Washington State University, MS, 1978, Washington State University; immunobiology of aging, transgenic mouse models of aging, DNA repair genes and age-associated cancer

LIGGITT, H DENNY \* Professor, 1989; DVM, 1972, Colorado State University, PhD, 1979, Colorado State University; using in vivo models to evaluate novel approaches for gene delivery, transgenic models

MISON, MICHAEL B, Affiliate Assistant Professor, 2005; DVM, 1998, University of Florida

O'HARA, TODD M, Affiliate Associate Professor, 2005; MS, 1985, Villanova University, PhD, 1988, Virginia Commonwealth University, DVM, 1992, University of Wisconsin

PRICE, LILLIAN M. \* Professor, 1984; DVM, 1972, University of Pennsylvania, PhD, 1983, University of Pennsylvania; t-cell development in the thymus, immunotoxicology, thymus development, retinoic acid embryopathy

RAUSCH, ROBERT L., Professor Emeritus, 1977; DVM, 1945, Ohio State University,

MS, 1946, Michigan State University, PhD, 1949, University of Wisconsin

RUNSTADLER, JONATHAN A, Affiliate Assistant Professor, 2006; MS, 1992, University of New Hampshire, DVM, 1999, University of California (Davis), PhD, 2003, University of California (Davis)

TREUTING, PIPER \* Assistant Professor, 1996; DVM, 1996, Louisiana State University

VAN HOOSIER, GERALD \* Professor Emeritus, 1975; DVM, 1957, Texas A&M University; laboratory animal medicine with emphasis on effects of intercurrent infection on mouse phenotypes

WAGGIE, KIMBERLY S., Affiliate Associate Professor, 1997; DVM, 1980, Iowa State University, MS, 1984, University of Missouri, PhD, 1984, University of Missouri

WARE, CAROL B. \* Research Associate Professor, 1997; PhD, 1986, University College (Ireland); Multi-systemic LIF receptor function in developing and adult mice

WEIGLER, BENJAMIN J \* Associate Professor, 1997; DVM, 1986, Colorado State University, MPH, 1988, University of California (Berkeley), PhD, 1991, University of California (Davis); Infectious disease epidemiology in laboratory animal medicine and management

WOLF, NORMAN S \* Adjunct Professor, 1968; DVM, 1953, Kansas State University, PhD, 1960, Northwestern University; hematopoietic stem cell dynamics and transplantation in radiation biology

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## Family Medicine

ALSTON, NANCY A., Affiliate Assistant Professor, 2005; MD, 1975, University of Utah

BALDWIN, LAURA M. \* Professor, 1984; MD, 1980, University of Southern California, MPH, 1986, University of Washington; Rural health, access to care for vulnerable populations, Native American health, health workforce

BEARD, JOHN M., Assistant Professor, 1989; MD, 1986, University of Missouri

BERG, ALFRED O, Professor, 1977; MD, 1974, Washington University, MPH, 1979, University of Washington

CARLINE, JAN D. \* Adjunct Professor, 1979; MEd, 1976, University of Washington, PhD, 1979, University of Washington;

Assessment of physician performance, evaluation of medical education programs

CHERKIN, DANIEL C \* Affiliate Professor, 1974; MS, 1974, University of Washington, PhD, 1978, University of Washington; Back Pain, Complimentary and Alternative Medicine Healing

CHRISMAN, NOEL \* Adjunct Professor, 1973; PhD, 1966, University of California (Berkeley), MPH, 1967, University of California (Berkeley); health beliefs and practices, social networks and social support

CHURCH, LILI LUCILLE, Associate Professor, 1992; MD, 1985, University of Iowa

COOMBS, JOHN B. \* Professor, 1972; MD, 1972, Cornell University; Health care outcomes, rural health policy, healthcare workforce issues and applied nutrition

CRITTENDEN, ROBERT A, Professor, 1981; MD, 1976, University of Washington, MPH, 1987, University of Washington

CURTIS, PETER, Affiliate Professor, 2007; MBBS, 1962, Royal College of Physicians (UK)

DICKEY, JOHN H., Affiliate Assistant Professor, 2005; MS, 1975, Idaho State University, PhD, 1982, Wayne State University

DOBIE, SHARON A., Associate Professor, 1987; MD, 1979, University of California (San Francisco)

DOESCHER, MARK \* Associate Professor, 1996; MA, 1983, National-Louis University, MD, 1989, University of California (San Francisco), MSPH, 1992, University of Colorado (Denver)

DREZNER, JONATHAN, Assistant Professor, 1999; MD, 1996, University of California (Los Angeles)

DUDZINSKI, DENISE M \* Adjunct Assistant Professor, 2001; MS, 1993, Vanderbilt University, PhD, 2001, Vanderbilt University; Methodological, philosophical and professional considerations in clinical & biomedical ethics

DYER, DONALD A., Affiliate Assistant Professor, 2005; MD, 1972, University of Tennessee

ELLSBURY, KATHLEEN E, Associate Professor Emeritus, 1982; MD, 1977, Johns Hopkins University, MPH, 1982, University of Missouri

ELLSWORTH, ALLAN J, Professor, 1982; PharmD, 1977, Philadelphia College of Pharmacy & Science

FARBER, STUART J., Associate Professor, 1978; MD, 1974, University of Washington

FORCE, REX W., Affiliate Professor, 2005; PharmD, 1991, University of Texas (Austin)

GEYMAN, JOHN P, Professor Emeritus, 1976; MD, 1960, University of California (San Francisco)

GLOYD, STEPHEN S. \* Adjunct Professor, 1973; MD, 1973, University of Chicago, MPH, 1983, Harvard University; political economy, epidemiology, and primary health care in developing countries

GOLDBAUM, GARY M. \* Adjunct Associate Professor, 1989; MD, 1978, University of Colorado (Denver), MPH, 1989, University of Washington; the epidemiology of human behaviors that increase risk for disease

GORDON, MICHAEL J, Professor Emeritus, 1973; MA, 1970, Michigan State University, PhD, 1973, Michigan State University

GREER, H THOMAS, Professor, 1977; MD, 1974, University of Mississippi, MPH, 1979, University of Washington

HEFFLINGER, ROGER G, Affiliate Assistant Professor, 1992; PharmD, 1986, Nebraska College of Pharmacy

HOFFMAN, SANDRA J., Affiliate Associate Professor, 2005; MS, 1986, University of California (Los Angeles), MD, 1988, Michigan State University

HORNECKER, JAIME R., Affiliate Assistant Professor, 2006; PharmD, 2003, University of Wyoming

HORROCKS, MARK T., Affiliate Assistant Professor, 2005; MD, 1994, University of Washington

HUNTINGTON, JANE, Assistant Professor, 1997; MD, 1994, University of Washington

IAMS, HELEN D., Affiliate Assistant Professor, 2007; MS, 1990, University of Southern California, MD, 2000, Loyola University (Chicago)

JACKSON, JO A., Assistant Professor, 1986; MS, 1975, University of Michigan, MD, 1979, Michigan State University

KATON, WAYNE J \* Adjunct Professor, 1976; MD, 1976, University of Oregon; Depression, panic disorder, somatization, adherence

LANDEL, GRACE P. \* Adjunct Senior Lecturer, 1990; MEd, 1999, University of Washington; Primary oral health care, Older students, Disadvantaged patient populations, Multidisciplinary education

LEVERSEE, JOHN H, Associate Professor Emeritus, 1969; MD, 1951, University of Minnesota

LOSH, DAVID PAUL, Professor, 1992; MD, 1974, University of Kansas

LUBOGA, SAMUEL A., Affiliate Associate Professor, 2007; MBBChir, 1974, Makerere University, Uganda, PhD, 1987, Makerere University, Uganda, MMed, 1979, Makerere University, Uganda

LYNGE, DANA C., Adjunct Associate Professor, 1993; MD, 1985, McGill University (Canada)

MACKENZIE, SARA LOUISE, Acting Instructor, 1992; MD, 1992, University of California (Davis)

MAESTAS, RAMONCITA R., Associate Professor, 1986; MD, 1983, University of Washington

MAUKSCH, LARRY B., Senior Lecturer, 1985; MEd, 1982, University of Washington

MAYER, CHARLES J., Acting Instructor, 2002; MD, 1991, Harvard University

MAYER, JONATHAN D \* Adjunct Professor, 1977; MA, 1975, University of Michigan, PhD, 1977, University of Michigan; infectious disease ecology, infectious diseases in sub-Saharan Africa, tropical and travel medicine, infectious disease epidemiology, global health, and HIV

MOORE, SYLVIA A., Affiliate Professor, 1997; MA, 1982, University of Wyoming, PhD, 1986, University of Wyoming

MORGAN, JAMES F., Affiliate Associate Professor, 2008; MD, 1980, Boston University

MORRIS, CARL, Assistant Professor, 2003; MD, 1994, Harvard University

MURDOCK, NICOLE, Affiliate Assistant Professor, 2005; PharmD, 2003, Idaho State University

NEIGHBOR, WILLIAM E, Associate Professor, 1983; MD, 1979, University of Washington

NORRIS, THOMAS E. \* Professor, 1988; MD, 1973, University of Texas (Galveston); Clinical applications, health policy and health workforce needs

O'KANE, JOHN, Adjunct Associate Professor, 1993; MD, 1993, University of Vermont

OLIVER, LYNN M., Associate Professor, 1983; MD, 1983, University of Washington

PAUWELS, JUDITH, Associate Professor, 1995; MS, 1978, University of Wisconsin, MD, 1983, University of Wisconsin

PETTINGER, TRACY K., Affiliate Assistant Professor, 2006; PharmD, 2003, Idaho State University

PHILLIPS, WILLIAM R \* Clinical Professor, 1978; MPH, 1975, University of Washington, MD, 1975, University of Washington; family medicine, preventive medicine

PINSKY, LINDA E, Adjunct Associate Professor, 1989; MD, 1989, University of Washington

ROBINS, LYNNE S \* Adjunct Associate Professor, 1999; PhD, 1990, University of Michigan; Patient communication, interprofessional communication, patient safety, faculty development, program evaluation, and cultural competence

ROSE, ERIC \* Clinical Assistant Professor, 1997; MD, 1993, Albert Einstein College of Medicine; Clinical informatics, especially Electronic Medical Records and EMR-based decision-support

ROSENBLATT, ROGER A \* Professor, 1971; MPH, 1971, Harvard University, MD, 1971, Harvard University; research into the organization and delivery of health services, rural health policy

ROSS, VALERIE R, Lecturer, 1998; MS, 1994, Seattle Pacific University

SAGER, DANIEL S, Affiliate Assistant Professor, 2005; MD, 1986, Case Western Reserve University

SCHNEEWEISS, RONALD, Professor Emeritus, 1977; MBChB, 1964, University of Capetown (South Africa)

SOLBRIG, RONALD M., Affiliate Associate Professor, 2005; MD, 1987, University of Washington

STEVENS, NANCY G \* Professor, 1982; MD, 1979, University of Washington, MPH, 1982, University of Washington; family medicine

STUMP, AMY L., Affiliate Assistant Professor, 2006; PharmD, 2003, University of Nebraska, campus unspecified

SUGARMAN, JONATHAN R. \* Clinical Professor, 1981; MD, 1981, Albert Einstein College of Medicine, MPH, 1990, University of Washington; American Indian and Alaska Native health; Health Care Quality Assessment and Improvement

TAYLOR, THOMAS R, Associate Professor, 1979; MBChB, 1957, University of Glasgow (UK), PhD, 1972, University of Glasgow (UK)

WALKER, EDWARD A., Adjunct Professor, 1983; MM, 1979, Catholic University of America, MD, 1983, University of Washington

WRIGHT, DEREK L., Affiliate Assistant Professor, 2007; MD, 1996, University of Utah

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## Genome Sciences

ABKOWITZ, JANIS L, Adjunct Professor, 1980; MD, 1977, Harvard University

AEBERSOLD, RUDOLF HANS, Affiliate Professor, 1993; PhD, 1983, University of Basel (Switzerland)

AKEY, JOSHUA M \* Assistant Professor, 2004; PhD, 2002, University of Texas (Houston); Population genetics and molecular evolution of yeast, canine, and human populations

BERG, CELESTE A \* Professor, 1990; MS, 1981, Yale University, PhD, 1986, Yale University; Drosophila developmental genetics: Cell communication and cell migration during oogenesis. Patterning and cell polarity. Drosophila immune system

BIGGINS, SUSAN \* Affiliate Assistant Professor, 2000; PhD, 1995, Princeton University

BRAUN, ROBERT, Affiliate Professor, 1986; PhD, 1985, Tufts University

BREWER, BONITA J \* Professor, 1979; PhD, 1979, University of Washington; replication of chromosomes, plasmids, and mitochondrial DNA in yeast

BYERS, BRECK E \* Professor, 1970; MA, 1963, Harvard University, PhD, 1967, Harvard University; cell biology: mitosis and meiosis, mechanisms of nuclear division and crossing-over in yeast

BYERS, PETER H \* Adjunct Professor, 1974; MD, 1969, Case Western Reserve University; extracellular matrix synthesis, genetic disorders of collagen metabolism, secretion, human genetics, splicing

DEEB, SAMIR S. \* Adjunct Research Professor, 1964; MS, 1959, Colorado State University, PhD, 1964, University of Illinois (Urbana); genetic factors predisposing to hyperlipidemia and coronary artery disease

DUDLEY, AIMEE M, Affiliate Assistant Professor, 2008; PhD, 1999, Harvard Medical School

EDGAR, BRUCE A \* Affiliate Assistant Professor, 1987; PhD, 1987, University of Washington

EICHLER, EVAN E \* Associate Professor, 2004; PhD, 1995, Baylor College of Medicine; Computational genomics, human molecular evolution, segmental aneuploidy, genome duplication

FANGMAN, WALTON L, Professor Emeritus, 1967; PhD, 1965, Purdue University

FELSENSTEIN, JOSEPH \* Professor, 1967; PhD, 1968, University of Chicago; estimation of evolutionary trees, models of long-term evolutionary processes, and theoretical population genetics

FIELDS, STANLEY \* Professor, 1995; MA, 1978, Cambridge University (UK), PhD, 1981, Cambridge University (UK); Yeast Molecular Biology and Genetics

FURLONG, CLEMENT E. \* Research Professor, 1977; PhD, 1968, University of California (Davis)

GALLANT, JONATHAN A \* Professor Emeritus, 1961; PhD, 1961, Johns Hopkins University; translation fidelity

GARTLER, STANLEY M, Professor Emeritus, 1957; PhD, 1952, University of California (Berkeley)

GOTTSCHLING, DANIEL E \* Affiliate Professor, 1996; MS, 1980, University of Colorado (campus unspecified), PhD, 1984, University of Colorado (campus unspecified); Dissection of telomere attributes and understanding telomerase in *S. Cerevisiae*

GOVERMAN, JOAN M \* Adjunct Professor, 1992; PhD, 1981, University of California (Los Angeles); immune recognition and tolerance, autoimmunity, T cell development, activation, antibody diversity

GREEN, PHILIP \* Professor, 1994; PhD, 1976, University of California (Berkeley); Mathematical and Computer Methods for Genome Analysis

HARTWELL, LELAND H \* Professor, 1967; PhD, 1964, Massachusetts Institute of Technology; genetic analysis of chromosome transmission and of the control of division by hormones in yeast

HENIKOFF, STEVEN \* Affiliate Associate Professor, 1977; PhD, 1977, Harvard University

HORWITZ, MARSHALL S \* Adjunct Professor, 1988; PhD, 1988, University of Washington, MD, 1990, University of Washington; Inherited white blood cell disorders, including leukemia

- JARVIK, GAIL P. \* Adjunct Professor, 1991; MS, 1983, University of Michigan, PhD, 1986, University of Michigan, MD, 1987, University of Iowa; Quantitative genetics and genetic epidemiology, focusing on common diseases
- KING, MARY-CLAIRE \* Professor, 1995; PhD, 1973, University of California (Berkeley); genetic analysis of complex human phenotypes, human diversity and evolution
- KRUGLYAK, LEONID, Affiliate Professor, 1998; MA, 1989, University of California (Berkeley), PhD, 1990, University of California (Berkeley)
- KUHNER, MARY K \* Research Associate Professor, 1991; PhD, 1991, University of California (Berkeley); Estimating population parameters (such as selection) from molecular data
- LAIRD, CHARLES D \* Adjunct Professor, 1968; PhD, 1966, Stanford University; cell and developmental biology, human genetics
- MACCOSS, MICHAEL \* Assistant Professor, 2004; PhD, 2001, University of Vermont; proteomics and mass spectrometry
- MALIK, HARMIT S \* Affiliate Assistant Professor, 2004; PhD, 1999, University of Rochester, MS, 1999, University of Rochester; Genetic conflict mediated by rapidly evolving genes, centromeres and heterochromatin
- MANOIL, COLIN C. \* Professor, 1986; PhD, 1979, Stanford University; molecular genetics, protein localization in bacteria
- MILLER, DANIEL G., Adjunct Assistant Professor, 1996; PhD, 1994, University of Washington, MD, 1996, University of Washington
- MILLER, SAMUEL I \* Professor, 1995; MD, 1979, Baylor College of Medicine; Salmonella pathogenesis and bacterial-eucaryotic cell interactions
- MONNAT, RAYMOND J \* Professor, 1976; MD, 1976, University of Chicago; somatic mutation, somatic cell molecular genetics, human genetic disease
- MOTULSKY, ARNO G., Professor Emeritus, 1953; MD, 1947, University of Illinois
- NELSON, PETER S. \* Adjunct Professor, 1993; MD, 1986, University of Kansas; The study of human carcinogenesis using tools of genomics and bioinformatics
- NICKERSON, DEBORAH A \* Professor, 1992; PhD, 1978, University of Tennessee; automating the identification and typing of human DNA variations
- NOBLE, WILLIAM S \* Associate Professor, 2002; MS, 1996, University of California (San Diego), PhD, 1998, University of California (San Diego); machine learning techniques for application to problems in molecular biology
- OLSON, MAYNARD V. \* Professor, 1975; PhD, 1970, Stanford University; Methods and applications of large-scale DNA analysis
- OSTRANDER, ELAINE A., Affiliate Professor, 1994; PhD, 1987, University of Portland
- PALLANCK, LEO J. \* Associate Professor, 1997; MS, 1989, Albert Einstein College of Medicine, PhD, 1992, Albert Einstein College of Medicine; Genetic and Molecular analysis of symptomatic transmission in *Drosophila melanogaster*
- PALMITER, RICHARD D \* Adjunct Professor, 1974; PhD, 1969, Stanford University; regulation of gene expression in transgenic mice
- PAUL, ANNE S, Lecturer, 1982; MS, 1994, University of Washington
- RAGHURAMAN, MOSUR \* Research Associate Professor, 1990; MSC, 1982, University of Madras (India), PhD, 1990, University of Colorado (campus unspecified); Control of the initiation of chromosomal DNA replication
- RAIBLE, DAVID W. \* Adjunct Professor, 1995; PhD, 1989, University of Pennsylvania; vertebrate embryology and development of the nervous system
- RASKIND, WENDY H \* Adjunct Professor, 1978; PhD, 1977, University of Washington, MD, 1978, University of Washington; Molecular genetics of neurodegenerative and behavioral disorders
- REID, BRIAN J \* Adjunct Professor, 1983; PhD, 1975, University of Washington, MD, 1980, University of Washington; CLONAL EVOLUTION, CANCER PREVENTION AND CANCER RISK PREDICTION IN BARRETT'S ESOPHAGUS
- RIEDER, MARK J. \* Research Associate Professor, 1996; PhD, 1996, Medical College of Wisconsin; Human genetic variation and complex disease associations
- RUOHOLA-BAKER, HANNELE \* Adjunct Professor, 1993; MSC, 1984, University of Helsinki (Finland), PhD, 1989, University of Helsinki (Finland); oogenesis, developmental genetics
- RUZZO, WALTER L \* Adjunct Professor, 1977; PhD, 1978, University of California (Berkeley); computational biology
- SCHUBIGER, GEROLDA \* Adjunct Professor, 1972; Diploma, 1957, Teachers Training College, Zurich, PhD, 1968, University of Zurich (Switzerland); developmental biology of insects, embryonic determination in *Drosophila*, pattern formation in imaginal disks
- SCHWINN, DEBRA A \* Adjunct Professor, 2007; MD, 1983, Stanford University; ANESTHESIOLOGY, GENOME SCIENCES, PHARMACOLOGY
- SIBLEY, CAROL HOPKINS \* Professor, 1976; MA, 1966, University of Rochester, MS, 1970, University of Rochester, PhD, 1974, University of California (San Francisco); molecular parasitology and drug resistance
- SIEGEL, ANDREW F \* Adjunct Professor, 1982; MS, 1975, Stanford University, PhD, 1977, Stanford University
- SMITH, GERALD R \* Affiliate Professor, 1983; PhD, 1970, Massachusetts Institute of Technology; molecular biology of genetic recombination and regulation of gene expression
- SORIANO, PHILIPPE \* Affiliate Associate Professor, 1994; MSC, 1975, University of Paris (France), PhD, 1978, University of Paris (France), DSc, 1982, University of Paris (France)
- STAMATOYANNOPOULOS, G, Professor, 1964; MD, 1958, University of Athens (Greece), DR, 1960, University of Athens (Greece)
- STAMATOYANNOPOULOS, JOHNA \* Assistant Professor, 2005; MD, 1995, University of Washington
- SWANSON, WILLIE J \* Associate Professor, 2002; PhD, 1998, University of California (San Diego); Function and evolution of proteins with emphasis on reproduction
- THOMAS, JAMES H \* Professor, 1988; PhD, 1985, Massachusetts Institute of Technology; genetics of development and the nervous system in nematodes
- THOMPSON, ELIZABETH A \* Adjunct Professor, 1985; PhD, 1974, Cambridge University (UK), MA, 1974, University of Cambridge (UK); statistical analysis of human genetic data, statistics of conservation and computational biology
- TOMPA, MARTIN \* Adjunct Professor, 1978; MS, 1975, University of Toronto (Canada), PhD, 1978, University of

Toronto (Canada); computational complexity, computational biology

TRASK, BARBARA J \* Professor, 1992; MS, 1979, Leiden University (The Netherlands), PhD, 1985, Leiden University (The Netherlands); in situ hybridization, analytical cytogenetics, analysis of large-scale DNA polymorphism

WAKIMOTO, BARBARA T \* Adjunct Professor, 1984; PhD, 1981, Indiana University; developmental genetics, gene expression and chromosome organization in eukaryotes

WATERSTON, ROBERT H \* Professor, 2002; PhD, 1972, University of Chicago, MD, 1972, University of Chicago; The organization and function of metazoan genomes

WEIR, BRUCE SPENCER \* Adjunct Professor, 2006; PhD, 1968, North Carolina State University; Development of statistical methodology for forensic and population genetic data

WIJSMAN, ELLEN M \* Adjunct Research Professor, 1987; PhD, 1981, University of Wisconsin (Madison); human quantitative and population genetics

YOUNG, ELTON \* Adjunct Professor, 1969; PhD, 1967, California Institute of Technology; regulation of gene activity in the yeast *Saccharomyces cerevisiae*

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## Immunology

ADEREM, ALAN A. \* Affiliate Professor, 1996; PhD, 1979, University of Capetown (South Africa); signal transduction and the cytoskeleton

BEVAN, MICHAEL J. \* Professor, 1990; MSC, 1968, University of London, UK, PhD, 1972, National Inst For Medical Research (UK); T lymphocyte development and specificity

CAMPBELL, DANIEL \* Affiliate Assistant Professor, 2004; PhD, 1998, University of California (Berkeley); Understanding the relationship between lymphocyte trafficking and function

CLARK, EDWARD A \* Professor, 1979; PhD, 1977, University of California (Los Angeles); lymphocyte surface molecules, lymphocyte activation and cell communication

ELKON, KEITH B \* Adjunct Professor, 2001; MD, 1974, University of Witwatersrand (S. Africa); Molecular and genetic mechanisms of systemic autoimmunity and apoptosis

EVANS, CHARLES A, Professor Emeritus, 1946; MD, 1937, University of Minnesota, PhD, 1942, University of Minnesota

FARR, ANDREW G \* Professor, 1982; PhD, 1975, University of Chicago; cell interactions governing lymphocyte production and function

FINK, PAMELA J. \* Professor, 1990; PhD, 1981, Massachusetts Institute of Technology; T cell differentiation, tolerance induction, molecular and cellular immunology

GALE, MICHAEL J \* Associate Professor, 1994; PhD, 1994, University of Washington; Virus-host interactions that control innate defenses and immunity to infection; genetic and functional analysis of the innate immune antiviral response; interferon biology; immune control of the replication and pathogenesis of hepatitis C virus, West Nile

GOVERMAN, JOAN M \* Professor, 1992; PhD, 1981, University of California (Los Angeles); immune recognition and tolerance, autoimmunity, T cell development, activation, antibody diversity

GREENBERG, PHILIP D \* Professor, 1976; MD, 1971, St University of New York (Downstate Med Ctr); molecular, cellular, viral, and tumor immunology

HAMERMAN, JESSICA A. \* Affiliate Assistant Professor, 2007; PhD, 2001, University of Washington; Macrophage and dendritic cell activation, macrophage and dendritic cell responses to infection with bacteria and viruses, regulation of inflammatory responses

HARMSSEN, ALLEN G., Affiliate Professor, 2003; PhD, 1980, Iowa State University

HOCKENBERRY, DAVID M. \* Adjunct Professor, 1994; MD, 1982, Washington University; gastroenterology

HOOD, LEROY E., Affiliate Professor, 1991; MD, 1964, Johns Hopkins University, PhD, 1968, California Institute of Technology

ISAAK, DALE D., Affiliate Professor, 2001; MS, 1973, Montana State University, PhD, 1976, Montana State University

JUTILA, MARK A., Affiliate Professor, 2002; MS, 1984, Washington State University, PhD, 1986, Washington State University

KAJA, MURALI KRISHNA \* Associate Professor, 2001; MSC, 1988, University of Hyderabad (India), PhD, 1995, Indian Institute of Technology (India); Anti-viral Immunity, Immunological Memory, Lymphoid Homeostasis and Vaccines

KWOK, WILLIAM W., Affiliate Associate Professor, 1983; PhD, 1983, University of Washington

LAGUNOFF, MICHAEL \* Adjunct Associate Professor, 2001; PhD, 1995, University of Chicago; Molecular Virology of Kaposi's Sarcoma-associated herpesvirus

LARA, JIMMIE CANO \* Associate Professor, 1972; MS, 1967, California State College, PhD, 1970, University of California (San Diego); microbial physiology and cytology, sporulation and gas vesicle synthesis and regulation

LATCHMAN, YVETTE, Adjunct Assistant Professor, 2003; MS, 1987, University of London King's College (UK), PhD, 1996, University College, London (UK)

LOO, YUEH-MING, Acting Instructor, 2007; PhD, 2003, State University of New York (Buffalo)

MAIZELS, NANCY \* Professor, 2000; PhD, 1974, Harvard University; Recombination and repair in mammalian cells, especially activated B cells

NEPOM, GERALD T \* Affiliate Professor, 1982; PhD, 1977, University of Washington, MD, 1978, University of Washington; immunogenetics, immunoregulation, neuroimmunology

PASCUAL, DAVID W., Affiliate Associate Professor, 2003; MS, 1985, University of Mississippi, PhD, 1987, University of Mississippi

PERLMUTTER, ROGER M., Affiliate Professor, 1984; PhD, 1979, Washington University, MD, 1979, Washington University

QUINN, MARK T., Affiliate Associate Professor, 2003; PhD, 1987, University of California (San Diego)

RAMAKRISHNAN, LALITA \* Adjunct Associate Professor, 2001; MD, 1983, Baroda Medical College (India), PhD, 1990, Tufts University; Contributions of Mycobacteria and hosts to maintenance of chronic tuberculosis

RAWLINGS, DAVID J \* Adjunct Professor, 2001; MD, 1984, University of North Carolina; Expertise in clinical immunology, signal transduction, and B cell developmental biology to identify altered signaling events contributing to B lineage diseases

REIJONEN, HELENA K., Affiliate Assistant Professor, 1997; MS, 1983, University of Oulu (Finland), PhD, 1993, University of Turku, Finland

REUER, QUENTIN B., Affiliate Associate Professor, 2005; PhD, 1988, Montana State University

RUBTSOV, YURI PETROVICH, Acting Instructor, 2004; PhD, 1999, Moscow State University (Russia)

RUDENSKY, ALEXANDER Y. \* Professor, 1992; MS, 1979, Second Moscow State Medical Institute, PhD, 1986, Gabrichevsky Institute For Epi & Micro; antigen processing and presentation, T-cell recognition, T cell development

SCHARENBERG, ANDREW M. \* Adjunct Associate Professor, 2000; MD, 1990, University of North Carolina; Function and cell biology of cation channels expressed in non-excitable cells

STETSON, DANIEL B \* Assistant Professor, 2008; PhD, 2002, University of California (San Francisco); Nucleic acid detection in host defense and autoimmunity; biology of antiviral responses

STRONG, ROLAND K \* Affiliate Professor, 1994; PhD, 1990, Harvard University; Structural immunology: analysis of the functions of proteins mediating immune responses through the study of their structures by molecular biology, solution biochemistry and x-ray crystallography

TEAGUE, RYAN M, Acting Instructor, 2002; PhD, 2002, University of Kansas

WEINMANN, AMY S \* Assistant Professor, 2003; PhD, 2000, University of California (Los Angeles); Understanding mechanisms of transcriptional regulation in the immune system

WILSON, CHRISTOPHER B \* Professor, 1979; MD, 1972, University of California (Los Angeles); immunology, infectious diseases

YABUKI, MUNEHISA, Acting Instructor, 2000; MS, 1995, Okayama University (Japan), PhD, 1999, Okayama University (Japan)

ZIEGLER, STEVEN F. \* Affiliate Professor, 1984; PhD, 1984, University of California (Los Angeles); Genetic and molecular analysis of immune system function

ASTION, MICHAEL L. \* Professor, 1991; PhD, 1989, University of Pennsylvania, MD, 1989, University of Pennsylvania; neural networks, multi media computer-aided tutorials, immunology

BAUER, LARRY \* Adjunct Professor, 1980; PharmD, 1980, University of Kentucky; clinical pharmacokinetics and drug metabolism, drug interactions

BEHRENS, JOYCE A, Assistant Professor Emeritus, 1972; MS, 1971, University of Minnesota

CALVO, CARA, Lecturer, 2007; MS, 1990, University of Vermont

CHAKRABARTI, LISA, Acting Instructor, 1997; DPhil, 1996, Oxford University (UK)

CHANDLER, WAYNE L \* Professor, 1982; MD, 1982, St Louis University; clinical chemistry, clinical coagulation, hematology

CHATRIAN, GIAN E, Professor Emeritus, 1959; MD, 1951, University of Naples (Italy)

CHEN-LEVY, ZEHAHA, Lecturer, 2004; MS, 1979, Ben-Gurion University, PhD, 1986, Weizmann Institute For Science (Israel)

CHOU, DAVID \* Associate Professor, 1998; MD, 1974, University of Pittsburgh, MS, 1979, University of Minnesota; Medical information systems, informatics and laboratory medicine

CLARRIDGE, JILL E. \* Professor, 2002; MS, 1962, University of Michigan, PhD, 1973, Purdue University; Microbial pathogenesis and molecular diagnosis of Tuberculosis

COOKSON, BRAD T \* Associate Professor, 1991; PhD, 1991, Washington University, MD, 1991, Washington University; Cellular Immune Response to Intracellular Bacteria; Microbial Pathogenesis; Clinical Microbiology

COOMBS, ROBERT W \* Professor, 1985; PhD, 1977, Dalhousie University (Canada), MD, 1981, Dalhousie University (Canada); diagnosis and pathogenesis of HIV infection

COREY, LAWRENCE \* Professor, 1975; MD, 1971, University of Michigan; laboratory medicine: diagnosis, therapy, and pathogenesis of viral infections, AIDS virus

COYLE, MARIE B, Professor Emeritus, 1973; MS, 1963, St. Louis University, PhD, 1965, Kansas State University

DE ROSA, STEPHEN C. \* Research Assistant Professor, 2004; MD, 1990,

Stanford University; Functional and phenotypic characterization of antigen-specific T cells using multiparametric flow cytometry

DELANEY, COLLENE J \* Associate Professor, 1972; MS, 1967, University of Illinois, PhD, 1972, University of Illinois; clinical chemistry, the study of diabetes and alcoholism

DETTET, JAMES C, Professor Emeritus, 1962; MD, 1962, University of Kansas

DONG, ZHAO-MING DAVID, Adjunct Assistant Professor, 2004; MD, 1983, Wannan Medical College (China), MS, 1986, Shandong University (China), PhD, 1995, University of Oklahoma

FANG, FERRIC C. \* Professor, 2001; MD, 1983, Harvard University; Bacterial pathogenesis with focus on macrophage-salmonella interactions

FINE, JAMES \* Associate Professor, 1977; MD, 1972, University of Minnesota, MS, 1977, University of Minnesota; enzymology, medical computer applications

FLIGNER, CORINNE L., Adjunct Associate Professor, 1976; MD, 1976, University of New Mexico

FRENKEL, LISAM., Professor, 1994; MD, 1987, University of Kansas

GERNESHEIMER, TERRY B., Adjunct Associate Professor, 1983; MD, 1979, State University of New York (Stony Brook)

GRABSTEIN, KENNETH H., Affiliate Professor, 1998; PhD, 1982, University of California (Berkeley)

GREISMAN, HARVEY A \* Assistant Professor, 2005; PhD, 1997, Massachusetts Institute of Technology, MD, 1998, Harvard University; Discovery and characterization of novel cytogenetic aberrations in hematolymphoid tumors by array-based comparative genome hybridization with the goal of improving the understanding of hematologic diseases and developing new diagnostic tools

GRETCH, DAVID R. \* Associate Professor, 1990; PhD, 1990, University of Iowa, MD, 1990, University of Iowa; medical informatics; clinical laboratory testing

HACKMAN, ROBERT C, Associate Professor, 1971; MD, 1971, Stanford University

HOOFNAGLE, ANDREW N \* Assistant Professor, 2004; PhD, 2002, University of Colorado (Boulder), MD, 2004, University

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## Laboratory Medicine

ASHLEY MORROW, RHODA \* Professor, 1979; PhD, 1977, University of California (Davis); pathogenesis of viral infections, immune response to herpes, rapid diagnosis

of Colorado (Denver); Immunology and Chemistry

HU, JINXIN, Affiliate Assistant Professor, 2008; MSC, 1987, Zhongshan University (China), PhD, 1998, McGill University (Canada)

JEROME, KEITH R \* Associate Professor, 1993; PhD, 1992, Duke University, MD, 1993, Duke University; Viral inhibition of apoptosis and viral immune modulation/ evasion

KENNY, MARGARET, Professor Emeritus, 1968; PhD, 1968, University of Illinois

KOELLE, DAVID \* Adjunct Professor, 1989; MD, 1985, University of Washington; Viral immunology, immune evasion, and vaccine design for viral infections

LA SPADA, ALBERT R \* Associate Professor, 1993; PhD, 1993, University of Pennsylvania, MD, 1993, University of Pennsylvania; Molecular basis of neurodegenerative disease

LABBE, ROBERT F, Professor Emeritus, 1957; MS, 1949, Oregon State University, PhD, 1951, Oregon State University

LAMPE, MARY F \* Associate Professor, 1988; MS, 1976, University of Washington, PhD, 1984, University of North Carolina; Molecular analysis of the pathogenic bacterium *Chlamydia trachomatis*

LE CRONE, CAROL N, Assistant Professor Emeritus, 1967; MS, 1966, Colorado State University

LIBBY, STEPHEN JAMES \* Research Associate Professor, 2003; MS, 1983, Iowa State University, PhD, 1987, Iowa State University; Salmonella molecular pathogenesis and oxidative stress resistance

LIMAYE, ABHIJIT P. \* Associate Professor, 1994; MD, 1992, University of Washington; Diagnostic microbiology, transplant-associated viral and fungal infections

LOEB, KEITH, Adjunct Assistant Professor, 1995; PhD, 1993, Medical College of Wisconsin, MD, 1995, Medical College of Wisconsin

MAGARET, AMALIA SOPHIA \* Research Assistant Professor, 2004; MS, 1997, Western Michigan University, PhD, 2001, University of Washington; survival analysis and viral shedding research

MC GONAGLE, LEE ANNE, Assistant Professor Emeritus, 1970; MPH, 1969, University of Michigan

MCEL RATH, MARGARET JULIANA \* Adjunct Professor, 1990; PhD, 1978,

Medical University of South Carolina, MD, 1980, Medical University of South Carolina; T cell immunity in HIV-1 Infection; understanding immune mechanisms that contribute to the control and prevention of HIV infection

MORISHIMA, CHIHIRO \* Research Assistant Professor, 1991; MD, 1988, Washington University; Immunity to Hepatitis C Virus Infection and Liver Fibrosis Progression

MULLINS, JAMES I. \* Adjunct Professor, 1994; PhD, 1978, University of Minnesota; retroviruses and AIDS, molecular virology

NESTER, THERESA \* Assistant Professor, 2001; MD, 1994, University of Rochester; All clinical transfusion medicine topics, and immunohematology (red cell blood group antigens/antibodies)

OPHEIM, KENT E \* Associate Professor, 1975; PhD, 1972, Cornell University; therapeutic drug monitoring, drug assay development, pediatric clinical chemistry

PLORDE, JAMES J, Professor Emeritus, 1960; MD, 1959, University of Minnesota

POLYAK, STEPHEN J. \* Research Associate Professor, 1993; PhD, 1993, McMaster University (Canada); Virology-Infectious Disease, Hepatology Hepatitis C Molecular Biology

QIN, XUAN, Assistant Professor, 2005; PhD, 1995, State University of New York (Albany)

RAGHU, GANESH, Adjunct Professor, 1981; MBBS, 1974, University of Mysore (India)

RAINEY, PETRIE M. \* Professor, 2000; PhD, 1973, University of California (Berkeley), MD, 1980, University of North Carolina, Chapel Hill; Clinical chemistry; medical toxicology; therapeutic drug monitoring; pharmacology of antimicrobials

RAISYS, VIDMANTAS A, Professor Emeritus, 1971; MS, 1965, University of Illinois, PhD, 1969, State University of New York (Buffalo)

REYES, MORAYMA \* Assistant Professor, 2003; DPhil, 2001, University of Minnesota, MD, 2003, University of Minnesota; Stem cell research, bone marrow transplant, multipotent adult progenitor cells and cell therapy for muscular dystrophy and cardiovascular diseases

RUTLEDGE, JOE C. \* Professor, 1976; MD, 1976, Vanderbilt University; genetic disease pathology, human embryology, mouse mutagenesis, pediatric chemistry/ hematology, laboratory management

SABATH, DANIEL E. \* Associate Professor, 1989; PhD, 1989, University of Pennsylvania, MD, 1989, University of Pennsylvania; regulation of gene expression in hematopoietic cells

SCHILLER, HARVEY S \* Associate Professor, 1972; MD, 1966, Washington University; clinical chemistry, hematology, interpretation of laboratory data

SCHMER, GOTTFRIED, Professor Emeritus, 1968; MD, 1956, University of Vienna, Austria

SLOAN, DEREK D., Acting Instructor, 2001; MD, 1999, University of California (San Diego)

STEPHENS, KAREN G. \* Research Professor, 1989; MA, 1978, Indiana University, PhD, 1982, Indiana University

SWENSON, PAUL DAVID, Affiliate Assistant Professor, 1987; PhD, 1979, Virginia Commonwealth University

TAIT, JONATHAN F \* Professor, 1983; PhD, 1983, Washington University, MD, 1983, Washington University; biochemistry of blood coagulation, laboratory diagnosis of genetic disorders

TSUCHIYA, KAREN D. \* Assistant Professor, 1990; MD, 1990, University of Michigan; tumor molecular cytogenetics; pediatric tumor models

VIEIRA, JEFFERY \* Research Assistant Professor, 2002; PhD, 1988, University of Minnesota; KSHV molecular biology, lytic activation, and tissue models for viral biology

WALD, ANNA \* Adjunct Professor, 1989; MD, 1985, Mt Sinai School of Medicine, MPH, 1994, University of Washington; The epidemiology, natural history and therapeutics of HSV and other herpesviruses infections

WENER, MARK H \* Professor, 1980; MD, 1974, Washington University; diagnostic immunology, immune complex diseases

WOOD, BRENT L. \* Associate Professor, 1990; PhD, 1988, Loma Linda University, MD, 1990, Loma Linda University; Hematopathology, leukemia, lymphoma, flow cytometry, cell sorting

ZEBALA, JOHN A, Affiliate Assistant Professor, 2008; PhD, 1993, Cornell University, MD, 1993, Cornell University

ZEH, JUDITH \* Adjunct Research Professor, 1965; MS, 1969, University of Washington, PhD, 1979, University of Washington; estimation of whale population size and dynamics, statistics in infectious disease research



ZHU, TUOFU \* Associate Professor, 1997; MD, 1984, Tiangxi (Jiangxi) Medical School, China, PhD, 1990, Peking Union Medical College (China); HIV-1 pathogenesis, host genetics, therapy, and vaccine

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## MEDEX Northwest

BALLWEG, RUTH A \* Associate Professor, 1981; PA, 1978, University of Washington, MPA, 1998, University of Washington; Primary Care; Rural Health; Women's roles in healthcare; Medical Education

BROCK, DOUGLAS MICHAEL \* Associate Professor, 1996; MEd, 1987, University of Washington, PhD, 1995, University of Washington; Usability and human factors

COERVER, DONALD A., Acting Instructor, 1997; MA, 1983, Alaska Pacific University

CURIOSO, WALTER H., Affiliate Assistant Professor, 2003; MD, 2002, Universidad Peruana Cayetano Heredia

EVANS, TIMOTHY C \* Associate Professor, 1980; MD, 1974, University of Michigan, PhD, 1976, University of Michigan; Education in internal medicine, special emphasis on endocrinology/

GIANOLA, FRED J., Lecturer, 1975; Physician's Assistant, 1973, University of Washington

LANDEL, GRACE P. \* Senior Lecturer, 1990; MEd, 1999, University of Washington; Primary oral health care, Older students, Disadvantaged patient populations, Multidisciplinary education

NAIDU, AMEE S., Lecturer, 2007; MS, 1999, Midwestern University

ROEHL, LORI C, Lecturer, 2007; MN, 1982, University of California (San Francisco)

WACHTEL, DIANNA L, Lecturer, 2008; MS, 2008, A.T. Still University of Health Sciences

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## Medical Education and Biomedical Informatics

AMBROZY, DONNA M., Lecturer, 1998; MA, 1994, Eastern Michigan University, PhD, 1998, University of Washington

ASTION, MICHAEL L. \* Adjunct Professor, 1991; PhD, 1989, University of Pennsylvania,

MD, 1989, University of Pennsylvania; neural networks, multi media computer-aided tutorials, immunology

BALLWEG, RUTH A \* Associate Professor, 1981; PA, 1978, University of Washington, MPA, 1998, University of Washington; Primary Care; Rural Health; Women's roles in healthcare; Medical Education

BERRY, DONNA L. \* Adjunct Professor, 1994; MN, 1981, University of Texas (Houston), PhD, 1992, University of Washington; Health care of persons with, and at risk for, cancer

BIEBER, STEPHEN, Affiliate Professor, 2000; MS, 1977, University of California (Berkeley), PhD, 1979, University of California (Berkeley)

BRINKLEY III, JAMES F. \* Professor, 1974; MD, 1974, University of Washington, PhD, 1984, Stanford University; computer applications in medicine and biology

BROCK, DOUGLAS MICHAEL \* Assistant Professor, 1996; MEd, 1987, University of Washington, MEd, 1987, University of Washington, PhD, 1995, University of Washington; Usability and human factors

BROWN, BRIAN D., Lecturer, 2005; MA, 1990, Michigan State University, PhD, 1995, Michigan State University

CARLINE, JAN D. \* Professor, 1979; MEd, 1976, University of Washington, PhD, 1979, University of Washington; Assessment of physician performance, evaluation of medical education programs

CHAPIN III, F STUART, Affiliate Professor, 2003; PhD, 1973, Stanford University

CHOU, DAVID \* Adjunct Associate Professor, 1998; MD, 1974, University of Pittsburgh, MS, 1979, University of Minnesota; Medical information systems, informatics and laboratory medicine

COERVER, DONALD A., Acting Instructor, 1997; MA, 1983, Alaska Pacific University

DAGGETT, VALERIE D. \* Adjunct Professor, 1993; PhD, 1990, University of California (San Francisco); Computational and Integrative Bioengineering, Molecular Bioengineering and Nanotechnology

DEMIRIS, GEORGE \* Associate Professor, 2006; MS, 1994, University of Heidelberg (Germany), PhD, 2000, University of Minnesota; the use of information technology to improve quality of life for older adults. He is exploring the design and evaluation of "smart home" applications that support older adults to remain independent and the use of

DOHNER, CHARLES W., Professor Emeritus, 1967; MS, 1957, Kansas State University, PhD, 1966, Ohio State University

EDWARDS, JOSEPH D., Affiliate Assistant Professor, 2002; MS, 1980, University of Washington, PhD, 1988, University of Washington

EVANS, TIMOTHY C \* Associate Professor, 1980; MD, 1974, University of Michigan, PhD, 1976, University of Michigan; Education in internal medicine, special emphasis on endocrinology/

EVELAND, ARTHUR P, Senior Lecturer, 2008; MS, 1992, University of Dayton, PhD, 1995, University of Cincinnati

FINE, JAMES \* Adjunct Associate Professor, 1977; MD, 1972, University of Minnesota, MS, 1977, University of Minnesota; enzymology, medical computer applications

FOSTER, JAMES A, Affiliate Professor, 2003; MS, 1987, Illinois Institute of Technology, PhD, 1990, Illinois Institute of Technology

FULLER, SHERRILYNNE \* Professor, 1988; MLS, 1968, Indiana University, PhD, 1984, University of Southern California; Analysis, representation and mapping of research findings (data mining.)

GANTENBEIN, REX E. \* Affiliate Professor, 1997; MS, 1983, University of Iowa, PhD, 1986, University of Iowa; Computer networking, virtual collaboration, telehealth, Internet security, and distributed computing

GENNARI, JOHN H \* Associate Professor, 2002; MS, 1985, University of Wisconsin, PhD, 1990, University of California (Irvine); Biomedical informatics, knowledge representation, and knowledge-based systems

GIANOLA, FRED J., Lecturer, 1975; Physician's Assistant, 1973, University of Washington

GOERING, SARA L. \* Adjunct Assistant Professor, 2003; MA, 1994, University of Colorado (Denver), PhD, 1998, University of Colorado (Denver); Bioethics, primarily issues in genetics and disability theory; feminist philosophy

GORDON, MICHAEL J, Professor Emeritus, 1973; MA, 1970, Michigan State University, PhD, 1973, Michigan State University

HAMMOND, KENRIC W. \* Clinical Associate Professor, 1988; MD, 1974, University of California (San Diego); Applied Medical Informatics and Health Services Research

emphasizing medical records and natural language processing

HECKERMAN, DAVID \* Affiliate Professor, 2006; MS, 1979, University of California (Los Angeles), MS, 1983, Stanford University, PhD, 1990, Stanford University, MD, 1992, Stanford University; Machine Learning and Applied Statistics

HORVITZ, ERIC J., Affiliate Associate Professor, 1995; PhD, 1991, Stanford University, MD, 1994, Stanford University

JACKSON, MOLLY BLACKLEY, Acting Instructor, 2004; MD, 2004, University of North Carolina

JOHNSON, LEONARD CLARK \* Adjunct Research Assoc Professor, 1995; MEd, 1973, University of Washington, PhD, 1977, University of Washington; Applied research methods including development in applied statistics, assessment, and analysis

JOYCE, PAUL J, Affiliate Professor, 1988; MS, 1982, Montana State University, PhD, 1988, University of Utah

KALET, IRA J \* Professor, 1968; MA, 1966, Princeton University, PhD, 1968, Princeton University; computer simulation of radiation therapy, artificial intelligence, computer graphics

KIM, SARA \* Associate Professor, 1999; MA, 1990, George Washington University, PhD, 1999, University of Washington; Evaluation, assessment of educational technology and faculty development

KIMBALL, ANN M. \* Adjunct Professor, 1976; MD, 1976, University of Washington, MPH, 1981, University of Washington; emerging infections, public health response to epidemic disease

KOLKER, EUGENE, Affiliate Associate Professor, 1996; MSC, 1986, Kishinev University, Ussr, PhD, 1996, Weizmann Institute For Science (Israel)

KRONE, STEPHEN M, Affiliate Associate Professor, 2003; MS, 1980, University of Illinois, MS, 1982, University of Illinois, PhD, 1990, University of Massachusetts

LANDEL, GRACE P. \* Senior Lecturer, 1990; MEd, 1999, University of Washington; Primary oral health care, Older students, Disadvantaged patient populations, Multidisciplinary education

LAVALLIE, DONNA LEE, Acting Instructor, 1994; DO, 1986, Michigan State University, MPH, 1999, University of Washington

LOBER, WILLIAM B. \* Associate Professor, 1997; MS, 1992, University of

California (Berkeley), MD, 1994, University of California (San Francisco); Architectures and Applications for Clinical and Public Health Informatics

MASUDA, DAVID, Lecturer, 1997; MD, 1980, University of North Dakota, MS, 1996, University of Wisconsin (Madison)

MCNEIL, BARBARA J., Affiliate Professor, 2002; MN, 1982, Oregon Health Sciences University, PhD, 1989, University of Idaho

MOORE, SYLVIA A., Affiliate Professor, 1997; MA, 1982, University of Wyoming, PhD, 1986, University of Wyoming

MYLER, PETER J. \* Research Professor, 1997; PhD, 1982, University of Queensland (Australia); regulation of gene expression in protozoan parasites

NAIDU, AMEE S., Lecturer, 2007; MS, 1999, Midwestern University

NORRIS, THOMAS E. \* Adjunct Professor, 1988; MD, 1973, University of Texas (Galveston); Clinical applications, health policy and health workforce needs

OBERLE, MARK W. \* Adjunct Professor, 1988; MD, 1974, Johns Hopkins University, MPH, 1979, University of California (Berkeley); Public Health; Native American Health

O'CARROLL, PATRICK W., Affiliate Professor, 1995; MPH, 1983, Johns Hopkins University, MD, 1983, Johns Hopkins University

PAYNE, THOMAS H. \* Clinical Associate Professor, 1991; MD, 1980, University of Washington; Computer-based medical records and automated practitioner order entry

PELLMYR, NILS O, Affiliate Associate Professor, 2003; PhD, 1985, University of Uppsala (Sweden)

PINSKY, LINDA E, Adjunct Associate Professor, 1989; MD, 1989, University of Washington

PRATT, WANDA \* Associate Professor, 2002; MS, 1991, University of Texas (Austin), PhD, 1999, Stanford University; Medical informatics, information retrieval, user interfaces, and natural language processing

PUTNAM, ELIZABETH A, Affiliate Assistant Professor, 2003; PhD, 1989, University of Texas (unspecified)

RAKESTRAW, PHILLIP G, Affiliate Assistant Professor, 1982; MS, 1977, University of Oregon, PhD, 1981, University of Washington

ROBINS, LYNNE S \* Associate Professor, 1999; PhD, 1990, University of Michigan; Patient communication, interprofessional communication, patient safety, faculty development, program evaluation, and cultural competence

ROSE, ERIC \* Clinical Assistant Professor, 1997; MD, 1993, Albert Einstein College of Medicine; Clinical informatics, especially Electronic Medical Records and EMR-based decision-support

ROSS, BRIAN K, Adjunct Professor, 1983; MS, 1973, Idaho State University, PhD, 1975, University of North Dakota, MD, 1983, University of Washington

ROSSINI, ANTHONY J \* Affiliate Associate Professor, 1998; DSc, 1994, Harvard University; Statistical computing, statistical issues in HIV/AIDS research, and the analysis of graphs

SCHAAD, DOUGLAS C. \* Associate Professor, 1981; MEd, 1974, University of Washington, PhD, 1986, University of Washington; Medical Education and Evaluation; Educational Assessment; Salmonid Recovery; Riparian Restoration

SCHWARZ, M. ROY, Affiliate Professor, 1963; MD, 1963, University of Washington

SCOTT, CRAIG S \* Professor, 1979; MA, 1970, California State University, Sacramento, PhD, 1973, University of Iowa; Performance-based teaching and evaluation (MedEd); Informatics fluency; MedEd outcomes

SCOTT, TERRY B, Lecturer, 1996; Physician's Assistant, 1993, University of Washington

SHAPIRO, LINDA G. \* Adjunct Professor, 1986; MS, 1972, University of Iowa, PhD, 1974, University of Iowa; computer vision, artificial intelligence, pattern recognition, robotics

SMITH, CURTIS SCOTT, Adjunct Professor, 1987; ScB, 1976, Massachusetts Institute of Technology, MD, 1980, University of Washington

STERN, ERIC J., Adjunct Professor, 1992; MD, 1985, U of Medicine & Dentistry of New Jersey

SURAWICZ, CHRISTINA M., Adjunct Professor, 1974; MD, 1973, University of Kentucky

TARCZY-HORNOCH, PETER \* Professor, 1992; MD, 1989, Stanford University; Bioinformatics and clinical informatics: clinical systems and integrating genetic databases

WACHTEL, DIANNA L, Lecturer, 2008; MS, 2008, A.T. Still University of Health Sciences

WOLF, FREDRIC M \* Professor, 1997; MEd, 1977, Kent State University, PhD, 1980, Kent State University; Clinical decision making/judgment, evaluation/dissemination/ adoption of new technology, social-psychological aspects of chronic illness

YORK, JOSEPH W., Lecturer, 2005; MS, 1975, University of Illinois, MBA, 1982, University of Chicago, PhD, 2001, University of Illinois

ZIERLER, BRENDA \* Adjunct Associate Professor, 1996; PhD, 1996, University of Washington; Research in patient with venous thromboembolism; clinical outcomes, process outcomes (care delivery methods), patient satisfaction, and provider satisfaction

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## Medical History and Ethics

AUSTIN, MELISSA A. \* Adjunct Professor, 1988; MS, 1975, University of California (Los Angeles), PhD, 1985, University of California (Berkeley); Genetic epidemiology of lipoproteins, coronary heart disease and cancer

BACK, ANTHONY L., Adjunct Professor, 1984; MD, 1984, Harvard University

BERRYMAN, JACK W \* Professor, 1975; MS, 1971, University of Massachusetts, MA, 1974, University of Massachusetts, PhD, 1976, University of Maryland; history of exercise, sports medicine, and health behavior/philosophy

BRADDOCK, CLARENCE H. \* Affiliate Associate Professor, 1993; MD, 1981, University of Chicago, MPH, 1995, University of Washington; doctor-patient communication, informed consent, bioethics education

BULLER, THOMAS G., Affiliate Assistant Professor, 1999; MA, 1984, University of Waterloo (Canada), PhD, 1994, University of Tennessee

BURKE, WYLIE \* Professor, 1974; PhD, 1974, University of Washington, MD, 1978, University of Washington; Ethical and policy implications of genetic information

CAHANA, ALEX, Adjunct Professor, 2008; MD, 1990, Sackler School of Medicine (Israel), MAS, 2005, University of Lausanne (Switzerland)

CURTIS, JARED R. \* Adjunct Professor, 1988; MD, 1988, Johns Hopkins University,

MPH, 1994, University of Washington; Improving end-of-life care for patients with critical illness and chronic pulmonary disease

DIEKEMA, DOUGLAS S. \* Adjunct Professor, 1990; MD, 1985, University of North Carolina, MPH, 1993, University of Washington; pediatric bioethics

DUDZINSKI, DENISE M \* Assistant Professor, 2001; MS, 1993, Vanderbilt University, PhD, 2001, Vanderbilt University; Methodological, philosophical and professional considerations in clinical & biomedical ethics

FARBER, STUART J., Adjunct Associate Professor, 1978; MD, 1974, University of Washington

FORSTER, DAVID, Affiliate Assistant Professor, 2000; JD, 1996, University of Washington, MA, 1996, University of Washington

FRYER-EDWARDS, KELLY \* Associate Professor, 2000; MA, 1995, University of Washington, PhD, 2000, University of Washington; Clinical ethics, professional education, physician-patient communication, research ethics, genetics

FULLERTON, STEPHANIE MALIA \* Assistant Professor, 2005; DPhil, 1995, University of Oxford (UK); Ethical implications of scientific practice; genetics and genomics; public health

GALLAGHER, THOMAS H \* Associate Professor, 2002; MD, 1990, Harvard University; Ethics and communication in the doctor-patient relationship

GRANT, GEORGE H., Affiliate Assistant Professor, 2001; PhD, 2001, Boston University

HOLLAND, SUZANNE, Affiliate Associate Professor, 2001; MA, 1991, Louisville Seminary, PhD, 1997, Graduate Theological Union

HUDSON, LEONARD D, Adjunct Professor, 1968; MD, 1964, University of Washington

JECKER, NANCY A.S. \* Professor, 1986; MA, 1982, Stanford University, MA, 1984, University of Washington, PhD, 1986, University of Washington; philosophical and ethical aspects of health care delivery and policy

JONSEN, ALBERT R., Professor Emeritus, 1987; MA, 1956, Gonzaga University, STM, 1963, Santa Clara University, PhD, 1967, Yale University

KELLEY, MAUREEN C, Adjunct Assistant Professor, 2007; MA, 1993, Bowling

Green State University, PhD, 2001, Rice University

KUSZLER, PATRICIA CAROL \* Adjunct Professor, 1994; MD, 1978, Mayo Medical School/Graduate School, JD, 1991, Yale University; law and medicine: health care finance and regulation; medical malpractice; biotechnology and law

MASTROIANNI, ANNA C. \* Adjunct Associate Professor, 1998; JD, 1986, University of Pennsylvania, MPH, 1997, University of Washington; Law, ethics and policy genetics, reproduction, human subjects research

MC CORMICK, THOMAS R. \* Senior Lecturer Emeritus, 1974; MDiv, 1960, Drake University, DMin, 1976, Southern Methodist University; biomedical ethics, particularly relating to neonatology, and problems related to death and dying

MENZEL, PAUL T., Affiliate Professor, 1988; PhD, 1971, Vanderbilt University

MILAM, STEVEN D., Affiliate Assistant Professor, 1989; JD, 1969, University of Oregon

PEARLMAN, ROBERT A \* Adjunct Professor, 1977; MD, 1975, Boston University, MPH, 1980, University of Washington; gerontology

RISSE, GUENTER B, Affiliate Professor, 2002; MD, 1958, University of Buenos Aires (Argentina), MA, 1966, University of Chicago, PhD, 1971, University of Chicago

SCHELLENBERG, INGRAR. \* Assistant Professor, 2007; MA, 2000, Queen's University (UK), MA, 2003, University of North Carolina, Chapel Hill, PhD, 2006, University of North Carolina, Chapel Hill; Ethics, Bioethics, Philosophy of Medicine, Moral Psychology, Philosophy of Feminism

SHANNON, SARAH E \* Adjunct Associate Professor, 1993; PhD, 1992, University of Washington, MN, 1992, University of Washington; clinical ethics; decision-making surrounding use of life-sustaining therapies

STARKS, HELENE \* Assistant Professor, 2005; MPH, 1989, University of California (Berkeley), PhD, 2004, University of Washington; End-of-life and family caregiver issues; qualitative and mixed methods research; clinician-patient communication

STEVENS, NANCY G \* Adjunct Professor, 1982; MD, 1979, University of Washington, MPH, 1982, University of Washington; family medicine

SULLIVAN, MARK D. \* Adjunct Professor, 1985; PhD, 1982, Vanderbilt University, MD, 1984, Vanderbilt University

TIMBERLAKE, DIANE MARIE, Affiliate Assistant Professor, 1989; MD, 1985, University of Washington

TONELLI, MARK R., Adjunct Associate Professor, 1993; MD, 1989, University of Colorado (Boulder)

VAN NORMAN, GAIL, Adjunct Professor, 1986; MD, 1981, University of Washington

WHORTON, JAMES C \* Professor, 1970; PhD, 1969, University of Wisconsin (Madison); history of American medicine, public health, alternative healing, pharmacy and biochemistry

WILFOND, BENJAMIN S, Adjunct Professor, 2006; MD, 1983, U of Medicine & Dentistry of New Jersey

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## Medicine

ABKOWITZ, JANIS L, Professor, 1980; MD, 1977, Harvard University

ABRASS, CHRISTINE K., Professor, 1984; MD, 1973, Case Western Reserve University

ADEREM, ALAN A. \* Affiliate Professor, 1996; PhD, 1979, University of Capetown (South Africa); signal transduction and the cytoskeleton

AGOSTONI, PIERGIUSEPPE, Affiliate Associate Professor, 2003; PhD, 1992, University of Milan (Italy)

AGUILAR-BRYAN, LYDIA, Affiliate Professor, 2007; MD, 1975, U Nacional Autonoma De Mexico (Mexico), PhD, 1985, University of Texas (Houston)

AHMAD, SUHAIL, Associate Professor, 1976; MBBS, 1968, University of Allahabad (India)

AHRENS, SARAH, Acting Instructor, 2002; MD, 2002, University of California (San Francisco)

AITKEN, MOIRA L., Professor, 1982; MBChB, 1978, University of Edinburgh (UK)

AJAM, KAMAL S., Acting Instructor, 2001; MA, 1996, Baylor University, MD, 2000, University of Texas (Houston)

ALPERS, CHARLES E., Adjunct Professor, 1986; MD, 1978, University of Rochester

ALTEMEIER, WILLIAM A., Assistant Professor, 1992; MD, 1992, Vanderbilt University

AMORY, JOHN K., Associate Professor, 1997; MD, 1994, University of California (San Francisco)

ANAWALT, BRADLEY D, Professor, 1989; MD, 1989, University of California (Davis)

APPELBAUM, FREDERICK R, Professor, 1978; MD, 1972, Tufts University

ARAL, SEVGI O., Affiliate Professor, 1992; MA, 1968, University of Pennsylvania, MA, 1970, Emory University, PhD, 1972, Emory University

ARGENYI, ZSOLT B, Professor, 2001; MD, 1978, Semmelweis Medical University (Hungary)

ARTERBURN, DAVID E, Affiliate Assistant Professor, 2001; MD, 1997, University of Kentucky

AU, DAVID H. \* Associate Professor, 1996; MD, 1993, University of Chicago; Chronic Obstructive Pulmonary Disease, Lung Cancer, Health Services Research and Epidemiology

AUSTIN, MELISSA A. \* Adjunct Professor, 1988; MS, 1975, University of California (Los Angeles), PhD, 1985, University of California (Berkeley); Genetic epidemiology of lipoproteins, coronary heart disease and cancer

BACK, ANTHONY L., Professor, 1984; MD, 1984, Harvard University

BAERNSTEIN, AMY, Assistant Professor, 1993; MD, 1993, Cornell University

BAMSHAD, MICHAEL J, Adjunct Professor, 2005; MD, 1989, University of Missouri, MA, 1991, University of Kansas

BAR, MERAV, Acting Instructor, 1999; MD, 1999, Hebrew University (Israel)

BARNHART, SCOTT \* Professor, 1979; MD, 1979, George Washington University; occupationally related lung disease

BASKIN, DENIS G. \* Research Professor, 1979; PhD, 1969, University of California (Berkeley); neuroendocrinology; obesity; CNS regulation of body weight; histochemistry; expression of receptors for insulin, leptin, and other peptides in the CNS

BECKER, PAMELA S, Associate Professor, 2003; PhD, 1986, Harvard University, MD, 1986, Harvard University

BEDA, RACHEL D., Acting Instructor, 2001; MD, 2001, University of Washington

BEDALOV, ANTONIO \* Assistant Professor, 1996; MD, 1989, University of Zagreb (Yugoslavia), DSc, 1998, University of Zagreb (Yugoslavia); Hematology Oncology

BELCHER, DONALD W, Associate Professor Emeritus, 1964; MD, 1962, University of Pennsylvania

BENDITT, JOSHUA O., Professor, 1994; MD, 1982, University of Washington

BENEDETTI, JACQUELINE K \* Adjunct Professor, 1980; PhD, 1974, University of Washington; statistical methodology in infectious disease research, cancer clinical trials

BENSINGER, WILLIAM I, Professor, 1976; MD, 1973, Northwestern University

BERG, DANIEL, Professor, 1997; MD, 1985, University of Toronto (Canada)

BEST, JENNIFER ANN, Acting Instructor, 2000; MD, 2000, Northwestern University

BIRD, THOMAS D., Professor, 1968; MD, 1968, Cornell University

BISHOP, MICHAEL J, Adjunct Professor, 1979; MD, 1974, University of California (San Diego)

BLAGG, CHRISTOPHER R, Professor Emeritus, 1963; MBChB, 1954, University of Leeds (UK), MD, 1954, University of Leeds (UK)

BLAU, CARL A. \* Professor, 1989; MD, 1986, Ohio State University; Focus on regulating the fate of genetically modified cells, in vivo

BLISH, CATHERINE A, Acting Instructor, 2001; PhD, 1999, University of Washington, MD, 2001, University of Washington

BOECKH, MICHAEL J. J., Associate Professor, 1990; MD, 1985, Freie University of Berlin (Germany)

BOENIG, HALVARD, Affiliate Assistant Professor, 2002; MA, 1995, Heinrich-Heine University (Germany), MD, 1998, Heinrich-Heine University (Germany)

BOLLYKY, PAUL L., Acting Instructor, 2004; PhD, 1998, Oxford University (UK), MD, 2001, Harvard University

BOMSZTYK, KAROL \* Professor, 1983; MD, 1977, University of Rochester; role of cytokine-induced protein kinases in the regulation of gene expression

BORNSTEIN, PAUL, Professor Emeritus, 1966; MD, 1958, New York University

- BOYKO, EDWARD J. \* Professor, 1982; MD, 1979, University of Pittsburgh, MPH, 1984, University of Washington; epidemiology of inflammatory bowel disease and non-insulin-dependent diabetes mellitus
- BRADLEY, KATHARINE A \* Associate Professor, 1990; MD, 1987, Stanford University, MPH, 1993, University of Washington; Prevention of alcohol-related problems in medical settings
- BRANCH, KELLEY R., Assistant Professor, 2001; MD, 1998, Thomas Jefferson University
- BREMNER, WILLIAM J, Professor, 1970; MD, 1969, University of Washington, PhD, 1977, Monash University (Australia)
- BRETNALL, TERESA A., Associate Professor, 1991; MD, 1987, University of Washington
- BRODWIN, KAYLA I, Associate Professor, 1989; MD, 1982, State University of New York (Stony Brook)
- BROUDY, VIRGINIA C., Professor, 1985; MD, 1980, University of California (San Francisco)
- BROUSSARD, ELIZABETH K., Acting Instructor, 2000; MD, 2000, Cornell University
- BROWN, B. GREG, Professor Emeritus, 1974; PhD, 1969, Johns Hopkins University, MD, 1969, Johns Hopkins University
- BROWN, JULIE C, Adjunct Assistant Professor, 1996; MD, 1991, McGill University (Canada)
- BROWNSTEIN, ALICE B., Assistant Professor, 1998; MD, 1998, University of Chicago
- BROWNSTEIN, DENAR., Adjunct Associate Professor, 1982; MD, 1982, University of Washington
- BRUNZELL, JOHN D, Professor Emeritus, 1966; MD, 1963, University of Washington
- BRYANT, AMY E., Affiliate Assistant Professor, 2006; PhD, 1999, University of Idaho
- BUCHTER, CAROL M, Associate Professor, 2001; MA, 1974, Indiana University, MD, 1978, Case Western Reserve University
- BUCHWALD, DEDRA S, Professor, 1987; MD, 1981, University of California (San Diego)
- BUCKNER, FREDERICK S., Associate Professor, 1992; MD, 1988, University of Washington
- BYERS, PETER H \* Professor, 1974; MD, 1969, Case Western Reserve University; extracellular matrix synthesis, genetic disorders of collagen metabolism, secretion, human genetics, splicing
- CALDWELL, JAMES H \* Professor, 1970; MD, 1970, University of Missouri; positron emission tomography imaging of myocardial oxygenation, metabolism and sympathetic function
- CAMPBELL, MARY, Acting Instructor, 2004; MD, 2000, Columbia University
- CARITHERS, ROBERT L., Professor, 1990; MD, 1969, University of Pennsylvania
- CARLBOM, DAVID J, Assistant Professor, 2000; MD, 1997, University of Washington
- CARR, LAURIE LYNN, Acting Instructor, 2003; MD, 2000, University of Iowa
- CARVALHO, PAULA G., Associate Professor, 1984; MD, 1984, University of Washington
- CASPER, COREY, Assistant Professor, 2000; MD, 1997, Cornell University
- CAWLEY, PETER J., Acting Instructor, 2004; MD, 2000, Georgetown University
- CELUM, CONNIE L. \* Professor, 1987; MD, 1984, University of California (San Francisco), PhD, 1989, University of Washington; Prevention and vaccine trials to reduce HIV acquisition and transmission
- CHAIT, ALAN \* Professor, 1975; MBChB, 1967, University of Capetown (South Africa), MSC, 1973, University of London, UK, MD, 1974, University of Capetown (South Africa); clinical nutrition with special emphasis on lipid metabolism
- CHAMBERLAIN, JEFFREY S \* Professor, 2000; PhD, 1985, University of Washington; Gene therapy for muscular dystrophy
- CHANCE, PHILLIP F., Adjunct Professor, 1980; MD, 1978, University of Tennessee
- CHANG, KAI-HSIN, Acting Instructor, 2003; PhD, 2003, McGill University (Canada)
- CHANG, TINA A., Assistant Professor, 1996; MD, 1996, University of Michigan
- CHARAN, NIRMAL B, Professor, 1977; MBBS, 1968, Christian Medical College of Ludhiana
- CHAUNCEY, THOMAS R., Associate Professor, 1985; PhD, 1981, University of Chicago, MD, 1985, Rush Medical College
- CHEEVER, MARTINA, Professor, 1970; MD, 1970, University of Michigan
- CHEN, MICHAELA, Assistant Professor, 1999; PhD, 1995, University of Michigan, MA, 1995, University of Michigan, MD, 1999, University of Michigan
- CHEN, PETER, Acting Instructor, 2002; MD, 1999, Baylor College of Medicine
- CHENG, EDITH Y., Adjunct Associate Professor, 1987; MS, 1979, Sarah Lawrence College, MD, 1987, University of Washington
- CHESNUT, CHARLES, Professor, 1966; MD, 1966, University of Florida
- CHEW, LISA D., Assistant Professor, 1993; MD, 1993, University of California (San Francisco)
- CHIEN, ANDY J, Assistant Professor, 1999; PhD, 1999, Northwestern University, MD, 1999, Northwestern University
- CHIEN, JASON W., Assistant Professor, 1999; MD, 1994, U of Medicine & Dentistry of New Jersey
- CHILDS, MARIAN T, Associate Professor Emeritus, 1968; PhD, 1950, University of California (Berkeley)
- CHIN, MICHAEL T, Associate Professor, 2006; PhD, 1988, University of Rochester, MD, 1991, University of Rochester
- CHOE, JOHN H, Acting Instructor, 2000; MD, 1997, New York University, MPH, 2002, University of Washington
- CHUNG, MICHAEL H., Acting Instructor, 2001; MPH, 1998, Harvard University, MD, 1998, University of Chicago
- CLARK, JOAN G., Professor, 1985; MD, 1974, Washington University
- CLURMAN, BRUCE E. \* Associate Professor, 1998; PhD, 1988, Cornell University, MD, 1989, Cornell University; Cell cycle control in normal and neoplastic cells
- COBB, LEONARD A, Professor Emeritus, 1957; MD, 1952, University of Minnesota
- COLLIER, ANN C, Professor, 1982; MD, 1978, Dartmouth College
- COLLINS, STEVEN J \* Professor, 1980; MD, 1973, Columbia University; retinoic acid receptors and the pathogenesis of malignancy
- COLVEN, ROY M., Associate Professor, 1996; MD, 1987, University of Washington
- CONNOLLY, LYNN E., Acting Instructor, 2003; PhD, 1998, University of California (San Francisco), MD, 2000, University of California (San Francisco)

- COOK, DAVID G. \* Research Associate Professor, 1998; PhD, 1991, Yale University; Molecular mechanisms of Alzheimer's disease
- COOMBS, ROBERT W \* Professor, 1985; PhD, 1977, Dalhousie University (Canada), MD, 1981, Dalhousie University (Canada); diagnosis and pathogenesis of HIV infection
- COOPER, STEPHANIE M., Acting Instructor, 2002; MS, 1998, University of Washington, MD, 2002, University of Washington
- COPASS, MICHAEL K, Professor, 1969; MA, 1964, Northwestern University, MD, 1964, Northwestern University
- COREY, LAWRENCE \* Professor, 1975; MD, 1971, University of Michigan; laboratory medicine: diagnosis, therapy, and pathogenesis of viral infections, AIDS virus
- CORNIA, PAUL B., Assistant Professor, 1996; MD, 1996, Case Western Reserve University
- CORSON, MARSHALL A., Associate Professor, 1994; MD, 1981, Baylor College of Medicine
- COUNTS, RICHARD B, Professor, 1967; MD, 1967, Washington University
- COUSER, WILLIAM G, Affiliate Professor, 1982; MD, 1965, Harvard University
- CRANE, HEIDI, Acting Instructor, 2001; MD, 1998, University of Washington, MPH, 2002, University of Washington
- CRANE, PAUL K, Assistant Professor, 1997; MD, 1997, University of Washington, MPH, 2003, University of Washington
- CULVER, BRUCE H, Associate Professor, 1972; MD, 1969, University of Washington
- CUMMINGS, DAVID E. \* Associate Professor, 1993; MD, 1987, Harvard University; Genetic determinants of obesity. Interplay between body weight and reproduction
- CUMMINS, RICHARD, Professor, 1977; MD, 1972, Case Western Reserve University
- CURTIS, JARED R. \* Professor, 1988; MD, 1988, Johns Hopkins University, MPH, 1994, University of Washington; Improving end-of-life care for patients with critical illness and chronic pulmonary disease
- CUSACK, BARRY J., Professor, 1982; MBBChir, 1972, University College (Ireland), MD, 1980, University College of Dublin (Ireland)
- DALE, DAVID C, Professor, 1971; MD, 1966, Harvard University
- DANIELL, WILLIAM E \* Adjunct Associate Professor, 1986; MD, 1979, Tufts University, MPH, 1986, University of Washington; Noise-induced hearing loss; long-term disability associated with carpal tunnel syndrome; chemically related illness, especially neuropsychological sequelae of solvent and pesticide exposure, and multiple chemical sensitivity syndrome
- DAVIDSON, ROBERT C, Associate Professor Emeritus, 1956; MD, 1953, University of Washington
- DAVIS, CONNIE, Professor, 1991; MD, 1980, University of Washington
- DE BOER, IAN H., Assistant Professor, 2003; MD, 1999, Oregon Health Sciences University
- DE CLARO, ROMEO, Acting Instructor, 2003; MD, 1998, University of The Philippines
- DEAN, JAMES P., Acting Instructor, 2003; PhD, 2000, University of Iowa, MD, 2000, University of Iowa
- DEAN, LARRY S., Professor, 1980; MD, 1980, University of Alabama
- DEEB, SAMIR S. \* Research Professor, 1964; MS, 1959, Colorado State University, PhD, 1964, University of Illinois (Urbana); genetic factors predisposing to hyperlipidemia and coronary artery disease
- DEEG, H. JOACHIM, Professor, 1976; MD, 1972, University of Bonn (Germany)
- DEEM, STEVEN A., Adjunct Associate Professor, 1992; MD, 1984, Southern Illinois University
- DEL BECCARO, MARK A., Adjunct Professor, 1985; MD, 1985, University of Washington
- DEL ZOPPO, GREGORY, Professor, 2007; MS, 1972, California Institute of Technology, MD, 1977, University of Washington
- DELLIT, TIMOTHY H., Assistant Professor, 2001; MD, 1997, Cornell University
- DENNY, JILL, Acting Instructor, 2003; MD, 2003, Baylor College of Medicine
- DEWITT, DAWN E., Affiliate Associate Professor, 1990; MD, 1990, Harvard University
- DHANIREDDY, SHIREESHA, Acting Instructor, 1999; MD, 1999, Georgetown University
- DICHEK, DAVID A. \* Professor, 2001; MD, 1984, University of California (Los Angeles); Cardiovascular Research
- DIEKEMA, DOUGLAS S. \* Adjunct Professor, 1990; MD, 1985, University of North Carolina, MPH, 1993, University of Washington; pediatric bioethics
- DISIS, MARY L., Professor, 1990; MD, 1986, University of Nebraska, MS, 1986, University of Nebraska
- DISTECHE, CHRISTINE M \* Adjunct Professor, 1980; Lic.Med., 1970, University of Liege (Belgium), PhD, 1976, University of Liege (Belgium); molecular genetics of sex chromosomes, X inactivation, human and mouse cytogenetics
- DOMINITZ, JASON A, Associate Professor, 1998; MD, 1991, University of Maryland, MS, 1996, Duke University
- DONEY, KRISTINE, Professor, 1975; MD, 1972, University of Michigan
- DORSCHNER, MICHAEL O, Acting Instructor, 1998; PhD, 1998, University of Wisconsin (Milwaukee)
- DREWNOWSKI, ADAM \* Adjunct Professor, 1998; MA, 1971, Oxford University (UK), PhD, 1977, Rockefeller University; Taste and psychology of food choice in disease prevention
- DU, LIANG, Acting Instructor, 2007; MD, 1996, Shandong University (China), PhD, 2000, Shandong University (China)
- DUCHIN, JEFFREY S. \* Associate Professor, 1995; MD, 1985, Rutgers University; Communicable disease control
- DUGDALE, DAVID C., Professor, 1982; MS, 1978, Cornell University, MD, 1982, University of Pennsylvania
- DUGOWSON, CARIN E., Associate Professor, 1977; MD, 1976, University of Illinois, MPH, 1986, University of Washington
- DURVASULA, RAGHU, Assistant Professor, 1999; MD, 1996, McGill University (Canada)
- EACKER, ANNE M., Assistant Professor, 1997; MD, 1997, University of Washington
- EATON, KEITH D., Assistant Professor, 1998; MS, 1991, University of California (San Diego), PhD, 1995, University of California (San Diego), MD, 1998, University of California (San Diego)
- EBY, KERRY, Acting Instructor, 2001; MD, 2001, University of Washington

- EDELMAN, JEFFREY, Associate Professor, 2005; MD, 1989, Columbia University
- EISENBERG, MICKEY, Professor, 1971; MD, 1971, Case Western Reserve University, PhD, 1978, University of Washington
- ELKON, KEITH B \* Professor, 2001; MD, 1974, University of Witwatersrand (S. Africa); Molecular and genetic mechanisms of systemic autoimmunity and apoptosis
- ELLIS, GEORGIANA K., Associate Professor, 1982; MD, 1982, University of Washington
- ELMORE, JOANN G \* Professor, 1996; MD, 1987, Stanford University, MPH, 1992, Yale University; Clinical epidemiology, breast cancer screening, diagnostic accuracy
- ENSINCK, JOHN W, Professor Emeritus, 1960; CM, 1956, McGill University (Canada), MD, 1956, McGill University (Canada)
- ESTEY, ELIHU, Professor, 2008; MD, 1972, Johns Hopkins University
- EVANS, TIMOTHY C \* Associate Professor, 1980; MD, 1974, University of Michigan, PhD, 1976, University of Michigan; Education in internal medicine, special emphasis on endocrinology/
- FAN, VINCENT S., Assistant Professor, 1995; MD, 1995, University of Minnesota, MPH, 2000, University of Washington
- FANG, FERRIC C. \* Adjunct Professor, 2001; MD, 1983, Harvard University; Bacterial pathogenesis with focus on macrophage-salmonella interactions
- FARQUHAR, CAREY \* Assistant Professor, 1994; MD, 1994, Harvard University, MPH, 2001, University of Washington; HIV/AIDS in Kenya: mother-to-child transmission, correlates of immunity, HIV-discordant couples
- FEFER, ALEXANDER, Professor Emeritus, 1968; MD, 1964, Stanford University
- FERO, MATTHEW L., Associate Professor, 1993; MD, 1990, University of California (Irvine)
- FERUCCI, ELIZABETH D., Affiliate Assistant Professor, 2004; MD, 1997, New York University
- FIELDS, STANLEY \* Professor, 1995; MA, 1978, Cambridge University (UK), PhD, 1981, Cambridge University (UK); Yeast Molecular Biology and Genetics
- FIGLEY, MELVIN M, Professor Emeritus, 1958; MD, 1944, Harvard University
- FIHN, STEPHAN \* Professor, 1977; MD, 1977, St Louis University, MPH, 1981, University of Washington; internal medicine
- FINCH, CLEMENT A, Professor Emeritus, 1949; MD, 1941, University of Rochester
- FIRESTONE, JORDANA. \* Assistant Professor, 1995; PhD, 1993, University of Colorado (Denver), MD, 1995, University of Colorado (Denver), MPH, 2002, University of Washington; Occupational and Environmental Medicine
- FISHBEIN, DANIEL P, Professor, 1981; MD, 1980, Albert Einstein College of Medicine
- FITZGIBBON, DERMOT R., Adjunct Associate Professor, 1992; MBChB, 1983, University College (Ireland)
- FIX, OREN, Assistant Professor, 2006; MD, 1999, State University of New York (Buffalo), MS, 2005, Boston University
- FLECKMAN, PHILIP H, Professor, 1982; MD, 1973, Washington University
- FLEET, WENDELL P., Professor, 1968; MD, 1965, Creighton University
- FLETCHER, GRANT S, Acting Instructor, 2007; MPH, 1999, University of North Carolina, MD, 2002, University of North Carolina
- FLOWERS, MARY E., Associate Professor, 1994; MD, 1977, Universidade Federal do Rio de Janeiro (Brazil)
- FOSTER-SCHUBERT, KAREN, Assistant Professor, 2001; MD, 1998, Johns Hopkins University, MS, 2007, University of Washington
- FOUCH, ERIN MIQUELLE, Acting Instructor, 2004; MD, 2004, University of Michigan
- FREDRICKS, DAVID N., Associate Professor, 2001; MS, 1984, Stanford University, MD, 1990, Case Western Reserve University
- FREEMAN, ROSARIO, Assistant Professor, 2001; MD, 1995, Loyola University (Chicago), MS, 2001, University of Michigan
- FUJIMOTO, WILFRED Y, Professor Emeritus, 1969; MD, 1965, Johns Hopkins University
- FURLONG, CLEMENT E. \* Research Professor, 1977; PhD, 1968, University of California (Davis)
- GADI, VIJAYAKRISHNA K., Assistant Professor, 2000; PhD, 1999, University of Alabama, MD, 2000, University of Alabama
- GALLAGHER, THOMAS H \* Associate Professor, 2002; MD, 1990, Harvard University; Ethics and communication in the doctor-patient relationship
- GALLAHUE, FIONA E, Assistant Professor, 2008; MD, 1997, Washington University
- GARDNER, GREGORY C., Professor, 1989; MD, 1984, Baylor College of Medicine
- GARTLER, STANLEY M, Professor Emeritus, 1957; PhD, 1952, University of California (Berkeley)
- GASTER, BARAK, Associate Professor, 1993; MD, 1993, University of California (San Francisco)
- GATEWOOD, MEDLEY, Acting Instructor, 2005; MD, 2001, University of Chicago
- GEBALLE, ADAM PHILIP \* Professor, 1988; MD, 1978, Duke University; Translational regulation of viral and cellular gene expression
- GELINAS, RICHARD, Affiliate Professor, 1985; PhD, 1974, Harvard University
- GEORGES, GEORGE E, Associate Professor, 1994; MD, 1990, University of California (San Francisco)
- GERNSHEIMER, TERRY B., Associate Professor, 1983; MD, 1979, State University of New York (Stony Brook)
- GIBRAN, NICOLE, Adjunct Professor, 1990; MD, 1985, Boston University
- GILL, EDWARD A., Associate Professor, 1984; MD, 1984, University of Washington
- GILLESPIE, HAMILTON S., Acting Instructor, 2004; MD, 2004, University of Washington
- GILLIAM, LISA K, Acting Instructor, 1999; PhD, 1998, Duke University, MD, 1999, Duke University
- GILLIGAN, DIANA MARY, Associate Professor, 2001; PhD, 1985, Albert Einstein College of Medicine, MD, 1985, Albert Einstein College of Medicine
- GILMORE, CHRISTINA, Acting Instructor, 2003; MD, 2003, University of Washington
- GLASS, IAN, Adjunct Professor, 2000; MBChB, 1979, University of Otago (New Zealand), MD, 1991, University of Otago (New Zealand)
- GLENNY, ROBB \* Professor, 1987; MA, 1980, Duke University, MD, 1984, University of Virginia; determinants of regional pulmonary blood flow and ventilation distribution

- GLOMSET, JOHNA \* Professor, 1960; Lic.Med., 1960, University of Uppsala (Sweden), MD, 1960, University of Uppsala (Sweden); membrane structure and function
- GOLDEN, MATTHEW R \* Associate Professor, 1995; MPH, 1993, Johns Hopkins University, MD, 1994, Johns Hopkins University
- GOLDSTEIN, ERIKAA., Professor, 1981; MD, 1981, University of Rochester
- GOODMAN, RICHARD B., Associate Professor, 1986; MA, 1980, University of South Dakota, MD, 1982, University of Oklahoma
- GOODNER, CHARLES J, Professor Emeritus, 1962; MD, 1955, University of Utah
- GOPAL, AJAY, Associate Professor, 1997; MD, 1993, Emory University
- GOSS, CHRISTOPHER HOOPER, Associate Professor, 1997; MD, 1992, University of Colorado (Denver)
- GOSS, J. RICHARD, Associate Professor, 1993; MD, 1987, Oregon Health Sciences University, MPH, 1995, University of Washington
- GOTTLIEB, GEOFFREY S., Assistant Professor, 1998; MD, 1994, Chicago Medical School, PhD, 1995, Chicago Medical School
- GRADY, WILLIAM M., Associate Professor, 2004; MD, 1990, University of Michigan
- GRAHAM, SUSAN M., Acting Instructor, 2003; MPH, 1990, Boston University, MD, 2000, McGill University (Canada)
- GRALOW, JULIE R., Associate Professor, 1992; MD, 1988, University of Southern California
- GRAY, HEIDI J., Adjunct Assistant Professor, 1997; MD, 1997, University of California (Los Angeles)
- GREEN, DAMIAN J., Acting Instructor, 2004; MD, 2000, Ohio State University
- GREENBERG, DEBORAH L., Associate Professor, 1990; MD, 1990, Washington University
- GREENBERG, PHILIP D \* Professor, 1976; MD, 1971, St University of New York (Downstate Med Ctr); molecular, cellular, viral, and tumor immunology
- GRETCH, DAVID R. \* Adjunct Associate Professor, 1990; PhD, 1990, University of Iowa, MD, 1990, University of Iowa; medical informatics; clinical laboratory testing
- GRIES, CYNTHIA JANE, Acting Instructor, 2004; MD, 2001, University of Chicago
- GRIM, JONATHAN E, Acting Instructor, 1999; PhD, 1997, University of Alabama, MD, 1999, University of Alabama
- GRUENEWALD, DAVID A, Associate Professor, 1983; MD, 1983, University of Chicago
- HAGMAN, MELISSA M, Assistant Professor, 1999; MD, 1999, University of Washington
- HAHN, SIHOUN, Adjunct Professor, 2006; MD, 1983, Korea University (Korea), PhD, 1995, Korea University (Korea)
- HAKKI, MORGAN B., Acting Instructor, 2000; MD, 1997, Temple University
- HALL, YOSHIO N., Assistant Professor, 2007; MD, 1999, Baylor College of Medicine
- HALLSTRAND, TEAL, Assistant Professor, 1997; MD, 1993, University of Washington, MPH, 2000, University of Washington
- HANSEN, JOHN A, Professor, 1977; MD, 1970, Stanford University
- HARLAN, JOHN M. \* Professor, 1976; MD, 1973, University of Chicago; Vascular Biology with emphasis on Leukocyte-Endothelial Adhesion
- HARRINGTON, ROBERT D, Associate Professor, 1989; MD, 1983, Tufts University
- HARTWELL, LELAND H \* Adjunct Professor, 1967; PhD, 1964, Massachusetts Institute of Technology; genetic analysis of chromosome transmission and of the control of division by hormones in yeast
- HAWN, THOMAS R., Assistant Professor, 1995; PhD, 1995, Johns Hopkins University, MD, 1995, Johns Hopkins University
- HAZZARD, WILLIAM R., Professor, 1965; MD, 1962, Cornell University
- HEINECKE, JAY W \* Professor, 1981; MD, 1981, Washington University; The role of oxidative stress in the pathogenesis of human disease
- HEITKEMPER, MARGARET M \* Adjunct Professor, 1975; MN, 1975, University of Washington, PhD, 1981, University of Illinois; gastroenterology, enteral nutrition, gerontology
- HENDERSON, MAUREEN M, Professor Emeritus, 1975; MBBS, 1949, University of Durham (UK), DPH, 1956, University of Durham (UK)
- HENDERSON, WILLIAM R, Professor, 1978; MD, 1973, University of California (San Francisco)
- HIGANO, CELESTIA S., Associate Professor, 1982; MD, 1979, University of Massachusetts
- HILDEBRANDT, JACOB \* Professor, 1966; MSC, 1960, University of British Columbia (Canada), PhD, 1966, University of Washington; respiratory physiology
- HIMMELFARB, JONATHAN, Professor, 2008; MD, 1983, George Washington University
- HING, ANNE V., Adjunct Assistant Professor, 1999; MD, 1985, Washington University
- HINGORANI, SUNIL, Assistant Professor, 2006; PhD, 1994, Yale University, MD, 1994, Yale University
- HIRSCH, IRL B., Professor, 1990; MD, 1984, University of Missouri
- HIRSCHMANN, JAN V, Professor, 1976; MD, 1970, University of Washington
- HLASTALA, MICHAEL P \* Professor, 1970; PhD, 1969, State University of New York (Buffalo); respiratory physiology, inert gas analysis of respiratory function
- HOCKENBERRY, DAVID M. \* Professor, 1994; MD, 1982, Washington University; gastroenterology
- HOLMBERG, LEONAA., Associate Professor, 1987; PhD, 1983, Harvard University, MD, 1986, University of Miami (Florida)
- HOLMES, KING K. \* Professor, 1967; MD, 1963, Cornell University, PhD, 1967, University of Hawaii; clinical epidemiology and pathogenesis of infectious diseases
- HORNUNG, ROBIN L., Adjunct Associate Professor, 1999; MD, 1990, Yale University, MPH, 1996, University of North Carolina
- HORWITCH, CARRIE A \* Clinical Assistant Professor, 1993; MPH, 1983, University of California (Berkeley), MD, 1987, University of Arizona
- HORWITZ, MARSHALL S \* Professor, 1988; PhD, 1988, University of Washington, MD, 1990, University of Washington; Inherited white blood cell disorders, including leukemia



HOUGH, CATHERINE LEE, Assistant Professor, 1999; MD, 1996, University of California (San Francisco), MSC, 2003, University of Washington

HUDSON, LEONARD D, Professor, 1968; MD, 1964, University of Washington

HUGHES, GRANT C., Acting Instructor, 2001; MD, 2001, Oregon Health Sciences University

HURLEY, WILLIAM T., Assistant Professor, 2007; MD, 1985, University of Colorado (Denver)

HWANG, JOO HA, Assistant Professor, 1997; MD, 1997, University of Chicago

IOANNOU, GEORGE, Assistant Professor, 2000; MBChB, 1996, Oxford University (UK), MS, 2002, University of Washington

JACKSON, J. CAREY, Associate Professor, 1990; MPH, 1980, University of Hawaii, MD, 1986, Michigan State University, MA, 1993, Michigan State University

JACKSON, LISA A. \* Adjunct Research Professor, 1994; MD, 1988, University of Virginia, MPH, 1996, University of Washington; infectious disease epidemiology and public health

JACKSON, MOLLY BLACKLEY, Acting Instructor, 2004; MD, 2004, University of North Carolina

JARVIK, GAIL P. \* Professor, 1991; MS, 1983, University of Michigan, PhD, 1986, University of Michigan, MD, 1987, University of Iowa; Quantitative genetics and genetic epidemiology, focusing on common diseases

JOBE, KATHLEEN A., Associate Professor, 1986; MD, 1986, University of Colorado (Denver)

JOHN STEWART, GRACE C. \* Associate Professor, 1992; MD, 1987, University of Michigan, MPH, 1995, University of Washington, PhD, 2000, University of Washington; Mother-to-child HIV-1 transmission (specifically: Africa, cofactors, breastmilk.)

JOHNSEN, JILL M., Assistant Professor, 2008; MD, 1998, Case Western Reserve University

JOHNSON, KAY M., Associate Professor, 1991; MD, 1991, University of Minnesota

JOHNSTON, CHRISTINE, Acting Instructor, 2001; MD, 2001, University of Minnesota, MPH, 2007, University of Washington

JONES, THOMAS K, Adjunct Professor, 1978; MD, 1978, Jefferson Medical College

JOSEPHSON, NEIL C., Assistant Professor, 1994; MD, 1988, Columbia University

KAHN, STEVEN EMANUEL, Professor, 1986; MBChB, 1978, University of Capetown (South Africa)

KALUS, ANDREA, Assistant Professor, 1999; MD, 1999, University of Washington

KALUS, ROBERT, Assistant Professor, 1998; MD, 1998, Yale University

KANAAN, MOIEN N., Affiliate Associate Professor, 1999; MSC, 1984, University of Arizona, PhD, 1992, Ohio State University

KAPUR, VISHESH, Associate Professor, 1993; MD, 1989, Yale University

KAUFMAN, JOEL D. \* Professor, 1988; MD, 1986, University of Michigan, MD, 1986, University of Michigan, MPH, 1990, University of Washington; occupational and environmental epidemiology; etiologic research and public health surveillance

KAVANAGH, TERRANCE J \* Adjunct Professor, 1985; MS, 1980, Michigan State University, PhD, 1985, Michigan State University; free radical toxicology, glutathione metabolism, toxicology and aging

KAZ, ANDREW M., Acting Instructor, 2003; MD, 1999, Duke University

KEARNEY, DAVID J, Associate Professor, 1996; MD, 1989, University of Missouri

KEEL, SIOBAN, Acting Instructor, 2002; MD, 1999, University of Minnesota

KEIFER, MATTHEW C. \* Associate Professor, 1982; MD, 1982, University of Illinois; the human health effects of pesticide exposure

KESTENBAUM, BRYAN, Assistant Professor, 1999; MD, 1995, University of Massachusetts, MS, 2002, University of Washington

KIEM, HANS-PETER, Associate Professor, 1992; MD, 1987, University of Ulm (Germany)

KIM, FRANCIS, Associate Professor, 1992; MD, 1990, University of California (San Francisco)

KIM, HYANG N, Acting Instructor, 1999; MD, 1999, University of California (San Francisco)

KIMBALL, ANN M. \* Adjunct Professor, 1976; MD, 1976, University of Washington, MPH, 1981, University of Washington; emerging infections, public health response to epidemic disease

KING, MARY-CLAIRE \* Professor, 1995; PhD, 1973, University of California (Berkeley); genetic analysis of complex human phenotypes, human diversity and evolution

KITAHATA, MARI M., Associate Professor, 1991; MD, 1987, University of Pennsylvania, MPH, 1995, University of Washington

KIVIAT, NANCY C \* Adjunct Professor, 1975; MA, 1969, University of Washington, MD, 1975, University of Washington; Epidemiologic and molecular biologic studies of the relationship between HPV, HIV, and Neoplasia

KLAUSNER, RICHARD D., Affiliate Professor, 2004; MD, 1976, Duke University

KLEBANOFF, SEYMOUR, Professor Emeritus, 1962; MD, 1951, University of Toronto (Canada), PhD, 1954, University of London, UK

KLEIN, EILEEN J. \* Adjunct Associate Professor, 1988; MD, 1988, Johns Hopkins University; Sedation and analgesia

KNIGHT, CHRISTOPHER, Assistant Professor, 1996; MD, 1996, University of Washington

KNOPP, ROBERT H, Professor, 1974; MD, 1964, Cornell University

KO, CYNTHIA W., Assistant Professor, 1994; MD, 1991, Stanford University

KOELLE, DAVID \* Professor, 1989; MD, 1985, University of Washington; Viral immunology, immune evasion, and vaccine design for viral infections

KOEPSSELL, THOMAS D \* Adjunct Professor, 1972; MD, 1972, Harvard University, MPH, 1979, University of Washington; chronic diseases, applying epidemiologic concepts to medical practice

KORVATSKA, OLENA, Acting Instructor, 2003; PhD, 1998, University of Lausanne (Switzerland)

KRIEGER, JAMES W. \* Clinical Professor, 1987; MD, 1984, University of California (San Francisco), MPH, 1989, University of Washington; community health assessment, asthma health services research, chronic disease prevention

KUCHELA, ARUN, Assistant Professor, 2005; MD, 1995, University of Toronto (Canada)

KUDENCHUK, PETER J, Professor, 1979; MD, 1979, University of Washington

KUVER, RAHUL P., Associate Professor, 1989; MD, 1989, University of Michigan

- LA SPADA, ALBERT R \* Adjunct Associate Professor, 1993; PhD, 1993, University of Pennsylvania, MD, 1993, University of Pennsylvania; Molecular basis of neurodegenerative disease
- LAFFERTY, WILLIAM E. \* Adjunct Professor, 1983; MD, 1978, University of Kansas; STDs, HIV/AIDS, surveillance and epidemiology of std, managed care
- LAKSHMINARAYAN, S., Professor, 1975; MBBS, 1965, All-India Institute of Medical Sciences, MCP, 1969, Royal College of Physicians (UK)
- LAMPE, MARY F \* Associate Professor, 1988; MS, 1976, University of Washington, PhD, 1984, University of North Carolina; Molecular analysis of the pathogenic bacterium *Chlamydia trachomatis*
- LANG, JOHN D, Adjunct Associate Professor, 2006; MD, 1988, American University of The Caribbean
- LARSON, ERIC B \* Clinical Professor, 1975; MD, 1973, Harvard University, MPH, 1977, University of Washington; internal medicine
- LATCHMAN, YVETTE, Assistant Professor, 2003; MS, 1987, University of London King's College (UK), PhD, 1996, University College, London (UK)
- LATTEMANN, DIANNE \* Adjunct Research Professor, 1981; MS, 1977, Loyola University (campus unspecified), PhD, 1981, University of California (San Francisco); Effect of Regulatory Pptides on Feeding and Behavior and Metabolism
- LAYA, MARY B., Associate Professor, 1993; MD, 1982, Creighton University, MPH, 1995, University of Washington
- LEBOEUF, RENEE C. \* Research Professor, 1987; MS, 1973, Oregon State University, PhD, 1977, State University of New York (Buffalo), PhD, 1985, Harvard University, MD, 1987, University of Massachusetts; genetic and nutritional regulation of proteins involved in lipid transport
- LEE, GERALD W., Acting Instructor, 2001; MS, 1993, Finch University of Health Sciences, PhD, 1999, Finch University of Health Sciences, MD, 2001, Finch University of Health Sciences
- LEE, SCOTT D., Associate Professor, 1997; MD, 1994, Jefferson Medical College
- LEE, STEPHANIE J., Associate Professor, 2006; MD, 1990, Stanford University, PhD, 1996, Harvard University
- LEHMANN, KENNETH G., Professor, 1990; MD, 1979, University of California (San Diego)
- LERNMARK, AKE, Professor, 1988; MD, 1970, University of Umea, PhD, 1971, University of Umea
- LESSLER, DANIEL, Associate Professor, 1990; MD, 1986, Stanford University, MHA, 1992, University of California (San Francisco)
- LEVY, RONA L \* Adjunct Professor, 1975; MSW, 1972, University of Michigan, PhD, 1974, University of Michigan, MPH, 1975, University of Michigan; research methodology, single-case evaluation, health care, behavioral medicine, biofeedback
- LEVY, WAYNE C., Associate Professor, 1985; MD, 1985, Loma Linda University
- LIEBER, ANDRE \* Research Professor, 1994; MD, 1987, Second Institute of Medicine (Russia), PhD, 1992, Humboldt University (Germany); Engineering adenoviruses for gene therapy of cancer
- LILES, W. CONRAD, Affiliate Professor, 1990; PhD, 1987, University of Washington, MD, 1987, University of Washington
- LIN, EDWARD, Associate Professor, 2006; MD, 1986, China Medical University (China)
- LINDEN, HANNAH M., Associate Professor, 1993; MD, 1989, University of Massachusetts
- LINENBERGER, MICHAEL L., Associate Professor, 1986; MD, 1982, University of Kansas
- LINGAPPA, JAIRAM R. \* Assistant Professor, 1991; PhD, 1987, Harvard University, MD, 1991, University of California (San Francisco); evaluating safety and efficacy of non-vaccine prevention interventions
- LINGAPPA, JAISRI \* Adjunct Associate Professor, 1999; PhD, 1985, Harvard University, MD, 1987, University of Massachusetts; Cell biology of virus assembly; host proteins involved in assembly of HIV and other viruses
- LINKER, DAVID T. \* Associate Professor, 1993; MD, 1976, Stanford University, MSE, 1982, University of Washington; diagnostic ultrasound in cardiology and cardiovascular pathophysiology
- LIPKIN, EDWARD W. \* Associate Professor, 1981; PhD, 1976, Case Western Reserve University, MD, 1978, Case Western Reserve University; Cardiovascular risks in diabetes and outcomes of weight loss in Type 2 Diabetes; investigation of disorders of bone and mineral metabolism
- LIPSKY, BENJAMIN A, Professor, 1973; MD, 1973, Cornell University
- LISS, HILLARY K, Acting Instructor, 1997; MD, 1997, University of Maryland
- LOBO, SARITA, Acting Instructor, 2003; MD, 2001, Georgetown University
- LOGAR, CHRISTINE, Assistant Professor, 2003; MD, 1999, Ohio State University
- LOGERFO SR., JAMES P \* Professor, 1971; MD, 1968, University of Rochester, MPH, 1974, University of Washington; quality-of-care assessment
- LONGSTRETH JR, W. T. \* Adjunct Professor, 1975; MD, 1975, University of Pennsylvania, MPH, 1982, University of Washington; Clinical and classic neuroepidemiology
- LOPEZ, JOSE A, Professor, 1981; MD, 1981, University of New Mexico
- LUKEHART, SHEILA A \* Professor, 1979; PhD, 1978, University of California (Los Angeles); Immunology of infectious diseases; microbiology; sexually transmitted diseases
- LUKS, ANDREW M., Acting Instructor, 2000; MA, 1994, Stanford University, MD, 2000, University of California (San Diego)
- MADTES, DAVID K, Associate Professor, 1983; MD, 1979, University of Pittsburgh
- MALONEY, DAVID G., Associate Professor, 1995; MD, 1985, Stanford University, PhD, 1991, Stanford University
- MANICONE, ANNE M., Acting Instructor, 2001; MD, 1998, Cornell University
- MANKOFF, DAVID A. \* Adjunct Professor, 1990; PhD, 1988, University of Pennsylvania, MD, 1988, University of Pennsylvania; Research focuses on cancer imaging to explore in vivo cancer biology
- MANNIK, MART, Professor Emeritus, 1966; MD, 1959, Case Western Reserve University
- MARK, KAREN E., Acting Instructor, 2003; MD, 1998, University of California (San Francisco), MPH, 2005, University of Washington
- MARRA, CHRISTINA M., Adjunct Professor, 1984; MS, 1979, Oregon State University, MD, 1984, University of Oregon
- MARRAZZO, JEANNE M., Associate Professor, 1992; MD, 1988, Jefferson

- Medical College, MPH, 1994, University of Washington
- MARSHALL, CAROLINE BELLE, Assistant Professor, 2002; MD, 1999, Baylor College of Medicine
- MARTIN, GARY V., Associate Professor, 1984; MD, 1980, University of Arizona
- MARTIN, PAUL J, Professor, 1977; MD, 1974, University of Pennsylvania
- MARTIN, THOMAS G., Associate Professor, 1996; MD, 1977, Pennsylvania State University, MPH, 1996, University of Pittsburgh
- MARTIN, THOMAS R., Professor, 1973; MD, 1973, University of Pennsylvania
- MARTINS, RENATO, Associate Professor, 2004; MD, 1992, Federal University of Rio De Janeiro (Brazil), MPH, 1998, Harvard University
- MATSUMOTO, ALVIN M, Professor, 1975; MD, 1975, University of Washington
- MATUTE-BELLO, GUSTAVO, Assistant Professor, 1994; MD, 1988, Central University (Venezuela)
- MAYER, JONATHAN D \* Adjunct Professor, 1977; MA, 1975, University of Michigan, PhD, 1977, University of Michigan; infectious disease ecology, infectious diseases in sub-Saharan Africa, tropical and travel medicine, infectious disease epidemiology, global health, and HIV
- MAZOR, SUZAN, Adjunct Assistant Professor, 2004; MD, 1995, University of Illinois
- MCARTHUR, JAMES R, Professor Emeritus, 1973; MD, 1956, University of Utah
- MC DONALD, GEORGE B, Professor, 1967; MD, 1967, Washington University
- MC MULLEN, W RUSSELL, Associate Professor, 1981; MD, 1978, University of Cincinnati
- MCCLELLAND, RAYMOND SCOTT \* Assistant Professor, 1998; MD, 1995, University of Washington; HIV-1 prevention and treatment studies in Kenya
- MCCORMICK, WAYNE C., Professor, 1987; MD, 1983, University of Washington, MPH, 1989, University of Washington
- MCDONOUGH, KARENA., Assistant Professor, 1993; MD, 1993, University of Wisconsin
- MCEL RATH, MARGARET JULIANA \* Professor, 1990; PhD, 1978, Medical University of South Carolina, MD, 1980, Medical University of South Carolina; T cell immunity in HIV-1 Infection; understanding immune mechanisms that contribute to the control and prevention of HIV infection
- MCGEE, STEVE R., Professor, 1980; MD, 1980, Washington University
- MCGOODWIN, WENDY L., Acting Instructor, 2004; MD, 2004, University of Washington
- MCKONE, EDWARD F., Affiliate Assistant Professor, 1999; MBChB, 1993, Trinity College (Ireland), MD, 2002, University College of Dublin (Ireland), MS, 2003, University of Washington
- MCNEELY, MARGUERITE J., Associate Professor, 1991; MS, 1984, University of Texas (Houston), MD, 1988, University of Washington, MPH, 1993, University of Washington
- MCTIERNAN, ANNE \* Adjunct Research Professor, 1989; MS, 1976, State University of New York (Buffalo), PhD, 1982, University of Washington, MD, 1989, New York Medical College; Prevention of breast and other cancers, exercise, and women's health
- MENGERT, TERRY J., Professor, 1984; MD, 1984, University of Washington
- MENZIES, BARBARA E., Assistant Professor, 2001; MD, 1988, Vanderbilt University
- MERRIAM, GEORGE R., Professor, 1991; MA, 1976, Trinity College, UK, MD, 1976, Harvard University
- MIELCAREK, BESSIE YOUNG, Associate Professor, 1987; MD, 1987, University of Washington
- MIELCAREK, MARCO B, Assistant Professor, 1998; MD, 1986, Freie University of Berlin (Germany), PhD, 1987, Freie University of Berlin (Germany)
- MIGEON, MARY, Associate Professor, 1993; MD, 1993, University of Washington
- MILLER, RICHARD A, Associate Professor, 1980; MD, 1977, Harvard University
- MILLER, SAMUEL I \* Professor, 1995; MD, 1979, Baylor College of Medicine; Salmonella pathogenesis and bacterial-eukaryotic cell interactions
- MINAMI, ELINA, Assistant Professor, 1999; MD, 1995, George Washington University
- MITCHELL, KARA J, Acting Instructor, 2005; MD, 2002, University of Washington
- MITCHELL, STEVEN H., Acting Instructor, 2006; MD, 2002, University of Washington
- MONTGOMERY, ROBERT B., Associate Professor, 1990; MD, 1987, Duke University
- MOOKHERJEE, SOMNATH, Acting Instructor, 2004; MD, 2004, University of Washington
- MOORE, SYLVIA A., Affiliate Professor, 1997; MA, 1982, University of Wyoming, PhD, 1986, University of Wyoming
- MOSTAGHEL, ELAHE, Acting Instructor, 2003; PhD, 2000, Duke University, MD, 2000, Duke University
- MOTULSKY, ARNO G., Professor Emeritus, 1953; MD, 1947, University of Illinois
- MOZAFFARIAN, NEELUFAR, Acting Instructor, 2001; MS, 1994, Albert Einstein College of Medicine, PhD, 2001, Albert Einstein College of Medicine, MD, 2001, Albert Einstein College of Medicine
- MUCZYNSKI, KIMBERLY ANN, Associate Professor, 1989; PhD, 1984, University of Washington, MD, 1984, University of Washington
- MULLINS, JAMES I. \* Professor, 1994; PhD, 1978, University of Minnesota; retroviruses and AIDS, molecular virology
- NARITA, MASAHIRO, Associate Professor, 2003; MD, 1988, Keio University (Japan)
- NASH, RICHARD A, Associate Professor, 1994; MD, 1977, University of Manitoba (Canada)
- NAVAS, PARVONEH, Adjunct Assistant Professor, 1992; PhD, 1992, University of California (Los Angeles)
- NEFF, MARGARET J., Associate Professor, 1997; MD, 1993, Stanford University, MSC, 2000, University of Washington
- NEIMAN, PAULE, Professor Emeritus, 1968; MD, 1964, University of Washington
- NELP, WIL B, Professor Emeritus, 1962; MD, 1955, Johns Hopkins University
- NELSON, JUDITH LEE, Professor, 1981; MD, 1977, University of California (Davis)
- NELSON, KARIN, Assistant Professor, 2001; MD, 1995, University of Minnesota, MS, 2000, University of California (Los Angeles)
- NELSON, PETER S. \* Professor, 1993; MD, 1986, University of Kansas; The study of human carcinogenesis using tools of genomics and bioinformatics

- NGHIEM, PAUL \* Associate Professor, 2006; PhD, 1994, Stanford University, MD, 1994, Stanford University; UV damage, skin cancer, dermatopathology
- NGUYEN, TOAN D, Professor, 1994; MD, 1978, University of Chicago
- NICHOL, GRAHAM, Professor, 2004; MD, 1988, University of Western Ontario (Canada), MPH, 1995, Harvard University
- NICHOL, GRAHAM, Professor, 2004; MPH, 1995, Harvard University
- NOBLE, WILLIAM S \* Adjunct Associate Professor, 2002; MS, 1996, University of California (San Diego), PhD, 1998, University of California (San Diego); machine learning techniques for application to problems in molecular biology
- NORRIS, THOMAS E. \* Adjunct Professor, 1988; MD, 1973, University of Texas (Galveston); Clinical applications, health policy and health workforce needs
- O'BRIEN, KEVIN, Associate Professor, 1984; MD, 1984, University of Washington
- O'CONNOR, KIM, Assistant Professor, 1999; MD, 1999, University of Washington
- O'DONNELL, PAUL V., Associate Professor, 2001; PhD, 1973, Cornell University, MD, 1992, Johns Hopkins University
- O'HARE, ANN M, Assistant Professor, 2007; MA, 1987, University of Minnesota, MD, 1996, University of Virginia
- OLERUD, JOHN E, Professor, 1971; MD, 1971, University of Washington
- OLSON, CARIN M., Associate Professor, 1994; MD, 1978, Ohio State University
- OLSON, MAYNARD V. \* Professor, 1975; PhD, 1970, Stanford University; Methods and applications of large-scale DNA analysis
- O'MORCHOE, CHARLES C., Affiliate Professor, 2005; MA, 1959, Dublin University, MD, 1961, Dublin University, PhD, 1969, Dublin University, DSc, 1981, Dublin University
- O'MORCHOE, CHARLES C., Affiliate Professor, 2005; DSc, 1981, Dublin University
- ONG, BRANDON, Acting Instructor, 2002; MD, 2002, Albert Einstein College of Medicine
- OSTROW, JAY DONALD, Affiliate Professor, 2001; MD, 1954, Harvard University, MSC, 1970, University College, London (UK)
- OTT, SUSAN M, Associate Professor, 1980; MD, 1974, University of Washington
- OTTO, CATHERINE M., Professor, 1982; MD, 1979, University of Washington
- OXORN, DONALD C., Adjunct Associate Professor, 1998; MD, 1978, McGill University (Canada)
- PAAUW, DOUGLAS, Professor, 1985; MD, 1985, University of Michigan
- PAGALILAUAN, GENEVIEVE, Assistant Professor, 2000; MD, 2000, University of Washington
- PAGE, RICHARD L, Professor, 2002; MD, 1984, Duke University
- PAGE, STEPHANIE T, Assistant Professor, 1999; PhD, 1999, University of Washington, MD, 1999, University of Washington
- PAGEL, JOHN M., Assistant Professor, 1999; PhD, 1991, University of California (Irvine), MD, 1996, Boston University
- PAGON, ROBERT A, Adjunct Professor, 1972; MD, 1972, Harvard University
- PALMER, JERRY P, Professor, 1972; MD, 1970, State University of New York (Upstate Med Ct)
- PARIMON, TANYALAK, Assistant Professor, 2002; MD, 1999, Lyceum-Northwestern University, Philippines
- PARIS, CAROLYN A., Adjunct Assistant Professor, 1995; MD, 1991, Cornell University
- PARK, DAVID R., Associate Professor, 1988; MD, 1988, University of Vermont
- PARKS, WILLIAM C, Professor, 2004; PhD, 1982, Medical College of Wisconsin
- PATTON, KRISTEN K, Assistant Professor, 2004; MD, 1995, Oregon Health Sciences University
- PAULOVICH, AMANDA G., Assistant Professor, 2005; PhD, 1996, University of Washington, MD, 1998, University of Washington
- PAULSEN, C ALVIN, Professor Emeritus, 1958; MD, 1952, University of Oregon
- PAYNE, THOMAS H. \* Clinical Associate Professor, 1991; MD, 1980, University of Washington; Computer-based medical records and automated practitioner order entry
- PEARLMAN, ALAN S, Professor, 1978; MD, 1970, Harvard University
- PEARLMAN, ROBERT A \* Professor, 1977; MD, 1975, Boston University, MPH, 1980, University of Washington; gerontology
- PENG, YUFENG, Acting Instructor, 2004; PhD, 2000, Cornell University
- PETERSDORF, EFFIE WANG, Professor, 1982; MD, 1982, McGill University (Canada)
- PETERSDORF, STEPHEN H, Associate Professor, 1983; MD, 1983, Brown University
- PHELAN, ELIZABETH A. \* Assistant Professor, 1996; MD, 1992, Tufts University, MS, 1998, University of Washington; Linking healthcare systems and communities to promote health of elders
- PIERSON, DAVID JOHN, Professor, 1976; MD, 1969, Johns Hopkins University
- PINSKY, LINDA E, Associate Professor, 1989; MD, 1989, University of Washington
- PLORDE, JAMES J, Professor Emeritus, 1960; MD, 1959, University of Minnesota
- PLYMATE, STEPHEN R, Professor, 1972; MD, 1968, University of Nebraska, campus unspecified, MS, 1968, University of Nebraska
- POOLE, JEANNE E, Associate Professor, 1981; MD, 1980, University of Washington
- POPE, CHARLES E, Professor Emeritus, 1959; MD, 1957, Case Western Reserve University
- PORTE, DANIEL, Professor Emeritus, 1963; MD, 1957, University of Chicago
- POTTINGER, PAUL S., Assistant Professor, 2002; MD, 1998, Yale University
- POWELL, HEIDI SARA, Associate Professor, 1993; MS, 1980, Oregon State University, MD, 1986, Oregon Health Sciences University
- PRESLAND, RICHARD B \* Adjunct Associate Professor, 1989; MSC, 1982, University of Otago (New Zealand), PhD, 1987, University of Adelaide (Australia); Molecular biology and genetics of epidermal differentiation and epithelial disorders
- PRESS, OLIVER W. \* Professor, 1982; PhD, 1977, University of Washington, MD, 1979, University of Washington; treatment of hematologic malignancies with monoclonal antibody immunoconjugates
- PRICE, THOMAS H., Professor, 1972; MD, 1966, Johns Hopkins University

PROBSTFIELD, JEFFREY L. \* Professor, 1993; MD, 1967, University of Washington; Hyperlipidemia, high blood pressure, and clinical trials methods

PSATY, BRUCE M. \* Professor, 1984; MA, 1975, Indiana University, PhD, 1979, Indiana University, MD, 1981, Indiana University; cardiovascular disease, coronary heart disease, hypertension, pharmacoepidemiology, and pharmacogenetics

QUAN, LINDA, Adjunct Professor, 1971; MS, 1969, Dartmouth College, MD, 1971, University of Washington

RADICH, JERALD P, Professor, 1983; MS, 1979, Harvard University, MD, 1983, University of California (Davis)

RAGHU, GANESH, Professor, 1981; MBBS, 1974, University of Mysore (India)

RALPH, DAVID D, Associate Professor, 1979; MD, 1972, Stanford University

RAMAKRISHNAN, ARAVIND, Acting Instructor, 2004; MD, 2001, U of Medicine & Dentistry of New Jersey

RAMAKRISHNAN, LALITA \* Associate Professor, 2001; MD, 1983, Baroda Medical College (India), PhD, 1990, Tufts University; Contributions of Mycobacteria and hosts to maintenance of chronic tuberculosis

RAMSEY, PAUL G, Professor, 1978; MD, 1975, Harvard University

RAMSEY, SCOTT D. \* Professor, 1990; MD, 1990, University of Iowa, PhD, 1994, University of Pennsylvania; economics in medicine

RASKIND, WENDY H \* Professor, 1978; PhD, 1977, University of Washington, MD, 1978, University of Washington; Molecular genetics of neurodegenerative and behavioral disorders

RAUGI, GREGORY J, Professor, 1980; ScB, 1969, Brown University, PhD, 1975, Duke University, MD, 1975, Duke University

REA, THOMAS D., Associate Professor, 1992; MD, 1992, University of Michigan

REED, MAY J., Associate Professor, 1990; MD, 1986, Harvard University

REID, BRIAN J \* Professor, 1983; PhD, 1975, University of Washington, MD, 1980, University of Washington; clonal evolution, cancer prevention and cancer risk prediction in Barrett's esophagus

REILLY, DOMINIC F., Associate Professor, 1991; MD, 1988, University of Washington

REMINGTON, JARED, Acting Instructor, 2004; MD, 2004, University of Washington

RHO, ROBERT W, Associate Professor, 2002; MD, 1992, Loma Linda University

RHOADS, CAROLINE S, Associate Professor, 1989; MD, 1989, University of Pennsylvania

RICHARD, ROBERT E., Assistant Professor, 1996; MD, 1984, Stony Brook University, PhD, 1992, Stony Brook University

RIDDELL, STANLEY R., Professor, 1985; MD, 1979, University of Manitoba (Canada)

RIDZON, RENEE, Affiliate Assistant Professor, 2004; MD, 1986, St. Louis University

ROBERTSON, H. THOMAS, Professor, 1968; MD, 1968, Harvard University

ROBERTSON, R. PAUL \* Clinical Professor, 1968; MD, 1964, Creighton University; Diabetes, oxidative stress, beta cell glucose toxicity, pancreas/islet transplantation

RODLER, EVE, Assistant Professor, 2008; MA, 1983, Yale University, MD, 1997, George Washington University

RODRIGUEZ, RUDOLPH, Associate Professor, 2007; MD, 1989, University of California (Los Angeles)

ROSEN, HENRY, Professor, 1972; MD, 1972, University of Rochester

ROTH, GERALD J., Professor Emeritus, 1984; MD, 1967, Harvard University

ROTH, GREGORY, Acting Instructor, 2002; MD, 2002, Brown University

RUBENFELD, GORDON, Affiliate Professor, 1995; MD, 1987, Jefferson Medical College, MPH, 1996, University of Washington

RUBIN, CYRUS E, Professor Emeritus, 1954; MD, 1945, Harvard University

RUBINSON, LEWIS, Assistant Professor, 2007; MD, 1997, Northwestern University, PhD, 2004, Johns Hopkins University

RUSSELL, DAVID WILLIAM \* Professor, 1991; PhD, 1988, Rockefeller University, MD, 1989, Cornell University; Vectors for gene therapy

RYAN, MICHAEL J., Associate Professor, 1986; MD, 1986, University of Michigan

SABATH, DANIEL E. \* Adjunct Associate Professor, 1989; PhD, 1989, University of

Pennsylvania, MD, 1989, University of Pennsylvania; regulation of gene expression in hematopoietic cells

SALAZAR, LUPE G., Assistant Professor, 1999; MD, 1996, University of Minnesota

SANDMAIER, BRENDA M., Associate Professor, 1985; MD, 1983, Albert Ludwig Universitat (Germany)

SASSO, ERIC H., Affiliate Associate Professor, 1984; MD, 1980, University of California (San Diego)

SCHLEYER, ANNELIESE M., Assistant Professor, 1999; MHA, 1992, University of Washington, MD, 1999, University of Washington

SCHMIDT, RODNEY, Adjunct Associate Professor, 1984; PhD, 1984, University of Washington, MD, 1984, University of Washington

SCHNAPP, LYNN M., Associate Professor, 2000; ScB, 1982, Massachusetts Institute of Technology, MD, 1986, University of Pennsylvania

SCHUBACH, WILLIAM H., Associate Professor, 1974; PhD, 1971, University of California (Santa Cruz), MD, 1974, Columbia University

SCHUFFLER, MICHAEL D, Professor, 1970; MD, 1966, University of Illinois

SCHUR, ELLEN A, Acting Instructor, 1999; MD, 1999, Stanford University

SCHWARTZ, MICHAEL W \* Professor, 1983; MD, 1983, Rush Medical College; Neuroendocrine mechanisms governing food intake and body weight, and the pathogenesis of obesity

SCHWARTZ, STEPHEN MARK \* Adjunct Professor, 1967; PhD, 1973, University of Washington; vascular biology, atherosclerosis, molecular basis of lineage, developmental biology, cell kinetics

SCOTT, BART L., Acting Instructor, 1999; MD, 1996, University of South Alabama

SCOTT, C RONALD, Adjunct Professor, 1964; MD, 1959, University of Washington

SCOTT, JOHN D., Acting Instructor, 2002; MD, 1998, Georgetown University

SHANDRO, JAMIE RAE, Assistant Professor, 2006; MD, 2002, University of Washington, MPH, 2003, Harvard University

SHANKLAND, STUART J, Professor, 1994; MBChB, 1983, University of Capetown (South Africa)

SHAO, BAOHAI, Acting Instructor, 2006; MS, 1996, Chinese Academy of Sciences (China), PhD, 2002, Zhejiang University (China)

SHARP, JOHN T, Affiliate Professor, 1998; MD, 1947, Columbia University

SHEFFIELD, JOHN V.L., Professor, 1989; MD, 1989, Harvard University

SHEN, EDIE P, Acting Instructor, 2006; MD, 2000, Northwestern University

SHERARD, DONALD J, Professor, 1961; MD, 1960, University of Washington

SHIMAMURA, AKIKO, Adjunct Associate Professor, 2007; MS, 1988, University of Rochester, PhD, 1990, University of Rochester, MD, 1991, University of Rochester

SHUGERMAN, RICHARD P, Adjunct Professor, 1984; MD, 1984, University of Alabama

SHUHART, MARGARET C., Associate Professor, 1991; MD, 1988, Dartmouth College

SHUSTOV, ANDREI R, Assistant Professor, 2003; MD, 1993, Crimea State Medical University(Ukraine)

SIMKIN, PETER A, Professor Emeritus, 1966; MD, 1961, University of Pennsylvania

SINGH, PRADEEP \* Associate Professor, 2005; MD, 1989, Northwestern University; biofilm biology and chronic lung infections

SISCOVICK, DAVID S. \* Professor, 1976; MD, 1976, University of Maryland, MPH, 1981, University of Washington; epidemiology

SKERRETT, SHAWN J., Associate Professor, 1983; MD, 1978, New York University

SLICHTER, SHERRILL J, Professor, 1967; MD, 1963, George Washington University

SMITH, CHARLES B., Professor Emeritus, 1991; MD, 1962, Harvard University

SMITH, CURTIS SCOTT, Professor, 1987; ScB, 1976, Massachusetts Institute of Technology, MD, 1980, University of Washington

SMITH, MARK W, Acting Instructor, 2005; MD, 2002, Howard University

SOTOODEHNIA, NONA, Assistant Professor, 1996; MPH, 1996, Harvard University, MD, 1996, Harvard University

SOW, PAPA S., Affiliate Professor, 2006; MD, 1987, Dakar University

SPACH, DAVID H, Professor, 1986; MD, 1986, Duke University

SPECHT, JENNIFER M, Assistant Professor, 1999; MD, 1999, University of Washington

SPENCE, ALEXANDER M, Adjunct Professor, 1974; MD, 1965, University of Chicago

STADIUS, MICHAEL L., Associate Professor, 1982; MD, 1978, University of Oregon

STAIGER, THOMAS O., Associate Professor, 1985; MD, 1985, University of Washington

STAMATOYANNOPOULOS, G, Professor, 1964; MD, 1958, University of Athens (Greece), DR, 1960, University of Athens (Greece)

STAMATOYANNOPOULOS, JOHNA \* Assistant Professor, 2005; MD, 1995, University of Washington

STAMATOYANNOPOULOS, THALIA, Professor, 1965; MD, 1961, University of Athens (Greece), DrMedSci, 1964, University of Athens (Greece)

STAMM, WALTER E \* Professor, 1976; MD, 1971, Harvard University; infectious disease

STAPLETON, ANN E., Associate Professor, 1987; MD, 1984, Albert Einstein College of Medicine

STARKEBAUM, GORDONA, Professor, 1970; MD, 1970, Columbia University

STEINBACH, GIDEON, Associate Professor, 2001; PhD, 1975, City University of New York, MD, 1981, Albert Einstein College of Medicine

STEINBERG, KENNETH P, Professor, 1989; MD, 1985, New York Medical College

STEMPIEN-OTERO, APRIL S., Assistant Professor, 1994; MD, 1990, University of Connecticut

STEPHENS, KAREN G. \* Adjunct Research Professor, 1989; MA, 1978, Indiana University, PhD, 1982, Indiana University

STEVENS, DENNIS L, Professor, 1979; PhD, 1967, Montana State University, MD, 1971, University of Utah

STEWART, DOUGLAS, Professor, 1965; MD, 1965, Harvard University

STEWART, FORREST MARC, Professor, 2000; MD, 1977, Indiana University

STIREWALT, DEREK, Assistant Professor, 1996; MD, 1992, University of North Carolina

STIVELMAN, JOHN C., Associate Professor, 2000; MD, 1978, University of Pennsylvania

STORB, RAINER F, Professor, 1965; MD, 1960, University of Freiburg (Germany)

STOUT, KAREN K., Assistant Professor, 2000; MD, 1996, University of Arizona

STRATE, LISA, Assistant Professor, 2006; MD, 1995, University of California (San Francisco), MPH, 2001, Harvard University

STRATTON, JOHN R, Professor, 1976; MD, 1973, Yale University

STROTE, JARED, Assistant Professor, 2002; MS, 1994, Duke University, MD, 1999, Harvard University

SUBRAMANIAN, SAVITHA, Acting Instructor, 2004; MBBS, 1997, Stanley Medical College (India)

SUGG, NANCY K, Associate Professor, 1983; MD, 1983, University of Maryland

SULLIVAN, MARK D, Acting Instructor, 2003; MD, 2003, University of Washington

SULLIVAN, SEAN \* Adjunct Professor, 1992; MS, 1984, University of Texas (unspecified), PhD, 1992, University of California (Berkeley); Health Economics, Pharmaceutical Outcomes Research and Health Policy

SURAWICZ, CHRISTINA M., Professor, 1974; MD, 1973, University of Kentucky

SUTTON, ELIZA L., Assistant Professor, 1990; MA, 1986, Harvard University, MD, 1990, Harvard University

SUTTON, PAUL R., Associate Professor, 1999; PhD, 1992, University of Illinois, MD, 1994, University of Chicago

SWANSON, PHILLIP D, Adjunct Professor, 1964; MD, 1958, Johns Hopkins University

SWENSEN, RON E, Adjunct Assistant Professor, 2003; MD, 1984, Loma Linda University

SWENSON, ERIK R., Professor, 1983; MD, 1979, University of California (San Diego)

SWISHER, ELIZABETH M., Adjunct Associate Professor, 1999; MD, 1992, University of California (San Diego)

- TAIT, JONATHAN F \* Adjunct Professor, 1983; PhD, 1983, Washington University, MD, 1983, Washington University; biochemistry of blood coagulation, laboratory diagnosis of genetic disorders
- TAKAHASHI, TRACI A., Assistant Professor, 1995; MD, 1995, University of California (San Diego), MPH, 2001, University of Washington
- TANG, CHONGREN, Acting Instructor, 2002; MD, 1992, Shanghai Medical University (China), MS, 1995, Shanghai Medical University (China), PhD, 2001, University of Texas (unspecified)
- TEMPEL, BRUCE L. \* Adjunct Professor, 1988; PhD, 1983, Princeton University; molecular neurobiology/neurogenetics, especially potassium channel gene structure and function
- TERASAKI, GENJI, Acting Instructor, 2001; MD, 2001, Case Western Reserve University
- TEWARI, MUNEEESH, Assistant Professor, 2008; PhD, 1997, University of Michigan, MD, 1997, University of Michigan
- THOMAS, E DONNALL, Professor Emeritus, 1953; MA, 1943, University of Texas (Austin), MD, 1946, Harvard University
- THOMPSON, ARTHUR R, Professor, 1969; MD, 1966, University of Washington, PhD, 1972, University of Washington
- THOMPSON, JENNIFER, Acting Instructor, 2004; MD, 2004, University of California (Los Angeles)
- THOMPSON, JOHN A., Professor, 1979; MD, 1979, University of Alabama
- THOMPSON, RACHELE E., Assistant Professor, 2000; MD, 2000, University of Washington
- THOMPSON, WILLIAM H., Associate Professor, 1988; MD, 1988, Johns Hopkins University
- TIAN, QIANG, Affiliate Assistant Professor, 2008; MD, 1994, Tianjin University (China), PhD, 2000, Michigan State University
- TONELLI, MARK R., Associate Professor, 1993; MD, 1989, University of Colorado (Boulder)
- TOROK-STORB, BEVERLY J, Affiliate Professor, 1975; PhD, 1975, University of Pittsburgh
- TOTTEN, PATRICIA A \* Research Associate Professor, 1990; MS, 1978, University of Georgia, PhD, 1990, University of Washington; Molecular pathogenesis and discovery of bacteria that cause STDs
- TOWNES, DAVID A., Associate Professor, 2001; MD, 1993, University of Massachusetts, MPH, 1998, University of Illinois
- TRENCE, DACE L., Associate Professor, 2000; MD, 1977, University of Minnesota
- TSANG, JOHN, Affiliate Associate Professor, 2005; MD, 1974, University of Toronto (Canada)
- TSUANG, DEBBY W., Adjunct Associate Professor, 1992; MD, 1988, University of Iowa, MS, 1992, University of Iowa
- TU, SHIN-PING, Associate Professor, 1993; MD, 1989, University of Cincinnati, MPH, 1996, University of Washington
- TUCKER, EBEN E, Associate Professor, 2003; MD, 1976, University of Michigan
- TURCK, MARVIN, Professor, 1960; MD, 1959, University of Illinois
- TURTLE, CAMERON J., Acting Instructor, 2008; MBBS, 1993, University of Sydney (Australia), PhD, 2005, University of Queensland (Australia)
- UTZSCHNEIDER, KRISTINAM., Assistant Professor, 1993; MD, 1993, Harvard University
- VAN CITTERS, ROBERT L., Professor Emeritus, 1962; MD, 1953, University of Kansas
- VAN VOORHIS, WESLEY C \* Professor, 1986; PhD, 1983, Rockefeller University, MD, 1984, Cornell University; infectious diseases
- VAUGHAN, MICHAEL R, Acting Instructor, 1999; MD, 1999, Georgetown University
- VEDAL, SVERRE \* Adjunct Professor, 2004; MD, 1976, University of Colorado (Boulder), MSC, 1983, Harvard University; health effects of air pollution, especially particulate matter; occupational lung disease
- VIG, ELIZABETH K., Assistant Professor, 1996; MD, 1993, New York University, MPH, 2000, University of Washington
- VISWANATHAN, MOHAN N, Assistant Professor, 2007; MD, 1999, University of California (San Francisco)
- VITIELLO, MICHAEL V \* Adjunct Professor, 1977; PhD, 1980, University of Washington; Sleep, sleep disorders, circadian rhythms, aging, behavioral medicine, principles of behavioral sciences applied to medical research and practice
- VULETIC, SIMONA, Acting Instructor, 1999; MD, 1991, University of Zagreb (Yugoslavia)
- WALD, ANNA \* Professor, 1989; MD, 1985, Mt Sinai School of Medicine, MPH, 1994, University of Washington; The epidemiology, natural history and therapeutics of HSV and other herpesviruses infections
- WALLACE, JAMES F., Professor, 1963; MD, 1961, Washington University
- WALLEN, HERSCHEL D, Acting Instructor, 1999; MD, 1999, University of Michigan
- WALSON, JUDD L., Acting Instructor, 2004; MPH, 2000, Tufts University, MD, 2000, Tufts University
- WALTER, ROLAND, Acting Instructor, 2005; MD, 1996, University of Zurich (Switzerland), PhD, 2006, University of Washington
- WANAGAT, JONATHAN, Acting Instructor, 2002; PhD, 2000, University of Wisconsin, MD, 2002, University of Wisconsin
- WANG, LINLIN, Acting Instructor, 2004; MD, 1996, Huazhong University of Science and Technology (China), PhD, 2001, Huazhong University of Science and Technology (China)
- WARREN, EDUS HOUSTON, Associate Professor, 1993; PhD, 1988, Harvard University, MD, 1991, Harvard University
- WASSERHEIT, JUDITH N. \* Professor, 2001; MD, 1978, Harvard University, MPH, 1989, Johns Hopkins University; sexually transmitted disease (STD) research, policy development and program implementation in the US and in developing countries
- WATANABE, JILL M., Associate Professor, 1998; MD, 1990, Johns Hopkins University, MPH, 1991, Johns Hopkins University
- WEIGLE, DAVID S \* Professor, 1981; MD, 1978, Harvard University; Animal and human studies of appetite regulation and energy balance
- WEMPLE, MATTHEW, Acting Instructor, 2003; MD, 2003, Wayne State University
- WENER, MARK H \* Adjunct Professor, 1980; MD, 1974, Washington University; diagnostic immunology, immune complex diseases
- WEPPNER, WILLIAM, Acting Instructor, 2002; MD, 2002, University of Washington
- WHEELER, STEPHANIE G., Assistant Professor, 1993; MD, 1993, University of

Washington, MPH, 1998, University of Washington

WHIMBEY, ESTELLA, Associate Professor, 2001; MD, 1978, Cornell University

WHITING, SAM H., Assistant Professor, 1997; PhD, 1997, University of Washington, MD, 1999, University of Washington

WICHMAN, MICHELLE GURVITZ, Adjunct Assistant Professor, 2005; MD, 1995, University of California (Los Angeles), MS, 2005, University of California (Los Angeles)

WIJSMAN, ELLEN M \* Research Professor, 1987; PhD, 1981, University of Wisconsin (Madison); human quantitative and population genetics

WILLIAMS, LISA H., Acting Instructor, 2001; MD, 2001, University of Alabama

WINGETT, DENISE G., Affiliate Assistant Professor, 2002; PhD, 1991, Washington State University

WIPF, JOYCE E., Professor, 1984; MD, 1984, University of Minnesota

WISSE, BRENT, Assistant Professor, 1999; MD, 1995, McGill University (Canada)

WITHERSPOON, ROBERT P, Professor, 1970; MD, 1970, Baylor College of Medicine, MS, 1970, Baylor College of Medicine

WONG, CHRISTOPHER J., Acting Assistant Professor, 2001; MD, 2001, Stanford University

WONG, EMILY Y., Associate Professor, 1995; MD, 1990, University of Washington

WOOD, FRANCIS C, Associate Professor Emeritus, 1955; MD, 1954, Harvard University

WOODEN, JASON, Acting Instructor, 2004; PhD, 1996, University of Washington

WOODWARD, GEORGE A., Adjunct Professor, 2003; MD, 1983, Temple University, MBA, 1999, University of Pennsylvania

WU, DANIEL Y., Associate Professor, 1991; MS, 1984, University of California (Los Angeles), PhD, 1990, Loma Linda University, MD, 1991, Loma Linda University

WURFEL, MARK M, Assistant Professor, 1997; PhD, 1995, Rockefeller University, MD, 1997, Cornell University

YANNAKI, EVANGELIA, Affiliate Assistant Professor, 1998; MD, 1988, University of Thessaloniki, Greece

YEE, CASSIAN, Associate Professor, 1991; MD, 1986, University of Manitoba (Canada)

YEUNG, RAYMOND S. \* Adjunct Professor, 1997; MD, 1982, University of Toronto (Canada); Genetic and functional analyses of the tuberous sclerosis tumor suppressor genes

YU, EVAN Y, Assistant Professor, 2004; MD, 1998, University of Washington

YUKAWA, MICHI, Assistant Professor, 1998; MD, 1989, Brown University, MPH, 1993, Harvard University

ZAGER, RICHARD A., Professor, 1973; MD, 1969, Northwestern University

ZAMBON, ALBERTO, Affiliate Assistant Professor, 1991; MD, 1988, University of Padova, Italy, PhD, 1999, University of Padova, Italy

ZUNT, JOSEPH R. \* Adjunct Associate Professor, 1991; MD, 1991, University of Minnesota, MPH, 1998, University of Washington; effects of HIV, HTLV-I, and HTLV-II infection upon the nervous system, retroviral co-infection and viral meningoencephalitis in Peru

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## Neurological Surgery

ANDERSON, GAIL \* Adjunct Professor, 1987; MS, 1981, University of Washington, PhD, 1987, University of Washington; pharmacokinetics, metabolism and interactions of drugs in epilepsy and trauma

AVELLINO, ANTHONY M., Associate Professor, 1992; MD, 1992, Columbia University

BEAUCHAMP, NORMAN J., Professor, 2002; MD, 1990, Michigan State University

BECKER, KYRA J., Associate Professor, 1996; MD, 1989, Duke University

BRANSFORD, RICHARD, Assistant Professor, 1996; MD, 1996, Vanderbilt University

BROWD, SAMUEL, Assistant Professor, 2007; PhD, 2000, University of Florida, MD, 2000, University of Florida

CARNEY, NANCY A., Affiliate Assistant Professor, 2006; MS, 1995, Portland State University, PhD, 1998, Portland State University

CHAPMAN, JENS R., Professor, 1990; MD, 1983, Technical University of Munich (Germany)

CHATRIAN, GIAN E, Professor Emeritus, 1959; MD, 1951, University of Naples (Italy)

CHESNUT, RANDALL M, Professor, 2004; MD, 1984, University of Washington

COHEN, WENDY, Professor, 1987; MD, 1975, Harvard University

CUSCHIERI, JOSEPH, Adjunct Associate Professor, 2000; MD, 1994, Wayne State University

DALLEY, ROBERT W., Associate Professor, 1987; MD, 1982, University of Utah

D'AMBROSIO, RAIMONDO \* Associate Professor, 1995; PhD, 1995, University of Milan (Italy); Neuronal and glial cell physiology and pathophysiology in the posttraumatic and the epileptic brain

DIKMEN, SUREYYA S \* Adjunct Professor, 1974; MA, 1967, University of Michigan, PhD, 1973, University of Washington; clinical neuropsychology, neuropsychological and psychosocial outcomes in traumatic head injury

DOMINO, KAREN B., Adjunct Professor, 1986; MA, 1974, University of New Mexico, MD, 1978, University of Michigan

DOUGLAS, JAMES G., Associate Professor, 1980; MS, 1976, University of Wisconsin, MD, 1980, Case Western Reserve University

DUCKERT, LARRY GENE, Professor, 1978; MD, 1972, University of Minnesota, PhD, 1977, University of Minnesota

ELLENBOGEN, RICHARD G., Professor, 1997; MD, 1983, Brown University

FRASER, ROBERT T \* Professor, 1977; MS, 1972, University of Southern California, PhD, 1976, University of Wisconsin, MPA, 1984, Seattle University; psychology

FUTRAN, NEAL DAVID, Professor, 1995; DMD, 1982, University of Pennsylvania, MD, 1987, St University of New York (Downstate Med Ctr)

GEYER, JEFFREY R., Professor, 1983; MD, 1977, Wayne State University

GOODKIN, ROBERT, Professor Emeritus, 1987; MD, 1964, Chicago Medical School

GRUSS, JOSEPH S., Adjunct Professor, 1991; MBChB, 1969, University of Witwatersrand (S. Africa)

HARRIS, A BASIL, Professor Emeritus, 1967; MD, 1954, University of Alabama



- HAYNOR, DAVID R \* Adjunct Professor, 1979; PhD, 1971, University of California (Berkeley), MD, 1979, Harvard University; Medical image processing and segmentation; image deformation; functional MRI; expression arrays
- HEVNER, ROBERT F \* Associate Professor, 2000; PhD, 1992, University of Michigan, MD, 1992, University of Michigan; Cerebral cortex development and axon guidance
- HILLARD, VIRANY H, Assistant Professor, 2006; MD, 1999, New York University
- HORNER, PHILIP J \* Associate Professor, 2001; MS, 1992, Ohio State University, PhD, 1995, Ohio State University; Stem cell biology and adult neural regeneration
- JAFFE, KENNETH M \* Adjunct Professor, 1975; MD, 1975, Harvard University, MRM, 1982, University of Washington; pediatric rehabilitation, brain injury, neuromuscular diseases, congenital defects, electromyography
- JARVIK, JEFFREY G \* Assistant Professor, 1993; MD, 1987, University of California (San Diego); health services research as it relates to diagnostic imaging
- KELLY, WILLIAM A, Professor Emeritus, 1959; MD, 1954, University of Cincinnati
- KIM, LOUIS J., Assistant Professor, 2007; MD, 1999, Columbia University
- KINOSHITA, YOSHITO, Lecturer, 1990; PhD, 1982, Tohoku University, Japan
- KLIOT, MICHEL, Professor, 1990; MA, 1977, Harvard University, MD, 1984, Yale University
- LAM, ARTHUR M, Professor, 1986; MD, 1974, University of Western Ontario (Canada)
- LARAMORE, GEORGE E, Professor, 1976; MS, 1966, University of Illinois, PhD, 1969, University of Illinois, MD, 1976, University of Miami (Florida)
- LEE, LORRI A., Adjunct Associate Professor, 1995; MD, 1989, West Virginia University
- LEVY, RENE H \* Professor, 1970; PhD, 1970, University of California (San Francisco); metabolic interactions among antiepileptic drugs and between cytokines and drugs
- LOESER, JOHN D, Professor, 1962; MD, 1961, New York University
- MARAVILLA, KENNETH R., Professor, 1986; MD, 1970, State University of New York (Brooklyn)
- MIKHEEV, ANDREI M, Acting Instructor, 2007; MD, 1984, St. Petersburg State University (Russia), MD, 1990, Dnepropetrovsk State University(Ukraine)
- MILLER, JOHN W., Professor, 1999; MD, 1977, University of Illinois, PhD, 1981, University of Illinois
- MONTINE, THOMAS J \* Adjunct Professor, 2002; PhD, 1988, University of Rochester, MD, 1991, McGill University (Canada); Causes, consequences, and prevention of oxidative damage to brain
- MORRISON, RICHARD S \* Professor, 1994; PhD, 1982, University of California (Los Angeles); Genetic pathways regulating neuronal cell death in disease and injury. Genomic and proteomic analysis of brain tumors
- MORSETTE, DELMORE J., Acting Instructor, 2007; MS, 1992, University of California (Riverside), PhD, 1999, Chicago Medical School, MD, 2001, Chicago Medical School
- MURPHY, SEAN P, Acting Professor, 2005; MSC, 1973, University of London, UK, PhD, 1977, Open University (UK)
- OJEMANN, GEORGE A, Professor Emeritus, 1960; MD, 1959, University of Iowa
- OJEMANN, JEFFREY G, Associate Professor, 1999; MA, 1992, Washington University, MD, 1992, Washington University
- OJEMANN, LINDA M, Associate Professor Emeritus, 1966; MD, 1960, University of Illinois
- O'KEEFE, GRANT E., Adjunct Associate Professor, 1994; MD, 1988, University of Alberta, Canada
- PHILLIPS, MARK H, Professor, 1991; PhD, 1982, University of Wisconsin (Madison)
- REH, THOMAS A. \* Adjunct Professor, 1989; PhD, 1981, University of Wisconsin; regeneration and development of central nervous system
- ROCKHILL, JASON K., Assistant Professor, 2000; PhD, 1997, University of Illinois, MD, 1998, University of Illinois
- ROSTOMILY, ROBERT C., Associate Professor, 1987; MD, 1987, Case Western Reserve University
- SAMII, ALI, Adjunct Associate Professor, 1998; MD, 1989, McGill University (Canada)
- SEKHAR, LALIGAM N, Professor, 2004; MBBS, 1974, University of Madras (India)
- SILBERGELD, DANIEL L, Professor, 1984; MD, 1984, University of Cincinnati
- SOUTER, MICHAEL J., Adjunct Associate Professor, 2001; MBChB, 1984, University of Edinburgh (UK)
- SPENCE, ALEXANDER M, Adjunct Professor, 1974; MD, 1965, University of Chicago
- SVIRI, GILL, Affiliate Assistant Professor, 2004; MD, 1996, Haifa University (Israel), MS, 2002, Haifa University (Israel)
- TEMKIN, NANCY R \* Professor, 1977; MS, 1971, University of Connecticut, PhD, 1976, State University of New York (Buffalo); clinical trials, recovery models, statistical modeling of epileptic phenomena, survival analysis
- TREDWAY, TRENT L, Assistant Professor, 2004; MD, 1997, Rush Medical College
- TREGGIARI, MIRIAM, Adjunct Associate Professor, 1999; MD, 1990, University of Pavia (Italy), MD, 1999, University of Geneva (Switzerland), MPH, 2002, University of Washington
- UO, TAKUMA, Acting Instructor, 2002; MS, 1997, Kyoto University (Japan), PhD, 2001, Kyoto University (Japan)
- VAVILALA, MONICA S., Adjunct Associate Professor, 1994; MD, 1991, University of Texas (Houston)
- VILELA, MARCELO, Assistant Professor, 2000; MD, 1995, Federal University of Minas Gerais (Brazil)
- WEINBERGER, EDWARD, Professor, 1979; MD, 1979, Harvard University
- WILENSKY, ALAN J, Adjunct Professor, 1975; MD, 1967, University of Western Ontario (Canada), PhD, 1973, University of Toronto (Canada)
- ZHANG, MIQIN \* Adjunct Associate Professor, 1999; MAS, 1993, University of Victoria (Canada), PhD, 1999, University of California (Berkeley); Biomaterials, tissue engineering, BioMEMS, bionanotechnology, surface modification, drug delivery

# Neurology

BAMFORD, NIGEL S., Assistant Professor, 2002; MD, 1992, University of Utah

BECKER, KYRA J., Associate Professor, 1996; MD, 1989, Duke University; managerial accounting

BIRD, THOMAS D., Professor, 1968; MD, 1968, Cornell University; managerial accounting

BROWN, ANGUS M., Affiliate Assistant Professor, 1991; PhD, 1990, University of Manchester (UK); traumatology

BUSHNELL, THEODORE E., Acting Instructor, 1999; MD, 1999, University of California (San Francisco)

CHAMBERLAIN, JEFFREY S \* Professor, 2000; PhD, 1985, University of Washington; Gene therapy for muscular dystrophy

CHAMBERLAIN, MARC C, Professor, 2007; MS, 1973, University of California (Berkeley), MD, 1977, Columbia University; Chinese language and linguistics, Altaic linguistics

CHANCE, PHILLIP F., Professor, 1980; MD, 1978, University of Tennessee

COPASS, MICHAEL K, Professor, 1969; MA, 1964, Northwestern University, MD, 1964, Northwestern University

CRAMER, STEVEN C, Affiliate Assistant Professor, 1997; MD, 1988, University of Southern California

D'AMBROSIO, RAIMONDO \* Adjunct Associate Professor, 1995; PhD, 1995, University of Milan (Italy); Neuronal and glial cell physiology and pathophysiology in the posttraumatic and the epileptic brain

DISTAD, B. JANE, Assistant Professor, 2001; MD, 1994, Medical College of Ohio

DODRILL, CARL B, Professor Emeritus, 1973; MS, 1967, Purdue University, PhD, 1970, Purdue University

DRANE, DANIEL L, Affiliate Associate Professor, 2001; MS, 1989, Georgia State University, MS, 1993, Fuller Theological Seminary, PhD, 1994, Fuller Graduate School of Psychology

FARRELL, DONALD, Professor Emeritus, 1971; MD, 1965, George Washington University; economic history

FERN, ROBERT, Affiliate Assistant Professor, 1996; PhD, 1992, University of London, UK

FERRI, RAYMOND T., Assistant Professor, 2003; PhD, 1995, Medical College of Pennsylvania, MD, 1995, Medical College of Pennsylvania

FRANKLIN, GARY M. \* Adjunct Research Professor, 1988; MD, 1969, George Washington University, MPH, 1982, University of California (Berkeley); occupational injury, neurological epidemiology, public health nutrition

FRASER, ROBERT T \* Professor, 1977; MS, 1972, University of Southern California, PhD, 1976, University of Wisconsin, MPA, 1984, Seattle University; psychology. general pediatrics

GARDEN, GWENNA A. \* Associate Professor, 2000; PhD, 1994, University of Washington, MD, 1994, University of Washington; The study of molecular pathways involved in neuronal degeneration

GOSPE, SIDNEY M, Professor, 2000; MS, 1975, Stanford University, PhD, 1980, Duke University, MD, 1981, Duke University

GREGOREVIC, PAUL, Affiliate Assistant Professor, 2002; PhD, 2000, University of Melbourne (Australia)

HOLMES, MARK D., Professor, 1987; MD, 1977, Ohio State University

HU, SHU-CHING, Assistant Professor, 2001; MD, 1993, National Taiwan University, PhD, 2001, Johns Hopkins University

KAPUR, VISHESH, Adjunct Associate Professor, 1993; MD, 1989, Yale University

KHOT, SANDEEP, Acting Instructor, 2002; MPH, 2002, Tulane University, MD, 2002, Tulane University

KRAFT, GEORGE HOWARD \* Adjunct Professor, 1969; MD, 1963, Ohio State University, MS, 1967, Ohio State University; psychiatry

KRAUS, ERIC E., Associate Professor, 1991; MD, 1991, University of Minnesota

KURATANI, JOHN D, Associate Professor, 1999; MD, 1990, Tulane University

LA SPADA, ALBERT R \* Adjunct Associate Professor, 1993; PhD, 1993, University of Pennsylvania, MD, 1993, University of Pennsylvania; Molecular basis of neurodegenerative disease category theory, Abelian groups

LEVERENZ, JAMES B., Associate Professor, 1992; MD, 1985, University of Washington

LIOW, LEE-LOUNG, Acting Instructor, 2003; PhD, 1999, California State University, Los Angeles, MD, 2003, University of Michigan

LONGSTRETH JR, W. T. \* Professor, 1975; MD, 1975, University of Pennsylvania, MPH, 1982, University of Washington; Clinical and classic neuroepidemiology genetics and evolution

MARRA, CHRISTINA M., Professor, 1984; MS, 1979, Oregon State University, MD, 1984, University of Oregon

MEEKINS, GREGG D, Assistant Professor, 1993; MD, 1993, Tulane University

MILLER, JOHN W., Professor, 1999; MD, 1977, University of Illinois, PhD, 1981, University of Illinois

MILSTEIN, JERROLD M, Associate Professor Emeritus, 1977; MD, 1964, University of Minnesota

MOELLER, THOMAS \* Research Associate Professor, 1998; MSC, 1992, Ruprechts Karl University, PhD, 1996, Free University Berlin; Cell physiology of microglial cells / brain macrophages

MONTANO, SILVIA M., Affiliate Assistant Professor, 2006; MD, 1991, Universidad De La Habana (Cuba), MPH, 2002, University of Washington

MRUGALA, MACIEJ M, Assistant Professor, 2006; MD, 1995, University of Warsaw (Poland), PhD, 2003, Nicolaus Copernicus University (Poland), MPH, 2006, Harvard University

OAKES, PATRICIA, Acting Instructor, 2002; JD, 1992, Georgetown University, MD, 2002, University of Michigan

PINTER, JOSEPH D., Affiliate Assistant Professor, 1990; MD, 1990, University of California (Los Angeles)

POOLLOS, NICHOLAS P \* Associate Professor, 2001; PhD, 1991, Stanford University, MD, 1991, Stanford University; Cellular neurophysiology of epilepsy; physiology of neuronal dendrites

RANSOM, BRUCE ROBERT \* Professor, 1995; PhD, 1972, Washington University, MD, 1972, Washington University; neurology, neuroscience research

RAWNER, ESTHER, Acting Instructor, 2008; MD, 2004, New York Medical College

ROSE-INNES, ANDREW P., Assistant Professor, 2004; JDS, 1986, University of Capetown (South Africa), MBChB, 1986, University of Capetown (South Africa)

SAMII, ALI, Associate Professor, 1998; MD, 1989, McGill University (Canada)

SANETO, RUSSELL P, Assistant Professor, 2001; MS, 1975, San Diego State University, PhD, 1981, University of Texas, DO, 1994, Des Moines University

SHADLEN, MICHAEL N. \* Adjunct Professor, 1995; PhD, 1985, University of California (Berkeley), MD, 1988, Brown University; neurobiology of vision and cognition

SPAIN, WILLIAM \* Professor, 1978; MD, 1977, Columbia University; signal transduction in the central nervous system

SPENCE, ALEXANDER M, Professor, 1974; MD, 1965, University of Chicago

STAHL, WILLIAM L, Professor Emeritus, 1967; PhD, 1963, University of Pittsburgh

SUMI, SHUZO MARK, Professor Emeritus, 1963; MD, 1956, University of Toronto (Canada)

SWANSON, PHILLIP D, Professor, 1964; MD, 1958, Johns Hopkins University

TAPSCOTT, STEPHEN J. \* Professor, 1986; PhD, 1982, University of Pennsylvania, MD, 1982, University of Pennsylvania; Molecular and developmental biology

TIRSCHWELL, DAVID L., Associate Professor, 1991; MD, 1991, Cornell University

TON, THANH, Acting Instructor, 2004; MPH, 1998, Yale University, PhD, 2004, University of Washington

WATSON, NATHANIEL F., Assistant Professor, 1996; MD, 1996, University of North Carolina

WEINSTEIN, JONATHAN R., Assistant Professor, 1998; PhD, 1998, University of California (Irvine), MD, 1998, University of California (Irvine)

WEISS, MICHAEL D., Associate Professor, 2001; MD, 1991, Albert Einstein College of Medicine; family medicine, sports medicine, team care

WILENSKY, ALAN J, Professor, 1975; MD, 1967, University of Western Ontario (Canada), PhD, 1973, University of Toronto (Canada); Pathophysiology of post-injury infection and organ failure

YANG, CLAIRE C, Adjunct Associate Professor, 1993; MD, 1988, Vanderbilt University

YUEN, ERIC C., Affiliate Assistant Professor, 1996; MD, 1989, University of Chicago

ZABETIAN, CYRUS P. \* Assistant Professor, 1994; MS, 1988, University of Washington, MD, 1994, University of Miami (Florida); Genetics of neurodegenerative diseases

ZUNT, JOSEPH R. \* Associate Professor, 1991; MD, 1991, University of Minnesota, MPH, 1998, University of Washington; effects of HIV, HTLV-I, and HTLV-II infection upon the nervous system, retroviral co-infection and viral meningoencephalitis in Peru

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## Obstetrics and Gynecology

ADAMS WALDORF, KRISTINA M, Assistant Professor, 1998; MD, 1998, Mayo Medical School/Graduate School

AMIES OELSCHLAGER, ANNE-MA, Assistant Professor, 1997; MD, 1997, Vanderbilt University

BENEDETTI, THOMAS J, Professor, 1979; MD, 1973, University of Washington

BREMNER, WILLIAM J, Adjunct Professor, 1970; MD, 1969, University of Washington, PhD, 1977, Monash University (Australia)

BROWN, ZANE A, Professor, 1976; MD, 1966, Temple University

CARR, DARCY R., Assistant Professor, 1997; MD, 1993, Medical College of Wisconsin

CHENG, EDITH Y., Associate Professor, 1987; MS, 1979, Sarah Lawrence College, MD, 1987, University of Washington

CHIANG, SEINE, Associate Professor, 2006; MD, 1990, Oregon Health Sciences University

CLIFTON, DONALD K, Professor, 1983; PhD, 1979, University of California (Los Angeles)

DISIS, MARY L., Adjunct Professor, 1990; MD, 1986, University of Nebraska, MS, 1986, University of Nebraska

DUBINSKY, THEODORE J., Adjunct Associate Professor, 1984; MD, 1983, University of Maryland

DUNSMOOR-SU, REBECCA F, Acting Instructor, 2005; MD, 2001, University of Pennsylvania, MS, 2001, University of Pennsylvania

EASTERLING, THOMAS R, Professor, 1985; MD, 1981, University of North Carolina, Chapel Hill

EASTWOOD, KATHERINE L, Acting Instructor, 2005; MD, 2001, Oregon Health Sciences University

ECKERT, LINDA O., Associate Professor, 1992; MD, 1987, University of California (San Diego)

ESCHENBACH, DAVID A, Professor, 1968; MD, 1968, University of Wisconsin

FIALKOW, MICHAEL F., Assistant Professor, 1997; MD, 1997, University of Washington

GARCIA, ROCHELLE, Adjunct Associate Professor, 1989; MD, 1989, University of Washington

GARDELLA, CAROLYN M., Assistant Professor, 1995; MD, 1995, State University of New York (Stony Brook)

GOFF, BARBARA A., Professor, 1993; MD, 1986, University of Pennsylvania

GRAVETT, MICHAEL G., Professor, 1977; MD, 1977, University of California (Los Angeles)

GRAY, HEIDI J., Assistant Professor, 1997; MD, 1997, University of California (Los Angeles)

GREER, BENJAMINE E, Professor, 1980; MD, 1966, University of Pennsylvania

HALBERT, SHERIDAN, Affiliate Associate Professor, 1973; PhD, 1972, University of Washington

HEBERT, MARY F \* Adjunct Professor, 1996; PharmD, 1987, University of California (San Francisco); Clinical pharmacology of drugs in pregnancy, lactation, solid organ transplantation and end stage liver disease

HITTI, JANE \* Associate Professor, 1993; MD, 1989, University of Vermont

HOHMANN, JOHN G., Affiliate Assistant Professor, 2004; PhD, 2001, University of Washington

KNOPP, ROBERT H, Adjunct Professor, 1974; MD, 1964, Cornell University

KOH, WUI-JIN, Adjunct Professor, 1984; MD, 1984, Loma Linda University

LEIN, JOHN N, Professor Emeritus, 1963; MD, 1955, University of Washington

LENTZ, GRETCHEN M., Associate Professor, 1986; MD, 1986, University of Washington

LEWIN, MARK, Adjunct Associate Professor, 2001; MA, 1982, University of California (Berkeley), MS, 1987, Hahnemann University, MD, 1991, University of Southern California

MAO, CONSTANCE, Assistant Professor, 1988; MD, 1988, University of Southern California

MCMAHON, KERRY M, Acting Instructor, 2007; MD, 2003, University of Washington

MELVILLE, JENNIFER L., Assistant Professor, 1995; MD, 1995, University of California (Los Angeles), MPH, 2001, University of Washington

MENDIRATTA, VIKSA, Assistant Professor, 1998; MD, 1994, Ohio State University

MERRIAM, GEORGE R., Adjunct Professor, 1991; MA, 1976, Trinity College, UK, MD, 1976, Harvard University

MITCHELL, CAROLINE M., Acting Instructor, 2002; MD, 2002, Harvard University

MOORE, DONALD E, Associate Professor Emeritus, 1977; MD, 1967, Case Western Reserve University

PATTON, DOROTHY L, Professor, 1981; MS, 1973, University of Puget Sound, PhD, 1981, University of Washington

PETERSON, SUZANNE E, Acting Instructor, 2007; MD, 2003, University of Washington

PRAGER, SARAH W \* Assistant Professor, 2006; MD, 2000, University of Texas (Southwestern), MS, 2006, University of California (San Francisco); Women's health

PRINCE, C EDWARD, Associate Professor Emeritus, 1977; MA, 1949, University of Kansas, MD, 1955, University of Washington

REED, SUSAN D., Associate Professor, 1991; MS, 1979, Sarah Lawrence College, MD, 1986, Stanford University

ROBILIO, PETER A, Acting Instructor, 2006; MD, 2002, University of California (Davis)

ROTHBERGER, SOPHIAM, Acting Instructor, 2008; MPH, 2004, University of North Carolina, Chapel Hill, MD, 2004, University of North Carolina, Chapel Hill

SHY, KIRKWOOD K \* Professor, 1973; MD, 1973, Wayne State University, MPH, 1979, University of Washington; epidemiologic applications to problems in obstetrics and gynecology

SPADONI, LEON R, Professor Emeritus, 1960; MD, 1957, University of Washington

STEINER, ROBERT A \* Professor, #VALUE!; PhD, 1975, University of Oregon; Neuroendocrinology/Neuroscience/Endocrinology

STENCHEVER, MORTON A, Professor Emeritus, 1976; MD, 1956, State University of New York (Buffalo)

SWENSEN, RON E, Assistant Professor, 2003; MD, 1984, Loma Linda University

SWISHER, ELIZABETH M., Associate Professor, 1999; MD, 1992, University of California (San Diego)

TAMIMI, HISHAM K, Professor, 1977; MD, 1969, Cairo University (Egypt)

UNGER, JENNIFER A., Acting Instructor, 2005; MPH, 1998, University of Connecticut, MD, 2003, University of Connecticut

VONTVER, LOUIS A, Professor Emeritus, 1964; MD, 1960, University of Minnesota, MEd, 1970, University of Washington

WALKER, EDWARD A., Professor, 1983; MM, 1979, Catholic University of America, MD, 1983, University of Washington

WALLER, SARAH A, Acting Instructor, 2008; MD, 2004, Tulane University

WISE, PHYLLIS M, Adjunct Professor, 2005; MA, 1969, University of Michigan, PhD, 1972, University of Michigan

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## Ophthalmology

BARAN, FRANCINE, Assistant Professor, 2006; MD, 2001, Hahnemann Medical College

BEJJANI, BASSEM, Affiliate Professor, 2004; MD, 1987, American University of Beirut (Lebanon)

BHANDARI, ANUJA, Associate Professor, 1996; MBBS, 1988, Christian Medical College

CHEN, PHILIP P., Associate Professor, 1996; MD, 1991, Yale University

CHUANG, ELAINE L., Associate Professor, 1979; MD, 1979, University of Texas (San Antonio)

CLARK, JOHN I \* Adjunct Professor, 1982; PhD, 1974, University of Washington; biophysical and structural properties of cytoplasm and membranes, cell aging, differentiation and opacification in the lens

GARCIA, DENISE DEALVA, Acting Instructor, 2007; MD, 1999, University of Michigan

KALINA, ROBERT E, Professor, 1967; MD, 1960, University of Minnesota

KELLY, JOHN P, Affiliate Assistant Professor, 1993; MA, 1989, State University of New York (Stony Brook), PhD, 1992, State University of New York (Stony Brook)

KINYOUN, JAMES L, Professor, 1978; MD, 1971, University of Nebraska

LAM, DEBORAH, Acting Instructor, 2002; MD, 2002, Northwestern University

MILAM, ANN H., Professor Emeritus, 1968; PhD, 1967, University of Texas (Southwestern)

MUDUMBAL, RAGHU, Associate Professor, 2000; MD, 1994, SUNY Brooklyn

ORCUTT, JAMES C, Professor, 1977; PhD, 1976, University of Colorado (Denver), MD, 1977, University of Colorado (Denver)

PAGON, ROBERT A, Adjunct Professor, 1972; MD, 1972, Harvard University

PATTON, DOROTHY L, Adjunct Professor, 1981; MS, 1973, University of Puget Sound, PhD, 1981, University of Washington

REH, THOMAS A. \* Adjunct Professor, 1989; PhD, 1981, University of Wisconsin; regeneration and development of central nervous system

RIEKE, FREDERICK MARTIN \* Adjunct Associate Professor, 1997; PhD, 1991, University of California (Berkeley); Sensory signal processing and computation

SAARI, JOHN C \* Professor, 1970; MS, 1963, University of Minnesota, PhD, 1970, University of Washington; retinal biochemistry

SHEN, TUENG T \* Assistant Professor, 2003; PhD, 1994, Massachusetts Institute of Technology, MD, 1997, Harvard University; corneal tissue engineering for the treatment of corneal blindness. She has a particular interest in raising the public awareness of the importance of tissue donation

TOWER, ROBERT NEILL, Assistant Professor, 2006; MD, 1999, University of Texas (Southwestern)

VAN GELDER, RUSSELL \* Professor, 2008; PhD, 1994, Stanford University, MD, 1994, Stanford University; Ocular inflammation, circadian cycles in the eye and uveitis

WEISS, AVERY H, Professor, 1991; MD, 1974, Miami University (Ohio)

WU, MICHAEL, Assistant Professor, 2004; MD, 1998, University of Texas (Dallas)

YAN, QI, Affiliate Assistant Professor, 1998; MD, 1984, Hengyang Medical School, China, MS, 1989, Hunan Medical University, China, PhD, 1998, University of Washington

ZHANG, JING \* Adjunct Assistant Professor, 2002; MS, 1987, Second Military Medical University, China, PhD, 1995, Duke University; Pathogenesis and Biomarkers of Parkinson's disease

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## Orthopaedics and Sports Medicine

ALLAN, CHRISTOPHER H \* Associate Professor, 1998; MD, 1992, Northwestern University; include wound repair and regeneration, tissue engineering, and application of these fields to extremity injuries

AVELLINO, ANTHONY M., Associate Professor, 1992; MD, 1992, Columbia University

BAREI, DAVID P, Associate Professor, 1999; MD, 1991, University of Ottawa (Canada), MS, 2001, University of Ottawa (Canada)

BEINGESSNER, DAPHNE M., Assistant Professor, 2003; MD, 1997, University of Western Ontario (Canada), MS, 2003, University of Western Ontario (Canada)

BELLABARBA, CARLO, Associate Professor, 1999; MD, 1992, McGill University (Canada)

BELZA, BASIA \* Adjunct Professor, 1991; MN, 1982, University of Virginia, PhD, 1991, University of California (San Francisco); chronic illness, gerontology, fatigue prevention and management in rheumatic diseases

BENIRSCHKE, STEPHEN K., Professor, 1985; MD, 1979, Case Western Reserve University

BERRYMAN, JACK W \* Adjunct Professor, 1975; MS, 1971, University of Massachusetts, MA, 1974, University of Massachusetts, PhD, 1976, University of Maryland; history of exercise, sports medicine, and health behavior/philosophy

BIGOS, STANLEY J, Professor Emeritus, 1980; MD, 1975, University of Missouri

BRANSFORD, RICHARD, Assistant Professor, 1996; MD, 1996, Vanderbilt University

BREUNER, CORAC., Adjunct Associate Professor, 1991; MD, 1982, Thomas Jefferson University, MPH, 1998, University of Washington

CAVANAGH, PETER R, Professor, 2008; PhD, 1972, University of London, UK, DSc, 2004, University of London, UK

CHANSKY, HOWARD ALAN, Professor, 1992; MD, 1987, University of Pennsylvania

CHAPMAN, JENS R., Professor, 1990; MD, 1983, Technical University of Munich (Germany)

CHESNUT, CHARLES, Adjunct Professor, 1966; MD, 1966, University of Florida

CHESNUT, RANDALL M, Professor, 2004; MD, 1984, University of Washington

CHING, RANDAL PRESTON \* Adjunct Research Assoc Professor, 1992; MSME, 1988, University of Washington, PhD, 1992, University of Washington; Orthopaedic biomechanisms related to injury prevention, injury mechanisms and injury repair

CONRAD, ERNEST U., Professor, 1986; MD, 1979, University of Virginia

DUNBAR, ROBERT P, Assistant Professor, 2002; MD, 1993, Georgetown University

EARY, JANET F, Professor, 1980; MD, 1980, Michigan State University

EYRE, DAVID R. \* Professor, 1985; PhD, 1969, University of Leeds (UK); connective tissue biology, collagen chemistry, bone and cartilage metabolism

FRIEDRICH, JEFFREY BARTON, Adjunct Assistant Professor, 2000; MD, 2000, University of Texas (Houston)

GARDNER, GREGORY C., Adjunct Professor, 1989; MD, 1984, Baylor College of Medicine

GRANEY, DANIEL O \* Adjunct Professor, 1966; MA, 1962, University of California (San Francisco), PhD, 1965, University of California (San Francisco); gross anatomy, electron microscopy, intestinal absorption

GREEN, JOHN R, Associate Professor, 2002; MD, 1991, University of Cincinnati

GREENLEE, THEODORE K, Associate Professor Emeritus, 1961; MD, 1959, Northwestern University

GROSS, TED S \* Professor, 2000; MS, 1985, Pennsylvania State University, PhD, 1993, State University of New York (Stony

Brook); Biomedical Engineering in Orthopaedic Surgery

HANEL, DOUGLAS PAUL, Professor, 1992; MD, 1977, St Louis University

HANSEN, SIGVARD T, Professor, 1965; MD, 1961, University of Washington

HENLEY, MICHAEL BRADFORD, Professor, 1988; MD, 1979, University of Washington

KRIEG, JAMES C, Associate Professor, 1995; MD, 1990, U of Medicine & Dentistry of New Jersey

LARSON, ROGER V, Associate Professor, 1982; MD, 1973, University of Utah

LEDOUX, WILLIAM R. \* Affiliate Associate Professor, 2000; MS, 1993, University of Pennsylvania, PhD, 1999, University of Pennsylvania; Foot biomechanics, soft tissue testing, and computational modeling

LEE, MICHAEL J, Assistant Professor, 2007; MD, 2000, Northwestern University

LEOPOLD, SETH S, Associate Professor, 2002; MD, 1993, Cornell University

MANNER, PAUL A, Assistant Professor, 2006; MD, 1991, McGill University (Canada)

MATSEN, FREDERICK A \* Professor, 1971; MD, 1968, Baylor College of Medicine; orthopaedics, bone and joint research, robotics

MOSCA, VINCENT S., Associate Professor, 1985; MD, 1978, University of Rochester

NEWMAN-GAGE, HELEN, Affiliate Assistant Professor, 1993; PhD, 1984, University of Washington

NORK, SEAN E., Associate Professor, 1997; MD, 1992, University of California (San Diego)

O'KANE, JOHN, Associate Professor, 1993; MD, 1993, University of Vermont

OLERUD, JOHN E, Professor, 1971; MD, 1971, University of Washington

OTT, SUSAN M, Adjunct Associate Professor, 1980; MD, 1974, University of Washington

POLIACHIK, SANDRA L, Acting Assistant Professor, 2001; MS, 1991, Virginia Polytechnic Institute and State University, PhD, 2001, University of Washington

RICHARDSON, MICHAEL L., Adjunct Professor, 1984; MD, 1975, Baylor College of Medicine

ROUTT, MILTON L., Professor, 1988; MD, 1983, University of Texas (Galveston)

SANGEORZAN, BRUCE J., Professor, 1986; MD, 1981, Wayne State University

SCHMALE, GREGORY A, Associate Professor, 2000; MEd, 1984, Southern Illinois University, MD, 1994, University of Washington

SIDLES, JOHN ARTHUR \* Professor, 1984; PhD, 1982, University of Washington; Seeing molecules (i.e., quantum-coherent instrumentation); and regenerating cartilage (i.e., natural history of healing.)

SMITH, DOUGLAS G., Professor, 1989; MD, 1984, University of Chicago

SMITH, NATHAN J, Professor Emeritus, 1965; MD, 1945, University of Wisconsin

SONG, KIT M., Associate Professor, 1995; MD, 1985, University of Iowa

STAHEL, LYNN T, Professor Emeritus, 1963; MD, 1959, University of Utah

TAITSMAN, LISA A., Assistant Professor, 2001; MD, 1994, Brown University, MPH, 1995, Harvard University

TEITZ, CAROL CLAIRE, Professor, 1974; MD, 1974, Yale University

TENCER, ALLAN FRED \* Professor, 1988; MEng, 1973, McGill University (Canada), PhD, 1981, McGill University (Canada); biomechanics of joints, orthopaedic trauma implants, controlled release of substances for bone formation

TRUMBLE, THOMAS E., Professor, 1989; MD, 1979, Yale University

VEDDER, NICHOLAS, Professor, 1981; MD, 1981, Case Western Reserve University

WAHL, CHRISTOPHER J, Assistant Professor, 2004; MD, 1996, Yale University

WARME, WINSTON J, Associate Professor, 2007; MD, 1989, Uniformed Services University of The Health Sciences

WEISSTEIN, JASON S, Assistant Professor, 2003; MPH, 1994, Columbia University, MD, 1998, Mt Sinai School of Medicine

WHITE, KLANE K, Assistant Professor, 2006; MS, 1993, University of Southern California, MD, 1997, George Washington University

ZHANG, MIQIN \* Adjunct Associate Professor, 1999; MAS, 1993, University of Victoria (Canada), PhD, 1999, University

of California (Berkeley); Biomaterials, tissue engineering, BioMEMS, bionanotechnology, surface modification, drug delivery

ZOU, JUNHUI, Acting Instructor, 2003; MS, 1996, Shandong University (China), PhD, 2000, Shandong University (China)

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## Otolaryngology/Head and Neck Surgery

BERGERON, CHRIS M, Acting Instructor, 2007; MD, 2002, University of California (Irvine)

BERMINGHAM-MCDONOGH, O \* Adjunct Associate Professor, 1998; PhD, 1987, University of California (Los Angeles); Development and regeneration of sensory systems, particularly the auditory system

BHRANY, AMIT, Acting Instructor, 2001; MD, 2001, Boston University

BREW, HELEN M., Affiliate Assistant Professor, 1996; PhD, 1987, University College, London (UK)

BURNS, JANE L., Professor, 1978; MD, 1978, University of Washington

CALDERON, ROSEMARY, Adjunct Associate Professor, 1989; PhD, 1988, University of Washington

CHEN, CHU \* Affiliate Professor, 1982; MS, 1971, Ohio State University, PhD, 1982, University of Washington; Molecular Epidemiology of Cancer

COLTRERA, MARC DANTE, Professor, 1986; ScB, 1977, Brown University, MD, 1981, Yale University

DONALDSON, JAMES A, Professor Emeritus, 1965; MD, 1954, University of Minnesota

DRENNAN, WARD R., Lecturer, 2004; PhD, 1998, Indiana University

DUCKERT, LARRY GENE, Professor, 1978; MD, 1972, University of Minnesota, PhD, 1977, University of Minnesota

FEENEY, M. PATRICK, Associate Professor, 2002; MA, 1979, Washington State University, PhD, 1993, University of Washington

FUCHS, ALBERT F \* Adjunct Professor, 1969; MS, 1961, Drexel Institute of Technology, PhD, 1966, Johns Hopkins University; oculomotor physiology, vision

FUTRAN, NEAL DAVID, Professor, 1995; DMD, 1982, University of Pennsylvania, MD, 1987, St University of New York (Downstate Med Ctr)

GATES, GEORGE A., Professor Emeritus, 1993; MD, 1959, University of Michigan

HILLEL, ALLEN D \* Professor, 1983; MA, 1972, Stanford University, MD, 1976, Stanford University; peripheral nerve physiology after injury, swallowing disorders in neuromuscular disease, voice disorders, neurolaryngology, electromyography of the larynx

HUME, CLIFFORD \* Assistant Professor, 1996; PhD, 1988, Cornell University, MD, 1996, Cornell University; Inner ear development and hearing rehabilitation

INGLIS, ANDREW F, Associate Professor, 1983; MD, 1981, Medical College of Pennsylvania

KUHL, PATRICIA K \* Adjunct Professor, 1976; MA, 1971, University of Minnesota, PhD, 1973, University of Minnesota; speech perception

LIPPE, WILLIAM R., Affiliate Associate Professor, 1988; MS, 1968, Pennsylvania State University, PhD, 1972, University of California (campus unspecified)

LURIE, DIANA I., Affiliate Associate Professor, 1990; PhD, 1990, University of Pennsylvania

MANNING, SCOTT C., Professor, 1995; MD, 1980, Tulane University

MENDEZ, EDUARDO, Assistant Professor, 1999; MD, 1999, University of Maryland

MERATI, ALBERT L, Associate Professor, 2007; MD, 1991, University of Washington

MOE, KRISTEN S, Associate Professor, 1989; MD, 1989, University of Washington

MOORE, MICHAEL G, Acting Instructor, 2007; MD, 2002, University of California (Los Angeles)

NELIGAN, PETER CAMILLUS, Adjunct Professor, 2007; MBChB, 1975, Trinity College (Ireland)

NIE, KAIBAO, Acting Instructor, 2005; MS, 1991, Shandong University (China), PhD, 1999, Tsinghua University (China)

NORTON, SUSAN J. \* Professor, 1991; MS, 1973, Purdue University, PhD, 1982, University of Washington; normal and non-normal hearing, specifically cochlear mechanics, in humans and animals

ORCUTT, JAMES C, Adjunct Professor, 1977; PhD, 1976, University of Colorado

(Denver), MD, 1977, University of Colorado (Denver)

OU, HENRY, Assistant Professor, 1998; MD, 1998, Washington University

PARHIZKAR, NOOSHIN, Acting Instructor, 2008; MD, 2000, University of California (San Diego)

PARKER, DONALD E., Senior Lecturer, 1993; PhD, 1963, Princeton University

PERKEL, DAVID J \* Professor, 2000; PhD, 1992, University of California (San Francisco); Neural mechanisms of learning; focus on vocal learning in songbirds

PERKINS, JONATHAN A., Associate Professor, 1994; DO, 1987, Osteopathic Medicine And Surgery (Iowa)

PUJOL, REMY, Affiliate Professor, 2003; PhD, 1971, University of Montpellier II (France)

REES, THOMAS, Associate Professor, 1972; MA, 1969, University of Redlands, PhD, 1972, University of Washington

ROBINSON, LAWRENCE R. \* Adjunct Professor, 1989; MD, 1982, Baylor College of Medicine; psychiatry

RUBEL, EDWIN W. \* Professor, 1986; MS, 1967, Michigan State University, PhD, 1969, Michigan State University; developmental neurobiology, with special emphasis on vertebrate auditory system development

RUBINSTEIN, JAY T. \* Professor, 2004; MS, 1983, Brown University, MD, 1987, University of Washington, PhD, 1988, University of Washington

SCHUBERT, MARK M \* Adjunct Professor, 1974; DDS, 1974, University of Washington, MSD, 1981, University of Washington; oral medicine/oral oncology

SIE, KATHLEEN C.Y., Associate Professor, 1984; MD, 1984, University of Michigan

SIRJANI, DAVUD B., Acting Instructor, 2008; MD, 2001, University of Arizona

STANLEY, ROBERT B., Professor, 1993; DDS, 1973, University of North Carolina, MD, 1976, Duke University

STONE, JENNIFER \* Research Associate Professor, 1993; PhD, 1993, Boston University

TEMPEL, BRUCE L. \* Professor, 1988; PhD, 1983, Princeton University; molecular neurobiology/neurogenetics, especially potassium channel gene structure and function

WEAVER, EDWARD M., Associate Professor, 1998; MD, 1993, Yale University

WERNER, LYNNE A. \* Adjunct Professor, 1986; PhD, 1980, Loyola University (campus unspecified), MA, 1980, Loyola University (campus unspecified); auditory development, infant psychoacoustics

WEYMULLER, ERNEST A, Professor, 1978; MD, 1966, Harvard University

WHIPPLE, MARK E., Assistant Professor, 2001; MD, 1991, University of Washington, MS, 2001, Massachusetts Institute of Technology

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## Pathology

ADLER, DAVID A, Affiliate Assistant Professor, 1986; MS, 1978, State University of New York (Buffalo), PhD, 1996, University of Washington

ALBERS, JOHN J., Adjunct Research Professor, 1971; MS, 1967, University of Illinois, PhD, 1969, University of Illinois

ALLISON, KIMBERLY H., Acting Instructor, 2001; MD, 2001, New York Medical College

ALPERS, CHARLES E., Professor, 1986; MD, 1978, University of Rochester

ALVORD, ELLSWORTH C, Professor Emeritus, 1960; MD, 1946, Cornell University

ARGENYI, ZSOLT B, Professor, 2001; MD, 1978, Semmelweis Medical University (Hungary)

ASKARI, BARDIA, Acting Instructor, 2000; MS, 1995, New York Medical College, PhD, 1999, New York Medical College

AUSTAD, STEVEN N, Affiliate Professor, 1993; PhD, 1981, Purdue University

BERETTA, LAURA, Affiliate Associate Professor, 2006; MS, 1984, University of Paris (France), PhD, 1989, University of Paris (France)

BIELAS, JASON H, Acting Instructor, 2003; PhD, 2003, York University (Canada)

BORNFELDT, KARIN E \* Professor, 1991; PhD, 1991, Linköping University (Sweden); Cardiovascular disease in diabetes, focusing on vascular muscle cells

BOWEN-POPE, DANIEL \* Professor, 1979; PhD, 1979, University of California (Berkeley); gene regulation, growth factors and receptors

BRENTNALL, TERESA A., Associate Professor, 1991; MD, 1987, University of Washington

BURMER, GLENNA C., Affiliate Assistant Professor, 1984; PhD, 1983, University of Washington, MD, 1983, University of Washington

BYERS, PETER H \* Professor, 1974; MD, 1969, Case Western Reserve University; extracellular matrix synthesis, genetic disorders of collagen metabolism, secretion, human genetics, splicing

CAMPBELL, JEAN S., Acting Instructor, 1990; PhD, 1990, University of Wisconsin

CHIN, MICHAEL T, Adjunct Associate Professor, 2006; PhD, 1988, University of Rochester, MD, 1991, University of Rochester

CLOWES, ALEXANDER W \* Adjunct Professor, 1980; MD, 1972, Harvard University; vascular smooth muscle cell growth control arterial injury and repair

CLURMAN, BRUCE E. \* Adjunct Associate Professor, 1998; PhD, 1988, Cornell University, MD, 1989, Cornell University; Cell cycle control in normal and neoplastic cells

COLLINS, STEVEN J \* Adjunct Professor, 1980; MD, 1973, Columbia University; retinoic acid receptors and the pathogenesis of malignancy

DICHEK, DAVID A. \* Adjunct Professor, 2001; MD, 1984, University of California (Los Angeles); Cardiovascular Research

DINTZIS, SUZANNE M, Assistant Professor, 2008; MD, 1993, Stanford University

DISIS, MARY L., Adjunct Professor, 1990; MD, 1986, University of Nebraska, MS, 1986, University of Nebraska

DISTECHE, CHRISTINE M \* Professor, 1980; Lic.Med., 1970, University of Liege (Belgium), PhD, 1976, University of Liege (Belgium); molecular genetics of sex chromosomes, X inactivation, human and mouse cytogenetics

DONG, ZHAO-MING DAVID, Assistant Professor, 2004; MD, 1983, Wannan Medical College (China), MS, 1986, Shandong University (China), PhD, 1995, University of Oklahoma

DURNAM, DIANE MARIE, Affiliate Assistant Professor, 1985; PhD, 1981, University of Washington

EISEN, HARVEY, Affiliate Professor, 1986; PhD, 1967, University of Toronto (Canada)

- FAUSTO, NELSON \* Professor, 1994; MD, 1960, Universidade de Sao Paulo; Liver regeneration, tumor biology, carcinogenesis, growth factors
- FENG, QINGHUA, Acting Instructor, 2004; PhD, 1996, Johns Hopkins University
- FINN, LAURA S, Associate Professor, 1998; MD, 1989, Pennsylvania State University
- FLIGNER, CORINNE L., Associate Professor, 1976; MD, 1976, University of New Mexico
- FRIEND, STEPHEN H, Affiliate Professor, 1997; PhD, 1979, Indiana University, MD, 1981, Indiana University
- GALLOWAY, DENISE A \* Adjunct Research Professor, 1982; PhD, 1976, City University of New York; viral pathogenesis and neoplasia
- GARCIA, ROCHELLE, Associate Professor, 1989; MD, 1989, University of Washington
- GELINAS, RICHARD, Affiliate Professor, 1985; PhD, 1974, Harvard University
- GIACHELLI, CECILIA \* Adjunct Professor, 1988; PhD, 1987, University of Washington; adhesion molecules and vascular biology processes
- GROUDINE, MARK \* Adjunct Professor, 1976; MD, 1975, University of Pennsylvania, PhD, 1976, University of Pennsylvania; chromatin structure and gene activity
- GUGGENHEIM, STEPHEN J., Affiliate Professor, 1984; MD, 1964, Harvard University
- HACKMAN, ROBERT C, Associate Professor, 1971; MD, 1971, Stanford University
- HARLAN, JOHN M. \* Adjunct Professor, 1976; MD, 1973, University of Chicago; Vascular Biology with emphasis on Leukocyte-Endothelial Adhesion
- HART, CHARLES EDWARD, Affiliate Assistant Professor, 1990; MS, 1978, Oregon State University, PhD, 1987, University of Washington
- HELLSTROM, KARL-ERIK, Affiliate Professor, 1966; DrMed, 1964, Karolinska Institute (Sweden), Lic.Med., 1964, Karolinska Institute (Sweden)
- HEVNER, ROBERT F \* Associate Professor, 2000; PhD, 1992, University of Michigan, MD, 1992, University of Michigan; Cerebral cortex development and axon guidance
- HOCH, BENJAMIN, Associate Professor, 2008; MD, 1999, Thomas Jefferson University
- HORWITZ, MARSHALL S \* Adjunct Professor, 1988; PhD, 1988, University of Washington, MD, 1990, University of Washington; Inherited white blood cell disorders, including leukemia
- KAEBERLEIN, MATT R \* Assistant Professor, 2003; PhD, 2002, Massachusetts Institute of Technology; Molecular mechanisms of aging and age-associated disease
- KAPUR, RAJ P. \* Associate Professor, 1988; PhD, 1986, University of Southern California, MD, 1988, University of Southern California; normal and abnormal development of the enteric nervous system
- KEMP, CHRISTOPHER JAMES \* Affiliate Professor, 1996; MS, 1984, Oregon State University, PhD, 1989, University of Wisconsin (Madison); Genetic and environmental influence on multistage cancer in the mouse
- KIEM, HANS-PETER, Adjunct Associate Professor, 1992; MD, 1987, University of Ulm (Germany)
- KINSELLA, MICHAEL G, Affiliate Associate Professor, 1981; PhD, 1978, University of Oregon
- KIVIAT, NANCY C \* Professor, 1975; MA, 1969, University of Washington, MD, 1975, University of Washington; Epidemiologic and molecular biologic studies of the relationship between HPV, HIV, and Neoplasia
- KNUDSEN, BEATRICE S, Affiliate Assistant Professor, 2004; PhD, 1988, Cornell University, MD, 1989, Cornell University
- KOWALEWSKA, JOLANTA, Assistant Professor, 2002; MD, 1995, University of Warsaw (Poland)
- LA SPADA, ALBERT R \* Adjunct Associate Professor, 1993; PhD, 1993, University of Pennsylvania, MD, 1993, University of Pennsylvania; Molecular basis of neurodegenerative disease
- LAFLAMME, MICHAEL A. \* Assistant Professor, 1999; PhD, 1998, Emory University, MD, 1999, Emory University; Stem cell biology, cardiac repair, cardiac electrophysiology
- LEWIS, JAMES B, Affiliate Associate Professor, 1982; PhD, 1972, Harvard University, MA, 1972, Harvard University
- LIEBER, ANDRE \* Adjunct Research Professor, 1994; MD, 1987, Second Institute of Medicine (Russia), PhD, 1992, Humboldt University (Germany); Engineering adenoviruses for gene therapy of cancer
- LOEB, KEITH, Assistant Professor, 1995; PhD, 1993, Medical College of Wisconsin, MD, 1995, Medical College of Wisconsin
- LOEB, LAWRENCE A \* Professor, 1978; MD, 1961, New York University, PhD, 1967, University of California (Berkeley); DNA replication, cancer and AIDS
- MARTIN, GEORGE \* Professor Emeritus, 1957; MD, 1953, University of Washington; somatic cell genetics, pathobiology of aging, neurodegenerative disorders
- MILLER, ARTHUR D. \* Affiliate Professor, 1987; PhD, 1982, Stanford University; Virology, gene therapy
- MONNAT, RAYMOND J \* Professor, 1976; MD, 1976, University of Chicago; somatic mutation, somatic cell molecular genetics, human genetic disease
- MONTINE, THOMAS J \* Professor, 2002; PhD, 1988, University of Rochester, MD, 1991, McGill University (Canada); Causes, consequences, and prevention of oxidative damage to brain
- MOTTET, N KARLE, Professor Emeritus, 1959; MD, 1952, Yale University
- MURRY, CHARLES E. \* Professor, 1989; PhD, 1989, Duke University, MD, 1989, Duke University; Myocardial infarction, heart regeneration, skeletal/cardiac muscle differentiation, intercellular junctions
- MYERSON, DAVID \* Associate Professor, 1985; ScB, 1970, Brown University, PhD, 1979, Albert Einstein College of Medicine, MD, 1979, Albert Einstein College of Medicine; the pathology of viral disease in humans
- NARAYANAN, A SAMPATH \* Professor, 1971; MSC, 1963, University of Madras (India), PhD, 1967, University of Madras (India); Pathology, Periodontal diseases
- NELSON, PETER S. \* Adjunct Professor, 1993; MD, 1986, University of Kansas; The study of human carcinogenesis using tools of genomics and bioinformatics
- NGHIEM, PAUL \* Adjunct Assistant Professor, 2006; PhD, 1994, Stanford University, MD, 1994, Stanford University; UV damage, skin cancer, dermatopathology
- NICOSIA, ROBERTO F, Professor, 1999; MD, 1976, University of Rome (Italy), PhD, 1984, Medical College of Pennsylvania



NORWOOD, THOMAS H \* Professor, 1968; MD, 1968, University of Maryland; somatic cell genetics, pathobiology of aging, mitotic cell cycle regulation

OLSON, JAMES M. \* Adjunct Associate Professor, 1991; MD, 1991, University of Michigan; Brain tumor and Huntington's disease pathogenesis and drug discovery

OSHIMA, JUNKO \* Research Associate Professor, 1992; MD, 1984, University of Tsukuba (Japan), PhD, 1992, Boston University; Genetic mechanism of aging and progeroid syndromes

OTT, SUSAN M, Adjunct Associate Professor, 1980; MD, 1974, University of Washington

PAGE, ROY C, Professor Emeritus, 1964; DDS, 1957, University of Maryland, PhD, 1967, University of Washington

PAN, SHENG, Acting Instructor, 2002; MS, 1992, Central Michigan University, PhD, 1999, University of Washington

PATTERSON, KATHLEEN, Associate Professor, 1992; MD, 1976, University of Iowa

PENDERGRASS, WILLIAM R, Lecturer, 1977; PhD, 1977, University of Washington

PORTER, PEGGY L. \* Associate Professor, 1987; MD, 1987, University of New Mexico; Identifying and understanding the molecular events associated with the initiation and progression of human cancer

PREHN, RICHMOND T., Affiliate Professor, 1958; MD, 1947, Long Island University

PRESTON, BRADLEY D \* Professor, 2002; PhD, 1983, University of Wisconsin; causes and consequences of mutation in human disease

PRITCHARD, DAVID K, Acting Instructor, 1998; PhD, 1994, University of Washington

QWARNSTROM, EVA E, Affiliate Associate Professor, 1984; DDS, 1975, University of Lund (Sweden), PhD, 1984, University of Lund (Sweden)

RABINOVITCH, PETER S. \* Professor, 1980; MD, 1979, University of Washington, PhD, 1980, University of Washington; cellular aging, preneoplastic disease, cell cycle abnormalities, DNA change

RAINES, ELAINE W \* Research Professor, 1977; MS, 1975, University of California (San Francisco); Molecular mechanisms responsible for vascular cell migration, proliferation and survival in Atherosclerosis

REAY, DONALD T, Professor Emeritus, 1975; MD, 1963, University of Utah, MPA, 1978, Seattle University

REICHENBACH, DENNIS D, Professor Emeritus, 1960; MD, 1958, University of Washington

REIDY, MICHAELA \* Professor, 1978; MSC, 1972, University of Guelph (Canada), PhD, 1976, University of Cambridge (UK); identification of migration specific genes, expression of matrix metalloproteinases

REN, JUN, Affiliate Associate Professor, 2005; PhD, 1994, University of Alberta, Canada

REYES, MORAYMA \* Assistant Professor, 2003; DPhil, 2001, University of Minnesota, MD, 2003, University of Minnesota; Stem cell research, bone marrow transplant, multipotent adult progenitor cells and cell therapy for muscular dystrophy and cardiovascular diseases

RISQUES, ROSA ANA, Acting Instructor, 2003; PhD, 2001, Autonomous University of Barcelona

ROHRSCHEIDER, LARRY R \* Affiliate Professor, 1978; PhD, 1973, University of Wisconsin (Madison); control of growth, differentiation, transformation by the c-fms proto-oncogene

ROSENFELD, MICHAEL E. \* Professor, 1982; MS, 1978, University of Vermont, PhD, 1981, University of Wisconsin (Madison); mechanisms of atherogenesis and macrophage gene expression

SALE, GEORGE E, Professor, 1971; MD, 1968, Stanford University

SALK, DARRELL J, Affiliate Associate Professor, 1974; MD, 1974, Johns Hopkins University

SCHMIDT, RODNEY, Associate Professor, 1984; PhD, 1984, University of Washington, MD, 1984, University of Washington

SCHWARTZ, STEPHEN MARK \* Professor, 1967; MD, 1967, Boston University, PhD, 1973, University of Washington; vascular biology, atherosclerosis, molecular basis of lineage, developmental biology, cell kinetics

SCHWARZE, ULRIKE, Associate Professor, 1993; MD, 1992, Technische Universität (Germany)

SHAW, CHENG-MEI, Professor Emeritus, 1960; MD, 1950, National Taiwan University

SHULMAN, HOWARD M, Professor, 1972; MD, 1971, University of California (Los Angeles)

SIEBERT, JOSEPH ROBERT, Professor, 1986; MS, 1975, University of Pittsburgh, MA, 1984, University of Washington, PhD, 1985, University of Washington

SILBERGELD, DANIEL L, Adjunct Professor, 1984; MD, 1984, University of Cincinnati

SMITH, GERALD R \* Affiliate Professor, 1983; PhD, 1970, Massachusetts Institute of Technology; molecular biology of genetic recombination and regulation of gene expression

SMITH, KELLY D. \* Assistant Professor, 1996; PhD, 1996, University of Iowa, MD, 1996, University of Iowa; Innate immune system regulation of infectious and inflammatory disorders

SONNEN, JOSHUA A, Acting Instructor, 2005; MD, 2002, University of Southern California

SPENCE, ALEXANDER M, Professor, 1974; MD, 1965, University of Chicago

SPRUGEL, KATHERINE H, Affiliate Assistant Professor, 1983; PhD, 1983, Michigan State University

STAMATOYANNOPOULOS, G, Adjunct Professor, 1964; MD, 1958, University of Athens (Greece), DR, 1960, University of Athens (Greece)

STEPHENS, KAREN G. \* Adjunct Research Professor, 1989; MA, 1978, Indiana University, PhD, 1982, Indiana University

SUMI, SHUZO MARK, Professor Emeritus, 1963; MD, 1956, University of Toronto (Canada)

SWANSON, KRISTIN R. \* Research Assistant Professor, 1999; MD, 1998, University of Washington, PhD, 1999, University of Washington; Modeling growth and invasion of gliomas in living patients, particularly brain tumors

SWANSON, PAUL E, Professor, 2001; MD, 1984, Oregon Health Sciences University

SWISSHELM, KAREN \* Affiliate Associate Professor, 1993; PhD, 1989, University of Washington; Cancer Genetics Cytogenetics

TAIT, JONATHAN F \* Adjunct Professor, 1983; PhD, 1983, Washington University, MD, 1983, Washington University; biochemistry of blood coagulation, laboratory diagnosis of genetic disorders

TANIGUCHI, TOSHIYASU \* Affiliate Assistant Professor, 2008; MD, 1990, University of Tokyo (Japan), PhD, 1999, University of Tokyo (Japan); Fanconi anemia and cancer susceptibility, DNA repair and cell cycle checkpoints, drug sensitivity and resistance in cancer chemotherapy

TAPSCOTT, STEPHEN J. \* Adjunct Professor, 1986; PhD, 1982, University of Pennsylvania, MD, 1982, University of Pennsylvania; Molecular and developmental biology

THORNING, DAVID R, Associate Professor, 1969; MD, 1965, University of Kansas

TRUE, LAWRENCE DASHIELL \* Professor, 1971; MD, 1971, Tulane University; urologic pathology, nuclear aspects of tumor differentiation

UPTON, MELISSA P, Associate Professor, 2002; MD, 1978, Northwestern University

VASIOUKHIN, VALERI \* Affiliate Assistant Professor, 2002; PhD, 1992, Academy of Science (Ussr)

VESSELLA, ROBERT, Adjunct Professor, 1989; PhD, 1974, University of Mississippi

VINCENT, INEZ J., Affiliate Associate Professor, 1998; MS, 1981, University of Bombay, PhD, 1987, Indiana University

WELLINGS, SEFTON ROBERT, Affiliate Professor, 1967; MD, 1953, University of Washington, PhD, 1961, University of California (Berkeley)

WIGHT, THOMAS \* Affiliate Professor, 1973; MS, 1968, University of New Hampshire, PhD, 1972, University of New Hampshire; Cell biology and pathology of connective tissue proteoglycans

WILLIAMS, KANDACE J., Affiliate Assistant Professor, 1988; PhD, 1987, Dartmouth University

WILSON, ROBERT B., Affiliate Professor, 1990; DVM, 1961, Washington State University, PhD, 1967, University of Toronto (Canada)

WOLF, NORMAN S \* Professor, 1968; DVM, 1953, Kansas State University, PhD, 1960, Northwestern University; hematopoietic stem cell dynamics and transplantation in radiation biology

WRIGHT, A MORGAN, Affiliate Assistant Professor, 1990; MD, 1976, Pennsylvania State University

YEH, MENG-CHE, Assistant Professor, 2002; PhD, 1997, University of Pennsylvania

YEUNG, RAYMOND S. \* Adjunct Professor, 1997; MD, 1982, University of Toronto (Canada); Genetic and functional analyses of the tuberous sclerosis tumor suppressor genes

ZARBL, HELMUT \* Affiliate Professor, 1996; DCS, 1975, Marianopolis College, Canada, PhD, 1983, McGill University (Canada)

ZHANG, JING \* Assistant Professor, 2002; MS, 1987, Second Military Medical University, China, PhD, 1995, Duke University; Pathogenesis and Biomarkers of Parkinson's disease

## Pediatrics

ALBERTSON, TINA M., Acting Instructor, 2002; MD, 1999, Stanford University

ANDERSON, CORRIE, Adjunct Professor, 2001; MS, 1985, Boston University

ANDREWS, ROBERT G, Associate Professor, 1979; MD, 1976, University of Minnesota

BADEN, HARRIS P., Associate Professor, 1992; MD, 1989, University of Texas (Galveston)

BAMFORD, NIGEL S., Adjunct Assistant Professor, 2002; MD, 1992, University of Utah

BAMSHAD, MICHAEL J, Professor, 2005; MD, 1989, University of Missouri, MA, 1991, University of Kansas

BATRA, MANEESH, Acting Instructor, 2000; MD, 2000, Stanford University, MPH, 2006, University of Washington

BENDER, MICHAELA., Associate Professor, 1990; PhD, 1989, University of Washington, MD, 1990, University of Washington

BENNETT, FORREST C, Professor, 1971; MD, 1970, University of Minnesota

BERGMAN, ABRAHAM, Professor, 1964; MD, 1958, Case Western Reserve University

BERNSTEIN, IRWIN D, Professor, 1971; MD, 1967, New York University

BLEAKLEY, MARIE, Acting Instructor, 2002; MMSc, 2000, University of Newcastle (Australia)

BOUCEK, ROBERT J. JR., Professor, 2004; MD, 1969, Tulane University, MS, 1969, Tulane University

BREUNER, CORA C., Associate Professor, 1991; MD, 1982, Thomas Jefferson University, MPH, 1998, University of Washington

BREWER, DAVID K, Adjunct Associate Professor, 1977; MD, 1972, Harvard University

BROGAN, THOMAS V, Associate Professor, 1993; MD, 1990, University of California (Davis)

BROWN, JULIE C, Assistant Professor, 1996; MD, 1991, McGill University (Canada)

BROWNSTEIN, DENAR., Associate Professor, 1982; MD, 1982, University of Washington

CAMPBELL, ANGELA JEAN PECK, Acting Instructor, 1999; MD, 1999, Vanderbilt University

CARPENTER, PAULA., Associate Professor, 1995; MBBS, 1988, University of Sydney (Australia)

CARTER, EDWARD R., Associate Professor, 1996; MD, 1981, Vanderbilt University

CHABRA, SHILPI, Assistant Professor, 2003; MBBS, 1986, University of Bombay, MD, 1989, University of Bombay

CHANCE, PHILLIP F., Professor, 1980; MD, 1978, University of Tennessee

CHEN, MAIDA L., Assistant Professor, 2005; MD, 1998, Northwestern University

CHOW, ERIC J., Acting Instructor, 2001; MPH, 2000, University of California (Berkeley), MD, 2001, University of California (San Francisco)

CHRISTAKIS, DIMITRIA., Professor, 1993; MD, 1993, University of Pennsylvania

CHRISTIE, DENNIS L., Professor, 1968; MD, 1968, Northwestern University

CHUN, TERRENCE, Assistant Professor, 2004; MD, 1997, Hahnemann Medical College

CLARREN, STERLING K, Affiliate Professor, 1974; MD, 1973, University of Minnesota

CONNELL, FREDERICKA \* Adjunct Professor, 1976; MD, 1972, New York University, MPH, 1978, University of Washington; maternal and child care, health services

COOMBS, JOHN B. \* Professor, 1972; MD, 1972, Cornell University; Health care

outcomes, rural health policy, healthcare workforce issues and applied nutrition

COREY, LAWRENCE \* Adjunct Professor, 1975; MD, 1971, University of Michigan; laboratory medicine: diagnosis, therapy, and pathogenesis of viral infections, AIDS virus

COX, TIMOTHY C. \* Research Associate Professor, 2006; PhD, 1994, University of Adelaide (Australia); craniofacial development and dysmorphology, mouse and chick model systems, molecular genetics, cell and developmental biology, primary epithelia

CUNNINGHAM, MICHAEL L. \* Associate Professor, 1988; MD, 1988, University of Vermont, PhD, 1996, University of Washington; Molecular, Development, Craniofacial, Malformation, Human, Mouse, Craniosynostosis, Birth Defects

DALLAS, MARI H., Acting Instructor, 2002; MD, 1999, University of Pennsylvania

DEBLEY, JASON S., Assistant Professor, 2000; MD, 1995, Northwestern University, MPH, 2003, University of Washington

DEISHER, ROBERT W, Professor Emeritus, 1949; MD, 1944, Washington University

DEL BECCARO, MARK A., Professor, 1985; MD, 1985, University of Washington

DELANEY, COLLEEN S., Assistant Professor, 2001; MS, 1991, Oxford University (UK), MD, 1996, Harvard University

DENNO, DONNA M., Affiliate Assistant Professor, 1993; MD, 1991, University of Michigan

DICHEK, A. K. HELEN L, Associate Professor, 2001; MD, 1980, University of Louvain (Belgium)

DIEKEMA, DOUGLAS S. \* Professor, 1990; MD, 1985, University of North Carolina, MPH, 1993, University of Washington; pediatric bioethics

DOHERTY, DANIEL A., Assistant Professor, 1998; PhD, 1995, University of California (San Francisco), MD, 1998, University of California (San Francisco)

DOUGLAS, JAMES G., Associate Professor, 1980; MS, 1976, University of Wisconsin, MD, 1980, Case Western Reserve University

EBEL, BETH E. \* Associate Professor, 1999; MS, 1989, Oxford University (UK), MD, 1996, Harvard University, MPH, 2001, University of Washington; Injury prevention and health behaviors

EDDY, ALLISON A., Professor, 1997; MD, 1975, McMaster University (Canada)

EMANUEL, IRVIN, Professor Emeritus, 1961; MA, 1956, University of Arizona, MD, 1960, University of Rochester, MS, 1966, University of Washington

EMERY, HELEN, Professor, 2003; MBBS, 1971, University of Adelaide (Australia)

ENGLUND, JANET A., Associate Professor, 2002; MD, 1980, University of Michigan

FANTEL, ALAN G \* Research Professor, 1974; MA, 1969, University of Oregon, PhD, 1974, University of Washington; embryology, teratology

FECHNER, PATRICIA Y., Associate Professor, 2006; MD, 1986, Northwestern University

FLYNN, JOSEPH T, Professor, 2007; MD, 1987, State University of New York (Syracuse), MS, 2003, Albert Einstein College of Medicine

FOLSOM, RICHARD C \* Adjunct Professor, 1977; MS, 1970, Portland State University, PhD, 1979, University of Washington; pediatric audiology, auditory evoked potentials

FRENCH, JAMES W., Professor Emeritus, 1968; MD, 1963, University of Michigan

FRENKEL, LISA M., Professor, 1994; MD, 1987, University of Kansas

FRIEDMAN, JAN MARSHALL, Affiliate Professor, 1973; MD, 1971, Tulane University, MS, 1971, Tulane University, PhD, 1977, University of Washington

GEYER, JEFFREY R., Professor, 1983; MD, 1977, Wayne State University

GIBSON, RONALD L, Professor, 1982; PhD, 1982, Washington University, MD, 1982, Washington University

GLASS, IAN, Professor, 2000; MBChB, 1979, University of Otago (New Zealand), MD, 1991, University of Otago (New Zealand)

GLEASON, CHRISTINE A., Professor, 1997; MD, 1979, University of Rochester

GOSPE, SIDNEY M, Professor, 2000; MS, 1975, Stanford University, PhD, 1980, Duke University, MD, 1981, Duke University

GRAHAM, C BENJAMIN, Professor Emeritus, 1959; MD, 1958, University of Washington

GRAHAM, ELINOR A., Associate Professor, 1982; MD, 1970, University of Rochester, MPH, 1993, Johns Hopkins University

GREVES, HELENE M., Acting Instructor, 2003; MD, 2003, University of Pennsylvania

GROSSMAN, DAVID C. \* Adjunct Professor, 1988; MD, 1982, University of California (Los Angeles), MPH, 1990, University of Washington; Injury Control, Native American Health, and Pediatric Health Services Research

GUNTHEROTH, WARREN G, Professor, 1958; MD, 1952, Harvard University

GURALNICK, MICHAEL J, Professor, 1986; MS, 1964, Lehigh University, PhD, 1967, Lehigh University

HAHN, SIHOUN, Professor, 2006; MD, 1983, Korea University (Korea), PhD, 1995, Korea University (Korea)

HAHN, SIHOUN, Professor, 2006; PhD, 1995, Korea University (Korea)

HANNIBAL, MARK C., Assistant Professor, 1994; PhD, 1994, University of Michigan, MD, 1994, University of Michigan

HANSEN, THOMAS N, Professor, 2005; MD, 1973, Baylor College of Medicine

HAWKINS, DOUGLAS S., Associate Professor, 1990; MD, 1990, Harvard University

HAYDEN, PATRICIA, Professor Emeritus, 1958; MD, 1953, University of Rochester

HAYS, ROSS M. \* Adjunct Professor, 1983; MD, 1978, University of Washington; pediatric rehabilitation, brain injury, neuromuscular diseases, congenital defects, electromyography

HING, ANNE V., Assistant Professor, 1999; MD, 1985, Washington University

HINGORANI, SANGEETA R., Assistant Professor, 1993; MD, 1993, Albert Einstein College of Medicine

HODSON, W. ALAN, Professor Emeritus, 1966; MD, 1959, University of Manitoba (Canada), MMSc, 1964, Ohio State University

HOFFMAN, LUCAS R., Assistant Professor, 1998; PhD, 1996, University of California (San Francisco), MD, 1998, University of California (San Francisco)

HOLM, VANJA A, Associate Professor Emeritus, 1956; MD, 1954, Karolinska Institute (Sweden)

- HORNUNG, ROBIN L., Associate Professor, 1999; MD, 1990, Yale University, MPH, 1996, University of North Carolina
- HORSLEN, SIMON PETER, Professor, 2005; MBChB, 1984, University of Bristol (UK)
- JACKSON, J CRAIG, Professor, 1979; MD, 1979, Vanderbilt University
- JAFFE, KENNETH M \* Adjunct Professor, 1975; MD, 1975, Harvard University, MRM, 1982, University of Washington; pediatric rehabilitation, brain injury, neuromuscular diseases, congenital defects, electromyography
- JARDINE, DAVID, Associate Professor, 1987; MD, 1980, Johns Hopkins University
- JOHNSON, REBECCA H, Assistant Professor, 2007; MD, 1994, Jefferson Medical College
- JOHNSTON, BRIAN D. \* Associate Professor, 1990; MD, 1990, University of California (San Diego); childhood injury prevention, pediatric health services
- JOHNSTON, TROY, Associate Professor, 1999; MD, 1991, University of Virginia
- JOLLEY, SANDRA N. \* Adjunct Assistant Professor, 1997; MS, 1972, University of North Carolina, PhD, 2004, University of Washington; the psychobiology of postpartum depression and the effects on maternal-infant interaction, attachment and child outcomes
- JONES, THOMAS K, Professor, 1978; MD, 1978, Jefferson Medical College
- JUUL LEDBETTER, SANDRA \* Associate Professor, 1981; MD, 1981, University of Washington, PhD, 1997, University of Chicago; neuroprotective effects of erythropoietin (Epo) in neonatal models of brain injury
- KAHN, STUART J., Affiliate Associate Professor, 1985; MS, 1978, Rutgers University, MD, 1985, U of Medicine & Dentistry of New Jersey
- KAPUR, RAJ P. \* Adjunct Associate Professor, 1988; PhD, 1986, University of Southern California, MD, 1988, University of Southern California; normal and abnormal development of the enteric nervous system
- KARR, CATHERINE J. \* Assistant Professor, 1999; MS, 1989, University of Washington, MD, 1999, University of Washington; Environmental epidemiology, pediatric environmental health
- KAWABORI, ISAMU, Associate Professor Emeritus, 1970; MD, 1966, University of Washington
- KELLEY, MAUREEN C, Assistant Professor, 2007; MA, 1993, Bowling Green State University, PhD, 2001, Rice University
- KIFLE, YEMISERACH, Assistant Professor, 2001; MD, 1976, Addis Ababa University (Ethiopia)
- KLEIN, EILEEN J. \* Associate Professor, 1988; MD, 1988, Johns Hopkins University; Sedation and analgesia
- KNOX, ISABELLA, Associate Professor, 2007; MD, 9999, University of Pennsylvania
- KOLLMANN, TOBIAS R., Affiliate Assistant Professor, 1998; MS, 1991, Albert Einstein College of Medicine, MD, 1998, Albert Einstein College of Medicine
- KURATANI, JOHN D, Adjunct Associate Professor, 1999; MD, 1990, Tulane University
- LAW, YUK M., Associate Professor, 2006; MD, 1987, University of California (Los Angeles)
- LEWIN, MARK, Associate Professor, 2001; MA, 1982, University of California (Berkeley), MS, 1987, Hahnemann University, MD, 1991, University of Southern California
- LEWIS, CHARLOTTE W \* Associate Professor, 1998; MNS, 1989, Cornell University, MD, 1994, University of California (San Francisco)
- LINGAPPA, JAIRAM R. \* Adjunct Assistant Professor, 1991; PhD, 1987, Harvard University, MD, 1991, University of California (San Francisco); evaluating safety and efficacy of non-vaccine prevention interventions
- LIU, LENNA L., Associate Professor, 1992; MD, 1992, University of Pennsylvania, MPH, 1997, University of Washington
- LOPEZ-GUISA, JESUS M., Affiliate Assistant Professor, 1998; MSC, 1979, National University, Mexico, PhD, 1985, University of Wisconsin, MBA, 1995, Saint Joseph's University
- LOREN, DAVID J, Assistant Professor, 2004; MD, 1997, Rush Medical College
- LOZANO, PAULA \* Associate Professor, 1989; MD, 1989, Harvard University, MPH, 1994, University of Washington; Health care delivery care to children with chronic conditions, asthma and ADHD in particular
- LYNN, ANNE, Adjunct Professor, 1975; MD, 1975, Stanford University
- MANGIONE-SMITH, RITA M \* Associate Professor, 2005; MD, 1991, Wayne State University, MPH, 1997, University of California (Los Angeles); pediatrics, quality of care
- MANLEY, THOMAS J., Assistant Professor, 1999; MD, 1996, University of Wisconsin (Madison)
- MARCUSE, EDGAR K \* Professor, 1971; MD, 1967, Stanford University, MPH, 1973, University of Washington; Immunization Practice & Policy, Patient Safety, Clinical Quality Improvement, Resident Education
- MARSHALL, SUSAN G, Associate Professor, 1980; MD, 1980, University of California (Los Angeles)
- MARTIN, LYNN D, Adjunct Professor, 1994; MD, 1982, University of Washington
- MASSAGLI, TERESA L. \* Adjunct Professor, 1985; MD, 1982, Yale University; medical and rehabilitation outcome after spinal cord injury in children
- MASTROIANNI, ANNA C. \* Adjunct Associate Professor, 1998; JD, 1986, University of Pennsylvania, MPH, 1997, University of Washington; Law, ethics and policy genetics, reproduction, human subjects research
- MATTHEWS, DANA C., Associate Professor, 1984; MD, 1981, University of Washington
- MAYOCK, DENNIS EDWARD, Professor, 1978; MD, 1975, Ohio State University
- MAZOR, ROBERT, Assistant Professor, 2004; MD, 1995, University of Illinois
- MAZOR, SUZAN, Assistant Professor, 2004; MD, 1995, University of Illinois
- MC CAULEY, ELIZABETH \* Adjunct Professor, 1979; PhD, 1973, State University of New York (Buffalo); Developmental Psychopathology Focused on Affective Disorders, Behavioral Genetics, Adolescent Adjustment
- MC LAUGHLIN, JOHN F, Professor, 1970; MD, 1970, Northwestern University
- MCDONALD, RUTH A., Associate Professor, 1987; MD, 1987, University of Minnesota
- MCGUIRE, JOHN K, Assistant Professor, 2004; MD, 1993, Northwestern University
- MCPHILLIPS, HEATHER A., Associate Professor, 1998; MD, 1994, University of Chicago

- MELVIN, ANN JORNS, Associate Professor, 1987; MPH, 1986, Tulane University, MD, 1986, Tulane University
- MELZER, SANFORD M., Associate Professor, 1990; MD, 1982, Mt Sinai School of Medicine
- MERRITT, JOHN L., Assistant Professor, 2007; MD, 1999, Loma Linda University
- MESHINCHI, SOHEIL, Assistant Professor, 1997; PhD, 1990, University of Michigan, Ann Arbor, MD, 1994, Wayne State University
- MILLER, DANIEL G., Assistant Professor, 1996; PhD, 1994, University of Washington, MD, 1996, University of Washington
- MOSELEY, STEPHEN L. \* Adjunct Professor, 1985; MS, 1978, Catholic University of America, PhD, 1981, University of Washington; molecular basis of pathogenesis in *E. coli* diarrhea
- MOSKOWITZ, SAMUEL M., Assistant Professor, 1994; MD, 1994, Harvard University
- MURPHY, JANET HAWORTH, Associate Professor Emeritus, 1969; MBChB, 1967, Victoria University (UK)
- MURRAY, KAREN F., Professor, 1990; MD, 1990, Johns Hopkins University
- NEFF, JOHN, Professor, 1981; MD, 1960, Harvard University
- NEPOM, BARBARA S, Affiliate Associate Professor, 1982; MD, 1978, University of Washington
- NING, XUE-HAN, Affiliate Professor, 1994; MD, 1960, Shanghai Medical University (China)
- NOVACK, ALVIN H, Professor Emeritus, 1979; MD, 1958, Temple University
- OCHS, HANS D, Professor, 1968; MD, 1969, University of Freiburg (Germany)
- OKAMURA, DARYL M, Assistant Professor, 2001; MD, 1998, University of Hawaii
- OLSON, JAMES M. \* Associate Professor, 1991; MD, 1991, University of Michigan; Brain tumor and Huntington's disease pathogenesis and drug discovery
- OPEL, DOUGLAS J., Acting Instructor, 2002; MD, 2002, University of Chicago
- PAGON, ROBERTAA, Professor, 1972; MD, 1972, Harvard University
- PARIS, CAROLYN A., Assistant Professor, 1995; MD, 1991, Cornell University
- PARISI, MARGUERITE T., Adjunct Associate Professor, 2001; MD, 1977, State University of New York, MS, 1995, University of California (Los Angeles)
- PARISI, MELISSA A., Assistant Professor, 1994; PhD, 1994, Stanford University, MD, 1994, Stanford University
- PARK, JULIE R., Associate Professor, 1988; MD, 1988, University of Vermont
- PENDERGRASS, THOMAS W, Professor, 1975; MD, 1971, University of Tennessee, MPH, 1979, University of Washington
- PIHOKER, CATHERINE, Professor, 1997; MD, 1987, Albany Medical College
- POLIFKA, JANINE E., Lecturer, 1998; MA, 1984, University of Louisville, PhD, 1985, University of Louisville
- PORTMAN, MICHAELA., Professor, 1992; MD, 1980, University of Cincinnati
- POZOS, TAMARA, Acting Instructor, 2002; PhD, 1998, University of California (San Francisco), MD, 1998, University of California (San Francisco)
- QUAN, LINDA, Professor, 1971; MS, 1969, Dartmouth College, MD, 1971, University of Washington
- RAFF, MICHAEL L, Assistant Professor, 1994; MD, 1991, McGill University (Canada)
- RAJAGOPAL, LAKSHMI, Assistant Professor, 1999; MS, 1995, Madurai University (India), PhD, 1999, Jawaharlal Nehru University (India)
- RAMSEY, BONNIE W, Professor, 1978; MD, 1976, Harvard University
- RAWLINGS, DAVID J \* Professor, 2001; MD, 1984, University of North Carolina; Expertise in clinical immunology, signal transduction, and B cell developmental biology to identify altered signaling events contributing to B lineage diseases
- REDDING, GREGORY J, Professor, 1980; MD, 1974, Stanford University
- REES, JANE, Lecturer, 1973; MS, 1972, University of Washington
- REID, JENNIFER R, Assistant Professor, 2004; MD, 1998, University of Washington
- RICHARDS, GAIL E., Professor Emeritus, 2000; MD, 1970, Northwestern University, MM, 1993, Northwestern University
- RICHARDSON, LAURA P., Associate Professor, 1998; MD, 1994, University of Michigan
- RIVARA, FREDERICK P. \* Professor, 1978; MD, 1974, University of Pennsylvania, MPH, 1980, University of Washington; pediatric epidemiology and injury prevention and research
- ROBERTS, JOAN S., Assistant Professor, 1992; MD, 1992, University of Nevada
- ROBERTSON, WILLIAM O, Professor Emeritus, 1963; MD, 1949, University of Rochester
- ROSE, TIMOTHY M \* Professor, 1991; PhD, 1981, University of Geneva (Switzerland); molecular biology of tumor viruses, cell growth, differentiation, and transformation
- ROSENBAUM, DAVID M, Adjunct Associate Professor, 1983; MD, 1977, Albert Einstein College of Medicine
- ROSENFELD, MARGARET, Associate Professor, 1988; MD, 1988, Harvard University, MPH, 1995, University of Washington
- ROTH, CHRISTIAN L., Associate Professor, 2007; MD, 1990, University of Heidelberg (Germany)
- RUBENS, CRAIG E \* Professor, 1982; PhD, 1978, Medical University of South Carolina, MD, 1982, University of Washington; Infectious Diseases/pathogenesis of gram(+) bacterial infections
- SAELENS, BRIAN E, Associate Professor, 2006; MA, 1996, State University of New York (Buffalo)
- SALERNO, JACK, Assistant Professor, 2003; MD, 1996, University of California (San Diego)
- SALK, DARRELL J, Affiliate Associate Professor, 1974; MD, 1974, Johns Hopkins University
- SANDERS, JEAN E, Professor, 1975; MD, 1970, University of Iowa
- SCHARENBERG, ANDREW M. \* Associate Professor, 2000; MD, 1990, University of North Carolina; Function and cell biology of cation channels expressed in non-excitabile cells
- SCHENKMAN, KENNETHA. \* Associate Professor, 1991; MD, 1986, Indiana University; Oxygen transport in tissue Muscle oxygenation Myocardial performance Optical spectroscopy Mitochondrial function
- SCHULTZ, AMY H., Assistant Professor, 2005; MD, 1996, University of Pennsylvania
- SCOTT, C RONALD, Professor, 1964; MD, 1959, University of Washington

- SESLAR, STEPHEN, Assistant Professor, 2008; PhD, 1993, Georgetown University, MD, 1996, Georgetown University
- SHAFII, TARANEH, Assistant Professor, 2000; MD, 1996, University of Louisville, MPH, 2003, University of Washington
- SHEPARD, THOMAS H, Professor Emeritus, 1955; MD, 1948, University of Rochester
- SHIMAMURA, AKIKO, Associate Professor, 2007; MS, 1988, University of Rochester, PhD, 1990, University of Rochester, MD, 1991, University of Rochester
- SHUGERMAN, RICHARD P, Professor, 1984; MD, 1984, University of Alabama
- SMITH, ARNOLD L \* Professor, 2003; MD, 1964, University of Missouri, MS, 1964, University of Missouri; Investigating the biology of the human-restricted bacterium *Haemophilus influenzae*
- SMITH, CHARLES VINCENT, Professor, 2007; PhD, 1974, Rice University
- SMITH, JODI, Assistant Professor, 1999; MD, 1995, McGill University (Canada)
- SMITH, MARK S, Professor Emeritus, 1976; MD, 1969, University of Virginia
- SMITH, NATHAN J, Professor Emeritus, 1965; MD, 1945, University of Wisconsin
- SMITH, SHERILYN, Associate Professor, 1994; MD, 1989, Baylor University
- SNIDERMAN KING, LISA C, Lecturer, 2003; MS, 1999, McGill University (Canada)
- SORIANO, BRIAN D, Assistant Professor, 2007; MD, 1996, Medical College of Ohio
- SPILLER, SUSAN E., Acting Instructor, 2001; MD, 1995, Albany Medical College
- STAPLETON, F. BRUDER, Professor, 1996; MD, 1972, University of Kansas
- STARR, JACQUELINE R \* Research Assistant Professor, 2003; MPH, 2000, University of Washington, MS, 2000, University of Washington, PhD, 2003, University of Washington; Epidemiology of craniofacial malformations, molecular epidemiology, clinical epidemiology
- STEVENS, ANNE M., Assistant Professor, 1997; PhD, 1993, Baylor University, MD, 1995, Baylor University
- STONE, KIMBERLY P, Assistant Professor, 2005; MA, 1996, Tufts University, MS, 1999, University of California (Berkeley), MD, 2001, University of California (San Francisco)
- STOUT, JAMES W. \* Professor, 1986; MAT, 1981, Duke University, MD, 1986, Wake Forest University; childhood asthma, health services and epidemiology
- STOUT, KAREN K., Adjunct Assistant Professor, 2000; MD, 1996, University of Arizona
- STRANDJORD, THOMAS P, Associate Professor, 1983; MD, 1983, Johns Hopkins University
- SULZBACHER, STEPHEN, Associate Professor Emeritus, 1966; MA, 1964, Hollins College (Virginia), PhD, 1971, University of Washington
- SUSKIND, DAVID, Assistant Professor, 2003; MD, 1997, Louisiana State University
- SYMONS, JORDAN, Associate Professor, 1999; MD, 1992, Columbia University
- TAMURA, GLEN S., Assistant Professor, 1987; PhD, 1987, Stanford University, MD, 1987, Stanford University
- TARCZY-HORNOCH, PETER \* Professor, 1992; MD, 1989, Stanford University; Bioinformatics and clinical informatics: clinical systems and integrating genetic databases
- TARR, PHILLIP I, Affiliate Professor, 1980; MD, 1980, Yale University
- TAYLOR, JAMES A., Professor, 1987; MD, 1980, University of North Carolina
- TIDDENS, HARMANNUS A W M, Affiliate Professor, 2006; MD, 1985, University of Amsterdam (Netherlands), PhD, 1998, Erasmus University (Netherlands)
- TORGERSON, TROY, Assistant Professor, 1998; PhD, 1998, Vanderbilt University, MD, 1998, Vanderbilt University
- TRAHMS, CRISTINE M \* Senior Lecturer, 1973; MS, 1972, University of Washington; growth and development of young children: metabolic disorders, special health care needs
- URDAHL, KEVIN B., Assistant Professor, 1995; PhD, 1993, University of Minnesota, MD, 1995, University of Minnesota
- VAVILALA, MONICA S., Associate Professor, 1994; MD, 1991, University of Texas (Houston)
- VERNON, MARGARET MACMILLAN, Assistant Professor, 2000; MD, 2000, University of Rochester
- WAHBEH, GHASSAN, Assistant Professor, 2004; MD, 1990, University of Jordan
- WALKER, WILLIAM O., Associate Professor, 1993; MD, 1979, Tulane University
- WALKER-HARDING, LESLIE R, Associate Professor, 2007; MD, 1990, University of Illinois
- WALLACE, CAROL A, Professor, 1974; MD, 1973, University of Michigan
- WALLS, THERESA A., Assistant Professor, 2008; MD, 1997, Temple University, MPH, 2004, Eastern Virginia Medical School
- WARGULA, JENNIFER C, Assistant Professor, 2006; MD, 1994, State University of New York (Buffalo), MS, 2001, University of Cincinnati
- WATKINS, SANDRA L, Professor Emeritus, 1981; MD, 1981, University of Texas (Houston)
- WAY, SING SING Y., Affiliate Assistant Professor, 2001; MS, 1996, Albert Einstein College of Medicine, PhD, 1998, Albert Einstein College of Medicine, MD, 1999, Albert Einstein College of Medicine
- WEDGWOOD, RALPH J, Professor Emeritus, 1962; MD, 1947, Harvard University
- WEINBERGER, EDWARD, Adjunct Professor, 1979; MD, 1979, Harvard University
- WEISS, AVERY H, Adjunct Professor, 1991; MD, 1974, Miami University (Ohio)
- WICHMAN, MICHELLE GURVITZ, Assistant Professor, 2005; MD, 1995, University of California (Los Angeles), MS, 2005, University of California (Los Angeles)
- WILFOND, BENJAMIN S, Professor, 2006; MD, 1983, U of Medicine & Dentistry of New Jersey
- WILKINS, VICTORIA L., Acting Instructor, 2004; MPH, 1999, University of California (Berkeley), MD, 2004, University of California (Davis)
- WILSON, CHRISTOPHER B \* Professor, 1979; MD, 1972, University of California (Los Angeles); immunology, infectious diseases
- WOODRUM, DAVID E, Professor, 1968; MD, 1965, University of Illinois
- WOODWARD, GEORGE A., Professor, 2003; MD, 1983, Temple University, MBA, 1999, University of Pennsylvania
- WOOLFREY, ANN E., Associate Professor, 1989; MD, 1984, University of Minnesota

WRIGHT, JEFFREY A., Associate Professor, 1988; MD, 1978, University of Missouri (Kansas City)

YAMAGUCHI, IKUYO, Acting Instructor, 2003; MD, 1987, Kumamoto University (Japan), PhD, 1994, Kurume University (Japan)

YANAY, OFER, Assistant Professor, 1998; MD, 1993, Hebrew University (Israel)

YUNG, DELPHINE, Assistant Professor, 2004; MD, 1997, Stanford University

ZERR, DANIELLE M., Assistant Professor, 1993; MD, 1993, Temple University

ZHANG, GUOQIANG, Acting Instructor, 2004; MBBS, 1990, Sun Yat-Sen University, PhD, 1999, Sun Yat-Sen University, MD, 1999, Sun Yat-Sen University

ZHENG, JIANG, Associate Professor, 2007; MS, 1985, Zhejiang University (China), MS, 1990, University of Kansas, PhD, 1992, University of Kansas

ZIMMERMAN, FREDERICK J. \* Associate Professor, 2000; PhD, 1994, University of Wisconsin (Madison), MS, 1994, University of Wisconsin (Madison); Economic determinants and outcomes of health disparities

ZIMMERMAN, JERRY J., Professor, 1998; PhD, 1975, University of Wisconsin (Madison), MD, 1979, University of Wisconsin (Madison)

ZINNER, SAMUEL, Assistant Professor, 2003; MD, 1994, University of California (Berkeley)

BRIDGES, RICHARD J., Affiliate Professor, 2003; PhD, 1984, Cornell University

CATTERALL, WILLIAM A \* Professor, 1977; PhD, 1972, Johns Hopkins University; molecular biology of ion channels, molecular pharmacology and neurobiology

CHAVKIN, CHARLES \* Professor, 1984; PhD, 1982, Stanford University; cell and molecular mechanisms of psychoactive opiate drugs to understand normal and pathophysiology

COOK, DAVID G. \* Adjunct Research Assoc Professor, 1998; PhD, 1991, Yale University; Molecular mechanisms of Alzheimer's disease

DANIELS, CHRISTOPHER K., Affiliate Associate Professor, 2003; MS, 1975, University of Wisconsin, PhD, 1982, Stanford University

DE FERRARI, GIANCARLO, Affiliate Assistant Professor, 2002; PhD, 2002, Catholic University of Chile

DEVAUD, LESLIE L., Affiliate Associate Professor, 2003; PhD, 1988, Oregon State University

GARDNER, RICHARD G. \* Assistant Professor, 2006; PhD, 2000, University of California (San Diego); Studies of ubiquitin-mediated regulation in the nucleus including: nuclear protein quality control and its role in protecting against protein aggregation diseases; regulation of chromatin structure in telomere silencing, gene activation, and DNA repair; a

GREENBERG, NORMAN M., Affiliate Professor, 2005; PhD, 1988, University of British Columbia (Canada); orthopaedics, traumatology

HAGUE, CHRIS \* Assistant Professor, 2005; PhD, 2002, Creighton University; Pharmacological and molecular characterization of G-protein coupled receptors

HALPERN, LAWRENCE M \* Associate Professor Emeritus, 1965; PhD, 1961, Albert Einstein College of Medicine; neuropharmacology

HAMBLIN, MARK W., Adjunct Associate Professor, 1990; PhD, 1982, University of California (San Diego), MD, 1982, University of California (San Diego); regulation of blood flow, exercise physiology

HOL, WILHELMUS G.J. \* Adjunct Professor, 1992; MS, 1966, Technical University (Eindhoven), PhD, 1971, University of Groningen (Netherlands); protein crystallography, drug design, vaccine development, and protein engineering

diagnosis and psychopharmacology of anxiety, depression, and ADHD in adults

HORITA, AKIRA \* Professor Emeritus, 1954; MS, 1951, University of Washington, PhD, 1954, University of Washington; Pharmacology, Psychiatry

JUCHAU, MONT RAWLINGS, Professor Emeritus, 1981; PhD, 1966, University of Iowa

KREBS, EDWIN G, Professor Emeritus, 1948; MD, 1943, Washington University

LEE, KYUNG-SOON, Acting Instructor, 2002; MD, 1989, Ewha University (Korea), MS, 1993, Ewha University (Korea), PhD, 1996, Ewha University (Korea)

LOOMIS, TED A, Professor Emeritus, 1947; MS, 1941, University of Buffalo, PhD, 1943, University of Buffalo, MD, 1946, Yale University

MAIER, SEBASTIAN KARL-GEOR, Affiliate Assistant Professor, 1999; MD, 1995, University of Wurzburg (Germany), DrMed, 1996, University of Wurzburg (Germany)

MC KNIGHT, G STANLEY \* Professor, 1976; PhD, 1976, Stanford University; phosphorylation; gene expression and neuro/endocrine physiology in mice using genetic approaches pulmonary and critical care medicine

MOON, RANDALL T. \* Professor, 1985; PhD, 1982, University of Washington; embryonic development; signal transduction; cancer biology pulmonary and critical care medicine

NATHANSON, NEIL \* Professor, 1979; PhD, 1975, Brandeis University; neurobiology; molecular analysis of neural signal transduction by muscarinic and neurokinin receptors

NEUMAIER, JOHN F. \* Adjunct Associate Professor, 1990; PhD, 1989, University of Washington, MD, 1990, University of Washington; Neurobiology of stress and depression; regulation of serotonin receptors

OMIECINSKI, CURTIS J \* Affiliate Professor, 1983; PhD, 1980, University of Washington; molecular toxicology, genetic regulation/expression of drug/chemical metabolizing enzymes

PHILLIPS, PAUL \* Assistant Professor, 2004; PhD, 1999, University of London, UK; Rapid dopamine neurotransmission during motivated behaviors and addictions. Sudden Infant Death Syndrome, Landscape & Nature Photography, The psychology of conflict resolution

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## Pharmacology

BAJJALIEH, SANDRA M. \* Associate Professor, 1995; MS, 1983, University of Illinois, PhD, 1989, University of Wisconsin (Madison); molecular neurobiology surgery of adult brain and cranial base tumors, molecular biology of nervous system tremors

BEAVO, JOSEPH A \* Professor, 1977; PhD, 1970, Vanderbilt University; roles and molecular mechanisms of cyclic nucleotide phosphodiesterase regulation of cell function hematology

BLACK, STEPHEN M., Affiliate Associate Professor, 2003; PhD, 1990, University of Edinburgh (UK)

BOMSZTYK, KAROL \* Adjunct Professor, 1983; MD, 1977, University of Rochester; role of cytokine-induced protein kinases in the regulation of gene expression

RISINGER, FRED O., Affiliate Associate Professor, 2003; MS, 1981, University of Louisiana, PhD, 1987, University of Louisiana

ROBERTSON, R. PAUL \* Affiliate Professor, 1968; MD, 1964, Creighton University; Diabetes, oxidative stress, beta cell glucose toxicity, pancreas/islet transplantation. gastroenterology

ROHN, TROY T., Affiliate Assistant Professor, 2003; PhD, 1994, University of Washington

SCHELLENBERG, GERARD D, Adjunct Research Professor, 1977; PhD, 1978, University of California (Riverside)

SCHWINN, DEBRA A \* Adjunct Professor, 2007; MD, 1983, Stanford University; ANESTHESIOLOGY, GENOME SCIENCES, PHARMACOLOGY

SEAMON, KENNETH B., Affiliate Professor, 1996; PhD, 1976, Carnegie Mellon University

SHADLE, SUSAN E., Affiliate Associate Professor, 2003; PhD, 1994, Stanford University

SLATTERY, JOHN T \* Professor, 1978; PhD, 1978, State University of New York (Buffalo); pharmacokinetics/pharmacodynamics of alkylating agents, oncology/ bone marrow transplant

SOKOLOV, STANISLAV, Acting Instructor, 2002; MS, 1997, Moscow Inst of Physics & Tech (Russia), PhD, 2001, Institute of Physics and Technology, Russia

STELLA, NEPIH \* Associate Professor, 1999; PhD, 1995, University of Lausanne (Switzerland); Microglia cells activation: Involvement of endogenous cannabinoid ligands and their allied receptors

STORM, DANIEL R \* Professor, 1978; MS, 1967, University of Washington, PhD, 1971, University of California (Berkeley); molecular basis of neuroplasticity; cAMP and Ca<sup>2+</sup> signal transduction systems in the CNS

TANG, XIAO-BO, Lecturer, 1999; PhD, 1992, University of Giessen (Germany)

TEMPEL, BRUCE L. \* Professor, 1988; PhD, 1983, Princeton University; molecular neurobiology/neurogenetics, especially potassium channel gene structure and function

VINCENZI, FRANK F \* Professor, 1967; MS, 1962, University of Washington, PhD, 1965, University of Washington; membrane transport, autonomic and cardiovascular pharmacology

WANG, EDITH H. \* Associate Professor, 1996; MA, 1987, Columbia University, MPhil, 1988, Columbia University, PhD, 1991, Columbia University; Regulation of genes that control cellular proliferation and differentiation

WATSON, EILEEN L \* Adjunct Professor, 1970; PhD, 1970, University of Utah; salivary gland pharmacology and regulation

XIA, ZHENGUI \* Adjunct Professor, 1997; MS, 1985, Wuhan University (China), PhD, 1991, University of Washington; neuronal apoptosis, neuronal gene regulation

YU, FRANK, Affiliate Assistant Professor, 1997; MSC, 1990, University of British Columbia (Canada), PhD, 1997, McGill University (Canada)

ZHENG, NING \* Associate Professor, 2002; PhD, 1997, University of Texas (Southwestern); Structural Biology And Protein Crystallography

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## Physiology and Biophysics

ADAMS, MARVIN \* Research Associate Professor, 2000; PhD, 1991, Colorado State University

ALMERS, WOLFHARD, Affiliate Professor, 1974; PhD, 1971, University of Rochester

ANDERSON, CURTIS, Affiliate Associate Professor, 2005; MS, 1992, Northern Arizona University, PhD, 1996, Northern Arizona University

ANDERSON, MARJORIE E. \* Professor Emeritus, 1971; PhD, 1969, University of Washington; physiology of basal ganglia and thalamus; neural control of movement

ASBURY, CHARLES L \* Assistant Professor, 2004; MS, 1993, Tulane University, PhD, 1999, University of Washington; molecular basis of biological motion; biophysics of kinetochore-microtubule attachments

BABCOCK, DONNER \* Research Professor, 1986; PhD, 1971, Oregon State University; Gamete physiology, sperm motility, chemotaxis, capacitation, acrosomal exocytosis, Ca<sup>2+</sup> signaling

BARNES, BRIAN M, Affiliate Professor, 2004; PhD, 1983, University of Washington

BARRIA-ROMAN, ANDRES \* Assistant Professor, 2005; PhD, 1998, University of

Chile; Role and regulation of glutamate receptors during synaptic plasticity

BERGER, ALBERT J \* Professor, 1977; MA, 1965, Princeton University, PhD, 1967, Princeton University, PhD, 1976, University of California (San Francisco); neural and chemical control of respiration, neurobiology, synaptic transmission

BINDER, MARC D \* Professor, 1978; MS, 1972, University of Southern California, PhD, 1974, University of Southern California; organization of spinal reflexes

BLINKS, JOHN R., Professor Emeritus, 1990; MD, 1955, Harvard University

BOTHWELL, MARK ALLEN \* Professor, 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology

BOYER, BERT B, Affiliate Associate Professor, 2004; PhD, 1988, Louisiana State University

BRENGELMANN, GEORGE L, Professor Emeritus, 1966; PhD, 1967, University of Washington

BUCK, LINDA B. \* Affiliate Professor, 2003; PhD, 1980, University of Texas (unspecified); Mechanisms underlying odor and pheromone perception and aging

BULT-ITO, ABEL, Affiliate Associate Professor, 2005; MS, 1988, University of Groningen (Netherlands), PhD, 1993, Wesley College

BURNS, JENNIFER M, Affiliate Assistant Professor, 2004; MS, 1992, University of Washington, PhD, 1997, University of Alaska

CARLSON, STEVEN S. \* Professor, 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology of synaptic transmission

CONLEY, KEVIN E \* Professor, 1988; PhD, 1983, University of Wisconsin (Madison), MS, 1983, University of Wisconsin; muscle metabolism and energetics in vivo

COPPIN, CHRISTOPHE M, Affiliate Assistant Professor, 2008; PhD, 1993, Tufts University, MD, 1993, Tufts University

CRILL, WAYNE E, Professor Emeritus, 1966; MD, 1962, University of Washington

DETWILER, PETER B \* Professor, 1976; PhD, 1970, Georgetown University; physiology of photoreceptors

EIGER, STEVEN MANUEL, Affiliate Assistant Professor, 1997; PhD, 1984, University of Michigan



FAIRHALL, ADRIENNE L \* Assistant Professor, 2003; MS, 1993, Weizmann Institute For Science (Israel), PhD, 1997, Weizmann Institute For Science (Israel); Computational and systems neuroscience: adaptive information processing in sensory systems

FEIGL, ERIC O \* Professor, 1969; MD, 1958, University of Minnesota; cardiovascular physiology, coronary and cerebral circulation

FETZ, EBERHARD \* Professor, 1967; PhD, 1966, Massachusetts Institute of Technology; cortical regulation of movement

FROEHNER, STANLEY C \* Professor, 2000; PhD, 1973, California Institute of Technology; Molecular mechanisms of synapse formation and muscle disease

FUCHS, ALBERT F \* Professor, 1969; MS, 1961, Drexel Institute of Technology, PhD, 1966, Johns Hopkins University; oculomotor physiology, vision

GINIGER, EDWARD SCOTT \* Affiliate Associate Professor, 1994; MS, 1979, Yale University, PhD, 1988, Harvard University; neural development, mechanism of axon guidance, genetic specification of brain structure

GLENNY, ROBB \* Professor, 1987; MA, 1980, Duke University, MD, 1984, University of Virginia; determinants of regional pulmonary blood flow and ventilation distribution

GORDON, ALBERT M. \* Professor Emeritus, 1964; PhD, 1961, Cornell University; skeletal and cardiac muscle physiology/biophysics

GORDON, SHARONA E. \* Associate Professor, 1993; PhD, 1993, Brown University; Molecular Mechanisms of Ion Channel Gating in Visual and Olfactory Transduction

GRIMES, MARK L, Affiliate Associate Professor, 2004; PhD, 1986, University of Oregon

HILDEBRANDT, JACOB \* Professor, 1966; MSC, 1960, University of British Columbia (Canada), PhD, 1966, University of Washington; respiratory physiology

HILLE, BERTIL \* Professor, 1968; PhD, 1967, Rockefeller University; receptors and ion channels of excitable membranes; Cell signaling; intracellular calcium dynamics; nerve, muscle, synapse, epithelia, pituitary, reproductive cells

HLASTALA, MICHAEL P \* Professor, 1970; PhD, 1969, State University of New York (Buffalo); respiratory physiology, inert gas analysis of respiratory function

HORWITZ, GREGORY \* Assistant Professor, 2007; MS, 1997, Stanford University, PhD, 1999, Stanford University; neural basis of color perception

JAGADEESH, BHARATHI \* Assistant Professor, 1999; PhD, 1993, Northwestern University; Neural basis of visual learning and memory

KAVANAUGH, MICHAEL P, Affiliate Associate Professor, 2004; PhD, 1986, Oregon Health Sciences University

KENNEDY, THELMA T, Professor Emeritus, 1958; MS, 1949, University of Chicago, PhD, 1955, University of Chicago

KLOWDEN, MARC J, Affiliate Professor, 2004; MS, 1974, University of Illinois, PhD, 1976, University of Illinois

KOERKER, DONNA J \* Professor Emeritus, 1970; PhD, 1970, University of Michigan; endocrinology, intermediate metabolism of carbohydrates

KUSHMERICK, MARTIN J. \* Professor, 1988; MD, 1963, University of Pennsylvania, PhD, 1966, University of Pennsylvania; muscle contraction, magnetic resonance, metabolic imaging NMR spectroscopy

LASKOWSKI, MICHAEL B., Affiliate Professor, 1988; PhD, 1970, University of Oklahoma

LEIN, EDWARD S, Affiliate Assistant Professor, 2005; PhD, 1998, University of California (Berkeley)

LINDER, THOMAS M, Senior Lecturer, 1975; PhD, 1971, University of Washington

MC KEAN, THOMAS A, Affiliate Professor, 1984; PhD, 1968, University of Oregon

MC MILLAN, JAMES A, Affiliate Professor, 1984; MS, 1970, University of California (Davis), PhD, 1972, University of California (Davis)

MELBY, ANNA, Senior Lecturer, 1996; MS, 1987, University of California (San Diego), PhD, 1995, University of Oregon

MUNSON, JOHN B, Affiliate Professor, 1998; PhD, 1965, University of Rochester

OTT, TROY L, Affiliate Assistant Professor, 2004; MS, 1988, Auburn University, PhD, 1992, University of Florida

OWENS, JESSE L., Affiliate Associate Professor, 2003; PhD, 1987, University of Alaska

PERKEL, DAVID J \* Adjunct Professor, 2000; PhD, 1992, University of California (San Francisco); Neural mechanisms of learning; focus on vocal learning in songbirds

PERLMUTTER, STEVE I \* Research Associate Professor, 1991; PhD, 1991, Northwestern University; Neural control of arm movements by cortical and spinal circuits

POOLOS, NICHOLAS P \* Adjunct Associate Professor, 2001; PhD, 1991, Stanford University, MD, 1991, Stanford University; Cellular neurophysiology of epilepsy; physiology of neuronal dendrites

RAISBECK, MERL F., Affiliate Professor, 2002; DVM, 1975, Colorado State University, MS, 1982, University of Missouri, PhD, 1984, University of Missouri

RANSOM, BRUCE ROBERT \* Adjunct Professor, 1995; PhD, 1972, Washington University, MD, 1972, Washington University; neurology, neuroscience research

REGNIER, MICHAEL \* Adjunct Associate Professor, 1997; MS, 1983, Portland State University, PhD, 1991, University of Southern California; Mechanics, kinetics and computational modeling of cardiac/skeletal muscle contraction

RIEKE, FREDERICK MARTIN \* Associate Professor, 1997; PhD, 1991, University of California (Berkeley); Sensory signal processing and computation

ROBERTSON, H. THOMAS, Professor, 1968; MD, 1968, Harvard University

RODNICK, KENNETH J, Affiliate Professor, 2004; MS, 1983, Oregon State University, MA, 1984, Oregon State University, PhD, 1989, Stanford University

ROWELL, LORING B, Professor Emeritus, 1962; PhD, 1962, University of Minnesota

RUBEL, EDWIN W. \* Professor, 1986; MS, 1967, Michigan State University, PhD, 1969, Michigan State University; developmental neurobiology, with special emphasis on vertebrate auditory system development

SANTANA, LUIS F \* Assistant Professor, 2001; MS, 1992, University of Hawaii, PhD, 1996, University of Maryland; Molecular studies of calcium signaling in cardiac and smooth muscle

SCHER, ALLEN M, Professor Emeritus, 1950; PhD, 1951, Yale University

SCHULTE, MARVIN K, Affiliate Associate Professor, 2004; MS, 1989, University of

Minnesota, PhD, 1992, University of Minnesota

SCHWINDT, PETER C, Professor Emeritus, 1974; MS, 1965, Massachusetts Institute of Technology, PhD, 1972, University of Washington

SHADLEN, MICHAEL N. \* Professor, 1995; PhD, 1985, University of California (Berkeley), MD, 1988, Brown University; neurobiology of vision and cognition

SMITH, ORVILLE A, Professor Emeritus, 1956; MA, 1950, Michigan State University, PhD, 1953, Michigan State University

SPAIN, WILLIAM \* Professor, 1978; MD, 1977, Columbia University; signal transduction in the central nervous system

STAHL, WILLIAM L, Professor Emeritus, 1967; PhD, 1963, University of Pittsburgh

STEINER, ROBERT A \* Professor, 1974; PhD, 1975, University of Oregon; Neuroendocrinology/Neuroscience/Endocrinology

STIRLING, CHARLES E, Professor Emeritus, 1968; PhD, 1966, State University of New York (Upstate Med Ct)

SULLIVAN, JANE M \* Assistant Professor, 2002; PhD, 1990, University of Utah; Cellular and molecular mechanisms controlling synaptic transmission and plasticity

SUN, QIAN-QUAN, Affiliate Assistant Professor, 2006; MS, 1993, Shandong University (China), PhD, 1998, St. Andrews College

SWENSON, ERIK R., Adjunct Professor, 1983; MD, 1979, University of California (San Diego)

TELLER, DAVIDA Y \* Professor Emeritus, 1965; PhD, 1965, University of California (Berkeley); vision, psychophysics, development of vision

VALENZENO, DENNIS P, Affiliate Professor, 2004; MS, 1975, Case Western Reserve University, PhD, 1976, Case Western Reserve University

VAN CITTERS, ROBERT L., Professor Emeritus, 1962; MD, 1953, University of Kansas

WELLS, RICHARD B, Affiliate Associate Professor, 2004; MS, 1979, Stanford University, PhD, 1985, University of Idaho

WHITE, SUSAN R., Affiliate Professor, 1987; PhD, 1971, Indiana University

WISE, PHYLLIS M, Professor, 2005; MA, 1969, University of Michigan, PhD, 1972, University of Michigan

WORDEMAN, LINDA \* Professor, 1994; PhD, 1988, University of California (Berkeley); mitosis and myofibril formation

ZAGOTTA, WILLIAM N. \* Professor, 1993; PhD, 1989, Stanford University; molecular mechanisms of ion channel function

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## Psychiatry and Behavioral Sciences

AL-NOORI, SALWA, Acting Instructor, 2000; PhD, 2000, Baylor College of Medicine

ARMSTRONG, HUBERT E, Associate Professor Emeritus, 1966; PhD, 1963, Syracuse University

AVERY, DAVID H, Professor, 1980; MD, 1972, Washington University

AYLWARD, ELIZABETH H. \* Adjunct Professor, 1997; MA, 1976, University of Connecticut, PhD, 1982, Cornell University; Structural and functional magnetic resonance imaging of neurological/neuropsychiatric disorders

BAKER, LAURA D., Assistant Professor, 1995; MA, 1986, Saint Mary's University of San Antonio, PhD, 1995, Washington University

BARNES, ROBERT, Associate Professor, 1974; MD, 1973, University of Utah

BELENKY, GREGORY, Affiliate Professor, 2005; MD, 1971, Stanford University

BENNETT, WILLIAM M., Assistant Professor, 1994; MD, 1992, University of British Columbia (Canada)

BERNIER, RAPHAEL, Assistant Professor, 2007; MS, 1996, University of Wisconsin (Madison), MS, 2004, University of Washington, PhD, 2007, University of Washington

BIRD, THOMAS D., Adjunct Professor, 1968; MD, 1968, Cornell University

BONNER, LAURA M., Acting Instructor, 2008; MA, 1998, California School of Professional Psychology, PhD, 2003, California School of Professional Psychology

BOOKSTEIN, FRED L \* Professor, 2005; MA, 1971, Harvard University, PhD, 1977, University of Michigan; Morphometrics

BORSON, SOO, Professor, 1972; MD, 1969, Stanford University

BOWDEN, DOUGLAS M, Professor, 1969; MD, 1965, Stanford University

BOYNTON, LORIN D, Assistant Professor, 1995; MBChB, 1991, University of Capetown (South Africa)

BRADEN, JENNIFER B., Acting Instructor, 2004; MD, 1998, Medical College of Wisconsin, MPH, 2001, University of Washington

BREITNER, JOHN, Professor, 2002; MD, 1970, University of Pennsylvania, MPH, 1978, Johns Hopkins University

BRKANAC, ZORAN, Assistant Professor, 1998; MD, 1993, University of Zagreb (Yugoslavia)

BRUNS, ERIC, Assistant Professor, 2005; PhD, 1997, University of Vermont

BUCHWALD, DEDRA S, Adjunct Professor, 1987; MD, 1981, University of California (San Diego)

CALDERON, ROSEMARY, Associate Professor, 1989; PhD, 1988, University of Washington

CALSYN, DONALD, Professor, 1980; PhD, 1979, University of Washington

CARGILL, KIMA \* Adjunct Assistant Professor, 2002; MA, 1997, University of Texas (Austin), PhD, 2002, University of Texas (Austin); Educational psychology and psychoanalytic theory and culture

CARLIN, ALBERT S, Associate Professor Emeritus, 1964; MA, 1961, Syracuse University, PhD, 1964, Syracuse University

CARLISLE, LYNDIA LEE, Assistant Professor, 1987; MD, 1985, Medical College of Georgia

CARMICHAEL OLSON, HEATHER, Senior Lecturer, 1987; MA, 1976, University of Iowa, PhD, 1986, University of Washington

CARR, JOHN E, Professor Emeritus, 1963; MA, 1958, Syracuse University, PhD, 1963, Syracuse University

CHANEY, EDMUND, Associate Professor, 1977; PhD, 1976, University of Washington

CHILES, JOHN A, Acting Professor, 1973; MD, 1966, University of Pennsylvania

CIECHANOWSKI, PAUL S, Associate Professor, 1994; MDCM, 1991, McGill

University (Canada), MPH, 1999, University of Washington

CLARK, MICHAEL S., Assistant Professor, 1997; PhD, 1997, University of Iowa

COMTOIS, KATHERINE ANN \* Associate Professor, 1992; MA, 1990, University of Maryland, PhD, 1992, University of Maryland

CONNOR, PAUL D., Assistant Professor, 1995; PhD, 1995, Brigham Young University

COSGROVE, KENNEDY M, Acting Instructor, 2000; MPH, 2000, Tulane University, MD, 2000, Tulane University

COWLEY, DEBORAH S, Professor, 1980; MD, 1980, University of Pennsylvania

CRAFT, SUZANNE \* Professor, 1994; PhD, 1985, University of Texas (Austin); neuropsychology of attention and memory in development and aging

DAGADAKIS, CHRISTOS S, Associate Professor, 1976; MD, 1974, University of Washington, MPH, 1975, University of Washington

DAGER, STEPHEN R \* Adjunct Professor, 1979; MD, 1978, University of Nebraska; application of functional brain imaging techniques to investigate neuropsychiatric disorders and studying the biology of psychiatric disorders

DAVIS CORREALE, TANIA M., Assistant Professor, 1999; MA, 1991, Bradley University, PhD, 1996, University of Wisconsin

DAVYDOW, DIMITRY S, Assistant Professor, 2008; MD, 2002, University of Missouri (Kansas City)

DIKMEN, SUREYYA S \* Adjunct Professor, 1974; MA, 1967, University of Michigan, PhD, 1973, University of Washington; clinical neuropsychology, neuropsychological and psychosocial outcomes in traumatic head injury

DOBIE, DORCAS J, Associate Professor, 1984; MD, 1984, University of Michigan

DOERR, HANS O, Professor Emeritus, 1967; MD, 1962, Florida State University, PhD, 1965, Florida State University

DONOVAN, DENNIS, Professor, 1981; MA, 1972, Western Washington University, PhD, 1980, University of Washington

DORSA, DANIEL M, Affiliate Professor, 1979; PhD, 1977, University of California (Davis)

DUBACH, MARK F, Associate Professor, 1985; PhD, 1983, University of Washington

DUNN, CHRISTOPHER W., Associate Professor, 1994; MA, 1990, University of Florida, PhD, 1994, University of Florida

DWORKIN, SAMUEL F, Professor Emeritus, 1974; DDS, 1958, New York University, PhD, 1969, New York University

DYCK, DENNIS, Affiliate Professor, 1992; MA, 1970, Pepperdine University, PhD, 1973, University of Oklahoma

ERICKSON, RICHARD C., Associate Professor Emeritus, 1971; PhD, 1969, University of Washington

FANN, JESSE R. \* Associate Professor, 1990; MD, 1989, Northwestern University, MPH, 1995, University of Washington; Psychiatric epidemiology in cancer & neurologic populations, health services research, depression, cognitive disorders

FELKER, BRADFORD, Assistant Professor, 1997; MD, 1987, University of Virginia

GRANT, THERESE M. \* Research Associate Professor, 2001; MEd, 1982, University of Oregon, PhD, 1999, University of Washington; Prenatal alcohol and drug exposure; intervention with substance-abusing mothers

GROTE, NANCY \* Adjunct Research Assoc Professor, 2007; MEd, 1968, Tufts University, MSW, 1980, University of Pittsburgh, PhD, 1992, University of Pittsburgh; Individual and couple distress during the transition to parenthood Psychoneuroimmunology; Risk and resilience in economically disadvantaged, minority women; Behavioral medicine

HAMBLIN, MARK W., Associate Professor, 1990; PhD, 1982, University of California (San Diego), MD, 1982, University of California (San Diego)

HAMMOND, KENRIC W. \* Clinical Associate Professor, 1988; MD, 1974, University of California (San Diego); Applied Medical Informatics and Health Services Research emphasizing medical records and natural language processing

HORITA, AKIRA \* Professor Emeritus, 1954; MS, 1951, University of Washington, PhD, 1954, University of Washington; Pharmacology, Psychiatry

HUGGINS, JANET E., Acting Instructor, 2000; PhD, 1992, University of Texas, Southwestern medical center

JILEK, WOLFGANG G., Affiliate Professor, 1986; MD, 1956, McGill University

(Canada), MSC, 1966, McGill University (Canada), MA, 1972, University of British Columbia (Canada)

JOHNSON, MEGAN, Associate Professor, 2004; MD, 1992, University of Cincinnati, MPH, 1998, University of Washington

JOHNSON, MERLIN, Professor Emeritus, 1955; MD, 1947, University of Iowa

KAISER, JEFFREY P., Acting Instructor, 2000; MD, 2000, University of North Carolina

KANTER, EVAN D., Assistant Professor, 1994; PhD, 1992, University of Wisconsin, MD, 1994, University of Wisconsin

KATON, WAYNE J \* Professor, 1976; MD, 1976, University of Oregon; Depression, panic disorder, somatization, adherence

KAYSEN, DEBRA, Assistant Professor, 2003; MA, 1997, University of Missouri, PhD, 2003, University of Missouri

KING, BRYAN, Professor, 2005; MD, 1983, Medical College of Wisconsin

KIVLAHAN, DANIEL R \* Associate Professor, 1984; MA, 1979, University of Missouri, PhD, 1983, University of Missouri; evaluating assessment, prevention, and treatment approaches for addictive behaviors; implementation and effectiveness of clinical practice guidelines

KOHEN, RUTH, Assistant Professor, 1988; MD, 1986, University of Aachen (Germany)

KRASHIN, DANIEL, Acting Instructor, 2006; MD, 1994, University of Michigan

LAMPE, THOMAS H, Associate Professor, 1977; MD, 1977, Indiana University

LARIMER, MARY E \* Professor, 1992; MS, 1990, University of Washington, PhD, 1992, University of Washington; prevention of alcohol problems among college students

LATTEMANN, DIANNE \* Research Professor, 1981; MS, 1977, Loyola University (campus unspecified), PhD, 1981, University of California (San Francisco); Effect of Regulatory Peptides on Feeding and Behavior and Metabolism

LEBLANG, JOSHUA, Lecturer, 2008; EdS, 1994, University of Florida, MEd, 1994, University of Florida

LEVERENZ, JAMES B., Associate Professor, 1992; MD, 1985, University of Washington

- LEVY, MITCHELL, Assistant Professor, 1996; MD, 1996, George Washington University
- LEWIS, MELISSA, Assistant Professor, 2005; MS, 2002, Montana State University, PhD, 2005, North Dakota State University
- LI, GAIL, Assistant Professor, 1996; MMed, 1986, Beijing Medical University (China), PhD, 1989, Beijing Medical University (China)
- LINEHAN, MARSHAM \* Adjunct Professor, 1977; MA, 1970, Loyola University (campus unspecified), PhD, 1971, Loyola University (campus unspecified); behavioral assessment and therapy, suicide & parasuicide, borderline personality disorders, drug abuse, behavior therapy with women
- LOGSDON, REBECCAG. \* Adjunct Research Professor, 1986; MA, 1976, Oklahoma State University, PhD, 1986, Oklahoma State University; Gerontology, Alzheimer's disease, Dementia caregivers, Quality of Life in Dementia
- LUDMAN, EVETTE, Affiliate Associate Professor, 2004; MA, 1985, University of Oregon, PhD, 1993, University of Oregon
- MADHAVAN, ERNEST M., Acting Instructor, 2003; MD, 2003, Hahnemann Medical College
- MARTIN, BENNY R, Affiliate Assistant Professor, 2004; MA, 1998, University of California (Santa Barbara), PhD, 2004, University of California (Santa Barbara)
- MAXIM, PETER E, Associate Professor Emeritus, 1973; MD, 1966, Stanford University, PhD, 1971, Stanford University
- MC CANN, BARBARA S., Professor, 1986; MS, 1982, Rutgers University, PhD, 1984, Rutgers University
- MC CAULEY, ELIZABETH \* Professor, 1979; PhD, 1973, State University of New York (Buffalo); Developmental Psychopathology Focused on Affective Disorders, Behavioral Genetics, Adolescent Adjustment
- MC CLELLAN, JON M., Associate Professor, 1984; MD, 1984, University of Michigan
- MCCURRY, SUSAN MELANCON \* Adjunct Research Professor, 1991; MSC, 1977, University of Nevada (Las Vegas), MS, 1984, University of Nevada (Las Vegas), PhD, 1991, University of Nevada (Reno); dementia, aging, older adults, depression, sleep, psychotherapy intervention research, neuropsychology
- MCFALL, MILES E, Associate Professor, 1984; MA, 1979, University of Montana, MA, 1979, University of Montana, PhD, 1981, University of Montana
- MELTZOFF, ANDREW N \* Adjunct Professor, 1974; PhD, 1976, Oxford University (UK); perceptual, cognitive & social development in infants, concept formation & memory in infancy and early childhood
- MELVILLE, JENNIFER L., Adjunct Assistant Professor, 1995; MD, 1995, University of California (Los Angeles), MPH, 2001, University of Washington
- MICHAEL, SCOTT T., Acting Instructor, 2002; MA, 1999, University of Kansas, PhD, 2002, University of Kansas
- MILLER, MARGARET A., Affiliate Associate Professor, 1989; MS, 1976, Idaho State University, PhD, 1984, University of Washington
- MOHAN, PHILIP J., Affiliate Professor, 1985; PhD, 1967, Claremont Graduate School
- MURBURG, MICHELE, Associate Professor, 1982; MD, 1978, Albert Einstein College of Medicine
- MYERS, KATHLEEN M, Associate Professor, 2001; MS, 1972, University of Hawaii, MPH, 1979, University of Hawaii, MD, 1979, University of Hawaii
- NAVAS, PARVONEH, Assistant Professor, 1992; PhD, 1992, University of California (Los Angeles)
- NEIGHBORS, CLAYTON T., Associate Professor, 2000; MS, 1996, Lamar University, PhD, 2000, University of Houston
- NEUMAIER, JOHN F. \* Associate Professor, 1990; PhD, 1989, University of Washington, MD, 1990, University of Washington; Neurobiology of stress and depression; regulation of serotonin receptors
- PASCUALY, O. MARCELLA, Associate Professor, 1984; MD, 1982, Universidad Javeriana (Colombia)
- PASIC, JAGODA, Assistant Professor, 1997; MD, 1978, University of Sarajevo, MS, 1983, University of Sarajevo, PhD, 1990, University of London King's College (UK)
- PEPPING, MARY \* Adjunct Professor, 1981; MA, 1975, California State University, Los Angeles, PhD, 1981, Washington State University; Psychosocial outcome after brain injury; neuropsychological test performance in dementia, and in mild traumatic brain injury
- PESKIND, ELAINE R., Professor, 1986; MS, 1978, Washington State University, MD, 1986, University of Washington
- PETRIE, ERIC C., Associate Professor, 1985; MS, 1981, University of Wisconsin (Madison), MD, 1985, University of Washington
- PHILLIPS, MICHAEL R, Affiliate Assistant Professor, 1980; MD, 1974, McMaster University (Canada)
- PHILLIPS, PAUL \* Assistant Professor, 2004; PhD, 1999, University of London, UK; Rapid dopamine neurotransmission during motivated behaviors and addictions
- POESCHLA, BRIAN D., Assistant Professor, 2002; MD, 1986, Emory University
- RADANT, ALLEN D., Associate Professor, 1985; MD, 1985, University of California (Davis)
- RASKIND, MURRAY, Professor, 1970; MD, 1968, Columbia University
- RASKIND, WENDY H \* Professor, 1978; PhD, 1977, University of Washington, MD, 1978, University of Washington; Molecular genetics of neurodegenerative and behavioral disorders
- REGER, MARK A., Affiliate Assistant Professor, 2001; MA, 1998, Rosemead School of Psychology, PhD, 2001, Rosemead School of Psychology
- REOUX, JOSEPH P., Assistant Professor, 1995; MD, 1985, University of Texas (Houston)
- RICHARDSON, LAURA P., Adjunct Associate Professor, 1998; MD, 1994, University of Michigan
- RIES, RICHARD K., Professor, 1975; MD, 1975, Northwestern University
- ROBINSON, NANCY M., Professor Emeritus, 1969; MA, 1953, Stanford University, PhD, 1958, Stanford University
- ROLL, JOHN, Affiliate Assistant Professor, 2005; MA, 1990, St. Bonaventure University (New York), PhD, 1994, Washington State University
- ROMANO, JOAN, Professor, 1982; MS, 1974, University of Pittsburgh, PhD, 1982, University of Pittsburgh
- ROY-BYRNE, PETER, Professor, 1986; MD, 1978, Tufts University
- RUSSO, JOAN E., Associate Professor, 1990; PhD, 1989, University of Washington

- SAELEN, BRIAN E, Associate Professor, 2006; MA, 1996, State University of New York (Buffalo)
- SAWCHUK, CRAIG NEIL, Affiliate Assistant Professor, 2000; MA, 1999, University of Arkansas, PhD, 2000, University of Arkansas
- SAXON, ANDREW J, Professor, 1982; MD, 1977, Tufts University
- SCHAE, K. WARNER, Affiliate Professor, 1954; MS, 1953, University of Washington, PhD, 1956, University of Washington
- SCHER, MARYONDA, Associate Professor Emeritus, 1955; MD, 1954, University of Washington
- SCHMALING, KAREN B., Affiliate Professor, 1992; MS, 1985, University of Washington, PhD, 1988, University of Washington
- SCOTT, DAVID T., Associate Professor, 1993; MS, 1973, Yale University, PhD, 1978, Yale University
- SHAW, SHILO R, Acting Instructor, 2006; MS, 2004, Oklahoma State University, PhD, 2006, Oklahoma State University
- SHORES, MOLLY M., Associate Professor, 1989; MD, 1987, University of Washington
- SIMPSON, TRACY L., Associate Professor, 1999; MS, 1993, University of New Mexico, PhD, 1999, University of New Mexico
- SLOAN, KEVIN L., Associate Professor, 1992; MD, 1986, University of Chicago
- SMITH, WAYNE R., Associate Professor, 1978; PhD, 1979, Washington University, MPH, 1986, University of Washington
- SNOWDEN, MARK B., Associate Professor, 1990; MD, 1990, University of Washington
- SPELTZ, MATTHEW L., Professor, 1980; MA, 1975, Western Washington University, PhD, 1980, University of Missouri
- STELLA, NEPI \* Associate Professor, 1999; PhD, 1995, University of Lausanne (Switzerland); Microglia cells activation: Involvement of endogenous cannabinoid ligands and their allied receptors
- STORCK, MICHAEL G., Assistant Professor, 1989; MD, 1980, Medical College of Ohio
- STRACHAN, ERIC, Acting Instructor, 2004; MA, 1999, University of Colorado (Colorado Springs), MLS, 2003, University of Nebraska, PhD, 2004, University of Nebraska
- STREISSGUTH, ANN P, Professor Emeritus, 1963; MA, 1959, University of California (Berkeley), PhD, 1964, University of Washington
- SULLIVAN, MARK D. \* Professor, 1985; PhD, 1982, Vanderbilt University, MD, 1984, Vanderbilt University
- SULZBACHER, STEPHEN, Associate Professor Emeritus, 1966; MA, 1964, Hollins College (Virginia), PhD, 1971, University of Washington
- SYRJALA, KAREN L., Associate Professor, 1983; PhD, 1983, Boston University, MA, 1983, Boston University
- SZOT, PATRICIA, Senior Lecturer, 1987; MS, 1982, Idaho State University, PhD, 1987, Oregon State University
- TERI, LINDA \* Adjunct Professor, 1984; PhD, 1980, University of Vermont; Controlled clinical trials of caregiving training for patients with Alzheimer's; studies on cognitive and behavioral changes that accompany normal and abnormal aging
- THOMPSON, ALEXANDER, Acting Instructor, 2006; MBA, 2001, Rice University, MD, 2001, Baylor College of Medicine
- TOWNES, BRENDA D, Professor Emeritus, 1961; MA, 1958, Mills College, PhD, 1970, University of Washington
- TRUPIN, ERIC W, Professor, 1974; MA, 1973, University of Wyoming, PhD, 1974, University of Wyoming
- TSUANG, DEBBY W., Associate Professor, 1992; MD, 1988, University of Iowa, MS, 1992, University of Iowa
- TURNER, JUDITH A, Professor, 1979; MA, 1975, University of California (Los Angeles), PhD, 1979, University of California (Los Angeles)
- ULDALL, KARINA K., Associate Professor, 1987; MD, 1987, University of Missouri
- UNUTZER, JURGEN \* Professor, 2003; MA, 1988, University of Chicago, MD, 1990, Vanderbilt University, MPH, 1996, University of Washington
- VANDER STOEP, ANN \* Associate Professor, 1998; MS, 1979, University of Oklahoma, PhD, 1997, University of Washington; Psychiatric epidemiology, children's mental health services, public health research methodology
- VANNOY, STEVEN D., Assistant Professor, 2004; MS, 2001, University of Wisconsin (Madison), PhD, 2005, University of Wisconsin (Madison), MPH, 2007, University of Washington
- VARLEY, C K, Professor, 1974; MD, 1973, University of Washington
- VARRA, ALETHEA, Acting Instructor, 2008; MA, 2004, University of Nevada, PhD, 2007, University of Nevada
- VEITENGRUBER, JASON P., Acting Instructor, 2000; MD, 2000, University of Washington
- VEITH, RICHARD, Professor, 1973; MD, 1973, University of Washington
- VERHULST, JOHAN, Associate Professor Emeritus, 1971; MD, 1964, Catholic University of Louvain (Belgium)
- VILLACRES, ENRIQUE C., Associate Professor, 1981; MD, 1981, Medical College of Wisconsin
- VITALIANO, PETER P \* Professor, 1976; MS, 1973, Syracuse University, PhD, 1975, Syracuse University; psychiatric methodology (epidemiology, design, psychometrics), behavioral medicine (stress and coping)
- VITIELLO, MICHAEL V \* Professor, 1977; PhD, 1980, University of Washington; Sleep, sleep disorders, circadian rhythms, aging, behavioral medicine, principles of behavioral sciences applied to medical research and practice
- VON KORFF, MICHAEL, Affiliate Professor, 1986; DSc, 1978, Johns Hopkins University
- WAGNER, AMY W, Affiliate Assistant Professor, 2000; MS, 1989, University of Washington, PhD, 1995, University of Washington
- WALKER, EDWARD A., Professor, 1983; MM, 1979, Catholic University of America, MD, 1983, University of Washington
- WALKER, R DALE, Affiliate Professor, 1977; MD, 1972, University of Oklahoma
- WANG, LUCY Y., Acting Instructor, 2002; MD, 2002, Pennsylvania State University
- WARD, NICHOLAS G, Professor Emeritus, 1975; MD, 1973, Cornell University
- WATSON, GEORGE STENNIS, Assistant Professor, 1999; MDiv, 1979, Harvard University, MA, 1996, University of Mississippi, PhD, 1999, University of Mississippi
- WHITSETT, STAN F, Affiliate Assistant Professor, 2001; MSC, 1976, University of South Alabama, PhD, 1982, University of Tennessee

WILLIS, SHERRY L., Affiliate Professor, 1992; PhD, 1972, University of Texas (unspecified)

WILSON, LAWRENCE G, Associate Professor Emeritus, 1970; MD, 1966, University of Kansas

WINGERSON, DANE K., Associate Professor, 1987; MD, 1987, University of Washington

WOMACK, WILLIAM M, Associate Professor Emeritus, 1961; MD, 1961, University of Virginia

ZATZICK, DOUGLAS F., Associate Professor, 2000; MD, 1989, University of California (San Diego)

ZHOU, XIAO-HUA ANDREW \* Adjunct Professor, 2002; MS, 1987, University of Calgary (Canada), PhD, 1991, Ohio State University; ROC Curve Methodology, Causal Inferences, Analysis of Skewed Distributions, Analysis of Missing Data, Diagnostic Medicine, Health Services Research, and Mental Health Research

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## Radiation Oncology

DOUGLAS, JAMES G., Associate Professor, 1980; MS, 1976, University of Wisconsin, MD, 1980, Case Western Reserve University

GROUDINE, MARK \* Professor, 1976; MD, 1975, University of Pennsylvania, PhD, 1976, University of Pennsylvania; chromatin structure and gene activity

HENDRICKSON, KRISTI, Lecturer, 2004; PhD, 1999, University of Washington

KALET, IRA J \* Professor, 1968; MA, 1966, Princeton University, PhD, 1968, Princeton University; computer simulation of radiation therapy, artificial intelligence, computer graphics

KANE, GABRIELLE M, Associate Professor, 2007; MBChB, 1975, Trinity College (Ireland), MEd, 1998, University of Toronto (Canada), EdD, 2005, University of Toronto (Canada)

KIM, JANICE N, Assistant Professor, 2006; MS, 1997, Chicago Medical School, MD, 2001, Chicago Medical School

KOH, WUI-JIN, Professor, 1984; MD, 1984, Loma Linda University

KROHN, KENNETH A \* Professor, 1981; PhD, 1971, University of California (Davis); chemistry, radiation oncology

LARAMORE, GEORGE E, Professor, 1976;

MS, 1966, University of Illinois, PhD, 1969, University of Illinois, MD, 1976, University of Miami (Florida)

LIAO, JAY J, Assistant Professor, 2007; MD, 2002, University of Michigan

PARVATHANENI, UPENDRA, Assistant Professor, 2006; MBBS, 1993, Annamalai University (India)

PATEL, SHILPEN, Assistant Professor, 2006; MD, 2001, University of Texas (Galveston)

PHILLIPS, MARK H, Professor, 1991; PhD, 1982, University of Wisconsin (Madison)

QUANG, TONY, Assistant Professor, 2007; MD, 2002, Drexel University

RAJENDRAN, JOSEPH, Adjunct Associate Professor, 1994; MBBS, 1973, Madurai University (India), MD, 1980, Christian Medical College

ROCKHILL, JASON K., Assistant Professor, 2000; PhD, 1997, University of Illinois, MD, 1998, University of Illinois

RUSSELL, KENNETH J., Professor, 1985; MD, 1979, Harvard University

SCHWARTZ, JEFFREY L., Associate Professor, 1995; PhD, 1979, University of Texas (Dallas)

WALLNER, KENT E, Associate Professor, 1997; MD, 1981, Ohio State University

WILBUR, D. SCOTT, Professor, 1986; PhD, 1978, University of California (Irvine)

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## Radiology

ANDREWS, ROBERT TORRANCE, Associate Professor, 2003; MD, 1990, University of California (San Diego)

ANZAI, YOSHIMI, Professor, 2000; MD, 1986, Chiba University (Japan)

AYLWARD, ELIZABETH H. \* Professor, 1997; MA, 1976, University of Connecticut, PhD, 1982, Cornell University; Structural and functional magnetic resonance imaging of neurological/neuropsychiatric disorders

BASSINGTHWAIGHTE, JAMES \* Adjunct Professor, 1975; MD, 1955, University of Toronto (Canada), PhD, 1964, Mayo Medical School/Graduate School; computer analysis of transport mechanisms in blood and tissues

BEAUCHAMP, NORMAN J., Professor, 2002; MD, 1990, Michigan State University

BITTLE, MICHELLE MARIE, Assistant Professor, 2002; MD, 1997, University of Illinois

BLACKMORE, CHRISTOPHER C., Affiliate Professor, 1995; MD, 1990, University of Rochester, MPH, 1997, University of Washington

BREE, ROBERT, Professor, 2004; MD, 1968, University of Michigan, MHA, 1998, University of Michigan

BREWER, DAVID K, Associate Professor, 1977; MD, 1972, Harvard University

CALDWELL, JAMES H \* Professor, 1970; MD, 1970, University of Missouri; positron emission tomography imaging of myocardial oxygenation, metabolism and sympathetic function

CARTER, STEPHEN J, Associate Professor, 1974; MD, 1968, University of Washington

CHEEKATLA, SURESH KUMAR R., Acting Instructor, 2007; MBBS, 2002, All-India Institute of Medical Sciences, MD, 2005, Postgrad. Inst. of Medical Ed. Research

CHESNUT, CHARLES, Professor, 1966; MD, 1966, University of Florida

CHEW, FELIX S, Professor, 2004; MD, 1979, University of Florida, MEd, 1995, Harvard University, MBA, 2004, Duke University

CHINAPUVVULA, NAGAR., Acting Instructor, 2007; MBBS, 1998, Andhra University (India)

COHEN, WENDY, Professor, 1987; MD, 1975, Harvard University

CONLEY, KEVIN E \* Professor, 1988; PhD, 1983, University of Wisconsin (Madison), MS, 1983, University of Wisconsin; muscle metabolism and energetics in vivo

COY, DAVID L., Affiliate Assistant Professor, 2000; PhD, 1998, University of Washington, MD, 2000, University of Washington

CUEVAS, CARLOS, Assistant Professor, 2001; MD, 1992, Pontificia Universidad Catolica De Chile

DAGER, STEPHEN R \* Professor, 1979; MD, 1978, University of Nebraska; application of functional brain imaging techniques to investigate neuropsychiatric disorders and studying the biology of psychiatric disorders

DALLEY, ROBERT W., Associate Professor, 1987; MD, 1982, University of Utah

- DEMARTINI, WENDY B., Assistant Professor, 1998; MD, 1998, Virginia College of Medicine
- DIGHE, MANJIRI K., Assistant Professor, 2003; MBBS, 1998, University of Mumbai (India), MD, 2002, University of Mumbai (India)
- DUBINSKY, THEODORE J., Associate Professor, 1984; MD, 1983, University of Maryland
- DUGOWSON, CARIN E., Adjunct Associate Professor, 1977; MD, 1976, University of Illinois, MPH, 1986, University of Washington
- EARY, JANET F, Professor, 1980; MD, 1980, Michigan State University
- EBY, PETER R, Assistant Professor, 2000; MD, 1999, Vanderbilt University
- EFFMANN, ERIC L., Professor, 1991; MD, 1967, Indiana University
- ELLENBOGEN, RICHARD G., Adjunct Professor, 1997; MD, 1983, Brown University
- EUBANK, WILLIAM B., Associate Professor, 1996; MS, 1980, Louisiana State University, MPH, 1986, Tulane University, MD, 1986, Tulane University
- FIGLEY, MELVIN M, Professor Emeritus, 1958; MD, 1944, Harvard University
- FINK, JAMES R, Assistant Professor, 2005; MD, 1998, University of California (Los Angeles)
- FINLEY, RANDALL J, Acting Instructor, 2007; MD, 2000, Albert Einstein College of Medicine
- FISHER, DARRELL R., Affiliate Assistant Professor, 1985; MS, 1976, University of Florida, PhD, 1978, University of Florida
- GERSON, RACHEL F., Acting Instructor, 2007; MA, 1993, Stanford University, MD, 2001, Dartmouth College
- GHODKE, BASAVARAJ, Assistant Professor, 2002; MBBS, 1989, University of Bombay, MD, 1993, University of Bombay
- GILL, EDWARD A., Adjunct Associate Professor, 1984; MD, 1984, University of Washington
- GLICKERMAN, DAVID J., Associate Professor, 1990; MD, 1983, Albany Medical College
- GODWIN, J. DAVID, Professor, 1986; MD, 1971, Stanford University
- GOODMAN, MARGARET M., Acting Instructor, 2008; MS, 1996, University of Arizona, MD, 2003, University of Arizona
- GOSWAMI, GAURAV K, Assistant Professor, 2004; MD, 1988, University of Bombay, MS, 1992, University of Bombay
- GRAHAM, C BENJAMIN, Professor Emeritus, 1959; MD, 1958, University of Washington
- GREEN, DOUGLAS E, Assistant Professor, 2007; MD, 1991, University of Vermont
- GROSS, JOEL A., Assistant Professor, 2000; MS, 1985, University of California (San Diego), MD, 1990, University of California (Davis)
- GUNN, MARTIN, Assistant Professor, 2002; MBChB, 1994, University of Auckland (New Zealand)
- GUTCHECK, ROBERT A, Affiliate Assistant Professor, 1983; PhD, 1972, University of Pittsburgh
- HALLAM, DANIAL K., Associate Professor, 2000; MS, 1985, Stanford University, MD, 1989, Stanford University
- HARLEY, JOHN D, Professor, 1972; MD, 1966, Washington University
- HARMS, SOENKE, Associate Professor, 2007; MD, 1982, University of California (San Francisco)
- HAYES, CECIL E., Professor, 1991; PhD, 1973, Harvard University
- HAYNOR, DAVID R \* Professor, 1979; PhD, 1971, University of California (Berkeley), MD, 1979, Harvard University; Medical image processing and segmentation; image deformation; functional MRI; expression arrays
- HOFFER, ERIC K., Affiliate Associate Professor, 1997; MD, 1984, University of California (Los Angeles)
- HOFFER, FREDRIC A, Professor, 2006; MD, 1975, University of Iowa
- HOFFMAN, HUNTER G, Affiliate Assistant Professor, 1997; MS, 1989, University of Washington, PhD, 1992, University of Washington
- HWANG, JOO HA, Adjunct Assistant Professor, 1997; MD, 1997, University of Chicago
- ISHAK, GISELE ELIAS, Assistant Professor, 2005; MD, 2000, Lebanese University (Beirut)
- JAKOBOVITS, REX, Affiliate Assistant Professor, 2003; MS, 1994, University of Washington, PhD, 1999, University of Washington
- JARVIK, JEFFREY G \* Assistant Professor, 1993; MD, 1987, University of California (San Diego); health services research as it relates to diagnostic imaging
- JI, HONGXIU, Affiliate Assistant Professor, 2007; MD, 1985, Fudan University (China), PhD, 1991, Kuopio University
- KANAL, KALPANA M., Assistant Professor, 2003; MS, 1991, University of Texas (unspecified), PhD, 1996, University of Texas (unspecified)
- KASRAIE, ALEX A., Acting Instructor, 2008; MD, 2003, Medical College of Virginia
- KIM, YONGMIN \* Adjunct Professor, 1982; MS, 1979, University of Wisconsin (Madison), PhD, 1982, University of Wisconsin (Madison); computer architecture, imaging systems, medical imaging, computer graphics, multimedia, home healthcare, modeling and medical instrumentation
- KINAHAN, PAUL E. \* Professor, 2001; MS, 1988, University of British Columbia (Canada), PhD, 1994, University of Pennsylvania; Medical imaging
- KOLOKYTHAS, ORPHEUS, Assistant Professor, 2002; MD, 1996, University of Ulm (Germany)
- KOOY, TODD, Assistant Professor, 2001; MD, 2001, University of Washington
- KROHN, KENNETHA \* Professor, 1981; PhD, 1971, University of California (Davis); chemistry, radiation oncology
- KUSHMERICK, MARTIN J. \* Professor, 1988; MD, 1963, University of Pennsylvania, PhD, 1966, University of Pennsylvania; muscle contraction, magnetic resonance, metabolic imaging NMR spectroscopy
- LANGER, STEVE G., Affiliate Associate Professor, 1996; MS, 1988, Michigan State University, PhD, 1994, Oakland University
- LEBLOND, ANTOINE, Acting Instructor, 2007; MD, 2002, Laval University (Canada)
- LEE, JEAN H., Assistant Professor, 2004; MD, 1996, Korea University (Korea), MMSc, 2001, Korea University (Korea), PhD, 2004, Korea University (Korea)
- LEHMAN, CONSTANCE D., Professor, 1990; MS, 1986, Yale University, MPH,

- 1987, Yale University, PhD, 1990, Yale University, MD, 1990, Yale University
- LEHMAN, CONSTANCE D., Professor, 1990; MD, 1990, Yale University
- LEWELLEN, THOMAS \* Professor, 1972; PhD, 1972, University of Washington; My areas of specialization are centered on technologies for imaging of gamma rays for medical applications. The work includes: 1) investigation of basic gamma ray interactions in scintillators and solid state detectors; 2) design and fabrication of el
- LEWIS, DAVID H., Associate Professor, 1985; MD, 1985, Virginia Commonwealth University
- LICHTENSTEIN, JOEL E., Professor, 2000; MS, 1966, Ohio State University, MD, 1972, Ohio State University
- LINK, JEANNE, Associate Professor, 1999; MS, 1982, University of Washington, PhD, 1998, University of Washington
- LYOO, KYOON, Affiliate Associate Professor, 2007; MD, 1988, Seoul National University (Korea), PhD, 1997, Seoul National University (Korea), MMSc, 2002, Harvard University
- MAHURIN, RODERICK K., Associate Professor, 1997; MA, 1984, University of Houston, PhD, 1985, University of Houston
- MAKI, JEFFREY H., Associate Professor, 1998; PhD, 1990, Duke University, MD, 1991, Duke University
- MANCHANDA, VIVEK, Acting Instructor, 2004; MD, 1994, Delhi University College of Medical Sciences India
- MANKOFF, DAVID A. \* Professor, 1990; PhD, 1988, University of Pennsylvania, MD, 1988, University of Pennsylvania; Research focuses on cancer imaging to explore in vivo cancer biology
- MARAVILLA, KENNETH R., Professor, 1986; MD, 1970, State University of New York (Brooklyn)
- MARGLIN, STEPHEN I, Associate Professor, 1986; MD, 1968, Yale University
- MCMENAMIN, DREW S, Acting Instructor, 2007; MBBS, 1999, University of Queensland (Australia)
- MEDVERD, JONATHAN R., Assistant Professor, 1995; MD, 1995, New York University
- MINOSHIMA, SATOSHI \* Professor, 2000; MD, 1987, Chiba University (Japan), PhD, 1994, Chiba University (Japan); Functional Brain Imaging / Image Processing and Statistics
- MITSUMORI, LEE M., Assistant Professor, 1996; MSBE, 1994, University of Washington, MD, 1996, University of Hawaii
- MOSHIRI, MARIAM, Assistant Professor, 2005; MD, 1995, SUNY Brooklyn
- MOSS, ALBERT A., Professor, 1984; MD, 1967, State University of New York (Syracuse)
- MULCAHY, HYOJEONG, Assistant Professor, 2007; MD, 1992, Chonnam National University, Korea, MS, 1997, University of Ulsan (Korea)
- NARAYANAN, MANOJ V., Affiliate Assistant Professor, 2005; MSC, 1991, Birla Inst of Tech And Science (India), PhD, 1996, Drexel University
- NATHAN, ROBERT O, Acting Assistant Professor, 2008; MD, 1977, University of Oklahoma, MPH, 2007, University of Washington
- NELP, WIL B, Professor Emeritus, 1962; MD, 1955, Johns Hopkins University
- NELSON, JAMES A., Professor Emeritus, 1986; MD, 1965, Harvard University
- NG, LYDIA LUP-MING, Affiliate Assistant Professor, 2005; PhD, 2000, Macquarie University (Australia)
- NOWINSKI, WIESLAW, Affiliate Professor, 2004; MS, 1977, Technical University of Warsaw (Poland), PhD, 1985, University of Lodz (Poland), DSc, 1994, Polish Academy of Science (Poland)
- O'SULLIVAN, S. FINBARR, Affiliate Professor, 1987; PhD, 1983, University of Wisconsin
- OTTO, RANDOLPH K, Assistant Professor, 2007; MD, 1985, University of Michigan
- PALADIN, ANGELISA M., Assistant Professor, 1998; MD, 1999, Chicago Medical School
- PARISI, MARGUERITE T., Associate Professor, 2001; MD, 1977, State University of New York (campus unspecified), MS, 1995, University of California (Los Angeles)
- PHILLIPS, GRACE SIAN, Assistant Professor, 2002; MD, 1997, Johns Hopkins University
- PHILLIPS, LEON A, Associate Professor Emeritus, 1959; MD, 1952, Yale University
- PIPAVATH, SUDHAKAR N., Assistant Professor, 2002; MBBS, 1997, All-India Institute of Medical Sciences, MD, 2000, All-India Institute of Medical Sciences
- PORTILLO, MICHAEL S., Acting Instructor, 2008; MD, 2003, University of South Florida
- POSSE, STEFAN, Affiliate Assistant Professor, 1995; PhD, 1990, University of Berne (Switzerland)
- PRUTHI, SUMIT, Assistant Professor, 2005; MBBS, 1998, University of Mumbai (India)
- RAJENDRAN, JOSEPH, Associate Professor, 1994; MBBS, 1973, Madurai University (India), MD, 1980, Christian Medical College
- RELYEA-CHEW, ANNEMARIE, Assistant Professor, 2007; MA, 1985, University of Florida, JD, 1989, Syracuse University, MS, 2005, Wake Forest University
- RICHARDS, TODD L, Professor, 1985; PhD, 1984, University of California (Berkeley)
- RICHARDSON, MICHAEL L., Professor, 1984; MD, 1975, Baylor College of Medicine
- ROGERS, JAMES V, Affiliate Associate Professor, 1975; MD, 1975, Emory University
- ROHRMANN JR, CHARLES A., Professor, 1975; MD, 1966, University of Washington
- ROSENBAUM, DAVID M, Associate Professor, 1983; MD, 1977, Albert Einstein College of Medicine
- SARANATHAN, MANOJKUMAR, Affiliate Assistant Professor, 2005; MS, 1996, University of Washington, PhD, 2001, University of Washington
- SHAW, DENNIS, Professor, 1983; MD, 1983, University of Washington
- SHIBATA, DEAN K., Associate Professor, 1990; MD, 1989, Stanford University
- SHUMAN, WILLIAM P, Professor, 1979; MD, 1973, State University of New York (Upstate Med Ct)
- SILBERGELD, JANET J., Acting Instructor, 2005; MA, 1982, University of California (Berkeley), MD, 1989, Ohio State University, MS, 1993, University of Washington
- STANDISH, LEANNA, Affiliate Professor, 2004; MS, 1975, University of Massachusetts, PhD, 1978, University of Massachusetts



STEARNS, CHARLES W, Affiliate Associate Professor, 1996; MS, 1986, Massachusetts Institute of Technology, PhD, 1990, Massachusetts Institute of Technology

STERN, ERIC J., Professor, 1992; MD, 1985, U of Medicine & Dentistry of New Jersey

STEWART, BRENT K., Professor, 1993; PhD, 1988, University of California (Los Angeles)

STORCH, RICHARD \* Adjunct Professor, 1977; MS, 1968, Massachusetts Institute of Technology, PhD, 1978, University of Washington; ship production, large scale assembly and manufacturing systems, statistical quality control, design for production

SZE, RAYMOND W., Affiliate Associate Professor, 2000; MD, 1990, U of Medicine & Dentistry of New Jersey

TAKASUGI, JULIE E., Associate Professor, 1988; MD, 1982, University of California (Los Angeles)

TALNER, LEE B., Professor Emeritus, 1993; MD, 1963, Yale University

THAPA, MAHESH, Assistant Professor, 2001; MD, 2000, University of Southern California

VAIDYA, SANDEEP, Assistant Professor, 2004; MBBS, 1996, University of Bombay

VALJI, KARIM, Professor, 2007; MD, 1982, Harvard University

VESSELLE, HUBERT J. \* Associate Professor, 1997; MS, 1986, Case Western Reserve University, PhD, 1990, Case Western Reserve University, MD, 1991, Case Western Reserve University; Nuclear Medicine and Abdominal Imaging

WEINBERGER, EDWARD, Professor, 1979; MD, 1979, Harvard University

WILSON, GREGORY J., Affiliate Assistant Professor, 2008; PhD, 1999, University of Wisconsin

WISEMAN, ROBERT W., Affiliate Associate Professor, 1989; MS, 1984, University of Rhode Island, PhD, 1988, Florida State University

YANG, XIAOMING, Professor, 2006; MD, 1983, Suzhou Medical College (China), MS, 1986, Peking Union Medical College (China), PhD, 1991, University of Kuopio (Finland)

YAU, EDWIN J., Acting Instructor, 2008; MD, 2003, Baylor College of Medicine

YUAN, CHUN \* Professor, 1991; PhD, 1988, University of Utah; magnetic resonance imaging in medical application

ZHANG, MIQIN \* Adjunct Associate Professor, 1999; MAS, 1993, University of Victoria (Canada), PhD, 1999, University of California (Berkeley); Biomaterials, tissue engineering, BioMEMS, bionanotechnology, surface modification, drug delivery

ZOLLARS, LAUREL E, Acting Instructor, 2008; MD, 1980, Yale University

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## Rehabilitation Medicine

AMTMANN, DAGMAR \* Research Assistant Professor, 2000; MS, 1982, Institute of Economics (Czechoslovakia), MA, 1995, University of Washington, PhD, 2002, University of Washington; Measurement of patient reported outcomes, cognitive disabilities, assistive technology, latent variable modeling

ANDERSON, MARJORIE E. \* Professor Emeritus, 1971; PhD, 1969, University of Washington; physiology of basal ganglia and thalamus; neural control of movement

ATLI, AYSEL, Adjunct Assistant Professor, 2003; MD, 1994, University of Istanbul (Turkey)

BARR, KAREN P., Associate Professor, 2001; MD, 1993, Northeast Ohio University College of Medicine

BELL, KATHLEEN \* Professor, 1981; MD, 1981, Temple University; brain injury and sleep disorders, community reintegration in brain injury, medical education

BENDITT, JOSHUA O., Adjunct Professor, 1994; MD, 1982, University of Washington

BERNI, ROSEMARIAN, Associate Professor Emeritus, 1967; MN, 1973, University of Washington

BOMBARDIER, CHARLES H. \* Professor, 1989; MS, 1984, Washington State University, PhD, 1987, Washington State University; spinal cord injury adjustment, decubitus ulcers, brain injury, alcohol abuse after injury

BROWN, PATRICIAA \* Clinical Assistant Professor, 1998; MEd, 1989, University of Washington, EdD, 1997, University of Washington; Employment of persons with disabilities, disability policy, technology and disability, and adolescent transition from school to employment

BURNS, STEPHEN P. \* Associate Professor, 1992; MD, 1992, Brown University; medical complications of spinal cord injury

CIOL, MARCIA A. \* Research Associate Professor, 1999; MS, 1982, Universidad Estadual De Campinas(Brazil), MS, 1987, University of Washington, PhD, 1991, University of Washington; Statistics in medicine, development of measures of evaluation of mobility and rehabilitation

CZERNIECKI, JOSEPH M \* Professor, 1982; MD, 1981, University of British Columbia (Canada), MS, 1985, University of Washington; rehabilitation engineering, prosthetics, biomechanics and gait analysis

DANIELSON, KIRK D., Acting Instructor, 2004; MD, 2003, Oregon Health Sciences University

DE LATEUR, BARBARA J, Affiliate Professor, 1963; MD, 1963, University of Washington, MS, 1968, University of Washington

DIKMEN, SUREYYA S \* Professor, 1974; MA, 1967, University of Michigan, PhD, 1973, University of Washington; clinical neuropsychology, neuropsychological and psychosocial outcomes in traumatic head injury

DOWDEN, PATRICIAA \* Clinical Assistant Professor, 1986; MS, 1980, University of Washington; Augmentative communication, including speech intelligibility, intervention systems, efficacy and outcomes

DUDGEON, BRIAN J \* Associate Professor, 1982; MS, 1983, University of Washington, PhD, 2000, University of Washington; Pain and disability, assistive technology, pediatric rehabilitation, occupational therapy

EHDE, DAWN \* Associate Professor, 1992; MA, 1989, University of North Dakota, PhD, 1992, University of North Dakota; Chronic pain secondary to disability, psychological distress following disability

ENGEL, JOYCE MARIE \* Professor, 1993; MA, 1984, University of Kansas, PhD, 1988, University of Kansas; use of occupational therapy in pain management, especially with children

ESSELMAN, PETER C. \* Professor, 1981; MD, 1979, University of Washington, MD, 1986, University of Washington; exercise in the elderly; treatment of traumatic brain injury and burn rehabilitation

FANN, JESSE R. \* Adjunct Associate Professor, 1990; MD, 1989, Northwestern University, MPH, 1995, University of Washington; Psychiatric epidemiology in

cancer & neurologic populations, health services research, depression, cognitive disorders

FORDYCE, WILBERT E, Professor Emeritus, 1953; MS, 1951, University of Washington, PhD, 1953, University of Washington

FRASER, ROBERT T \* Professor, 1977; MS, 1972, University of Southern California, PhD, 1976, University of Wisconsin, MPA, 1984, Seattle University; psychology

GARDNER, GREGORY C., Adjunct Professor, 1989; MD, 1984, Baylor College of Medicine

GOLDSTEIN, BARRY \* Professor, 1987; PhD, 1981, University of California (Los Angeles), MD, 1986, University of California (Los Angeles); skin adaption to mechanical stress, pressure ulcers, overuse injuries of the upper extremity

GUTHRIE, MARK R. \* Associate Professor, 1983; MD, 1980, University of Washington, PhD, 1990, University of Washington; functional assessment, physical therapy efficacy

GUY, ARTHUR W, Professor Emeritus, 1955; MSEE, 1957, University of Washington, PhD, 1966, University of Washington

HALAR, EUGEN M, Professor Emeritus, 1968; MD, 1959, University of Zagreb (Yugoslavia)

HAMMOND, MARGARET C \* Professor, 1979; MD, 1978, Medical College of Wisconsin; medical consequences of longstanding spinal cord injury

HARNISS, MARK \* Clinical Assistant Professor, 1998; MS, 1990, Utah State University, PhD, 1996, University of Oregon; Instruction for children with disabilities; assistive technology across the lifespan

HASELKORN, JODIE K. \* Associate Professor, 1985; MPH, 1985, University of Michigan, MD, 1985, Louisiana State University; health services for the disabled: diagnostic accuracy of tests, effectiveness of interventions

HAYS, ROSS M. \* Professor, 1983; MD, 1978, University of Washington; pediatric rehabilitation, brain injury, neuromuscular diseases, congenital defects, electromyography

HILLEL, ALLEN D \* Adjunct Professor, 1983; MA, 1972, Stanford University, MD, 1976, Stanford University; peripheral nerve physiology after injury, swallowing disorders in neuromuscular disease, voice

disorders, neurolaryngology, electromyography of the larynx

HOFFMAN, JEANNE MARIE \* Assistant Professor, 2000; MA, 1995, Arizona State University, PhD, 2000, Arizona State University; Access to rehabilitation and interventions to improve quality of life in rehabilitation patients

JAFFE, KENNETH M \* Professor, 1975; MD, 1975, Harvard University, MRM, 1982, University of Washington; pediatric rehabilitation, brain injury, neuromuscular diseases, congenital defects, electromyography

JENSEN, MARK \* Professor, 1989; MA, 1984, Arizona State University, PhD, 1989, Arizona State University; assessment and treatment of chronic pain, coping with medical illness, treatment outcome

JOHNSON, KURT LEWIS \* Professor, 1990; MEd, 1979, University of Washington, PhD, 1984, University of Wisconsin; psychological, social, educational and vocational adjustment to disability; community-based rehabilitation; technology and disability

KANNY, ELIZABETH M \* Associate Professor, 1972; MA, 1977, Seattle University, PhD, 1996, University of Washington; Education of Allied Health Practitioners; Ethical reasoning and ethics education

KARTIN, DEBORAH \* Associate Professor, 1984; MS, 1988, University of Washington, PhD, 1996, University of Washington; pediatric developmental disabilities, prenatal drug exposure, high-risk infancy

KELLY, VALERIE E \* Assistant Professor, 2003; MS, 1999, Washington University, PhD, 2003, Washington University; The neural substrates of movement and rehabilitation, particularly the neural mechanisms underlying movement impairments and therapeutic interventions in Parkinson disease

KINNEY, GREGORY A. \* Assistant Professor, 1997; PhD, 1996, Northwestern University

KRAFT, GEORGE HOWARD \* Professor, 1969; MD, 1963, Ohio State University, MS, 1967, Ohio State University; psychiatry

LIM, PAUL C., Acting Assistant Professor, 2004; MD, 2004, University of Washington

LITTLE, JAMES WENDELL \* Professor, 1978; PhD, 1976, University of Chicago, MD, 1977, University of Chicago; psychiatry, rehabilitation medicine, clinical neurophysiology

MAITLAND, MURRAY E \* Associate Professor, 2006; MS, 1989, University of British Columbia (Canada), PhD, 1996, University of Calgary (Canada); Physical Therapy, exercise physiology, biomechanics, anatomical kinesiology, and motor control

MASSAGLI, TERESA L. \* Professor, 1985; MD, 1982, Yale University; medical and rehabilitation outcome after spinal cord injury in children

MAYADEV, ANGELI S., Acting Instructor, 2003; MD, 2003, Northeast Ohio University College of Medicine

MCCOY, SARAH WESTCOTT \* Associate Professor, 2003; MS, 1979, University of Washington, PhD, 1993, University of Washington; Pediatric rehabilitation for cerebral palsy and developmental coordination disorders; postural control examination and intervention

MCQUADE, KEVIN J \* Associate Professor, 2004; MPH, 1986, University of Washington, PhD, 1995, University of Iowa

MOLTON, IVAN, Acting Assistant Professor, 2006; PhD, 2006, University of Miami (Florida)

MORGENROTH, DAVID C, Acting Instructor, 2004; MD, 2003, SUNY Brooklyn

ODDERSON, IB R. \* Associate Professor, 1985; MS, 1973, University of Copenhagen (Denmark), PhD, 1979, Indiana University, MD, 1985, Vanderbilt University; psychiatry

PATRICK, DONALD L. \* Adjunct Professor, 1987; MS, 1968, Columbia University, PhD, 1972, Columbia University; aging, disablement, and health-related quality of life

PATTERSON, DAVID R. \* Professor, 1984; PhD, 1982, Florida State University; treatment of acute pain, psychology of burn patients, psychological outcome of physical trauma

PEPPING, MARY \* Professor, 1981; MA, 1975, California State University, Los Angeles, PhD, 1981, Washington State University; Psychosocial outcome after brain injury; neuropsychological test performance in dementia, and in mild traumatic brain injury

POWELL, JANET M. \* Associate Professor, 1998; MS, 1998, University of Washington, PhD, 2001, University of Washington; Recovery of function following traumatic brain injury and stroke

RAICHLE, KATHERINE A, Affiliate Assistant Professor, 2004; PhD, 2004, University of Iowa

ROBINSON, CYNTHIA A., Lecturer, 1999; MS, 1990, Long Island University

ROBINSON, LAWRENCE R. \* Professor, 1989; MD, 1982, Baylor College of Medicine; psychiatry

RODRIGUEZ, ARTHUR A. \* Associate Professor, 1999; MD, 1972, University of Wisconsin (Madison), MS, 1978, University of Minnesota; Musculoskeletal pain disorders and clinical neurophysiology

SANDERS, JOAN ELIZABETH \* Adjunct Associate Professor, 1992; MSME, 1985, Northwestern University, PhD, 1991, University of Washington; soft tissue biomechanics and tissue adaptation to mechanical stress

SHUMWAY-COOK, ANNE \* Professor Emeritus, 1995; MS, 1973, University of Oregon, PhD, 1983, University of Oregon; Physiologic basis for balance problems following neurological injury, and the clinical applications of this research

SLIMP, JEFFERSON C \* Professor, 1976; MA, 1974, University of Wisconsin, PhD, 1976, University of Wisconsin (Madison); neurophysiology, cerebral cortex, spinal cord, clinical somatosensory evoked potentials

STIENS, STEVE A. \* Associate Professor, 1993; MD, 1986, University of Cincinnati, MS, 1991, University of Washington; Spinal cord injury medicine, rehabilitation, neurogenic bowel care, spinal cord neuroplasticity, and cardiovascular disease after spinal cord injury

STOLOV, WALTER C, Professor Emeritus, 1960; MA, 1951, University of Minnesota, MD, 1956, University of Minnesota

SWETT, ELIZABETH A., Affiliate Assistant Professor, 2005; MS, 1993, University of Wisconsin, PhD, 2000, University of Wisconsin

TEMKIN, NANCY R \* Adjunct Professor, 1977; MS, 1971, University of Connecticut, PhD, 1976, State University of New York (Buffalo); clinical trials, recovery models, statistical modeling of epileptic phenomena, survival analysis

THURMAN, TREVIN, Acting Instructor, 2008; MD, 2002, University of Utah

TURNER, AARON P., Assistant Professor, 2001; MS, 1997, University of Washington, PhD, 2001, University of Washington

TURNER, JUDITH A, Professor, 1979; MA, 1975, University of California (Los

Angeles), PhD, 1979, University of California (Los Angeles)

WASHINGTON, KATHLEENA. \* Clinical Associate Professor, 1986; MS, 1980, University of Wisconsin (Madison), PhD, 1996, University of Washington

WEISS, MICHAEL D., Adjunct Associate Professor, 2001; MD, 1991, Albert Einstein College of Medicine

WIECHMAN ASKAY, SHELLEY A \* Assistant Professor, 2000; MS, 1994, University of Arizona, PhD, 2000, University of Washington; Clinical Psychology - adult and child trauma and pain

WILLIAMS, MARCIA FRANCES \* Adjunct Senior Lecturer, 1978; MPA, 1992, University of Washington, PhD, 2000, University of Washington; High-risk infants: low-birthweight, prenatal substance exposure, intrauterine infection; CSHCN (children with special health care needs); racial disparities

WILLIAMS, RHONDA M. \* Assistant Professor, 1999; MA, 1995, Arizona State University, PhD, 1999, Arizona State University; Psychosocial adjustment to disability, positive psychology, social support, rehabilitation

YORKSTON, KATHRYN \* Professor, 1977; MS, 1972, University of Oregon, PhD, 1975, University of Oregon; neurogenic communication disorders in adults

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## Surgery

ALDEA, GABRIEL S., Professor, 1998; MD, 1981, Columbia University

ALLAN, CHRISTOPHER H \* Adjunct Associate Professor, 1998; MD, 1992, Northwestern University; include wound repair and regeneration, tissue engineering, and application of these fields to extremity injuries

ALLEN, MARGARET D., Affiliate Professor, 1985; MD, 1974, University of California (San Diego)

ANDERSON, BENJAMIN O., Professor, 1994; MD, 1985, Albert Einstein College of Medicine

ARBABI, SAMAN, Associate Professor, 1992; MD, 1992, University of California (Davis), MPH, 2001, University of Washington

ASHBAUGH, DAVID G., Professor Emeritus, 1982; MD, 1957, Ohio State University

BAKTHAVATSALAM, RAMASAMY, Assistant Professor, 1999; MBBS, 1984, Madras Medical College (India), MS, 1988, Madras Medical College (India)

BIRGFELD, CRAIG B, Assistant Professor, 2006; MD, 2000, Virginia College of Medicine

BULGER, EILEEN, Associate Professor, 1992; MD, 1992, Cornell University

BYRD, DAVID R., Professor, 1982; MS, 1978, Tulane University, MD, 1982, Tulane University

CALHOUN, KRISTINE E., Assistant Professor, 2005; MD, 1998, University of Washington; children and youth with developmental disabilities and their families

CLOWES, ALEXANDER W \* Professor, 1980; MD, 1972, Harvard University; vascular smooth muscle cell growth control arterial injury and repair children and youth with developmental disabilities and their families

COHEN, GORDON A., Associate Professor, 1996; MS, 1985, University of California (Los Angeles), MD, 1989, Tulane University, PhD, 1996, University of California (Los Angeles)

COPASS, MICHAEL K, Adjunct Professor, 1969; MA, 1964, Northwestern University, MD, 1964, Northwestern University

CUNDIFF, JASON DAVID, Acting Instructor, 2008; MD, 2000, East Carolina University

CUSCHIERI, JOSEPH, Assistant Professor, 2000; MD, 1994, Wayne State University

DEAN, LARRY S., Professor, 1980; MD, 1980, University of Alabama

DELLINGER, E PATCHEN, Professor, 1977; MD, 1970, Harvard University

DICK, ANDRE AINSWORTH S., Acting Instructor, 2006; MD, 1999, State University of New York (Buffalo); mathematical physics

EGBERT, MARK A, Adjunct Associate Professor, 1982; DDS, 1981, University of Washington

ENGELSTAD, MARK E., Adjunct Associate Professor, 2007; DDS, 1994, University of Minnesota, MD, 1997, University of Louisville

ENGRAV, LOREN H, Professor, 1977; MD, 1969, University of California (Los Angeles); otolaryngology/head and neck surgery

FLUM, DAVID R \* Associate Professor, 2000; MD, 1991, University of Miami

- (Florida), MPH, 2002, University of Washington; Epidemiologic features of surgical care, quality of care/outcomes research. marketing
- FOY, HUGH M, Associate Professor, 1978; MD, 1978, University of Nebraska
- FRIEDRICH, JEFFREY BARTON, Assistant Professor, 2000; MD, 2000, University of Texas (Houston)
- FUTRAN, NEAL DAVID, Adjunct Professor, 1995; DMD, 1982, University of Pennsylvania, MD, 1987, St University of New York (Downstate Med Ctr); craniofacial surgery, cleft lip and palate, microsurgery, jaw reconstruction, orthognathic surgery
- GIBRAN, NICOLE, Professor, 1990; MD, 1985, Boston University
- GOFF, BARBARA A., Adjunct Professor, 1993; MD, 1986, University of Pennsylvania; Bioinformatics for gene expression
- GOLDIN, ADAM BRADLEY, Assistant Professor, 1997; MD, 1997, Rush Medical College; Bioinformatics for gene expression
- GOW, KENNETH W, Associate Professor, 2007; MD, 1991, University of Manitoba (Canada), MS, 1997, University of British Columbia (Canada)
- GRUSS, JOSEPH S., Professor, 1991; MBChB, 1969, University of Witwatersrand (S. Africa); preterm infant physiological and behavioral responsiveness to multimodal stimulation by caregivers
- HANEL, DOUGLAS PAUL, Adjunct Professor, 1992; MD, 1977, St Louis University
- HANNAFORD, BLAKE \* Adjunct Professor, 1989; MS, 1982, University of California (Berkeley), PhD, 1985, University of California (Berkeley); haptic interfaces, robotics, biomechanics, bioengineering, controls, human-machine interaction
- HATSUKAMI, THOMAS, Professor, 1982; MD, 1982, University of California (Los Angeles)
- HEALEY, PATRICK J., Associate Professor, 1993; MD, 1987, Boston University
- HEIMBACH, DAVID M, Professor, 1974; MD, 1964, Cornell University; technical editing, publications management, bibliography for document design
- HOPPER, RICHARD A., Assistant Professor, 2001; MD, 1993, Memorial University of Newfoundland, MSC, 1997, University of Toronto (Canada)
- HORVATH, KAREN D., Associate Professor, 1998; MD, 1990, New York Medical College
- JURKOVICH, GREGORY J., Professor, 1988; MD, 1978, University of Minnesota
- KEAGLE, JENNIFER NEWMAN, Assistant Professor, 2006; MD, 1996, Northwestern University
- KHANDELWAL, SAURABH, Acting Instructor, 2008; MD, 2002, Rush Medical College
- KLEIN, MATTHEW B., Associate Professor, 2003; MD, 1997, Yale University
- KOHLER, TED R, Professor, 1978; MD, 1976, Harvard University
- LANGDALE, LORRIE A., Associate Professor, 1985; MD, 1979, University of Washington
- LEDBETTER, DANIEL J., Associate Professor, 1981; MD, 1981, University of Florida
- LYNGE, DANA C., Associate Professor, 1993; MD, 1985, McGill University (Canada)
- MAIER, RONALD V, Professor, 1974; MD, 1973, Duke University; graphic design
- MANN, GARY N., Associate Professor, 2000; MBBChir, 1989, University of Witwatersrand (S. Africa); comparative development and physiology of invertebrates, genetic control of development
- MATHES, DAVID WOODBRIDGE, Assistant Professor, 2006; MD, 1996, Tulane University; comparative development and physiology of invertebrates, genetic control of development
- MCINTYRE, LISA KUWAMURA, Assistant Professor, 1999; MD, 1995, University of Washington; Federal Indian Law; Indian Treaty Rights; Tribal Law and Indigenous Justice Systems
- MCMULLAN, D. MICHAEL, Assistant Professor, 2002; MD, 1994, University of Texas (Southwestern)
- MEEHAN, JOHN JAMES, Associate Professor, 2008; MD, 1993, University of Iowa
- MEISSNER, MARK H., Associate Professor, 1985; MD, 1985, University of Colorado (campus unspecified)
- MERENDINO, K ALVIN, Professor Emeritus, 1948; MD, 1940, Yale University, PhD, 1946, University of Minnesota
- MILLER, DONALD W, Professor, 1975; MD, 1965, Harvard University
- MOCK, CHARLES N. \* Associate Professor, 1992; ScB, 1977, Brown University, MD, 1980, Brown University, MPH, 1994, University of Washington; injury: epidemiology, prevention, treatment; especially in less developed countries. child adolescent psychology
- MOE, ROGER E, Professor Emeritus, 1961; MD, 1959, University of Washington
- MOKADAM, NAHUSH A., Assistant Professor, 2005; MD, 1998, University of Pennsylvania
- MULLIGAN, MICHAELS, Associate Professor, 1999; MD, 1989, University of Connecticut
- NELIGAN, PETER CAMILLUS, Professor, 2007; MBChB, 1975, Trinity College (Ireland); ceramic processing, refractories, industrial minerals
- OELSCHLAGER, BRANT K, Associate Professor, 1995; MD, 1995, University of North Carolina, Chapel Hill; ceramic processing, refractories, industrial minerals
- O'KEEFE, GRANT E., Associate Professor, 1994; MD, 1988, University of Alberta, Canada
- PARK, JAMES OH, Assistant Professor, 2007; MD, 1998, University of Pennsylvania
- PATTERSON, DAVID R. \* Adjunct Professor, 1984; PhD, 1982, Florida State University; treatment of acute pain, psychology of burn patients, psychological outcome of physical trauma
- PELLEGRINI, CARLOSA., Professor, 1993; MD, 1971, University of Rosario Medical School (Argentina)
- PERKINS, JAMES D., Professor, 1989; MD, 1979, University of Arkansas
- PERMUT, LESTER C., Associate Professor, 2002; MD, 1983, Boston University
- PHAM, TAM NGOC, Assistant Professor, 2005; MD, 1998, University of California (San Diego)
- POMERANTZ, JASON H., Acting Instructor, 2008; MD, 2000, Albert Einstein College of Medicine
- REYES, JORGE DIONISIO, Professor, 2004; MD, 1979, Federal University of Minas Gerais (Brazil)
- ROSEN, JACOB \* Adjunct Research Assoc Professor, 1997; MSC, 1993, Tel

Aviv University (Israel), PhD, 1997, Tel Aviv University (Israel); Human Centered Robotics, Medical Robotics, Rehabilitation Robotics, Human Machine Interfaces, Surgical Robotics, Exoskeleton, Medical Simulation, Biomechanics

SAID, HAKIM K, Assistant Professor, 2006; MS, 1994, Johns Hopkins University, MD, 1998, University of Michigan; risk control and insurance

SATAVA, RICHARD M., Professor, 2002; MD, 1968, Hahnemann Medical College, MS, 1972, Mayo Medical School/Graduate School

SAWIN, ROBERT, Professor, 1987; MS, 1976, University of Iowa, MD, 1982, University of Pittsburgh

SINANAN, MIKA N. \* Professor, 1980; MD, 1980, Johns Hopkins University; Surgical education, biorobotic surgical instrument development, and clinical procedure development for minimally invasive surgery

SOBEL, MICHAEL, Professor, 2001; MD, 1975, Albert Einstein College of Medicine; chemical education, electrochemistry on liquid/liquid interfaces

SPITZER, AUSTIN L, Acting Instructor, 2007; MD, 2000, University of Colorado (Denver)

STARNES, BENJAMIN WARE, Associate Professor, 2006; MD, 1992, Jefferson Medical College

STERLING, JOSE PABLO, Acting Instructor, 2008; MD, 2003, University of New Mexico

TATUM, ROGER P., Assistant Professor, 2002; MD, 1995, Northwestern University

TRAN, NAM THANH, Assistant Professor, 1996; MD, 1996, University of Washington

TRUMBLE, THOMAS E., Adjunct Professor, 1989; MD, 1979, Yale University

VARGHESE, THOMAS K, Assistant Professor, 2007; MBBS, 1995, University of Kerala (India), MS, 2003, Northwestern University; radiochemistry

VEDDER, NICHOLAS, Professor, 1981; MD, 1981, Case Western Reserve University

VERRIER, EDWARD D., Professor, 1989; MD, 1974, Tufts University

WALDHAUSEN, JOHN H., Professor, 1992; MD, 1986, Pennsylvania State University

WILSON, HEATHER-MARIE P, Acting Instructor, 2004; PhD, 2002, University of

Washington; neurology, treatment of epilepsy, testing and use of anticonvulsants

WINTERSCHIED, LOREN C, Professor Emeritus, 1957; PhD, 1953, University of Pennsylvania, MD, 1954, University of Pennsylvania; neurology, treatment of epilepsy, testing and use of anticonvulsants

WOOD, DOUGLAS E., Professor, 1992; MD, 1983, Harvard University; neurology, treatment of epilepsy, testing and use of anticonvulsants

WRIGHT, ANDREW S., Assistant Professor, 2005; MD, 1998, University of Louisville; theoretical nuclear and atomic physics

WU, PETER CHANG CHUNG, Assistant Professor, 2004; MD, 1993, Jefferson Medical College; theoretical nuclear and atomic physics

YEUNG, RAYMOND S. \* Professor, 1997; MD, 1982, University of Toronto (Canada); Genetic and functional analyses of the tuberous sclerosis tumor suppressor genes

ZIERLER, BRENDA \* Adjunct Associate Professor, 1996; PhD, 1996, University of Washington; Research in patient with venous thromboembolism; clinical outcomes, process outcomes (care delivery methods), patient satisfaction, and provider satisfaction

ZIERLER, ROBERT, Professor, 1978; MD, 1976, Johns Hopkins University

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## Urology

ANSELL, JULIAN S, Professor Emeritus, 1959; MD, 1951, Tufts University, PhD, 1959, University of Minnesota

BAKTHAVATSALAM, RAMASAMY, Assistant Professor, 1999; MBBS, 1984, Madras Medical College (India), MS, 1988, Madras Medical College (India)

BARNES, GLOVER W, Professor, 1969; MA, 1955, State University of New York (Buffalo), PhD, 1961, State University of New York (Buffalo)

BERGER, RICHARD E, Professor, 1975; MD, 1973, University of Chicago

BERRY, DONNA L. \* Adjunct Professor, 1994; MN, 1981, University of Texas (Houston), PhD, 1992, University of Washington; Health care of persons with, and at risk for, cancer

BRANNEN, GEORGE, Professor Emeritus, 1978; MD, 1969, Northwestern University

CHAPMAN, WARREN H, Professor Emeritus, 1957; MD, 1952, University of Chicago

ELLIS, WILLIAM J., Professor, 1991; MD, 1985, Johns Hopkins University

GRADY, RICHARD W., Associate Professor, 1996; MD, 1990, University of Michigan

HIGANO, CELESTIA S., Associate Professor, 1982; MD, 1979, University of Massachusetts

JOYNER, BYRON DAVID, Associate Professor, 1999; MD, 1988, Harvard University

KOYLE, MARTIN A, Professor, 2008; MD, 1976, University of Manitoba (Canada)

KRIEGER, JOHN N, Professor, 1982; MD, 1974, Cornell University

LANGE, PAUL HENRY, Professor, 1988; MD, 1967, Washington University

LENDVAY, THOMAS S, Assistant Professor, 2004; MD, 1999, Temple University

LENTZ, GRETCHEN M., Adjunct Associate Professor, 1986; MD, 1986, University of Washington

LIN, DANIEL W., Assistant Professor, 1994; MD, 1994, Vanderbilt University

LONG, LAYRON O., Acting Instructor, 2005; MD, 2000, Meharry Medical College

MILLER, JANE L., Associate Professor, 1985; MD, 1985, University of Oklahoma

MITCHELL, MICHAEL, Professor Emeritus, 1989; MD, 1969, Harvard University

MONTGOMERY, ROBERT B., Adjunct Associate Professor, 1990; MD, 1987, Duke University

MULLER, CHARLES, Lecturer, 1980; MA, 1972, University of Colorado (Boulder), PhD, 1976, University of California (Berkeley)

NELSON, PETER S. \* Adjunct Professor, 1993; MD, 1986, University of Kansas; The study of human carcinogenesis using tools of genomics and bioinformatics

PLYMATE, STEPHEN R, Adjunct Professor, 1972; MD, 1968, University of Nebraska, campus unspecified, MS, 1968, University of Nebraska

PORTER, MICHAEL, Assistant Professor,  
1997; MD, 1997, University of Iowa, MS,  
2001, University of Washington

RUSSELL, KENNETH J., Adjunct Professor,  
1985; MD, 1979, Harvard University

STANFORD, JANET L. \* Adjunct Research  
Professor, 1986; MPH, 1982, Emory  
University, PhD, 1985, Johns Hopkins  
University; Cancer epidemiology and  
genetic susceptibility

SWEET, ROBERT, Affiliate Assistant  
Professor, 1997; MD, 1997, University of  
Minnesota

TAKAYAMA, THOMAS K., Associate  
Professor, 1989; MD, 1985, Tufts  
University

TRUE, LAWRENCE DASHIELL \* Adjunct  
Professor, 1971; MD, 1971, Tulane  
University; urologic pathology, nuclear  
aspects of tumor differentiation

VESSELLA, ROBERT, Professor, 1989;  
PhD, 1974, University of Mississippi

WESSELLS, HUNTER, Professor, 2000;  
MD, 1988, Georgetown University

WRIGHT, JONATHAN, Acting Instructor,  
2001; MD, 2001, University of Washington,  
MS, 2005, University of Washington

YANG, CLAIRE C, Associate Professor,  
1993; MD, 1988, Vanderbilt University

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# School of Nursing

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## School of Nursing

ABRUMS, MARY E. \* Adjunct Assistant Professor, 1979; MN, 1979, University of Washington, MA, 1988, University of Washington, PhD, 1995, University of Washington; Narrative/ethnographic analysis of clients' stories of disparity in health care

ALLEN, DAVID G. \* Professor, 1988; MA, 1971, University of Iowa, PhD, 1975, University of Iowa, MS, 1981, University of Wisconsin; philosophy of science, critical and feminist theory, psychosocial nursing theory

ALTMAN, GAYLENE M. \* Associate Professor, 1975; MN, 1973, University of Washington, PhD, 1992, University of Washington; women's health and inflammation; investigating the differences in inflammatory changes in uterine tissue of women with endometriosis as compared to controls and estrogen metabolism in uterine tissue; pain and endometriosis

BAKER, MARGARET W. \* Assistant Professor, 2002; MS, 1997, Otterbein College, PhD, 2000, University of Washington; elder abuse and neglect; independence and older Americans

BARNARD, KATHRYN E. \* Professor Emeritus, 1963; MS, 1962, Boston University, PhD, 1972, University of Washington; ecological factors of child development

BARONI, MARY A. \* Adjunct Professor, 2001; MS, 1981, University of Rochester, PhD, 1988, Cornell University; Ecological model of human development; medically fragile infants, parenting stress & the attachment relationship; advanced practice nursing; interdisciplinary practice, education & research

BATEY, MARJORIE V. \* Professor Emeritus, 1956; MS, 1956, University of Colorado (Boulder), PhD, 1968, University of Colorado (Boulder)

BAYDAR, NAZLI, Affiliate Associate Professor, 2001; PhD, 1984, Interuniversity Programme In Demography

BEATON, RANDAL D. \* Research Professor, 1977; PhD, 1972, University of Washington; assessment and treatment of temporomandibular joint pain and dysfunction

BEKEMEIER, ELIZABETH R. \* Assistant Professor, 1997; MN, 1994, Johns Hopkins University, MPH, 1994, Johns Hopkins University, PhD, 2007, University of Washington; Public Health

BELZA, BASIA \* Professor, 1991; MN, 1982, University of Virginia, PhD, 1991, University of California (San Francisco); chronic illness, gerontology, fatigue prevention and management in rheumatic diseases

BENOLIEL, JEANNE, Professor Emeritus, 1970; MS, 1955, University of California (Los Angeles), DNS, 1969, University of California (San Francisco)

BERKOWITZ, BOBBIE \* Professor, 1988; MN, 1981, University of Washington, PhD, 1990, Case Western Reserve University; Administration; leadership and policy development within public health and nursing

BERRY, DONNA L. \* Professor, 1994; MN, 1981, University of Texas (Houston), PhD, 1992, University of Washington; Health care of persons with, and at risk for, cancer

BETRUS, PATRICIA \* Associate Professor, 1979; MN, 1979, University of Washington, PhD, 1985, University of Washington; Women and depression, epigenesis of emotions, mental health, stress, violence quantitative analysis, research design

BEVENS, STELLA H., Associate Professor Emeritus, 1983; MA, 1951, University of Minnesota

BLACKBURN, SUSAN T. \* Professor, 1974; MN, 1973, University of Washington, PhD, 1979, University of Washington; high-risk infants and their families, infant care-giving interactions and environments

BLAINEY, CAROL, Associate Professor Emeritus, 1967; MN, 1967, University of Washington

BOND, ELEANOR \* Professor, 1985; MN, 1976, University of Washington, PhD, 1985, University of Washington; acute care nursing, critical care nursing, gut motility, effect of ovarian hormones on GI track, physiological effects of stress

BOOTH-LAFORCE, CATHRYN L. \* Professor, 1977; MA, 1971, Ohio State

University, PhD, 1974, Ohio State University; mother-infant interaction, observational methodology, child birth experiences and attachment

BOSTON-FLEISCHHAUER, CAROL \* Clinical Assistant Professor, 2003; MS, 1983, Northern Illinois University, JD, 1991, John Marshall Law School; Healthcare Operations

BOUTAIN, DORIS M. \* Associate Professor, 2004; PhD, 2000, University of Washington, MN, 2000, University of Washington; Using social justice as a framework to promote health and decrease disease among underserved populations and communities

BRANDT, PATRICIA \* Professor, 1975; MS, 1968, University of Colorado (campus unspecified), PhD, 1981, University of Washington; influence of family functioning on early child development

BRIDGES, ELIZABETH \* Assistant Professor, 2004; MN, 1991, University of Washington, PhD, 1998, University of Washington; Hemodynamic/cardiopulmonary monitoring, critical care nursing in unique and austere environments, evidence-based practice

BROWN, MARIE ANNETTE \* Professor, 1975; MN, 1973, University of Washington, PhD, 1983, University of Washington; Women's health, depression, mood disorders, lifestyle changes, exercise, and loss/grief/dying

BRUNO, PAULINE, Affiliate Associate Professor, 2003; MS, 1954, Catholic University of America

BUDZYNSKI, HELEN KOGAN, Professor Emeritus, 1968; MA, 1956, Columbia University, PhD, 1968, University of California (Los Angeles)

BURR, ROBERT L. \* Research Associate Professor, 1978; MSEE, 1978, University of Washington, PhD, 1986, University of Washington; cardiovascular/psychophysiology, autonomic nervous system

CARNEVALI, DORIS, Associate Professor Emeritus, 1947; RN, 1943, University of Washington, MN, 1961, University of Washington

CARR, CATHERINE A. \* Assistant Professor, 1993; MN, 1979, University

of Kentucky, PhD, 1993, University of Michigan; Factors the affect provider practice and clinical outcomes of midwifery care

CARRERE, SYBIL \* Affiliate Assistant Professor, 2000; MA, 1978, University of California (Santa Barbara), PhD, 1990, University of California (Irvine); The influence of family relations and emotions on health

CHRISMAN, NOEL \* Professor, 1973; PhD, 1966, University of California (Berkeley), MPH, 1967, University of California (Berkeley); health beliefs and practices, social networks and social support

COCHRANE, BARBARA B. \* Associate Professor, 1992; MN, 1986, University of Washington, PhD, 1992, University of Washington; older women's health, gerontology, health promotion, intervention research

CORNMAN, BARBARA J \* Senior Lecturer, 1979; MN, 1976, University of Oregon, PhD, 1988, University of Washington; sexual assault victims, kinetic family drawings, family having child with cancer

COXON, VALERIE J, Affiliate Assistant Professor, 1990; MN, 1985, University of Washington, PhD, 1989, University of Washington

COYNE, CHRISTINE M \* Research Assistant Professor, 2004; MN, 1980, University of Washington, PhD, 2003, University of Washington; Design, implementation and analysis of longitudinal research with women in recovery from substance use disorders (SUDs)

CRAVEN, RUTH F, Professor Emeritus, 1968; MN, 1968, University of Washington, EdD, 1984, Seattle University

CUNNINGHAM, SUSANNA L \* Professor, 1969; MS, 1969, University of Washington, PhD, 1978, University of Washington; risk factors for atherosclerotic cardiovascular disease

CURTIS, JARED R. \* Adjunct Professor, 1988; MD, 1988, Johns Hopkins University, MPH, 1994, University of Washington; Improving end-of-life care for patients with critical illness and chronic pulmonary disease

DE CASTRO, ARNOLD \* Assistant Professor, 2006; MN, 1998, Johns Hopkins University, PhD, 2003, Johns Hopkins University; PhD, MSN/MPH, RN Director of Occupational and Environmental Health Nursing Program

DE TORNYAY, RHEBA, Professor Emeritus, 1975; MA, 1954, San Francisco State, EdD, 1967, Stanford University

DEHART, SARA S., Affiliate Associate Professor, 1994; MN, 1968, Case Western Reserve University, PhD, 1973, Case Western Reserve University

DEMIRIS, GEORGE \* Associate Professor, 2006; MS, 1994, University of Heidelberg (Germany), PhD, 2000, University of Minnesota; the use of information technology to improve quality of life for older adults

DIMOND, MARGARET \* Professor Emeritus, 1988; MN, 1971, University of Iowa, PhD, 1978, University of Wisconsin (Madison); aging, bereavement, family caregiving, Alzheimer's disease, chronic illness, long-term care

DOBRA, ADRIAN \* Assistant Professor, 2006; MS, 1996, University of Bucharest (Romania), PhD, 2001, Carnegie Mellon University; Statistics

DOORENBOS, ARDITH \* Assistant Professor, 2006; MN, 2000, Madonna University, PhD, 2002, Wayne State University; end-of-life experience, including symptom management and advance care planning, especially among elderly

DOUGHERTY, CYNTHIA M. \* Associate Professor, 1990; MA, 1983, University of Iowa, PhD, 1990, University of Washington; cardiovascular disease, sudden cardiac death, nursing interventions, cardiovascular risk modification, exercise, autonomic cardiovascular function

DRAYE, MARY A \* Assistant Professor, 1973; MPH, 1968, University of Michigan

EGGERT, LEONA, Professor Emeritus, 1973; MA, 1970, University of Washington, PhD, 1984, University of Washington

ELMORE, SHAWN K \* Associate Professor, 1984; MN, 1982, University of Washington, PhD, 1990, University of Washington; psychobiological aspects of women with mood disorders and light therapy

ENSGIN, B. JOSEPHINE \* Associate Professor, 1994; MS, 1986, Virginia College of Medicine, MPH, 1992, Johns Hopkins University, DrPH, 1994, Johns Hopkins University; health care program planning and evaluation for marginalized populations

ESTES, NADA, Associate Professor Emeritus, 1961; MN, 1958, University of Colorado (Boulder)

FLAGLER, SUSAN B \* Associate Professor, 1979; MS, 1976, University of California (San Francisco), DNS, 1979, University of California (San Francisco); maternal role adjustment and early parent-infant interaction

FOUGHT, SHARON G. \* Adjunct Associate Professor, 1986; MN, 1976, University of Texas (Austin), PhD, 1983, University of Texas (Austin); emergency care/critical care nursing; simulation gaming educational strategies

GALLUCCI, BETTY J \* Professor, 1974; MLifeSc, 1971, North Carolina State University, PhD, 1973, North Carolina State University; oncology, nutritional assessment, pathophysiology of stomatitis, and graft versus host disease

GRAHAM, KATHERINE YOUNG, Professor Emeritus, 1978; MN, 1967, University of Washington, MA, 1972, University of Washington, PhD, 1978, University of Washington

HABERMAN, MEL R, Affiliate Professor, 1977; MN, 1977, University of Washington, PhD, 1987, University of Washington

HEGYVARY, SUE T. \* Professor, 1986; MN, 1966, Emory University, PhD, 1974, Vanderbilt University; administration and productivity of health care and nursing services

HEITKEMPER, MARGARET M \* Professor, 1975; MN, 1975, University of Washington, PhD, 1981, University of Illinois; gastroenterology, enteral nutrition, gerontology

HERTING, JERALD R. \* Research Associate Professor, 1996; MA, 1977, State University of New York (Stony Brook), PhD, 1987, University of Washington; Research methodology and at-risk youth (primarily substance use, mental health, and educational outcomes)

HOFFMAN, AGNES, Associate Professor Emeritus, 1979; MN, 1968, Wayne State University, MA, 1974, University of Kansas, PhD, 1977, University of Kansas

HORN, BARBARA J, Professor Emeritus, 1977; MS, 1957, Indiana University, PhD, 1971, University of Michigan

HORN, BEVERLY M, Associate Professor Emeritus, 1976; MN, 1962,



University of Washington, MN, 1962, University of Washington, PhD, 1975, University of Washington, PhD, 1975, University of Washington

HOYLE, CHRISTINE A, Senior Lecturer, 1985; MN, 1979, University of Washington

HUANG, HSIU-YING, Affiliate Assistant Professor, 1999; MN, 1994, University of Washington, PhD, 1998, University of Washington

HUEBNER, COLLEEN ELLEN \* Adjunct Associate Professor, 1991; PhD, 1991, University of Washington, MPH, 1994, University of Washington; The social bases of developmental problems in early childhood

HUNTER, CHRISTINE ANNE \* Senior Lecturer, 2003; MS, 1991, University of Colorado (Denver); Midwifery

JARRETT, MONICA E \* Professor, 1981; MN, 1981, University of Washington, PhD, 1988, University of Washington; psychobiology of women

JOHNSON, LEONARD CLARK \* Research Associate Professor, 1995; MEd, 1973, University of Washington, PhD, 1977, University of Washington; Applied research methods including development in applied statistics, assessment, and analysis

JOLLEY, SANDRA N. \* Assistant Professor, 1997; MS, 1972, University of North Carolina, PhD, 2004, University of Washington; the psychobiology of postpartum depression and the effects on maternal-infant interaction, attachment and child outcomes

JONES, MARY C, Assistant Professor Emeritus, 1964; MS, 1962, Boston University

JORDAN, PAMELA L. \* Associate Professor, 1984; MS, 1975, Rush University, PhD, 1984, University of Michigan; expectant/new fatherhood, transition to parenthood

KANG, REBECCA R. \* Adjunct Associate Professor, 1974; MN, 1974, University of Washington, PhD, 1985, University of Washington; environment of at-risk infants and families

KANG, REBECCA R. \* Associate Professor, 1974; MN, 1974, University of Washington, PhD, 1985, University of Washington; environment of at-risk infants and families

KAPLAN, LOUISE, Affiliate Assistant Professor, 1996; MN, 1981, University

of Washington, PhD, 1992, Brandeis University

KEEPNEWS, DAVID \* Affiliate Assistant Professor, 2001; MPH, 1986, University of California (Berkeley), JD, 1988, University of California (San Francisco), MA, 2000, Brandeis University, PhD, 2001, Brandeis University; Health systems; health policy, law and health care regulation

KELLY, JEAN F. \* Professor, 1988; MA, 1973, San Francisco State, PhD, 1979, University of Washington; family factors that affect at-risk children

KENNEDY, MICHAEL, Affiliate Assistant Professor, 1994; MN, 1989, University of Washington, PhD, 1994, University of Washington

KIECKHEFER, GAIL M. \* Professor, 1988; MN, 1977, St. Louis University, PhD, 1985, University of Washington; motivation for health promotional and illness management behavior in children

KILLIEN, MARCIA G \* Professor, 1974; MN, 1974, University of Washington, PhD, 1982, University of Washington; women's health, reproductive decision making, work and family

KIM, EUNJUNG \* Associate Professor, 2001; MN, 1996, University of Wisconsin (Madison), PhD, 2001, University of Wisconsin (Madison); parenting — especially Korean American parenting

KIRKNESS, CATHERINE J \* Research Associate Professor, 2000; MN, 1992, University of Washington, PhD, 1999, University of Washington; Acute brain injury, critical care, physiologic complexity, cerebrovascular adaptive capacity

KODADEK, SHEILA M., Affiliate Professor, 1996; MS, 1972, University of Colorado (campus unspecified), PhD, 1985, University of Illinois

KOVALESKY, ANDREA H. \* Adjunct Associate Professor, 1997; MN, 1977, University of California (San Francisco), MA, 1990, Fuller Theological Seminary, PhD, 1997, University of Washington; Alcohol and American faith communities

KOZUKI, YORIKO \* Assistant Professor, 2000; MS, 1995, Columbia University, MS, 1995, Columbia University, PhD, 2000, University of California (San Francisco); Adherence to psychotropic medications in schizophrenia

KURTH, ANN E. \* Associate Professor, 2003; MPH, 1987, Columbia University, MN, 1990, Yale University, PhD, 2003, University of Washington; HIV/sexually transmitted infection screening and prevention

LANDIS, CAROL A. \* Professor, 1991; MS, 1973, University of California (San Francisco), DNS, 1988, University of California (San Francisco); health consequences of sleep loss, neuroendocrinimmune interactions, methods of inquiry

LARSON, ELAINE, Affiliate Professor, 2006; MA, 1970, University of Washington, PhD, 1981, University of Washington

LARSON, MARGARET L, Assistant Professor Emeritus, 1960; RN, 1944, St. Luke's School of Nursing, MN, 1967, University of Washington

LEE, CARLA A, Affiliate Associate Professor, 2003; MA, 1972, Wichita State University, MN, 1984, Wichita State University, PhD, 1988, Kansas State University

LEPPA, CAROL J. \* Adjunct Associate Professor, 1990; MS, 1986, University of Illinois, PhD, 1990, University of Illinois; Ethics and comparative health care systems, palliative care approaches to end of life care, chronic progressive disease/disability in long term care settings

LEWIS, FRANCES M \* Professor, 1978; MN, 1968, University of Washington, MA, 1973, Stanford University, MA, 1974, Stanford University, PhD, 1977, Stanford University; complex organizational analysis, evaluation research, psychosocial factors in chronic illness

LEWIS, LINDA L. \* Associate Professor Emeritus, 1989; MS, 1981, University of Illinois, PhD, 1987, University of Illinois; reproductive neuroendocrinology mood changes related to the human menstrual cycle

LOBER, WILLIAM B. \* Associate Professor, 1997; MS, 1992, University of California (Berkeley), MD, 1994, University of California (San Francisco); Architectures and Applications for Clinical and Public Health Informatics

LOGSDON, REBECCA G. \* Research Professor, 1986; MA, 1976, Oklahoma State University, PhD, 1986, Oklahoma State University; Gerontology, Alzheimer's disease, Dementia caregivers, Quality of Life in Dementia

LOVELL, DAVID GILBERT \* Research Associate Professor, 1995; PhD, 1975, University of Wisconsin, MSW, 1993, University of Washington; criminal justice policy and treatment of mentally ill offenders

LUSTYK, MARY KATHLEEN, Affiliate Associate Professor, 1993; PhD, 1992, University of Washington

MACLAREN LORANGER, AILEEN \* Clinical Assistant Professor, 1994; MN, 1982, University of Miami (Florida), PhD, 1998, Johns Hopkins University

MAGYARY, DIANE L \* Professor, 1982; MN, 1977, University of Washington, PhD, 1981, University of Washington; family centered health care of children at risk, disabled or handicapped

MCCURRY, SUSAN MELANCON \* Research Professor, 1991; MSC, 1977, University of Nevada (Las Vegas), MS, 1984, University of Nevada (Las Vegas), PhD, 1991, University of Nevada (Reno); dementia, aging, older adults, depression, sleep, psychotherapy intervention research, neuropsychology

MCGRATH, BARBARA B. \* Research Associate Professor, 1987; MA, 1981, University of Washington, PhD, 1993, University of Washington; ethnographic studies with U.S. Pacific Islanders on health issues, specifically, HIV/AIDS prevention among adolescents

MEYER, KERRY E. \* Associate Professor, 1992; MN, 1981, St. Louis University, PhD, 1990, University of Maryland; Health informatics, expert systems in support of clinical decision making, and geriatrics

MITCHELL, ELLEN S. \* Associate Professor, 1974; NursDiploma, 1957, Johns Hopkins University, MN, 1967, University of Florida, PhD, 1986, University of Washington; women's health; menstrual cycle symptom experience, food cravings and eating control

MITCHELL, PAMELA H \* Professor, 1965; MS, 1965, University of California (San Francisco), PhD, 1991, University of Washington; neuroscience nursing, diagnostic strategies

MOTZER, SANDRA ADAMS \* Associate Professor Emeritus, 1976; MN, 1976, University of Washington, PhD, 1992, Oregon Health Sciences University; NK cell function in women with

chronic health disturbance (i.e., irritable bowel syndrome) across the menstrual cycle

MUNET-VILARO, FRANCES \* Affiliate Associate Professor, 1997; MN, 1973, University of Florida, PhD, 1984, University of Washington; Coping of Latinos with a family member with cancer and/or AIDS

MURPHY, SHIRLEY ANN, Professor Emeritus, 1985; MEd, 1965, Gonzaga University, PhD, 1981, Portland State University

NEWTON, KATHERINE \* Affiliate Associate Professor, 1977; MA, 1977, University of Washington, PhD, 1995, University of Washington; Chronic disease epidemiology including diabetes, urinary incontinence, women's health, menopause

NGUYEN, HUONG Q \* Assistant Professor, 2003; MS, 1999, University of California (San Francisco), PhD, 2003, University of California (San Francisco); Self-management, chronic illness, communication and information technology, physical activity monitoring

O'CONNOR, FREDERICA W. \* Associate Professor, 1986; MN, 1974, University of Illinois, MS, 1984, Northwestern University, PhD, 1986, Northwestern University; public sector mental health treatment provision, interventions promoting desired life quality for community-based adults with serious mental illnesses, program evaluation

OLSHANSKY, ELLEN F. \* Affiliate Professor, 1985; MS, 1979, University of California (San Francisco), Doctor of Nursing Science, 1985, University of California (San Francisco); psychosocial implications of infertility related to the family, qualitative research, depression and anxiety in women

OSBORNE, OLIVER H, Professor Emeritus, 1969; MA, 1960, New York University, PhD, 1968, Michigan State University

PARKMAN, SHARON E, Affiliate Assistant Professor, 1990; MN, 1990, University of Washington, PhD, 1999, University of Washington

PATRICK, MAXINE L, Professor Emeritus, 1951; MN, 1953, University of Washington, DPH, 1970, University of California (Los Angeles)

PERRY, CYNTHIA \* Assistant Professor, 2005; MN, 1990, Yale University,

PhD, 2005, Oregon Health Sciences University; the promotion of physical activity within underserved and disenfranchised communities

PESZNECKER, BETTY L, Associate Professor Emeritus, 1989; MN, 1957, University of Washington

PRICE SPRATLEN, LOIS \* Professor, 1972; MN, 1972, University of California (Los Angeles), PhD, 1976, University of Washington; sexual harassment and perceived workplace mistreatment in higher education

PRICE, CYNTHIA \* Research Assistant Professor, 2004; MA, 1990, Lesley College, PhD, 2004, University of Washington; CAM therapies, PTSD and trauma recovery, mind-body medicine; body awareness, integrative care

SCHEPP, KAREN G. \* Associate Professor, 1988; MN, 1967, University of Washington, PhD, 1985, University of Arizona; stress and coping of physically and mentally ill youth and their families

SCHROEDER, CAROLE A. \* Associate Professor, 1993; MN, 1985, University of Nevada, PhD, 1993, University of Colorado (Denver); women's health experiences, critical approaches to knowledge development, and developing partnerships in community health

SCHULTZ, PHYLLIS R \* Associate Professor Emeritus, 1989; MN, 1966, Emory University, MA, 1977, University of Denver, PhD, 1981, University of Denver; nursing systems research, impact of nursing services on population's health

SCHWARTZ, ANNA L \* Affiliate Associate Professor, 1998; MS, 1991, Florida State University, MS, 1994, Arizona State University, PhD, 1997, University of Utah; Interventions and mechanisms to improve symptoms and quality of life for patients and survivors

SHANNON, SARAH E \* Associate Professor, 1993; PhD, 1992, University of Washington, MN, 1992, University of Washington; clinical ethics; decision-making surrounding use of life-sustaining therapies

SHIRLEY, JAMIE LYNN \* Research Assistant Professor, 2005; MN, 1990, University of Pennsylvania, PhD, 2005, University of Washington; the ethical relations of caregiving families at diverse stages of life

SIANTZ, MARY LOU, **Affiliate Professor, 1998; MN, 1971, University of California (Los Angeles), PhD, 1984, University of Maryland**

SIKMA, SUZANNE \* **Adjunct Associate Professor, 1980; MN, 1979, Loyola University (Chicago), PhD, 1994, University of Washington; Gerontological nursing; home and community-based services, policy and systems**

SIMPSON, TERRI A. \* **Associate Professor, 1991; MN, 1975, University of California (San Francisco), PhD, 1988, University of Washington; critical care patients' physiological and psychological responses to environmental stressors**

SOLCHANY, JOANNE E. \* **Affiliate Assistant Professor, 2000; MN, 1991, University of California (San Francisco), PhD, 2000, University of Washington; relationships between children and their primary caregivers. Specifically my research interests are in adoption, attachment, children who have experienced trauma in their caregiving relationships, pregnancy and maternal mental health, and the development**

SPIEKER, SUSAN J \* **Professor, 1983; PhD, 1982, Cornell University; developmental psychology, infant security, mother-infant interaction**

SPITZER, ADA, **Affiliate Associate Professor, 1993; PhD, 1990, University of Washington**

STRICKLAND, CAROLYN J.B. \* **Associate Professor, 1977; MS, 1976, University of Washington, PhD, 1983, University of Washington; Health Related Behavior Change in Pacific Northwest American Indian Communities**

SWANSON, KRISTEN M. \* **Professor, 1985; MN, 1978, University of Pennsylvania, PhD, 1983, University of Colorado (Boulder); caring therapeutics, responses to miscarriage, women's health, loss, bereavement**

TAIBI, DIANA MARIE \* **Assistant Professor, 2005; MN, 2001, University of Virginia, PhD, 2005, University of Virginia; Sleep research, complementary and alternative medicine and women's health**

TERI, LINDA \* **Professor, 1984; PhD, 1980, University of Vermont; Controlled clinical trials of caregiving training for patients with**

**Alzheimer's; studies on cognitive and behavioral changes that accompany normal and abnormal aging**

THOMAS, KAREN A \* **Professor, 1986; MA, 1977, University of Iowa, PhD, 1986, University of Washington; preterm infant development, care unit environments, acute care pediatrics, thermoregulation**

THOMPSON, FRANCES ELAINE A \* **Professor, 1972; MA, 1972, University of Washington, PhD, 1990, University of Washington; attribution theory, adolescent drug use, suicide**

THOMPSON, HILAIRE \* **Assistant Professor, 2004; MS, 1992, Catholic University of America, MS, 1996, Virginia Commonwealth University, PhD, 2003, University of Pennsylvania; improving outcomes from traumatic brain injury**

TSAI, JENNY HSIN-CHUN \* **Assistant Professor, 2001; MN, 1994, University of Washington, PhD, 2001, University of Washington; Immigrant health, community mental health, cross-cultural inquiries, critical theory**

TYSON, SHERYL, **Affiliate Assistant Professor, 2003; MN, 1985, University of California (Los Angeles), PhD, 2002, University of California (Los Angeles)**

VITIELLO, MICHAEL V \* **Adjunct Professor, 1977; PhD, 1980, University of Washington; Sleep, sleep disorders, circadian rhythms, aging, behavioral medicine, principles of behavioral sciences applied to medical research and practice**

VOSS, JOACHIM G. \* **Assistant Professor, 2006; MS, 2000, University of Bremen (Germany), PhD, 2003, University of San Francisco; the development of biomarkers for fatigue in HIV/AIDS and cancer patients**

WALSH, ELAINE M. \* **Assistant Professor, 2003; MN, 1991, University of California (Los Angeles), PhD, 1999, University of Washington; Suicide and drug abuse prevention for adolescents and young adults**

WARD, DEBORAH \* **Associate Professor, 1987; MN, 1977, Yale University, PhD, 1987, Boston University; health policy and politics, women's paid and unpaid caregiving work**

WEBSTER-STRATTON, CAROLYN \* **Professor, 1976; MN, 1972, Yale University, MPH, 1972, Yale University,**

**PhD, 1979, University of Washington; parent intervention programs for behaviorally disturbed children**

WELTON, WILLIAM E. \* **Adjunct Senior Lecturer, 2001; MHA, 1972, University of Michigan, DPH, 1999, University of Michigan**

WHITE-TRAUT, ROSEMARY, **Affiliate Associate Professor, 1994; MS, 1977, Boston University, DSc, 1983, Rush University**

WHITNEY, JOANNE D. \* **Professor, 1982; MS, 1979, University of Michigan, PhD, 1991, University of California (San Francisco); wound healing**

WILKIE, DIANA J., **Affiliate Professor, 1990; MN, 1984, University of California (San Francisco), PhD, 1990, University of California (San Francisco)**

WILLGERODT, MAYUMI \* **Associate Professor, 2001; MN, 1995, University of Illinois, MPH, 1995, University of Illinois, PhD, 1999, University of Illinois; The relation between intergenerational conflict and health in Asian families**

WOLF-WILETS, VIVIAN, **Professor Emeritus, 1969; MA, 1964, University of Chicago, PhD, 1969, University of Chicago**

WOLPIN, SETH \* **Research Assistant Professor, 2005; MPH, 1999, Oregon State University, PhD, 2004, Oregon State University; promotion of health communication and health literacy through the use of information technology tools**

WOODS, NANCY \* **Professor, 1978; MN, 1969, University of Washington, PhD, 1978, University of North Carolina; women's health**

WOODS, SUSAN L \* **Professor, 1975; MA, 1975, University of Washington, PhD, 1991, Oregon Health Sciences University; cardiovascular clinical specialist, pulmonary artery catheter measurement**

WORCESTER, MARTHA L., **Affiliate Associate Professor, 1991; MS, 1964, University of California (San Francisco), PhD, 1990, University of Washington**

YOUNG, HEATHER M., **Affiliate Associate Professor, 1991; MN, 1989, University of Washington, PhD, 1991, University of Washington**

YOUNG, LYNNE, **Affiliate Associate Professor, 2001; MN, 1990, University**

of British Columbia (Canada), PhD,  
1997, University of British Columbia  
(Canada)

ZIERLER, BRENDA \* Associate Profes-  
sor, 1996; PhD, 1996, University of  
Washington; Research in patient with  
venous thromboembolism; clinical  
outcomes, process outcomes (care  
delivery methods), patient satisfac-  
tion, and provider satisfaction

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# College of Ocean and Fishery Sciences

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## Aquatic and Fishery Sciences

ANDERSON, JAMES J \* Research Professor, 1981; PhD, 1977, University of Washington; Research and computer models for management of Columbia River fisheries Studying mortality processes of juvenile salmon

ARMSTRONG, DAVID A. \* Professor, 1978; MS, 1974, Oregon State University, PhD, 1978, University of California (Davis); Shellfish physiology

BEAUCHAMP, DAVID A. \* Associate Professor, 1999; MS, 1982, University of Washington; PhD, 1987, University of Washington; Aquatic food web modeling in salmonid systems

BILBY, ROBERT E \* Affiliate Professor, 1994; PhD, 1979, Cornell University; The ecology of stream ecosystems and their response to land use impacts

BISSON, PETER A, Affiliate Professor, 1988; MS, 1969, Oregon State University, PhD, 1975, Oregon State University

BOLTON, SUSAN M \* Adjunct Professor, 1992; MS, 1979, University of North Dakota, MS, 1985, New Mexico State University, PhD, 1991, New Mexico State University; hydrology, watershed management, stream restoration, ecological engineering

BURGNER, ROBERT L, Professor Emeritus, 1958; PhD, 1958, University of Washington

CHEW, KENNETH K, Professor Emeritus, 1962; MS, 1958, University of Washington, PhD, 1962, University of Washington

CONQUEST, LOVEDAY L \* Professor, 1976; MS, 1972, Stanford University, PhD, 1975, University of Washington; statistics in forestry, fisheries, and environmental pollution monitoring

DAVIS, JONATHAN, Affiliate Associate Professor, 1997; MS, 1982, Yale University, PhD, 1994, University of Washington

DE MASTER, DOUGLAS PAUL \* Affiliate Professor, 1994; PhD, 1978, University of Minnesota; marine mammals, population dynamics, conservation biology

DICKHOFF, WALTON W \* Professor, 1975; PhD, 1976, University of California (Berkeley); fish physiology, endocrinology, aquaculture

ERICKSON, ALBERT, Professor Emeritus, 1974; MS, 1955, Michigan State University, PhD, 1964, Michigan State University

ESSINGTON, TIMOTHY E. \* Associate Professor, 2003; MS, 1995, University of Minnesota, PhD, 1999, University of Wisconsin (Madison); Food webs and resource management in marine ecosystems

FRANCIS, ROBERT C \* Professor Emeritus, 1980; MS, 1966, University of California (Santa Barbara), PhD, 1970, University of Washington; fisheries management, marine ecosystem dynamics, fisheries oceanography, climate change

FRIEDMAN, CAROLYN \* Associate Professor, 2001; PhD, 1990, University of California (Davis); Infectious and non-infectious diseases of wild and cultured marine invertebrates

GALLUCCI, VINCENT \* Professor, 1972; MS, 1966, State University of New York (Buffalo), PhD, 1971, North Carolina State University; biomathematics and population dynamics

GRUE, CHRISTIAN E \* Associate Professor, 1989; PhD, 1977, Texas A&M University, MS, 1977, Northern Arizona University; wildlife toxicology, wildlife and fisheries science

GUNDERSON, DONALD R \* Professor Emeritus, 1978; MS, 1966, Montana State University, PhD, 1975, University of Washington; marine fisheries, stock assessment, recruitment processes

HALVER, JOHN E, Professor Emeritus, 1958; MS, 1948, State College of Washington, PhD, 1953, University of Washington

HARD, JEFFREY J., Affiliate Associate Professor, 2008; MS, 1984, University of Alaska, PhD, 1991, University of Oregon

HAUSER, LORENZ \* Associate Professor, 2002; MSC, 1989, University of Vienna, Austria, MSC, 1990, University of Wales (U.K.), PhD, 1996, University of Wales (U.K.); Population genetics, evolutionary biology, introduced species, fish biology, fisheries management

HERWIG, RUSSELL P \* Research Associate Professor, 1983; MA, 1978, College of William And Mary, PhD, 1989, University of Washington; environmental microbiology, bioremediation, molecular microbial ecology, microbial phylogenetics

HILBORN, RAY \* Professor, 1987; PhD, 1974, University of British Columbia (Canada); population dynamics and resource policy

HORNE, JOHN K \* Research Associate Professor, 2001; MSC, 1988, Dalhousie University (Canada), PhD, 1995, Memorial University of Newfoundland; Uses acoustic techniques to examine scale-dependent distributions and predator-prey interactions of aquatic organisms

HORNER-DEVINE, MARIE CLAIRE \* Assistant Professor, 2004; PhD, 2004, Stanford University; The distribution of biodiversity and natural communities with a focus on microbes

HUNT, GEORGE L \* Research Professor, 2004; PhD, 1971, Harvard University; climate variability and marine ecosystem function, seabird ecology

HUPPERT, DANIEL D. \* Adjunct Professor, 1987; MA, 1972, University of Washington, PhD, 1975, University of Washington; economics and management of natural resources, especially marine fisheries

KARR, JAMES \* Professor Emeritus, 1991; MSC, 1967, University of Illinois, PhD, 1970, University of Illinois; ecology and conservation biology, water resources, environmental sciences, natural resources, environmental policy

KLINGER, TERRIE \* Adjunct Associate Professor, 1993; MSC, 1984, University of British Columbia (Canada), PhD, 1988, University of California (San Diego); Application of genetic, population, and ecosystem studies to marine environmental decision making

KOCAN, RICHARD M, Professor Emeritus, 1976; MS, 1965, Michigan State University, PhD, 1967, Michigan State University

KURATH, GAEL \* Affiliate Associate Professor, 1994; MS, 1980, Oregon State University, PhD, 1984, Oregon State University; Molecular biology and evolution of RNA viruses that infect fish

LESCHINE, THOMAS M \* Adjunct Professor, 1983; MA, 1970, University of Pittsburgh, PhD, 1975, University of Pittsburgh; marine pollution management, ocean policy studies

LISTON, JOHN, Professor Emeritus, 1957; PhD, 1955, University of Aberdeen (UK)

MANTUA, NATHAN \* Associate Professor, 1995; PhD, 1994, University of Washing-

ton; large-scale climate variability/  
predictability, climate impacts on human  
activities and ecosystems

MATHEWS, STEPHEN B, Professor  
Emeritus, 1963; MA, 1962, University of  
California (Berkeley), PhD, 1967, Univer-  
sity of Washington

MILES, EDWARD L \* Adjunct Professor,  
1974; PhD, 1965, University of Denver;  
international law and organization;  
science, technology, and international  
relations; marine policy and ocean  
management

MILLER, BRUCE S \* Professor Emeritus,  
1971; MS, 1965, University of Washington,  
PhD, 1969, University of Washington; life  
history and ecology of marine fishes,  
especially early life history

MILLER, MARC \* Adjunct Professor, 1979;  
MA, 1972, University of California (San  
Diego), PhD, 1974, University of California  
(Irvine); maritime anthropology, cognitive  
anthropology and social/cultural change

NAIMAN, ROBERT J \* Professor, 1988;  
MA, 1971, University of California (Los  
Angeles), PhD, 1974, Arizona State  
University; forest stream ecosystems,  
aquatic landscape dynamics

OLDEN, JULIAN D. \* Assistant Professor,  
2006; MS, 2000, University of Toronto  
(Canada), PhD, 2004, Colorado State  
University; invasive species, conservation  
biogeography, freshwater fish ecology,  
quantitative ecology

PARRISH, JULIA \* Associate Professor,  
1990; PhD, 1988, Duke University;  
Organismal biology. Aggregation of  
animals: schooling in fish and colonial  
nesting in seabirds

PAULEY, GILBERT B, Associate Professor  
Emeritus, 1974; MS, 1965, University of  
Washington, PhD, 1971, University of  
California (Irvine)

PIETSCH, THEODORE W \* Professor, 1978;  
MS, 1969, University of Southern  
California, PhD, 1973, University of  
Southern California; ichthyology

PIGOTT, GEORGE M, Professor Emeritus,  
1963; MS, 1955, University of Washington,  
PhD, 1963, University of Washington

PUNT, ANDRE \* Professor, 1992; MSC,  
1988, University of Capetown (South  
Africa), PhD, 1991, University of  
Capetown (South Africa); Population  
dynamics and risk analysis for marine  
renewable resources

QUINN, THOMAS P00 \* Professor, 1986;  
MS, 1978, University of Washington, PhD,

1981, University of Washington; fish  
ecology, evolution and behavior

RUESINK, JENNIFER \* Adjunct Associate  
Professor, 1998; MPhil, 1991, Cambridge  
University (UK), PhD, 1996, University of  
Washington; Marine intertidal ecology,  
especially community dynamics, food  
webs, introduced species

SCHINDLER, DANIEL E. \* Associate  
Professor, 1997; MS, 1992, University of  
Wisconsin, PhD, 1995, University of  
Wisconsin (Madison); Ecosystem and  
community ecology - especially of aquatic  
systems

SIMENSTAD, CHARLES \* Research  
Professor, 2001; MS, 1971, University of  
Washington; Understanding structure,  
dynamics and restoration of estuarine/  
nearshore marine ecosystems

SKALSKI, JOHN R. \* Professor, 1987; MS,  
1976, Oregon State University, MS, 1978,  
Cornell University, PhD, 1985, Cornell  
University; environmental sampling and  
effects assessment on wild populations,  
parameter estimation

SMITH, LYNWOOD S, Professor Emeritus,  
1957; MS, 1955, University of Washington,  
PhD, 1962, University of Washington

STROM, MARK S, Affiliate Associate  
Professor, 1995; MS, 1982, University of  
Washington, PhD, 1992, University of  
Washington

TAUB, FRIEDAB, Professor Emeritus,  
1961; MS, 1957, Rutgers University, PhD,  
1959, Rutgers University

VANBLARICOM, GLENN R. \* Associate  
Professor, 1993; PhD, 1978, University of  
California (San Diego); aquatic wildlife,  
ecology of marine communities, wildlife-  
fisheries interactions

VARANASI, USHA S, Affiliate Professor,  
1980; MS, 1964, California Institute of  
Technology, PhD, 1968, University of  
Washington

WISSMAR, ROBERT C \* Professor  
Emeritus, 1972; MS, 1968, University of  
Idaho, PhD, 1972, University of Idaho;  
ecology

WOOSTER, WARREN S, Professor  
Emeritus, 1976; ScB, 1943, Brown  
University, MS, 1947, California Institute of  
Technology, PhD, 1953, University of  
California (San Diego)

YOUNG, GRAHAM \* Professor, 2004; PhD,  
1980, University of Sheffield (UK)

## Marine Affairs

ALLEN, CRAIG H., Adjunct Professor,  
1996; JD, 1989, University of Washington

ALVERSON, DAYTON L, Affiliate Profes-  
sor, 1958; PhD, 1967, University of  
Washington

ARON, WILLIAM I, Affiliate Professor,  
1953; MS, 1957, University of Washington,  
PhD, 1960, University of Washington

CHRISTIE, PATRICK JOHN \* Associate  
Professor, 1999; MS, 1993, University of  
Michigan, Ann Arbor, PhD, 1999, University  
of Michigan, Ann Arbor; Management of  
marine and coastal areas

COPPING, ANDREA \* Affiliate Associate  
Professor, 1992; MS, 1977, University of  
Washington, PhD, 1982, University of  
Washington; marine environment and  
water quality, marine science/marine  
policy

DE MASTER, DOUGLAS PAUL \* Affiliate  
Professor, 1994; PhD, 1978, University of  
Minnesota; marine mammals, population  
dynamics, conservation biology

DELANEY, JOHN R. \* Adjunct Professor,  
1977; MA, 1967, University of Virginia,  
PhD, 1977, University of Arizona;  
geological oceanography, origin of  
oceanic crust, igneous petrology

DOWD, THOMAS J, Affiliate Professor,  
1983; MA, 1982, University of Washington

DUXBURY, ALYN C, Associate Professor  
Emeritus, 1963; MS, 1956, University of  
Washington, PhD, 1963, Texas A&M  
University

FLUHARTY, DAVID L \* Associate  
Professor, 1976; MS, 1972, University of  
Washington, PhD, 1977, University of  
Michigan; natural resource and environ-  
mental policy

GALLUCCI, VINCENT \* Adjunct Professor,  
1972; MS, 1966, State University of New  
York (Buffalo), PhD, 1971, North Carolina  
State University; biomathematics and  
population dynamics

HAYNIE, ALAN C., Affiliate Assistant  
Professor, 2006; PhD, 2005, University of  
Washington

HUPPERT, DANIEL D. \* Professor, 1987;  
MA, 1972, University of Washington, PhD,  
1975, University of Washington; econom-  
ics and management of natural resources,  
especially marine fisheries

KLINGER, TERRIE \* Associate Professor,  
1993; MSC, 1984, University of British  
Columbia (Canada), PhD, 1988, University

of California (San Diego); Application of genetic, population, and ecosystem studies to marine environmental decision making

LESCHINE, THOMAS M \* Professor, 1983; MA, 1970, University of Pittsburgh, PhD, 1975, University of Pittsburgh; marine pollution management, ocean policy studies

MANTUA, NATHAN \* Adjunct Associate Professor, 1995; PhD, 1994, University of Washington; large-scale climate variability/predictability, climate impacts on human activities and ecosystems

MILES, EDWARD L \* Professor, 1974; PhD, 1965, University of Denver; international law and organization; science, technology, and international relations; marine policy and ocean management

MILLER, MARC \* Professor, 1979; MA, 1972, University of California (San Diego), PhD, 1974, University of California (Irvine); maritime anthropology, cognitive anthropology and social/cultural change

PARRISH, JULIA \* Adjunct Associate Professor, 1990; PhD, 1988, Duke University; Organismal biology. Aggregation of animals: schooling in fish and colonial nesting in seabirds

RYAN, CLARE \* Adjunct Associate Professor, 1997; MS, 1990, University of Michigan, Ann Arbor, PhD, 1996, University of Michigan, Ann Arbor; Natural resource policy and administration, environmental conflict management, water policy

SATIA, BENEDICT P., Affiliate Professor, 2007; MSC, 1972, University of Washington, PhD, 1973, University of Washington

SECORD, DAVID L \* Affiliate Associate Professor, 1996; PhD, 1995, University of Washington; Oopulation and Community Ecology; Science and Policy; Marine Conservation and Marine Invertebrates; Environmental Science, Interdisciplinary and Environmental Education

WOOSTER, WARREN S, Professor Emeritus, 1976; ScB, 1943, Brown University, MS, 1947, California Institute of Technology, PhD, 1953, University of California (San Diego)

ALFORD, MATTHEW H. \* Affiliate Assistant Professor, 1998; PhD, 1998, Scripps Oceanographic Institution; Internal waves, turbulence, double diffusion and mixing in the ocean

ANDERSON, GEORGE C, Professor Emeritus, 1951; MA, 1949, University of British Columbia (Canada), PhD, 1954, University of Washington; seventeenth- and eighteenth-century European art

ARMBRUST, E. VIRGINIA \* Professor, 1996; PhD, 1990, Massachusetts Institute of Technology; molecular ecology, genetic diversity of microbial populations, diatom sexual reproduction orbit, oculoplastics, neuro-ophthalmology

BAKER, EDWARD T, Affiliate Professor, 1973; MS, 1969, University of Washington, PhD, 1973, University of Washington; orbit, oculoplastics, neuro-ophthalmology

BALISTRERI, LAURIE S \* Affiliate Associate Professor, 1995; MS, 1977, University of Washington; Low temperature aqueous geochemistry; metal cycling, limnology and chemical oceanography orbit, oculoplastics, neuro-ophthalmology

BANSE, KARL, Professor Emeritus, 1960; Doctorat D'Etat, 1955, University of Kiel (Germany); ecology and ethology, vertebrate social systems, community structure, plant-herbivore interactions

BAROSS, JOHN A \* Professor, 1984; MA, 1966, San Francisco State, PhD, 1973, University of Washington; microbial oceanography, bacterial ecology

BULLISTER, JOHN L, Affiliate Associate Professor, 1991; MS, 1980, Texas A&M University, PhD, 1984, University of California (San Diego); pharmacy history

BUTTERFIELD, DAVID A., Affiliate Associate Professor, 1997; PhD, 1990, University of Washington

CANNON, GLENN A. \* Affiliate Professor, 1969; MA, 1965, Johns Hopkins University, PhD, 1969, Johns Hopkins University; physical oceanography of coastal waters and deep-sea hydrothermal venting

CARPENTER, ROY, Professor Emeritus, 1968; PhD, 1968, University of California (San Diego)

CATTOLICO, ROSE A. \* Adjunct Professor, 1975; MA, 1968, Temple University, PhD, 1973, State University of New York (Stony Brook); plastid replication, nucleic acid biochemistry in synchronized unicellular algae

CREAGER, JOE S, Professor Emeritus, 1958; MS, 1953, Texas A&M University, PhD, 1958, Texas A&M University

CRONIN, MEGHAN \* Affiliate Associate Professor, 1998; PhD, 1993, University of Rhode Island; Physical oceanography, air-sea interaction, equatorial dynamics

D'ASARO, ERIC A. \* Professor, 1980; MS, 1976, Harvard University, PhD, 1980, Massachusetts Institute of Technology; physical oceanography, internal waves, turbulence and mixing processes

DELANEY, JOHN R. \* Professor, 1977; MA, 1967, University of Virginia, PhD, 1977, University of Arizona; geological oceanography, origin of oceanic crust, igneous petrology ideology, policy and health-care systems, cross-cultural health, mental health, nursing

DEMING, JODY W \* Professor, 1988; PhD, 1981, University of Maryland; evolution and ecology of marine bacteria in the pressurized ocean

DEVOL, ALLAN H \* Professor, 1974; PhD, 1975, University of Washington; biogeochemistry, sediment diagenesis, anoxic systems, carbon fluxes

DUSHAW, BRIAN D. \* Affiliate Assistant Professor, 1999; MA, 1985, University of California (Davis), PhD, 1992, Scripps Oceanographic Institution; Measurement of large-scale temperature and current by ocean acoustic tomography, e.g., waves and climate change

DUXBURY, ALYN C, Associate Professor Emeritus, 1963; MS, 1956, University of Washington, PhD, 1963, Texas A&M University

EMERSON, STEVEN R. \* Professor, 1976; MPhil, 1973, Columbia University, PhD, 1974, Columbia University; marine geochemistry, chemical oceanography, sediment diagenesis

ERIKSEN, CHARLES C \* Professor, 1986; PhD, 1977, Massachusetts Institute of Technology; experimental physical oceanography; equatorial and upper ocean dynamics, internal waves

EWART, TERRY E, Professor Emeritus, 1959; PhD, 1965, University of Washington

FEELY, RICHARD A \* Affiliate Professor, 1974; MS, 1971, Texas A&M University, PhD, 1974, Texas A&M University; chemical oceanography, oceanic sources and sinks for carbon dioxide

FROST, BRUCE W \* Professor Emeritus, 1969; PhD, 1969, University of California (San Diego); biological oceanography, marine zoogeography, plankton ecology and systematics

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## Oceanography

AAGAARD, KNUT \* Professor, 1966; MS, 1964, University of Washington, PhD, 1966, University of Washington; physical oceanography, ocean circulation, arctic oceanography

GAMMON, RICHARD H \* Professor, 1977; MA, 1966, Harvard University, PhD, 1970, Harvard University; atmospheric chemistry, chemical oceanography, environmental chemistry; biogeochemical cycles, global climate change, astrobiology

GREGG, MICHAEL C \* Professor, 1974; PhD, 1971, Scripps Institute of Technology; physical oceanography, ocean microstructure, coastal and estuarine processes, hydraulics, internal waves

GRUNBAUM, DANIEL \* Associate Professor, 1991; MSME, 1987, University of Washington, PhD, 1991, Cornell University; Marine ecology, zooplankton population biology, biomechanics, mathematical biology, conservation biology

HARRISON, DON EDMUNDS \* Affiliate Professor, 1985; MS, 1973, Harvard University, PhD, 1977, Harvard University; ocean circulation modeling, air-sea interaction, ocean and climate dynamics restorative dentistry

HAUTALA, SUSAN L \* Associate Professor, 1995; PhD, 1992, University of Washington; Large-Scale Ocean Circulation

HEATH, G ROSS \* Professor Emeritus, 1984; PhD, 1968, Scripps Oceanographic Institution; Geochemistry and mineralogy of deep-sea sediments

HERMANN, ALBERT J \* Affiliate Associate Professor, 2003; MS, 1980, University of Florida, PhD, 1988, University of Washington; Modeling of coastal/regional circulation and ecosystem dynamics, 3D visualization. endodontics

HICKEY, BARBARA M \* Professor, 1973; MS, 1969, University of California (San Diego), PhD, 1975, University of California (San Diego); physical oceanography, dynamics of equatorial and shelf circulation

HOWE, BRUCE M. \* Research Associate Professor, 1988; MS, 1978, Stanford University, PhD, 1986, University of California (San Diego); Ocean acoustic tomography, climate, and observatories. nephrology

INGALLS, ANITRA E. \* Assistant Professor, 2004; MS, 1998, State University of New York (Stony Brook), PhD, 2002, State University of New York (Stony Brook); Marine biogeochemistry, organic geochemistry, isotope geochemistry, carbon cycle

JOHNSON, GREGORY C \* Affiliate Professor, 1993; PhD, 1990, Massachusetts Institute of Technology; large-scale ocean circulation, dynamics and variability

JOHNSON, HARLAN PAUL \* Professor, 1972; MS, 1966, Southern Illinois University, PhD, 1972, University of Washington; paleomagnetism and marine geophysics cardiology

KAWASE, MITSUHIRO \* Associate Professor, 1988; MA, 1983, Princeton University, PhD, 1986, Princeton University; geophysical fluid dynamics; oceanic general circulation; tracer oceanography

KEIL, RICHARD G \* Associate Professor, 1991; PhD, 1991, University of Delaware; Microbial Degradation of Organic Compounds in Aquatic and Soil Environments

KEISTER, JULIE E \* Assistant Professor, 2008; MS, 1996, University of Maryland, PhD, 2008, Oregon State University; Zooplankton ecology: interdisciplinary research on the factors that effect zooplankton abundance and distribution, effects of climate variability on zooplankton community structure, time series analysis, satellite (SST, SSH, ocean color) data analysis

KELLEY, DEBORAH S. \* Professor, 1992; MSC, 1987, University of Washington, PhD, 1990, Dalhousie University (Canada); Marine geology, volcanic-hosted submarine hydrothermal systems, sulfide-microbial habitats

KELLY, KATHRYN A. \* Affiliate Professor, 1997; PhD, 1983, University of California (San Diego); physical oceanography, specializing in combining models with satellite observations

KESSLER, WILLIAM S \* Affiliate Professor, 1995; PhD, 1989, University of Washington; Equatorial ocean circulation and waves; interannual climate variability biology and mechano-sensory system of pulp-dentin complex, dentinal (bone) fluid

KUNZE, ERIC L \* Affiliate Professor, 1987; MS, 1982, University of Washington, PhD, 1985, University of Washington; mesoscale phenomena, wave/mean flow interaction double diffusion and mixing

LEE, CRAIG M \* Affiliate Associate Professor, 1998; PhD, 1995, University of Washington; Upper ocean dynamic, air-sea interaction, interactions between physical and biological processes

LESSARD, EVELYN J. \* Associate Professor, 1989; MS, 1979, University of Rhode Island, PhD, 1984, University of Rhode Island; microzooplankton ecology and physiology; physical/biological interactions at oceanic fronts

LEWIS, BRIAN T, Professor Emeritus, 1970; PhD, 1970, University of Wisconsin (Madison); trauma and critical care

LILLEY, MARVIN D. \* Professor, 1984; MS, 1970, University of Arkansas, PhD, 1983, Oregon State University; chemical oceanography trauma and critical care

LOGSDON, MILES G. \* Senior Lecturer, 1997; MS, 1978, Oklahoma State University, PhD, 1997, University of Washington; Spatial Modeling and Analysis of Environmental Systems in the Earth Sciences Lie groups, Riemannian geometry

MAC CREADY, PARKER \* Associate Professor, 1994; MS, 1986, California Institute of Technology, PhD, 1991, University of Washington; ocean circulation in estuaries and the southern ocean general internal medicine

MARTIN, SEELYE \* Professor, 1968; PhD, 1967, Johns Hopkins University; geophysical fluid dynamics, properties of sea ice

MC DUFF, RUSSELL E \* Professor, 1981; PhD, 1978, University of California (San Diego); marine geochemistry

MC MANUS, DEAN A, Professor Emeritus, 1959; PhD, 1959, University of Kansas

MC PHADEN, MICHAEL J \* Affiliate Professor, 1982; PhD, 1980, Scripps Oceanographic Institution; equatorial ocean dynamics, climate scale air-sea interaction

MOBLEY, CURTIS D, Affiliate Professor, 1997; PhD, 1977, University of Maryland

MOFJELD, HAROLD, Affiliate Professor, 1970; MS, 1965, University of Washington, PhD, 1970, University of Washington

MOORE, DENNIS W., Affiliate Professor, 1996; MA, 1963, Harvard University, PhD, 1968, Harvard University; connective-tissue pathology, chronic inflammation, immunopathology, periodontal disease

MORISON, JAMES H \* Affiliate Professor, 1995; MS, 1972, University of California (Davis), PhD, 1980, University of Washington; upper ocean physical processes in the polar regions connective-tissue pathology, chronic inflammation, immunopathology, periodontal disease

MORRIS, ROBERT \* Assistant Professor, 2007; PhD, 2004, Oregon State University; Marine Microbial Ecology, Bacterioplankton Physiology, Microbial Community Interactions

MURRAY, JAMES W \* Professor, 1973; PhD, 1973, Massachusetts Institute of Technology; marine geochemistry, aquatic chemistry

NAPP, JEFFREY M, Affiliate Associate Professor, 1991; PhD, 1986, University of California (San Diego)



NELSON, BRUCE K. \* Adjunct Professor, 1986; MS, 1980, University of Kansas, PhD, 1985, University of California (Los Angeles); isotopic and geochemical investigations

NEWTON, JAN A. \* Affiliate Assistant Professor, 1992; MS, 1984, University of Washington, PhD, 1989, University of Washington; Biological oceanography, coastal and estuarine dynamics, climate and human impacts on water quality

NITTROUER, CHARLES \* Professor, 1978; MS, 1974, University of Washington, PhD, 1978, University of Washington; geological oceanography, continental-margin sedimentation medical genetics

NOWELL, ARTHUR R \* Professor, 1978; MA, 1971, University of British Columbia (Canada), PhD, 1975, University of British Columbia (Canada); physical oceanography, turbulent boundary layer dynamics, sediment transport

NYSTUEN, JEFFREY A. \* Affiliate Associate Professor, 1999; PhD, 1985, University of California (San Diego); Acoustical oceanography - passive monitoring of ambient sound in the ocean Physical oceanography experimental ecology, organization and structure of marine communities

OGSTON, ANDREA S \* Associate Professor, 1997; MS, 1993, University of Washington, PhD, 1997, University of Washington; Interaction between geological and physical oceanography of the coastal ocean; sediment transport processes in marine environments from surf zone to continental slope; instrument development. experimental ecology, organization and structure of marine communities

OLTMAN-SHAY, JOAN M, Affiliate Associate Professor, 1991; MS, 1980, Scripps Oceanographic Institution, PhD, 1986, Scripps Oceanographic Institution

PARSONS, JEFFREY D \* Affiliate Assistant Professor, 2000; MSCE, 1995, University of Illinois (Urbana), PhD, 1998, University of Illinois (Urbana); Sediment dynamics, environmental fluid mechanics, submarine and Martian morphology

PERRY, MARY J., Affiliate Professor, 1976; PhD, 1974, University of California (San Diego)

PRATT, THOMAS L. \* Affiliate Professor, 2003; MS, 1982, Virginia Polytechnic

Institute and State University, PhD, 1986, Virginia Polytechnic Institute and State University; Earthquake hazards, active fault structures, seismic imaging

QUAY, PAUL D \* Professor, 1977; MPhil, 1975, Columbia University, PhD, 1977, Columbia University; chemical oceanography, stable isotope geochemistry, ocean tracers and mixing

RATTRAY, MAURICE, Professor Emeritus, 1950; MS, 1947, California Institute of Technology, PhD, 1951, California Institute of Technology; metabolism and endocrinology, diabetes

RESING, JOSEPH A., Affiliate Assistant Professor, 2001; MS, 1992, University of Hawaii, PhD, 1997, University of Hawaii

RHINES, PETER B. \* Professor, 1984; MS, 1964, Massachusetts Institute of Technology, ScB, 1964, Massachusetts Institute of Technology, PhD, 1967, Cambridge University (UK); the circulation of the oceans and evolution of climate

RICHEY, JEFFREY E \* Professor, 1973; MSPH, 1970, University of North Carolina, PhD, 1973, University of California (Davis); quantitative problems of aquatic ecosystems, primary Amazon River, limnology Renaissance literature, women writers

RISER, STEPHEN C \* Associate Professor, 1981; MS, 1974, Massachusetts Institute of Technology, PhD, 1980, University of Rhode Island; physical oceanography, mesoscale mixing, physics of mesoscale eddies, numerical modeling

ROCAP, GABRIELLE L. \* Associate Professor, 2001; PhD, 2000, Massachusetts Institute of Technology; Ecology, evolution, genetic diversity and comparative genomics of marine cyanobacteria

SABINE, CHRISTOPHER L., Affiliate Assistant Professor, 1999; PhD, 1992, University of Hawaii

SACHS, JULIAN P. \* Associate Professor, 2006; PhD, 1997, Massachusetts Institute of Technology; Paleoclimate, Paleoceanography & Organic Geochemistry

SANFORD, THOMAS B \* Professor, 1979; PhD, 1967, Massachusetts Institute of Technology; physical oceanography, dynamics of ocean currents, motional induction, instrumentation

SHEETS, BENJAMIN A, Assistant Professor, 2008; PhD, 2004, University of Minnesota

SHUMAN, FRANK R, Affiliate Associate Professor, 1999; MS, 1974, University of Washington, PhD, 1978, University of Washington

SPINDEL, ROBERT C., Adjunct Professor, 1987; MS, 1966, Yale University, MPhil, 1968, Yale University, PhD, 1971, Yale University

STERNBERG, RICHARD, Professor Emeritus, 1961; MS, 1961, University of Washington, PhD, 1965, University of Washington

THOMPSON, LUANNE \* Associate Professor, 1990; MA, 1986, Harvard University, PhD, 1990, Woods Hole Oceanographic Institution; numerical modeling of mesoscale and general circulation of the oceans pediatric emergency medicine

THOMSEN, LAURENZA., Affiliate Associate Professor, 2002; PhD, 1992, University of Kiel (Germany)

VAN DEN ENGH, GERRIT J \* Research Professor, 1992; MS, 1972, Leiden University (The Netherlands), PhD, 1976, Leiden University (The Netherlands); flow cytometry, quantitative cytogenetics, instrument design and development

WARNER, MARK J \* Associate Professor, 1989; PhD, 1988, University of California (San Diego); physical oceanography, ocean ventilation and mixing processes

WILCOCK, WILLIAM S D \* Professor, 1993; MSC, 1986, Imperial College, PhD, 1992, Massachusetts Institute of Technology; marine seismology, dynamics of mid-ocean ridges, geological fluid dynamics

WILLIAMS, KEVIN L. \* Associate Professor, 1998; MS, 1983, Washington State University, PhD, 1985, Washington State University; Experimental, Theoretical examinations of Acoustic propagation, scattering in the Ocean. pulmonary and critical care medicine

WOODGATE, REBECCA A, Affiliate Assistant Professor, 1999; PhD, 1994, University of Oxford (UK); hematology, oncology

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# School of Pharmacy

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## Medicinal Chemistry

ATKINS, WILLIAM M. \* Professor, 1991; MA, 1982, Harvard University, PhD, 1988, University of Illinois; protein engineering

BAILLIE, THOMAS A, Affiliate Professor, 1981; PhD, 1973, University of Glasgow (UK), MSC, 1978, London Contemp. Dance School (England)

CATALANO, CARLOS E. \* Professor, 2006; PharmD, 1983, University of California (San Francisco), PhD, 1987, University of California (San Francisco); Mechanistic enzymology, genome replication and packaging

ELMER, GARY W \* Professor Emeritus, 1971; MS, 1967, University of Connecticut, PhD, 1970, Rutgers University; pharmacognosy

FRITZBERG, ALAN R., Affiliate Associate Professor, 1984; MS, 1968, University of Wisconsin, PhD, 1971, Wesleyan University

GOODLETT, DAVID R. \* Associate Professor, 2002; MS, 1988, Auburn University, PhD, 1991, Auburn University; Bioanalytical laboratory developing separation and MS methods for biological problems

KRUPSKI, EDWARD, Professor Emeritus, 1944; MS, 1941, University of Washington, PhD, 1949, University of Washington

KUNZE, KENT \* Associate Professor, 1989; PhD, 1981, University of California (San Francisco); medicinal chemistry and drug metabolism

MC CARTHY, WALTER, Professor Emeritus, 1949; PhD, 1949, Indiana University

NELSON, SIDNEY D \* Professor, 1977; PhD, 1974, University of California (San Francisco); medicinal chemistry, chemical toxicology

NELSON, WENDEL \* Professor, 1965; PhD, 1965, University of Kansas; medicinal chemistry

RETTIE, ALLAN E. \* Professor, 1984; PhD, 1983, University of Newcastle-On-Tyne (UK); Drug Metabolism: Biochemical, Analytical, Mechanistic and Genetic Aspects

TOTAH, RHEEM A. \* Assistant Professor, 2002; MS, 2000, University of Kansas, PhD, 2002, University of Kansas; Drug metabolism

TRAGER, WILLIAM F, Professor Emeritus, 1963; PhD, 1965, University of Washington

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## Pharmaceutics

ANDERSON, GAIL \* Adjunct Professor, 1987; MS, 1981, University of Washington, PhD, 1987, University of Washington; pharmacokinetics, metabolism and interactions of drugs in epilepsy and trauma

BOWDLE, T. ANDREW, Adjunct Professor, 1981; MD, 1980, University of Washington, PhD, 1983, University of Washington

HO, RODNEY J.Y. \* Professor, 1990; MS, 1985, University of Tennessee, PhD, 1987, University of Tennessee; maternal-fetal transmission of HIV

HU, SHIU-LOK \* Professor, 1988; PhD, 1978, University of Wisconsin (Madison); Virus-host interactions, AIDS vaccines and pathogenesis of primate lentivirus infection

ISOHERRANEN, NINA \* Assistant Professor, 2003; MS, 1998, University of Helsinki (Finland), PhD, 2003, Hebrew University (Israel); Pharmaceutics

KELLY, EDWARD J \* Research Assistant Professor, 1999; MS, 1986, University of California (Riverside), PhD, 1996, University of Washington; Development of genetically engineered mouse models, focusing on polymorphic drug metabolizing enzymes

KUNZE, KENT \* Adjunct Associate Professor, 1989; PhD, 1981, University of California (San Francisco); medicinal chemistry and drug metabolism

LEVY, RENE H \* Professor, 1970; PhD, 1970, University of California (San Francisco); metabolic interactions among antiepileptic drugs and between cytokines and drugs

MAO, QINGCHENG \* Assistant Professor, 2002; MSC, 1988, East China Normal University, PhD, 1995, University of Berne (Switzerland); Role of ABC Transporters In Drug Disposition

SHEN, DANNY D \* Professor, 1984; PhD, 1975, State University of New York (Buffalo); CNS pharmacokinetics and pharmacodynamics of opioid analgesics and anticonvulsants

THUMMEL, KENNETH E. \* Professor, 1989; PhD, 1987, University of Washington; The metabolism of drugs by human liver and intestine

UNADKAT, JASHVANT D \* Professor, 1985; PhD, 1982, University of Manchester (UK); mechanisms of transport of anti-HIV drugs across placenta, CSF-blood barrier, and intestine

VICINI, PAOLO \* Adjunct Associate Professor, 1996; PhD, 1996, Polytechnic of Milan (Italy); Computational, mathematical, and statistical approaches to the analysis of biological systems. Maximum likelihood and least squares parameter estimation for biomedical models. Pharmacokinetics and pharmacodynamics. Use of models to test hypotheses

WANG, JOANNE \* Associate Professor, 2000; MS, 1993, University of Illinois, PhD, 1998, University of California (San Francisco); Drug transport and targeting

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## Pharmacy

ANDERSON, GAIL \* Professor, 1987; MS, 1981, University of Washington, PhD, 1987, University of Washington; pharmacokinetics, metabolism and interactions of drugs in epilepsy and trauma

AU, DAVID H. \* Adjunct Associate Professor, 1996; MD, 1993, University of Chicago; Chronic Obstructive Pulmonary Disease, Lung Cancer, Health Services Research and Epidemiology

BALUCH, WILLIAM M., Affiliate Associate Professor, 1978; MS, 1978, University of Washington

BANH, JEAN P., Acting Instructor, 2008; PharmD, 2008, University of Buffalo

BAUER, LARRY \* Professor, 1980; PharmD, 1980, University of Kentucky; clinical pharmacokinetics and drug metabolism, drug interactions

BELL, DEANE M., Affiliate Assistant Professor, 1990; MS, 1982, Seattle University

BLACK, DOUGLAS J, Associate Professor, 1983; PharmD, 1983, University of Washington

BLOUGH, DAVID K \* Research Associate Professor, 1997; MS, 1975, University of Arizona, MS, 1982, Iowa State University,

PhD, 1982, Iowa State University;  
Biostatistics applications; generalized  
linear models; time series analysis

BOMGAARS, DONALD L., Affiliate  
Associate Professor, 1987; MBA, 1985,  
University of Utah, MS, 1985, University of  
Utah

BOUDREAU, DENISE M., Affiliate Associate  
Professor, 2004; MS, 1996, University of  
Rhode Island, PhD, 2002, University of  
Washington

BOYER, SUSAN T., Affiliate Associate  
Professor, 1987; MS, 1981, Ohio State  
University

BRAKEBILL, JANET I, Affiliate Associate  
Professor, 1984; PharmD, 1982, University  
of Washington

BRENNAN, CYNTHIA, Affiliate Professor,  
1981; PharmD, 1980, University of  
Southern California

BROEKEMEIER, RONALD L, Affiliate  
Associate Professor, 1996; MS, 1976,  
University of Minnesota

BURKHART, VINCENT D, Professor  
Emeritus, 1982; MS, 1972, University of  
Maryland

CARLINE, JAN D. \* Adjunct Professor,  
1979; MEd, 1976, University of Washing-  
ton, PhD, 1979, University of Washington;  
Assessment of physician performance,  
evaluation of medical education programs

CARLSON, JAMES A., Affiliate Assistant  
Professor, 1986; PharmD, 1982, University  
of Minnesota

CHAN, AMY ONNI, Acting Instructor, 2006;  
PharmD, 2006, University of California  
(San Diego)

CHAN, LINGTAK-NEANDER \* Associate  
Professor, 2004; PharmD, 1996, University  
of Washington; antioxidant & micronutrient  
dispositions in acute illnesses; energy  
expenditure & drug/nutrient kinetics after  
bariatric surgery; clinical nutrition

CHAN, WAI-MAN, Acting Instructor, 2001;  
PharmD, 1997, University of Kentucky,  
MPH, 2005, University of Washington

CHANG, JENNIFER C., Affiliate Assistant  
Professor, 1997; PharmD, 1997, University  
of Minnesota

CHARNEY, PAMELA, Affiliate Associate  
Professor, 2007; MS, 1988, University of  
Washington, PhD, 2006, U of Medicine &  
Dentistry of New Jersey

CHEN, TARA LO-DER, Acting Instructor,  
2006; PharmD, 2005, Rutgers University

CHRISTENSEN, DALE B, Affiliate Profes-  
sor, 1976; MS, 1972, Oregon State  
University, PhD, 1977, University of  
Minnesota

CHUA, STEFANIE L., Acting Instructor,  
2008; PharmD, 2008, University of North  
Carolina

COOPER, SARAH, Acting Instructor, 2008;  
PharmD, 2008, Drake University

CUSTER, BRIAN, Affiliate Assistant  
Professor, 2005; MPH, 1999, University of  
Washington, PhD, 2003, University of  
Washington

DRIESNER, NANCY, Affiliate Assistant  
Professor, 1990; PharmD, 1990, University  
of Washington

DRYSDALE, TROY A., Acting Instructor,  
2008; PharmD, 2008, University of  
California (San Francisco)

ELLSWORTH, ALLAN J, Professor, 1982;  
PharmD, 1977, Philadelphia College of  
Pharmacy & Science

FASSETT, WILLIAM E, Affiliate Professor,  
1979; MBA, 1983, University of Puget  
Sound, PhD, 1992, University of Washing-  
ton

FIJALKA, STEVEN A., Affiliate Associate  
Professor, 1986; PharmD, 1986, University  
of Washington

FONG, RICHARD L., Acting Instructor,  
2008; PharmD, 2007, University of  
California (San Francisco)

FULLER, TIM S, Affiliate Associate  
Professor, 1975; MS, 1974, Ohio State  
University

FULLERTON, DWIGHT S., Affiliate  
Professor, 1995; PhD, 1971, University of  
California (Berkeley)

GARDNER, JACQUELINE S. \* Professor,  
1990; MPH, 1972, University of Hawaii,  
PhD, 1980, University of Washington;  
pharmacoepidemiology, drug therapy use  
and effects, pharmacist practice patterns

GARDNER, MATTHEW, Acting Instructor,  
2008; PharmD, 2008, Washington State  
University

GARRISON, LOUIS P \* Professor, 2004;  
PhD, 1981, Stanford University;  
Pharmacoeconomics, health economics,  
cost-effectiveness analysis, quality-of-life  
measurement, labor economics, public  
finance, applied econometrics

GONZALEZ, KRISTINA, Acting Instructor,  
2008; PharmD, 2008, University of Texas  
(Austin)

GRAY, SHELLY L. \* Professor, 1995;  
PharmD, 1989, University of Michigan, MS,  
2001, University of Washington;  
Pharmacoepidemiology of medication-  
related problems in frail older adults;  
Impact on medications and cognitive and  
functional status in older adults; Quality of  
medication use in assisted living facilities

GROOTHUIS, ELIZAA, Acting Instructor,  
2007; PharmD, 2007, University of  
Nebraska, Omaha

GROSS, DAVID E, Affiliate Associate  
Professor, 1986; PharmD, 1986, University  
of Washington

HALL, NATHAN A, Professor Emeritus,  
1948; PhD, 1948, University of Washing-  
ton

HAMMER, DANA L, Lecturer, 2001; MS,  
1995, Purdue University, PhD, 1999,  
Purdue University

HANSTEN, PHILIP D, Professor Emeritus,  
1989; PharmD, 1968, University of  
California (San Francisco)

HARVEY, ERIC M, Affiliate Assistant  
Professor, 1995; MBA, 1988, University of  
Florida, PharmD, 1988, University of  
Florida

HAZLET, THOMAS K. \* Associate  
Professor, 1996; PharmD, 1977, University  
of California (San Francisco), DPH, 1991,  
University of California (Berkeley);  
pharmaceuticals policy, outcomes and  
bioethics

HEBERT, MARY F \* Professor, 1996;  
PharmD, 1987, University of California  
(San Francisco); Clinical pharmacology of  
drugs in pregnancy, lactation, solid organ  
transplantation and end stage liver  
disease

HECKBERT, SUSAN R. \* Adjunct Profes-  
sor, 1981; MD, 1981, Case Western  
Reserve University, MPH, 1987, University  
of Washington, PhD, 1990, University of  
Washington; outcomes of drug therapy,  
cardiovascular epidemiology, pharmaco-  
genetics, pharmacoepidemiology

HORN, JOHN \* Professor, 1977; PharmD,  
1977, University of Cincinnati; pharmaco-  
therapeutics with emphasis on drug  
interactions

HUBER, VANDRA LEE \* Adjunct Professor,  
1987; MS, 1978, University of Utah, MBA,  
1981, Indiana University, DBA, 1982,  
Indiana University; human resource  
decision making, compensation, and  
performance appraisal

HWANG-HO, LILY S., Affiliate Assistant  
Professor, 1993; PharmD, 1987, University  
of California (San Francisco)

JOHNSON, ERIC S. \* Affiliate Assistant Professor, 1999; MPH, 1994, University of Washington, PhD, 1999, University of Washington; Evaluate drug safety; describe burden of disease/clinical outcomes

JOHNSON, SUZANNE G., Affiliate Assistant Professor, 1992; PharmD, 1992, Purdue University

KADIYALA, SRIKANTH, Assistant Professor, 2006; PhD, 2006, Harvard University

KAI, KRISTEN, Acting Instructor, 2008; PharmD, 2008, University of Washington

KAO, HENRY M., Acting Instructor, 2008; PharmD, 2008, Temple University

KING, MICHAEL P., Acting Instructor, 2008; PharmD, 2008, University of Washington

LAM, ANNIE Y., Senior Lecturer, 1998; PharmD, 1997, University of Washington

LAM, VIET Q., Acting Instructor, 2008; PharmD, 2008, University of Washington

LAMB, NATHAN, Acting Instructor, 2008; PharmD, 2008, Drake University

LEE, TODD A., Affiliate Assistant Professor, 2004; PharmD, 1997, Drake University, PhD, 2001, University of Washington

LEITH, PATRICIA O'CONNOR, Affiliate Assistant Professor, 1992; PharmD, 1992, University of Washington

LIN, JENNIFER, Acting Instructor, 2008; PharmD, 2008, University of Arizona

LYNCH, TIMOTHY W., Affiliate Assistant Professor, 2001; PharmD, 1998, University of Washington

MAXON, M. SCOT, Affiliate Assistant Professor, 1994; PharmD, 1993, University of Washington

MAYOR, JOAL G., Acting Instructor, 2008; PharmD, 2007, University of California (San Francisco)

MCCARTHY, HEIDI, Acting Instructor, 2008; PharmD, 2008, University of Washington

MCCUNE, JEANNINE S. \* Associate Professor, 1998; PharmD, 1995, University of North Carolina, Chapel Hill; cancer research, clinical pharmacology and pharmacogenomics of chemotherapy

MULVANEY, MARK B., Acting Instructor, 2008; PharmD, 2008, University of California (San Francisco)

MURPHY, NANCY L., Lecturer, 1989; PharmD, 1997, University of Washington

MURRAY, KIM M., Affiliate Assistant Professor, 1996; PharmD, 1986, University of Washington

NAKAMURA, KELLIE R, Acting Instructor, 2008; PharmD, 2008, University of Washington

NGO, TINA, Acting Instructor, 2008; PharmD, 2008, University of Washington

NGUYEN, JENNIFER, Acting Instructor, 2008; PharmD, 2008, Creighton University

NOWAK, RACHEL, Acting Instructor, 2008; PharmD, 2008, University of Washington

ODEGARD, PEGGY SOULE, Associate Professor, 1986; PharmD, 1990, University of Washington

OLIVER, LARRY W., Affiliate Assistant Professor, 1991; PharmD, 1989, University of Utah

OSBORN, JACQUELINE D, Affiliate Assistant Professor, 1992; PharmD, 1991, University of Washington

O'SULLIVAN, TERESA, Lecturer, 1990; PharmD, 1990, University of Minnesota

PATRICK, DONALD L. \* Adjunct Professor, 1987; MS, 1968, Columbia University, PhD, 1972, Columbia University; aging, disablement, and health-related quality of life

PAUN, DOROTHY A \* Adjunct Associate Professor, 1993; MBA, 1984, Catholic University of Leuven (Belgium), PhD, 1993, University of Oregon; product bundling; financial performance analyses; international countertrade; buyer-seller partnerships; forest products marketing; Chinese business options; integrating e-business and international education; and models for innovative higher education

PEFFER, AMANDA CHRISTINE, Acting Instructor, 2005; PharmD, 2005, University of Iowa

PENNA, PETER, Affiliate Associate Professor, 1977; PharmD, 1969, University of California (San Francisco)

PETILLA, MELANIE P., Acting Instructor, 2008; PharmD, 2007, University of Washington

PRITCHARD, BARBARA, Acting Instructor, 2008; PharmD, 2008, University of Florida

RAMSEY, SCOTT D. \* Adjunct Professor, 1990; MD, 1990, University of Iowa, PhD, 1994, University of Pennsylvania; economics in medicine

RICHARDS, ASHLEY I., Acting Instructor, 2008; PharmD, 2007, University of Florida

RITCHIE, CRAIG A., Affiliate Assistant Professor, 1995; JD, 1972, University of Idaho

SCHOONOVER, LORI L., Affiliate Associate Professor, 2003; PharmD, 1992, Virginia Commonwealth University

SCHREFFLER, RACHEL SUSAN, Acting Instructor, 2008; PharmD, 2008, University of Washington

SCOTT, DALE H, Affiliate Associate Professor, 1980; MS, 1978, Ohio State University, MBA, 1989, University of Washington

SEAR, CAROLYN, Acting Instructor, 2008; PharmD, 2008, University of Washington

SETO, ANNA CHIA, Acting Instructor, 2006; PharmD, 2006, University of California (San Francisco)

SHEN, DANNY D \* Professor, 1984; PhD, 1975, State University of New York (Buffalo); CNS pharmacokinetics and pharmacodynamics of opioid analgesics and anticonvulsants

SHERIDAN, BEVERLY A., Affiliate Associate Professor, 1991; JD, 1986, University of Toledo

SMITH, DAVID H., Affiliate Assistant Professor, 1998; MS, 1995, University of Washington, PhD, 1998, University of Washington

SOMANI, SHABIR M, Associate Professor, 1994; MS, 1982, University of Minnesota, MBA, 1992, University of Minnesota

STAGGS, TRANG, Affiliate Assistant Professor, 1997; PharmD, 1996, University of Washington

STERGACHIS, ANDREAS S \* Adjunct Professor, 1980; MS, 1976, University of Minnesota, PhD, 1979, University of Minnesota; pharmacoepidemiology, pharmacy administration

SULLIVAN, DONNA, Affiliate Assistant Professor, 1997; PharmD, 1996, Mercer University

SULLIVAN, SEAN \* Professor, 1992; MS, 1984, University of Texas (unspecified), PhD, 1992, University of California (Berkeley); Health Economics, Pharmaceutical Outcomes Research and Health Policy

TANAS, MAJID-THEODORE RAJA, Acting Instructor, 2007; MS, 2003, Washington State University, PharmD, 2007, Washington State University

TUNG, ELYSE L., Acting Instructor, 2008; PharmD, 2008, University of Washington

VALDERAZ, HELENE, Acting Instructor, 2006; PharmD, 2006, University of Texas (Austin)

VEENSTRA, DAVID \* Associate Professor, 1997; PhD, 1996, University of California (San Francisco), PharmD, 1996, University of California (San Francisco); Economic modeling and cost-effectiveness analysis in health care

VILLANUEVA, VIVIAN, Acting Instructor, 2008; PharmD, 2008, University of Washington

VOORHIES, JOHN H., Affiliate Assistant Professor, 1995; PharmD, 1999, University of Washington

WAALA, KATIE L., Acting Instructor, 2008; PharmD, 2008, University of Wisconsin (Madison)

WATKINS, JOHN BENNETT, Affiliate Associate Professor, 1997; MS, 1976, University of Washington, MPH, 1993, University of Washington

WEBER, STANLEY S., Associate Professor, 1996; PharmD, 1975, University of Cincinnati

WILSON, CYNTHIA, Affiliate Assistant Professor, 2001; PharmD, 1997, Washington State University

WONG, GIGI, Acting Instructor, 2008; PharmD, 2008, University of Washington

WOOLF, ROGER A., Affiliate Assistant Professor, 1991; PharmD, 1985, University of Washington

YEH, JASON CHIH YAN, Acting Instructor, 2008; PharmD, 2008, University of Texas (Austin)

YUNKER, FRANK J., Affiliate Assistant Professor, 1993; MBA, 1991, University of Phoenix

ZOLOTH, ARTHUR M, Affiliate Associate Professor, 1971; PharmD, 1968, University of California (San Francisco)

ZOU, YI, Acting Instructor, 2008; PharmD, 2008, University of Washington

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# Daniel J. Evans School of Public Affairs

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## Public Affairs

ANDERSON, C. LEIGH \* Professor, 1996; MA, 1987, University of Washington, PhD, 1989, University of Washington; Institutional economics, international trade and environmental policy, international development, microfinance

ARCHIBALD, SANDRA O \* Professor, 2003; MA, 1971, University of California (Berkeley), PhD, 1984, University of California (Davis)

BEYERS, WILLIAM B \* Adjunct Professor, 1966; PhD, 1967, University of Washington; regional science, economic geography, location theory, regional analysis, environment of the Pacific Northwest

BLAKE, MICHAEL I. \* Associate Professor, 2005; PhD, 1998, Stanford University; International ethics, multiculturalism, and immigration

BOSTROM, ANN \* Associate Professor, 2007; MBA, 1986, Western Washington University, PhD, 1990, Carnegie Mellon University; Risk Perception, Communication, and Management; Environmental Policy and Management

BROCK, JONATHAN, Associate Professor, 1981; MBA, 1973, Harvard University

CRUTCHFIELD, JAMES A, Professor Emeritus, 1949; MA, 1942, University of California (Los Angeles), PhD, 1954, University of California (Berkeley)

CULLEN, ALISON \* Associate Professor, 1995; MS, 1989, Harvard University, DSc, 1992, Harvard University; Environmental science, policy, quantitative decision making and management

CURRAN, SARA R \* Associate Professor, 2005; MS, 1990, North Carolina State University, PhD, 1994, University of North Carolina; globalization, development, migration, environment, gender & Southeast Asia

DAMON, MARIA \* Acting Assistant Professor, 2007; MA, 2005, University of California (San Diego), PhD, 2007, University of California (San Diego); Environmental policy and economics, natural resource management, pollution control, environmental regulation, international health and development

DENNY, BREWSTER C, Professor Emeritus, 1961; MA, 1948, Fletcher School of Law And Diplomacy, PhD, 1959, Fletcher School of Law And Diplomacy

DIVELY, DWIGHT D, Affiliate Associate Professor, 1989; MPA, 1982, Princeton University

DOBEL, J PATRICK \* Professor, 1985; MA, 1972, Princeton University, PhD, 1976, Princeton University; political theory, ethics and public policy, organizational theory

EMMERT, MARK A., Professor, 2004; MPA, 1976, Syracuse University, PhD, 1983, Syracuse University

EVANS, LAURA E \* Assistant Professor, 2004; MPP, 1996, University of Michigan, PhD, 2005, University of Michigan

FAUSTMAN, ELAINE M. \* Adjunct Professor, 1981; PhD, 1981, Michigan State University; developmental toxicology, risk assessment methodologies, toxicology of N-nitroso compounds

FLETSCHNER, DIANA \* Assistant Professor, 2002; MSC, 1995, University of Wisconsin (Madison), PhD, 2002, University of Wisconsin (Madison)

GALE, DIANA, Senior Lecturer Emeritus, 1982; MUP, 1969, University of Washington, PhD, 1981, University of Washington

GLOYD, STEPHEN S. \* Adjunct Professor, 1973; MD, 1973, University of Chicago, MPH, 1983, Harvard University; political economy, epidemiology, and primary health care in developing countries

GOLDHABER, DAN \* Research Professor, 2002; PhD, 1994, Cornell University; Educational reform and productivity, Labor Economics, Teacher Quality, School Choice

GORDON, MARGARET T \* Professor Emeritus, 1988; MS, 1962, Northwestern University, PhD, 1972, Northwestern University; news media and public policy; violence against women

HERRANZ JR, JOAQUIN \* Assistant Professor, 2004; MCP, 1989, University of California (Berkeley), PhD, 2004, Massachusetts Institute of Technology

HILL, PAUL T. \* Research Professor, 1993; MA, 1966, Ohio State University, PhD, 1972, Ohio State University; political science, public policy, effects of regulation, especially on schools

HIRSCHMAN, CHARLES \* Professor, 1987; MA, 1969, University of Wisconsin (Madison), PhD, 1972, University of Wisconsin (Madison); demography, race and ethnic relations, social stratification, Southeast Asia

HYMAN, BARRY \* Professor Emeritus, 1975; MS, 1961, St Louis University, PhD, 1965, Virginia Polytechnic Institute and State University; energy policy, industrial energy use and emissions patterns, technology and public policy, engineering design

KATZ, AARON \* Adjunct Senior Lecturer, 1993; Certificate of Public Health, 1975, University of Toronto (Canada); public policy in the health sector, U.S. and international

KHAGRAM, SANJEEV \* Associate Professor, 2005; MA, 1993, Stanford University, PhD, 1999, Stanford University; transnational/comparative studies, sustainable development, human security, good governance, democratization

KLAWITTER, MARIEKA \* Associate Professor, 1990; MPP, 1983, University of Michigan, MS, 1986, University of Wisconsin, PhD, 1992, University of Wisconsin; family and employment policy, women's studies, sexual orientation discrimination

KLEIT, RACHEL G. \* Associate Professor, 1999; MA, 1993, Tufts University, PhD, 1999, University of North Carolina, Chapel Hill; housing policy; urban and social policy; social networks and poverty

LAYTON, DAVID F \* Associate Professor, 2001; MA, 1993, University of Washington, PhD, 1995, University of Washington; Environmental and Natural Resource Economics and Policy; Non-market Valuation; Discrete Choice Econometrics

LIGHT, ANDREW \* Associate Professor, 2004; MA, 1992, University of California (Riverside), PhD, 1996, University of California (Riverside); Environmental Ethics & Policy, relating to restoration ecology and urban ecology; Philosophy of Technology, relating to ethical issues in emerging technologies; Philosophical issues in Architecture and Urban Planning

LOCKE, HUBERT G., Professor Emeritus, 1976; MA, 1962, University of Michigan

LONG, MARK C \* Assistant Professor, 2004; MPP, 1996, University of Michigan, MA, 1998, University of Michigan, PhD, 2002, University of Michigan; Economics of Education, Race, Inequality, Labor Markets, and Public Goods

MAY, PETER J. \* Adjunct Professor, 1979; MPP, 1976, University of California (Berkeley), PhD, 1979, University of California (Berkeley); policy processes;

policy design and implementation;  
environmental regulation

MEYERS, MARCIA \* Professor, 2001; MPA, 1987, Harvard University, PhD, 1992, University of California (Berkeley); Social policies, politics, and programs, with an emphasis on poverty and income inequality

MEYERS, MARCIA \* Professor, 2001; MSW, 1992, University of California (Berkeley); Social policies, politics, and programs, with an emphasis on poverty and income inequality

MILES, EDWARD L \* Professor, 1974; PhD, 1965, University of Denver; international law and organization; science, technology, and international relations; marine policy and ocean management

MILLER, ERNEST G., Associate Professor Emeritus, 1965; MPA, 1953, University of Washington, PhD, 1959, Princeton University

PAGE, STEPHEN B. \* Associate Professor, 1999; SM, 1989, Massachusetts Institute of Technology, PhD, 1999, Massachusetts Institute of Technology; Public Management, Social and Health Policy and Administration, Interagency Collaboration, Public-Private Partnerships, Bureaucracy and Organizations

PLOTNICK, ROBERT D. \* Professor, 1984; MA, 1973, University of California (Berkeley), PhD, 1976, University of California (Berkeley); economics of poverty, labor and social welfare policy

PRAKASH, ASEEM \* Adjunct Professor, 2002; MBA, 1988, Indian Institute of Management, India, PhD, 1997, Indiana University; international political economy, environmental policy, private governance, business-government relations

RYAN, CLARE \* Adjunct Associate Professor, 1997; MS, 1990, University of Michigan, Ann Arbor, PhD, 1996, University of Michigan, Ann Arbor; Natural resource policy and administration, environmental conflict management, water policy

SMITH, STEVEN RATHGEB \* Professor, 1996; MSW, 1978, Washington University, PhD, 1988, Massachusetts Institute of Technology; The changing relationship between government and nonprofit organizations

STEINEMANN, ANNE \* Professor, 2004; MS, 1985, University of California (Los Angeles), PhD, 1993, Stanford University; Drought, water management, environmental impacts, health effects of pollutants, sustainability

THOMAS, CRAIG W. \* Associate Professor, 2006; MPP, 1988, University of

California (Berkeley), PhD, 1997, University of California (Berkeley); Environmental Policy, Public Management, Collaborative Governance

WADDELL, PAUL A \* Professor, 1997; MS, 1981, University of Texas (Houston), PhD, 1989, University of Texas (Dallas); urban policy, regional planning, growth management, land use, transportation, GIS

WATTS, CAROLYN A. \* Adjunct Professor, 1975; MA, 1974, Johns Hopkins University, PhD, 1976, Johns Hopkins University; health economics and policy

WENK, EDWARD, Professor Emeritus, 1970; MS, 1947, Harvard University, PhD, 1950, Johns Hopkins University

WILLIAMS, WALTER, Professor Emeritus, 1970; MBA, 1956, University of Texas (unspecified), PhD, 1960, Indiana University

ZERBE, RICHARD O. \* Professor, 1975; PhD, 1969, Duke University; law and economics, cost-benefit analysis, economic history, environmental regulation

ZUMETA, WILLIAM M. \* Professor, 1985; MPP, 1973, University of California (Berkeley), PhD, 1978, University of California (Berkeley); public policy analysis, higher education policy and finance, workforce policy

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# School of Public Health and Community Medicine

## Biostatistics

ANDERSON, GARNET L \* Affiliate Professor, 1989; MA, 1983, State University of New York (Binghamton), PhD, 1989, University of Washington; clinical trial methodology, survival analysis, women's health, ovarian cancer screening

BARLOW, WILLIAM E. \* Research Professor, 1989; MA, 1976, University of Toronto (Canada), MS, 1982, University of Washington, PhD, 1986, University of Washington; Survival analysis, residuals, applications to ophthalmology and cancer screening

BENEDETTI, JACQUELINE K \* Professor, 1980; PhD, 1974, University of Washington; statistical methodology in infectious disease research, cancer clinical trials

BRESLOW, NORMAN \* Professor, 1967; PhD, 1967, Stanford University; clinical trials, epidemiology, survival and categorical data

BROWN, ELIZABETH \* Research Assistant Professor, 2002; MS, 1998, University of Colorado (campus unspecified), DSc, 2002, Harvard University; Bayesian methods in Biostatistics, HIV prevention research, Cardiovascular disease research

BRUMBACK, LYNDIA C. \* Research Assistant Professor, 2001; MS, 1996, University of Wisconsin (Madison), PhD, 2001, University of Wisconsin (Madison); Functional data analysis; applications in cardiovascular disease, Cystic Fibrosis research

CHEN, YING QING \* Affiliate Associate Professor, 2005; PhD, 1999, Johns Hopkins University; Development and application of statistical methodologies in HIV/AIDS prevention research. Assessing the association and attribution of specific HIV/AIDS prevention strategies in population life expectancy improvement, developing causal inferences on life

COOK, ANDREA, Affiliate Assistant Professor, 2007; MS, 2003, Harvard University, PhD, 2005, Harvard University

CRANE, PAUL K, Adjunct Assistant Professor, 1997; MD, 1997, University of Washington, MPH, 2003, University of Washington

DE ROUEN, TIMOTHY \* Professor, 1975; MS, 1969, Virginia Polytechnic Institute and State University, PhD, 1971, Virginia Polytechnic Institute and State University;

applications of biostatistics to clinical epidemiology of oral and infectious diseases

DIEHR, PAULA K. \* Professor, 1970; MS, 1967, University of California (Los Angeles), PhD, 1970, University of California (Los Angeles); health services applications, years of healthy life

EMERSON, SCOTT S. \* Professor, 1984; MD, 1981, University of Virginia, MS, 1984, University of Virginia, PhD, 1988, University of Washington; clinical trials, sequential testing, survival analysis, categorical data

EMOND, MARY JANE \* Research Associate Professor, 1994; MS, 1989, University of Washington, PhD, 1993, University of Washington; Semiparametric estimation and efficiency; efficient multi-stage sampling in retrospective studies with application to large case-control studies aimed at finding gene-disease associations; statistical problems in molecular biology

ETZIONI, RUTH B. \* Affiliate Professor, 1991; MS, 1987, Carnegie Mellon University, PhD, 1990, Carnegie Mellon University; statistical methods in cancer screening, Bayesian methods in biostatistics

FEIGL, POLLY, Professor Emeritus, 1969; MA, 1957, University of Minnesota, PhD, 1961, University of Minnesota

FENG, ZIDING \* Affiliate Professor, 1990; MS, 1985, Cornell University, PhD, 1990, Cornell University; correlated data methods, mixture models, cancer prevention

FISHER, LLOYD D, Professor Emeritus, 1966; MA, 1965, Dartmouth College, PhD, 1966, Dartmouth College

FLEMING, THOMAS RICHARD \* Professor, 1984; MA, 1974, University of Maryland, PhD, 1976, University of Maryland; survival analysis, cancer clinical trials, AIDS research, sequential analysis

GILBERT, PETER B \* Research Associate Professor, 2002; MS, 1994, University of Washington, PhD, 1996, University of Washington; HIV vaccine trials and statistical methods for HIV studies

GOOLEY, THEODORE A. \* Affiliate Professor, 1993; PhD, 1990, University of Arizona; Design and analysis of clinical trials

HALLORAN, M. ELIZABETH \* Professor, 2006; MD, 1983, Freie University of Berlin (Germany), MPH, 1985, Harvard University, DSc, 1989, Harvard University

HALLSTROM, ALFRED \* Professor, 1969; MSC, 1961, Brown University, PhD, 1968, Brown University; clinical trial methodologies in cardiovascular research and emergency medical services applications

HANEUSE, SEBASTIEN \* Affiliate Assistant Professor, 2006; MS, 1998, Northern Arizona University, MS, 2000, University of Washington, PhD, 2004, University of Washington; Bayesian statistics, Bayesian non-parametrics, epidemiological study design, spatial statistics, multi-stage modeling, repeated measures analysis

HEAGERTY, PATRICK J. \* Professor, 1995; MS, 1991, State University of New York (Albany), PhD, 1995, Johns Hopkins University; longitudinal and dependent data analysis

HOERING, ANTJE, Affiliate Assistant Professor, 1991; MA, 1988, Oregon State University, PhD, 1991, University of Heidelberg (Germany)

HOFF, PETER D \* Associate Professor, 2000; MS, 1994, University of Wisconsin, PhD, 2000, University of Wisconsin; Nonparametric Bayesian methods, mixture models, two-sided matching models

HOLTE, SARAH E. \* Affiliate Associate Professor, 1993; MA, 1987, University of Oregon, PhD, 1990, University of Oregon; Mathematical and statistical modeling of biological process data, with specific interest in models using systems of differential equations, stochastic processes and associated statistical methods such as nonlinear random effects methods

HUANG, YIJIAN \* Affiliate Associate Professor, 1997; MS, 1994, University of Minnesota, PhD, 1997, University of Minnesota; Censored Outcomes, Contaminated Covariates, and Applications to Clinical Research

HUGHES, JAMES P \* Professor, 1993; MS, 1980, University of Washington, PhD, 1993, University of Washington; Statistical methods in STD/AIDS research, longitudinal methods, Markov models

KERR, KATHLEEN F. \* Associate Professor, 2001; MA, 1994, University of Southern California, MS, 1998, University of Southern California, PhD, 1999, University of Southern California; Statistical analysis of genomic data, experimental design



KOOPERBERG, CHARLES L \* Affiliate Professor, 1991; MA, 1985, Delft University of Technology (Netherlands), PhD, 1991, University of California (Berkeley); splines, density estimation, image reconstruction, spatial statistics, function estimation

KOPECKY, KENNETH J \* Affiliate Professor, 1977; MS, 1975, Oregon State University, PhD, 1977, Oregon State University; Clinical trials design and analysis, survival data analysis, epidemiologic methodology, radiation epidemiology, biomedical and cancer-related applications

KRONMAL, RICHARD A \* Professor, 1964; PhD, 1964, University of California (Los Angeles); nonparametric density estimation, computer algorithms, cardiovascular data analysis

LE BLANC, MICHAEL \* Research Professor, 1989; MA, 1984, University of Waterloo (Canada), PhD, 1989, University of Washington; Tree-based methods for regression and exploratory survival analysis. Development and application of adaptive regression and classification techniques

LEISENRING, WENDY M. \* Affiliate Associate Professor, 1992; MS, 1990, Harvard University, DSc, 1992, Harvard University; Design and analysis of clinical trials, statistical methods for diagnostic tests, oncology, reproductive epidemiology

LEROUX, BRIAN \* Associate Professor, 1991; MSC, 1985, University of British Columbia (Canada), PhD, 1989, University of British Columbia (Canada); random effect models, stochastic processes, dental research, toxicology

LONGINI, IRA M. \* Professor, 2006; MS, 1973, University of Florida, PhD, 1977, University of Minnesota

LU, I-LI, Affiliate Assistant Professor, 2008; MA, 1987, University of Virginia, PhD, 1991, University of Virginia

LUEBECK, GEORG, Affiliate Associate Professor, 2007; MS, 1983, University of Washington, PhD, 1986, University of Washington

LUMLEY, THOMAS S. \* Associate Professor, 1998; MSC, 1994, University of Oxford (UK), PhD, 1998, University of Washington; statistical methods applied to public health, medicine and environmental science

MANCL, LLOYD A. \* Adjunct Research Assoc Professor, 1992; MS, 1988, University of Washington, PhD, 1992, University of Washington; statistical methodology in periodontal disease and TMD research

MASSE, BENOIT R., Affiliate Assistant Professor, 2003; MS, 1988, University of Montreal (Canada), PhD, 1993, University of North Carolina

MCKNIGHT, BARBARA \* Professor, 1981; MS, 1979, University of Wisconsin, PhD, 1981, University of Wisconsin; Statistical methods in chronic disease epidemiology, human genetics and animal carcinogenicity testing; survival analysis

MIGLIORETTI, DIANA LYNN \* Affiliate Associate Professor, 2000; MS, 1996, Johns Hopkins University, PhD, 2000, Johns Hopkins University; Research Interests: latent class models, hierarchical models, longitudinal and clustered data analysis, diagnostic testing

MOOLGAVKAR, SURESH H. \* Adjunct Professor, 1982; MBBS, 1966, University of Bombay, PhD, 1973, Johns Hopkins University; cancer epidemiology, development of quantitative methodology

NELSON, JENNIFER L. \* Affiliate Assistant Professor, 2004; MS, 1996, University of Washington, PhD, 1999, University of Washington; statistical methods for measuring agreement; cardiovascular and infectious disease epidemiology

NICHOL, GRAHAM, Adjunct Professor, 2004; MD, 1988, University of Western Ontario (Canada), MPH, 1995, Harvard University

PEPE, MARGARET \* Professor, 1987; MS, 1984, University of Washington, PhD, 1986, University of Washington; survival analysis, medical decision making, correlated data methods, child health issues

PETERSON, ARTHUR V \* Professor, 1975; MS, 1971, Stanford University, PhD, 1975, Stanford University; survival data methodology, competing risks, design of disease prevention trials

POLISSAR, NAYAK LINCOLN \* Affiliate Associate Professor, 1974; MA, 1968, Princeton University, PhD, 1974, Princeton University; Statistical consulting, community surveys, clinical trials, demography, epidemiology, statistics in law and environmental issues

PRENTICE, ROSS L \* Professor, 1974; MSC, 1968, University of Toronto (Canada), PhD, 1970, University of Toronto (Canada); failure time analysis, disease prevention trials, epidemiologic methods, dietary factors and disease

QIN, LI, Affiliate Assistant Professor, 2005; PhD, 2004, University of Pennsylvania

RICE, KENNETH M. \* Assistant Professor, 2004; PhD, 2002, Cambridge University

(UK); Biostatistics, linking Bayesian and classical methods, cardiovascular disease, genetics, fMRI

RICHARDSON, BARBRAANN \* Research Associate Professor, 1993; MS, 1989, University of California (Los Angeles), PhD, 1993, University of California (Los Angeles); statistical methods for data from AIDS/STD clinical trials

RUTTER, CAROLYN \* Affiliate Associate Professor, 1996; MS, 1988, University of California (Los Angeles), PhD, 1991, University of California (Los Angeles); evaluation of diagnostic tests, ROC curve analysis & correlated data problems

SCHADT, ERIC E., Affiliate Associate Professor, 2006; MA, 1993, University of California (Davis), PhD, 2001, University of California (Los Angeles)

SELF, STEVEN G \* Professor, 1984; MS, 1977, California State University, Long Beach, PhD, 1981, University of Washington; longitudinal data analysis, survival time models, cancer prevention, HIV vaccine evaluation

SHEPPARD, ELIZABETH A. \* Research Associate Professor, 1993; MSC, 1985, Johns Hopkins University, PhD, 1992, University of Washington; aggregate data, survival analysis, biostatistical methods in environmental health

STORER, BARRY E. \* Affiliate Professor, 1996; MA, 1977, University of Montana, PhD, 1984, University of Washington; statistical methods in clinical trials and epidemiology

STOREY, JOHN D \* Affiliate Associate Professor, 2003; PhD, 2002, Stanford University; Statistical and computational methods for genomics and molecular biology

TANG, HUA, Affiliate Assistant Professor, 2004; PhD, 2002, Stanford University

TANGEN, CATHERINE M. \* Affiliate Associate Professor, 2002; MS, 1990, University of North Carolina, PhD, 1997, University of North Carolina; randomized clinical trials; genitourinary cancer; nonparametric analysis of covariance

TEMKIN, NANCY R \* Professor, 1977; MS, 1971, University of Connecticut, PhD, 1976, State University of New York (Buffalo); clinical trials, recovery models, statistical modeling of epileptic phenomena, survival analysis

THOMPSON, ELIZABETH A \* Adjunct Professor, 1985; PhD, 1974, Cambridge University (UK), MA, 1974, University of Cambridge (UK); statistical analysis of

human genetic data, statistics of conservation and computational biology

THOMPSON, MARY LOU \* Research Professor, 1995; PhD, 1979, University of Göttingen (Germany); diagnostic methods and reference ranges with particular application to environmental and maternal and child health

THORNQUIST, MARK DANIEL \* Affiliate Associate Professor, 1985; MA, 1978, University of Wisconsin (Madison), MS, 1982, University of Wisconsin (Madison), PhD, 1985, University of Wisconsin (Madison); Ordinal response, repeated measures data, categorical response, chemoprevention trials, group randomized trials

VAN BELLE, GERALD \* Professor Emeritus, 1974; MA, 1964, University of Toronto (Canada), PhD, 1967, University of Toronto (Canada); biostatistics, environmental risk factors for neurodegenerative diseases, risk communication

WAHL, PATRICIA W \* Professor, 1971; PhD, 1971, University of Washington; multivariate statistical techniques, especially regression analysis applied to cardiovascular data

WAKEFIELD, JONATHAN C \* Professor, 1999; PhD, 1992, University of Nottingham (UK); Epidemiological methods, pharmacokinetic/pharmacodynamic models, Bayesian methods, biostatistical methods

WANG, CHING-YUN \* Affiliate Professor, 1993; MS, 1985, National Taiwan University, PhD, 1993, Texas A&M University; case-control study, missing data, measurement error, kernel smoothing

WANG, PEI, Affiliate Assistant Professor, 2007; PhD, 2004, Stanford University

WEIR, BRUCE SPENCER \* Professor, 2006; PhD, 1968, North Carolina State University; Development of statistical methodology for forensic and population genetic data

WELLNER, JONA \* Professor, 1983; PhD, 1975, University of Washington; large-sample theory, asymptotic efficiency, empirical processes, semiparametric models

WIJSMAN, ELLEN M \* Research Professor, 1987; PhD, 1981, University of Wisconsin (Madison); human quantitative and population genetics

XU, LI \* Affiliate Professor, 1996; MS, 1991, University of Washington, PhD, 1994, University of Washington; genetic epidemiology and biostatistics

YANEZ III, NORBERT DAVID \* Associate Professor, 1993; MS, 1989, Arizona State University, PhD, 1993, Arizona State University; Generalized linear models, overdispersion, measurement error models

ZHAO, LUE-PING \* Affiliate Associate Professor, 1993; MS, 1985, Shanghai Medical University (China), MS, 1987, University of Washington, PhD, 1989, University of Washington; Estimating equations, correlated data analysis, missing data and sampling

ZHENG, YINGYE, Affiliate Assistant Professor, 2003; MA, 1996, Washington University, MS, 1999, University of Washington, PhD, 2002, University of Washington

ZHOU, XIAO-HUA ANDREW \* Professor, 2002; MS, 1987, University of Calgary (Canada), PhD, 1991, Ohio State University; ROC Curve Methodology, Causal Inferences, Analysis of Skewed Distributions, Analysis of Missing Data, Diagnostic Medicine, Health Services Research, and Mental Health Research

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## Environmental and Occupational Health Sciences

AMMANN, HARRIET M., Affiliate Associate Professor, 1993; MS, 1965, New Mexico Highlands University, PhD, 1978, North Carolina State University

BAO, STEPHEN S, Affiliate Assistant Professor, 1999; MSC, 1985, Shanghai University (China), PhD, 1995, Lulea University of Technology, Sweden

BARNHART, SCOTT \* Professor, 1979; MD, 1979, George Washington University; occupationally related lung disease

BOYLE, DAVID R., Affiliate Professor, 2008; PhD, 1995, Edinburgh University, Scotland

BREYSSE, PETER, Associate Professor Emeritus, 1957; MS, 1954, Washington State University, MPH, 1957, University of Pittsburgh

BURBACHER, THOMAS M \* Professor, 1983; PhD, 1983, University of Washington; neurotoxicology, specializing in the behavioral effects of agents on the central nervous system

BUSSIÈRE, JEANINE L., Affiliate Associate Professor, 2000; MS, 1986, Western Washington University, PhD, 1989, Washington State University

CAMP, JANICE E \* Senior Lecturer, 1985; MN, 1984, University of Washington, MSPH, 1984, University of Washington; Field industrial hygiene and safety, ergonomics, program evaluation, exposure assessment

CANT, STEPHEN M, Affiliate Assistant Professor, 1982; MS, 1973, University of Washington

CARLSTEN, CHRISTOPHER R., Affiliate Assistant Professor, 2000; MD, 2000, Stanford University, MPH, 2006, University of Washington

CHECKOWAY, HARVEY \* Professor, 1987; MPH, 1975, Yale University, PhD, 1978, University of North Carolina; occupational and environmental epidemiology

CIRONE, PATRICIA A., Affiliate Associate Professor, 2006; MS, 1975, New York University, PhD, 1979, New York University

COSTA, LUCIO GUIDO \* Professor, 1983; PharmD, 1977, University of Milan (Italy); neurotoxicology; developmental and molecular mechanisms/biological markers of neurotoxicity

DANIELL, WILLIAM E \* Associate Professor, 1986; MD, 1979, Tufts University, MPH, 1986, University of Washington; Noise-induced hearing loss; long-term disability associated with carpal tunnel syndrome; chemically related illness, especially neuropsychological sequelae of solvent and pesticide exposure, and multiple chemical sensitivity syndrome

DE ROOS, ANNECLAIRE JENICE \* Adjunct Assistant Professor, 2003; MPH, 1995, University of California (Berkeley), PhD, 2000, University of North Carolina, Chapel Hill; Epidemiology of occupational and environmental exposures in relation to human health

DE WALLE, FOPPE B., Affiliate Professor, 1977; MSC, 1970, Wageningen University (The Netherlands), PhD, 1973, University of Washington

DOOLITTLE, THEUS LEE, Associate Professor Emeritus, 1970; MS, 1955, University of California (Los Angeles), PhD, 1963, University of Southern California

EATON, DAVID L \* Professor, 1979; PhD, 1978, University of Kansas; biochemical and environmental toxicology, aflatoxin carcinogenesis, metabolism of toxic chemicals

ECHEVERRIA, DIANA, Affiliate Professor, 1991; MS, 1982, University of Michigan, PhD, 1987, University of Michigan

FANTEL, ALAN G \* Adjunct Research Professor, 1974; MA, 1969, University of Oregon, PhD, 1974, University of Washington; embryology, teratology

FAUSTMAN, ELAINE M. \* Professor, 1981; PhD, 1981, Michigan State University; developmental toxicology, risk assessment methodologies, toxicology of N-nitroso compounds

FENSKE, RICHARD A. \* Professor, 1990; MA, 1972, Columbia University, MA, 1976, University of California (Berkeley), MPH, 1978, University of California (Berkeley), PhD, 1984, University of California (Berkeley); human exposure and health risk assessment, pesticide exposure

FIRESTONE, JORDANA. \* Adjunct Assistant Professor, 1995; PhD, 1993, University of Colorado (Denver), MD, 1995, University of Colorado (Denver), MPH, 2002, University of Washington; Occupational and Environmental Medicine

FRANKLIN, GARY M. \* Research Professor, 1988; MD, 1969, George Washington University, MPH, 1982, University of California (Berkeley); occupational injury, neurological epidemiology, public health nutrition

FREEMAN, STANLEY H, Senior Lecturer Emeritus, 1976; MA, 1958, New York University

GALLAGHER, EVAN P \* Associate Professor, 1991; MA, 1986, Duke University, PhD, 1991, Duke University; Molecular environmental toxicology and species' differences in susceptibility to toxicity

GAUTOM, ROMESH K, Affiliate Professor, 1991; MS, 1979, Punjab Agriculture University (India), PhD, 1987, Meerut University (India)

GILBERT, STEVEN G. \* Affiliate Associate Professor, 1991; PhD, 1986, University of Rochester; primate neurobehavioral toxicology and teratology, developmental effects of heavy metals

GROSSMANN, ANGELIKA \* Affiliate Associate Professor, 1985; DVM, 1978, Freie University of Berlin (Germany), PhD, 1982, Freie University of Berlin (Germany); immunosenescence in humans and mice; immunotoxicology; transmembrane signaling in T-lymphocytes

HATLEN, JACK B, Associate Professor Emeritus, 1952; MS, 1958, University of Washington

HECKER, STEVEN F \* Senior Lecturer, 2006; MS, 1981, University of Washington; Worker and professional training for

occupational safety and health

JACKSON, KENNETH L, Professor Emeritus, 1963; PhD, 1954, University of California (Berkeley)

JOHNSON, PETER W \* Associate Professor, 2001; PhD, 1998, University of California (Berkeley), MS, 1998, University of California (Berkeley); Developing hardware and software tools for exposure assessment research, measuring muscle fatigue with electrical stimulation, upper extremity biomechanics and ergonomics

KALMAN, DAVID A \* Professor, 1976; PhD, 1978, University of Washington; environmental chemistry, detection and fate of chemical hazards in natural and manmade environments

KAPUR, KAILASH C. \* Adjunct Professor, 1992; MTech, 1965, Indian Institute of Technology (India), MS, 1967, University of California (Berkeley), PhD, 1969, University of California (Berkeley); quality/reliability engineering, system design/optimization, total quality/reliability management

KARR, CATHERINE J. \* Adjunct Assistant Professor, 1999; MS, 1989, University of Washington, MD, 1999, University of Washington; Environmental epidemiology, pediatric environmental health

KAUFMAN, JOEL D. \* Professor, 1988; MD, 1986, University of Michigan, MPH, 1990, University of Washington; occupational and environmental epidemiology: etiologic research and public health surveillance

KAVANAGH, TERRANCE J \* Professor, 1985; MS, 1980, Michigan State University, PhD, 1985, Michigan State University; free radical toxicology, glutathione metabolism, toxicology and aging

KEIFER, MATTHEW C. \* Associate Professor, 1982; MD, 1982, University of Illinois; the human health effects of pesticide exposure

KISSEL, JOHN C. \* Professor, 1990; MS, 1974, Harvard University, PhD, 1985, Stanford University; solid and hazardous waste management practice, human exposure assessment

KOENIG, JANE Q \* Professor, 1970; MS, 1961, University of Washington, PhD, 1963, University of Washington; respiratory physiology, health effects of air pollutants, lung response of susceptible groups

KREJSA, CECILE M, Affiliate Professor, 2008; PhD, 2000, University of Washington

LARSON, TIMOTHY \* Adjunct Professor, 1976; MS, 1972, University of Washington, PhD, 1976, University of Washington; airborne particles, air quality modeling, and instrument development

LEROUX, BRIAN \* Adjunct Associate Professor, 1991; MSC, 1985, University of British Columbia (Canada), PhD, 1989, University of British Columbia (Canada); random effect models, stochastic processes, dental research, toxicology

LEWANDOWSKI, THOMAS A, Affiliate Assistant Professor, 2003; MPH, 1990, University of Michigan, PhD, 2000, University of Washington

LEWTAS, JOELLEN \* Research Professor, 1998; PhD, 1973, North Carolina State University; Combustion Emissions & Air Pollution Exposure, Biomarkers, & Health Effects

LIU, LEE-JANE S. \* Research Associate Professor, 1998; MS, 1991, Harvard University, DSc, 1994, Harvard University; Air pollution, exposure assessment, environmental epidemiology

LORENZANA, ROSEANNE M., Affiliate Assistant Professor, 1990; DVM, 1981, University of Illinois, PhD, 1986, University of Illinois

LUCHTEL, DANIEL L \* Professor, 1969; PhD, 1969, University of Washington; electron microscopy and cell biology, lung anatomy/pathophysiology, fiber toxicology

MALINS, DONALD C, Affiliate Professor, 1968; PhD, 1967, University of Aberdeen (UK)

MARTIN, THOMAS G., Adjunct Associate Professor, 1996; MD, 1977, Pennsylvania State University, MPH, 1996, University of Pittsburgh

MESCHKE, JOHN SCOTT \* Assistant Professor, 2002; JD, 1993, University of Kansas, MS, 1996, Indiana University, PhD, 2001, University of North Carolina, Chapel Hill; Pathogen mobility, persistence, and detection in the environment

MONTEITH, LEE E, Senior Lecturer Emeritus, 1981; MS, 1956, University of Washington

MORGAN, MICHAEL S \* Professor, 1974; DSc, 1972, Massachusetts Institute of Technology; applied respiratory, physiology and inhalation toxicology

MORRIS-FINE, KAREN L, Affiliate Assistant Professor, 1995; MS, 1970, Colorado State University, PhD, 1978, Colorado State University

MOTTET, N KARLE, Professor Emeritus, 1959; MD, 1952, Yale University

OMENN, GILBERT S, Affiliate Professor, 1969; MD, 1965, Harvard University, PhD, 1972, University of Washington

OMIECINSKI, CURTIS J \* Affiliate Professor, 1983; PhD, 1980, University of Washington; molecular toxicology, genetic regulation/ expression of drug/chemical metabolizing enzymes

PIER, STANLEY M., Affiliate Associate Professor, 1986; MS, 1949, Purdue University, PhD, 1952, Purdue University

PONCE, RAFAEL, Affiliate Assistant Professor, 2003; MS, 1990, University of Washington, PhD, 1995, University of Washington

ROBERTS, MARILYN C \* Professor, 1981; MS, 1977, University of Washington, PhD, 1978, University of Washington; antibiotic resistance genes, plasmids, sexually transmitted diseases, oral microbiology, heavy metal resistance in bacteria, mycobacterium, respiratory disease

ROBKIN, MAURICE A, Professor Emeritus, 1967; PhD, 1961, Massachusetts Institute of Technology

ROSENFELD, MICHAEL E. \* Professor, 1982; MS, 1978, University of Vermont, PhD, 1981, University of Wisconsin (Madison); mechanisms of atherogenesis and macrophage gene expression

SCHOLZ, NATHANIEL, Affiliate Associate Professor, 1997; MA, 1991, Boston University, PhD, 1997, University of Washington

SEIXAS, NOAH S. \* Professor, 1992; MS, 1982, Harvard University, PhD, 1990, University of Michigan; exposure assessment methods for occupational/ epidemiologic studies; small industrial plants

SHEPPARD, ELIZABETH A. \* Research Associate Professor, 1993; MSC, 1985, Johns Hopkins University, PhD, 1992, University of Washington; aggregate data, survival analysis, biostatistical methods in environmental health

SHIN, GWY-AM \* Assistant Professor, 2004; MS, 1989, Seoul National University (Korea), PhD, 1998, University of North Carolina; Water Quality: Removal of pathogens in water and wastewater treatment processes

SILVERSTEIN, BARBARA A., Affiliate Professor, 1990; MN, 1970, University of California (San Francisco), MPH, 1982, University of Michigan, PhD, 1985, University of Michigan

SILVERSTEIN, MICHAELA. \* Clinical Professor, 1990; MD, 1971, Stanford University, MPH, 1978, University of Michigan; Prevention of Work-Related Injuries and Illnesses

SIMPSON, CHRISTOPHER DAVID \* Assistant Professor, 2000; MSC, 1992, University of Waikato, PhD, 1997, University of British Columbia (Canada); Analytical and environmental chemistry, biomarker development, human exposure assessment, air pollution monitoring

SPARKS, PATRICIA J., Affiliate Associate Professor, 1986; MD, 1975, University of Utah, MPH, 1977, Harvard University

SPIELHOLZ, PEREGRIN O, Affiliate Assistant Professor, 2001; MSE, 1992, University of Michigan, PhD, 1999, University of Washington

STEIN, JOHN, Affiliate Professor, 2005; PhD, 1980, University of Washington

THOMPSON, MARY LOU \* Research Professor, 1995; PhD, 1979, University of Göttingen (Germany); diagnostic methods and reference ranges with particular application to environmental and maternal and child health

TRESER, CHARLES D \* Senior Lecturer, 1980; MPH, 1976, University of Michigan; environmental health, sanitation

VAN BELLE, GERALD \* Professor Emeritus, 1974; MA, 1964, University of Toronto (Canada), PhD, 1967, University of Toronto (Canada); biostatistics, environmental risk factors for neurodegenerative diseases, risk communication

VEDAL, SVERRE \* Professor, 2004; MD, 1976, University of Colorado (Boulder), MSC, 1983, Harvard University; health effects of air pollution, especially particulate matter; occupational lung disease

WHITTAKER, STEPHEN G., Affiliate Assistant Professor, 1989; PhD, 1983, University College, London (UK)

WILSON, JOHN T, Professor Emeritus, 1974; MD, 1950, Columbia University, DSc, 1956, University of Cincinnati

WOODS, JAMES S \* Research Professor, 1979; MS, 1968, University of Washington, PhD, 1970, University of Washington, MPH, 1978, University of North Carolina; toxicology of metals, molecular mechanisms of mercury toxicity, neurobehavioral toxicity of mercury in human subjects, and urinary and tissue porphyrin profiles as biomarkers of mercury exposure and toxicity

WU, CHANG-FU, Affiliate Assistant Professor, 2002; MS, 1998, University of Washington, PhD, 2002, University of Washington

XIA, ZHENGUI \* Professor, 1997; MS, 1985, Wuhan University (China), PhD, 1991, University of Washington; neuronal apoptosis, neuronal gene regulation

YOST, MICHAEL G. \* Professor, 1993; MS, 1984, University of California (Berkeley), PhD, 1989, University of California (Berkeley); worker exposures to physical agents, electromagnetic fields, noise and vibration

ZARBL, HELMUT \* Affiliate Professor, 1996; DCS, 1975, Marianopolis College, Canada, PhD, 1983, McGill University (Canada)

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## Epidemiology

ADAR, SARA DUBOWSKY, Assistant Professor, 2005; MS, 1998, Johns Hopkins University, PhD, 2005, Harvard University

ANDERSON, LAURIE M, Affiliate Assistant Professor, 1999; MS, 1974, Boston College, MPH, 1990, Emory University, PhD, 1994, University of California (Los Angeles)

ASTLEY, SUSAN J. \* Professor, 1992; MS, 1979, Oregon State University, PhD, 1990, University of Washington; chronic childhood diseases

AUSTIN, MELISSA A. \* Professor, 1988; MS, 1975, University of California (Los Angeles), PhD, 1985, University of California (Berkeley); Genetic epidemiology of lipoproteins, coronary heart disease and cancer

BALLARD, JANE E, Affiliate Assistant Professor, 1990; MS, 1971, University of Minnesota, PhD, 1989, University of Washington

BARASH, NITSA, Affiliate Assistant Professor, 1988; MEd, 1980, University of Washington, PhD, 1988, University of Washington

BECKER, THOMAS \* Affiliate Professor, 1995; MA, 1976, University of New Mexico, MD, 1981, Case Western Reserve University, PhD, 1986, University of New Mexico; Native American Cancer: diagnosis and prevention

BENSLEY, LILLIAN L., Affiliate Associate Professor, 1983; MS, 1979, University of Washington, PhD, 1982, University of Washington

BERESFORD, SHIRLEY A. \* Professor, 1987; MSC, 1971, University of Sussex (UK), MA, 1973, University of Cambridge (UK), PhD, 1981, University of London King's College (UK); cancer prevention, especially dietary factors; diet and exercise in disease prevention

BOBO, JANET K, Affiliate Associate Professor, 2003; MSW, 1983, University of Washington, PhD, 1990, University of Washington

BOYKO, EDWARD J. \* Adjunct Professor, 1982; MD, 1979, University of Pittsburgh, MPH, 1984, University of Washington; epidemiology of inflammatory bowel disease and non-insulin-dependent diabetes mellitus

BREITNER, JOHN, Adjunct Professor, 2002; MD, 1970, University of Pennsylvania, MPH, 1978, Johns Hopkins University

BRUEMMER, BARBARA \* Senior Lecturer, 1998; MS, 1983, University of Washington, PhD, 1993, University of Washington; Antioxidant supplementation; body weight and mortality following cancer therapy

BRUNSKILL, ANDREW J. \* Clinical Assistant Professor, 1988; MBBS, 1977, University of Newcastle-On-Tyne (UK), MPH, 1988, University of Washington; Health Policy

BUIST, DIANA SM \* Affiliate Associate Professor, 2002; MPH, 1995, Yale University, PhD, 1999, University of Washington; epidemiology, screening, and secondary prevention of breast cancer and osteoporosis

BURKE, WYLIE \* Adjunct Professor, 1974; PhD, 1974, University of Washington, MD, 1978, University of Washington; Ethical and policy implications of genetic information

BUSKIN, SUSAN E., Affiliate Assistant Professor, 1993; MPH, 1987, University of Washington, PhD, 1992, University of Washington

CAMPBELL, LEE ANN \* Professor, 1985; MS, 1979, Pennsylvania State University, PhD, 1982, Pennsylvania State University; molecular biology and pathogenic mechanisms of chlamydiae

CARLSON, CHRIS, Affiliate Assistant Professor, 2000; PhD, 2000, Stanford University

CASPER, COREY, Adjunct Assistant Professor, 2000; MD, 1997, Cornell University

CHECKOWAY, HARVEY \* Professor, 1987; MPH, 1975, Yale University, PhD,

1978, University of North Carolina; occupational and environmental epidemiology

CHEN, CHU \* Affiliate Professor, 1982; MS, 1971, Ohio State University, PhD, 1982, University of Washington; Molecular Epidemiology of Cancer

CHU, JOSEPH \* Clinical Associate Professor, 1975; MD, 1975, Georgetown University, MPH, 1981, University of Washington; gynecologic cancer epidemiology, perinatal epidemiology, health services research, women's health care

CHUBAK, JESSICA, Affiliate Assistant Professor, 2008; MS, 2002, University of Otago (New Zealand), PhD, 2007, University of Washington

CONNELL, FREDERICKA \* Adjunct Professor, 1976; MD, 1972, New York University, MPH, 1978, University of Washington; maternal and child care, health services

CORONADO, GLORIA \* Research Assistant Professor, 2005; MS, 1997, University of Washington, PhD, 2001, University of Washington; Research on health disparities and health promotion in the Latino populations

CRITCHLOW, CATHY W \* Affiliate Professor, 1979; MS, 1978, University of Washington, PhD, 1993, University of Washington; epidemiology of sexually transmitted diseases; HIV prevention, diseases of oral cavity

CUMMINGS, PETER \* Professor, 1992; MD, 1970, Case Western Reserve University, MPH, 1993, University of Washington; injury epidemiology, emergency medicine, epidemiologic methods

DALING, JANET R \* Professor Emeritus, 1978; MA, 1973, University of Washington, PhD, 1977, University of Washington; maternal and child health and cancer research

DAVIS, ROBERT L. \* Affiliate Professor, 1991; MD, 1983, University of California (San Diego); childhood immunization, including adverse events perinatal and pediatric epidemiology

DAVIS, SCOTT \* Professor, 1981; MS, 1977, University of Rochester, PhD, 1980, University of Washington; cancer epidemiology, disease etiology, radiation epidemiology

DE ROOS, ANNECLAIRE JENICE \* Assistant Professor, 2003; MPH, 1995, University of California (Berkeley), PhD, 2000, University of North Carolina, Chapel

Hill; Epidemiology of occupational and environmental exposures in relation to human health

DREWNOWSKI, ADAM \* Professor, 1998; MA, 1971, Oxford University (UK), PhD, 1977, Rockefeller University; Taste and psychology of food choice in disease prevention

DUBLIN, SASCHA, Affiliate Assistant Professor, 2004; PhD, 1999, University of Washington, MD, 2001, University of Washington

DUERR, ANN C \* Affiliate Associate Professor, 2004; PhD, 1981, Massachusetts Institute of Technology, MD, 1985, Harvard University, MPH, 1988, Johns Hopkins University; HIV, vaccines, women's health, HPV, STDs

DUGOWSON, CARIN E., Adjunct Associate Professor, 1977; MD, 1976, University of Illinois, MPH, 1986, University of Washington

DUNCAN, GLEN E \* Assistant Professor, 2003; MS, 1994, Ball State University, PhD, 1997, University of Tennessee; Prevention and treatment of insulin resistance and type 2 diabetes

EBEL, BETH E. \* Adjunct Associate Professor, 1999; MS, 1989, Oxford University (UK), MD, 1996, Harvard University, MPH, 2001, University of Washington; Injury prevention and health behaviors

EDWARDS, KAREN L. \* Associate Professor, 1997; MS, 1991, California State University, campus unspecified, PhD, 1996, University of Washington; Understanding genetic susceptibility to complex diseases, particularly diabetes and cardiovascular disease

EISENBERG, MICKY, Adjunct Professor, 1971; MD, 1971, Case Western Reserve University, PhD, 1978, University of Washington

EL-BASTAWISSI, AMIRA Y, Affiliate Assistant Professor, 1997; MBChB, 1981, Alexandria University, Egypt, MSC, 1984, Ohio State University, PhD, 1993, University of Texas (Houston)

ELMORE, JOANN G \* Adjunct Professor, 1996; MD, 1987, Stanford University, MPH, 1992, Yale University; Clinical epidemiology, breast cancer screening, diagnostic accuracy

EMANUEL, IRVIN, Professor Emeritus, 1961; MA, 1956, University of Arizona, MD, 1960, University of Rochester, MS, 1966, University of Washington

- FANN, JESSE R. \* Adjunct Associate Professor, 1990; MD, 1989, Northwestern University, MPH, 1995, University of Washington; Psychiatric epidemiology in cancer & neurologic populations, health services research, depression, cognitive disorders
- FARQUHAR, CAREY \* Assistant Professor, 1994; MD, 1994, Harvard University, MPH, 2001, University of Washington; HIV/AIDS in Kenya: mother-to-child transmission, correlates of immunity, HIV-discordant couples
- FERRARA, ASSIAMIRA \* Affiliate Assistant Professor, 2002; MD, 1987, University of Naples (Italy), PhD, 1996, University of Naples (Italy); Epidemiology of diabetes, cardiovascular disease, hormones, gestational diabetes and menopause
- FITZPATRICK, ANNETTE L. \* Research Associate Professor, 2001; MA, 1981, Southern Illinois University, PhD, 1999, University of Washington; Aging, chronic disease, functionality, dementia, healthcare access, alternative medicine, neuroepidemiology
- FOEGE, WILLIAM H., Affiliate Professor, 2004; MD, 1967, University of Washington, MPH, 1968, Harvard University
- FOY, HJORDIS, Professor Emeritus, 1965; MD, 1953, Karolinska Institute (Sweden), MS, 1967, University of Washington
- FOY, HJORDIS, Professor Emeritus, 1965; PhD, 1968, University of Washington
- GALE, JAMES L \* Professor Emeritus, 1967; MD, 1961, Columbia University, MS, 1969, University of Washington; epidemiology and control of infectious disease, international health
- GLOYD, STEPHEN S. \* Adjunct Professor, 1973; MD, 1973, University of Chicago, MPH, 1983, Harvard University; political economy, epidemiology, and primary health care in developing countries
- GOLDBAUM, GARY M. \* Associate Professor, 1989; MD, 1978, University of Colorado (Denver), MPH, 1989, University of Washington; the epidemiology of human behaviors that increase risk for disease
- GOLDBERG, JACK \* Research Professor, 2001; MA, 1976, University of Chicago, PhD, 1983, University of Illinois; Genetic epidemiology using twin registries
- GOLDEN, MATTHEW R \* Adjunct Professor, 1995; MPH, 1993, Johns Hopkins University, MD, 1994, Johns Hopkins University
- GRANT, THERESE M. \* Adjunct Research Assoc Professor, 2001; MEd, 1982, University of Oregon, PhD, 1999, University of Washington; Prenatal alcohol and drug exposure; intervention with substance-abusing mothers
- GRAYSTON, J THOMAS, Professor Emeritus, 1960; MD, 1948, University of Chicago, MS, 1952, University of Chicago
- HALLORAN, M. ELIZABETH \* Adjunct Professor, 2006; MD, 1983, Freie University of Berlin (Germany), MPH, 1985, Harvard University, DSc, 1989, Harvard University
- HASELKORN, JODIE K. \* Adjunct Associate Professor, 1985; MPH, 1985, University of Michigan, MD, 1985, Louisiana State University; health services for the disabled: diagnostic accuracy of tests, effectiveness of interventions
- HAWES, STEPHEN E. \* Assistant Professor, 2002; MS, 1993, University of Washington, PhD, 2001, University of Washington; HIV/AIDS, HPV, and other Sexually Transmitted Infections, and virus-associated cancers
- HECKBERT, SUSAN R. \* Professor, 1981; MD, 1981, Case Western Reserve University, MPH, 1987, University of Washington, PhD, 1990, University of Washington; outcomes of drug therapy, cardiovascular epidemiology, pharmacogenetics, pharmacoepidemiology
- HELGERSON, STEVEN D. \* Clinical Associate Professor, 1973; MA, 1971, University of Washington, MD, 1973, University of Washington, MPH, 1980, University of Washington; Public health practice and epidemiologic field investigation
- HENDERSON, MAUREEN M, Professor Emeritus, 1975; MBBS, 1949, University of Durham (UK), DPH, 1956, University of Durham (UK)
- HITTI, JANE \* Adjunct Associate Professor, 1993; MD, 1989, University of Vermont
- HOLMES, KING K. \* Adjunct Professor, 1967; MD, 1963, Cornell University, PhD, 1967, University of Hawaii; clinical epidemiology and pathogenesis of infectious diseases
- HOLT, VICTORIA L. \* Professor, 1991; MPH, 1987, University of Washington, PhD, 1990, University of Washington; reproductive health epidemiology, intimate partner violence
- HUJOEL, PHILIPPE P \* Adjunct Professor, 1985; DDS, 1984, University of Brussels (Belgium), MSD, 1986, University of Washington, PhD, 1993, University of Washington; Epidemiology and randomized controlled trials in the dental research field
- JACKSON, LISA A. \* Research Professor, 1994; MD, 1988, University of Virginia, MPH, 1996, University of Washington; infectious disease epidemiology and public health
- JARVIK, GAIL P. \* Adjunct Professor, 1991; MS, 1983, University of Michigan, PhD, 1986, University of Michigan, MD, 1987, University of Iowa; Quantitative genetics and genetic epidemiology, focusing on common diseases
- JOHN STEWART, GRACE C. \* Associate Professor, 1992; MD, 1987, University of Michigan, MPH, 1995, University of Washington, PhD, 2000, University of Washington; Mother-to-child HIV-1 transmission (specifically: Africa, cofactors, breastmilk.)
- KARTER, ANDREW JOHN, Affiliate Professor, 2005; MS, 1989, University of California (Davis), PhD, 1993, University of California (Davis)
- KAUFMAN, JOEL D. \* Professor, 1988; MD, 1986, University of Michigan, MPH, 1990, University of Washington; occupational and environmental epidemiology; etiologic research and public health surveillance
- KERANI, ROXANNE P., Affiliate Assistant Professor, 2000; MPH, 1994, University of Minnesota, PhD, 2000, University of Minnesota
- KERNIC, MARY A. \* Research Assistant Professor, 2002; MPH, 1996, University of Washington, PhD, 2000, University of Washington; Intimate partner violence, injury epidemiology, psychiatric epidemiology, epidemiologic methods
- KESTIN, MARK, Affiliate Associate Professor, 1990; MS, 1983, Deakin University (Australia), PhD, 1990, Flinders University (Australia), MPH, 1990, Harvard University
- KIMBALL, ANN M. \* Professor, 1976; MD, 1976, University of Washington, MPH, 1981, University of Washington; emerging infections, public health response to epidemic disease
- KIRK, ELIZABETH \* Assistant Professor, 1996; PhD, 1995, University of Washington; Interrelationships among obesity, atherosclerosis, and diabetes
- KOEPSSELL, THOMAS D \* Professor, 1972; MD, 1972, Harvard University, MPH, 1979, University of Washington; chronic diseases, applying epidemiologic concepts to medical practice
- KOUTSKY, LAURA A \* Professor, 1987; MSPH, 1981, University of Washington,

PhD, 1987, University of Washington; sexually transmitted diseases, including HIV-AIDS and HPV

KRATZ, MARIO \* Research Assistant Professor, 2003; MS, 1996, University of Bonn (Germany), PhD, 2002, University of Bonn (Germany); Nutrition intervention studies on obesity as well as the molecular and metabolic links between obesity and associated diseases (type 2 diabetes mellitus, cardiovascular disease, certain types of cancer)

KRISTAL, ALAN R. \* Professor, 1987; MS, 1976, Framingham State College, MPH, 1979, Northwestern University, DrPH, 1984, Columbia University; nutritional epidemiology, dietary behavior, nutrition intervention, and cancer control

KUKULL, WALTER A \* Professor, 1983; MS, 1974, Western Washington University, PhD, 1983, University of Washington; Alzheimer's disease; epidemiologic methods; chronic disease epidemiology

KUO, CHO-CHOU \* Professor Emeritus, 1966; MD, 1960, National Taiwan University, PhD, 1970, University of Washington; chlamydiae

KURTH, ANN E. \* Adjunct Associate Professor, 2003; MPH, 1987, Columbia University, MN, 1990, Yale University, 2003; PhD, 2003, University of Washington; HIV/sexually transmitted infection screening and prevention

LACROIX, ANDREA Z. \* Professor, 1989; MPH, 1981, University of North Carolina, PhD, 1984, University of North Carolina; epidemiology of aging

LAMPE, JOHANNA W \* Research Professor, 1998; PhD, 1990, University of Minnesota, MS, 1990, University of Minnesota; Dietary modulation of chronic disease: biomarkers of intake and risk

LEE, JOHN A. H., Professor Emeritus, 1966; MBChB, 1949, University of Edinburgh (UK), DPH, 1952, London Sch of Hygiene & Trop Med (UK), MD, 1955, University of Edinburgh (UK)

LEIGH, BARBARA C., Affiliate Assistant Professor, 1988; MS, 1982, University of Washington, PhD, 1983, University of Washington

LI, CHRISTOPHER I-FU \* Research Associate Professor, 2000; MPH, 2000, University of Washington, MD, 2000, University of California (San Francisco), PhD, 2002, University of Washington; Etiology and epidemiology of cancer

LITTMAN, ALYSON J. \* Research Assistant Professor, 2004; MPH, 1998,

University of Washington, PhD, 2003, University of Washington; Physical activity, obesity, and prostate cancer

LONGINI, IRA M. \* Adjunct Professor, 2006; MS, 1973, University of Florida, PhD, 1977, University of Minnesota

LONGSTRETH JR, W. T. \* Adjunct Professor, 1975; MD, 1975, University of Pennsylvania, MPH, 1982, University of Washington; Clinical and classic neuroepidemiology

LOVEJOY, JENNIFER C, Affiliate Professor, 2007; MA, 1986, Emory University, PhD, 1988, Emory University

MALMGREN, JUDITH A., Affiliate Assistant Professor, 2002; MS, 1985, University of Washington, PhD, 1995, University of Washington

MALONE, KATHLEEN E. \* Research Professor, 1994; MPH, 1984, Yale University, PhD, 1993, University of Washington; Etiology, genetic and other risk factor, efficacy of screening mammography, survival factors among young breast cancer and oral contraceptive use

MANDELSON, MARGARET T., Affiliate Associate Professor, 1995; MPH, 1985, Boston University, PhD, 1994, University of Washington

MANHART, LISA E. \* Assistant Professor, 2002; MPH, 1994, Tulane University, PhD, 2002, University of Washington; Sociobehavioral and clinical epidemiology of sexually transmitted infections

MARCUSE, EDGAR K \* Adjunct Professor, 1971; MD, 1967, Stanford University, MPH, 1973, University of Washington; Immunization Practice & Policy, Patient Safety, Clinical Quality Improvement, Resident Education

MARTIN, DIANE P \* Adjunct Professor, 1973; MA, 1972, Temple University, PhD, 1979, University of Washington; health care organization and behavior; benefits and insurance; and quality, cost and outcomes of care

MARTIN, MICHAEL D. \* Adjunct Associate Professor, 1986; DMD, 1979, University of Kentucky, MPH, 1989, University of Washington, PhD, 1993, University of Washington, MSD, 1994, University of Washington; dental education in oral health care of persons with disability

MASON, WALTER A \* Adjunct Research Assoc Professor, 2007; MA, 1993, University of Northern Colorado, PhD, 1998, University of Nevada; Adolescent development; Substance abuse; Mental health; Prevention; Longitudinal methods

MAYER, JONATHAN D \* Professor, 1977; MA, 1975, University of Michigan, PhD, 1977, University of Michigan; infectious disease ecology, infectious diseases in sub-Saharan Africa, tropical and travel medicine, infectious disease epidemiology, global health, and HIV

MBORI-NGACHA, DOROTHY, Affiliate Associate Professor, 1995; MBChB, 1983, University of Nairobi (Kenya), MMed, 1988, University of Nairobi (Kenya), MPH, 1998, University of Washington

MCCLELLAND, RAYMOND SCOTT \* Assistant Professor, 1998; MD, 1995, University of Washington; HIV-1 prevention and treatment studies in Kenya

MCGRATH, BARBARA B. \* Adjunct Research Assoc Professor, 1987; MA, 1981, University of Washington, PhD, 1993, University of Washington; ethnographic studies with U.S. Pacific Islanders on health issues, specifically, HIV/AIDS prevention among adolescents

MCTIERNAN, ANNE \* Research Professor, 1989; MS, 1976, State University of New York (Buffalo), PhD, 1982, University of Washington, MD, 1989, New York Medical College; Prevention of breast and other cancers, exercise, and women's health

MOCK, CHARLES N. \* Associate Professor, 1992; ScB, 1977, Brown University, MD, 1980, Brown University, MPH, 1994, University of Washington; injury: epidemiology, prevention, treatment; especially in less developed countries

MOOLGAVKAR, SURESH H. \* Professor, 1982; MBBS, 1966, University of Bombay, PhD, 1973, Johns Hopkins University; cancer epidemiology, development of quantitative methodology

MUELLER, BETH A. \* Professor, 1984; MPH, 1980, University of California (Los Angeles), DrPH, 1984, Tulane University; epidemiology of perinatal and reproductive diseases, cancer, and injury research

NARITA, MASAHIRO, Adjunct Associate Professor, 2003; MD, 1988, Keio University (Japan)

NEWCOMB, POLLY A. \* Affiliate Professor, 1997; MPH, 1982, University of Washington, PhD, 1986, University of Washington

NEWTON, KATHERINE \* Affiliate Associate Professor, 1977; MA, 1977, University of Washington, PhD, 1995, University of Washington; Chronic disease epidemiology including diabetes, urinary incontinence, women's health, menopause

OBERLE, MARK W. \* Professor, 1988; MD, 1974, Johns Hopkins University, MPH,

- 1979, University of California (Berkeley); Public Health; Native American Health
- O'CARROLL, PATRICK W., Affiliate Professor, 1995; MPH, 1983, Johns Hopkins University, MD, 1983, Johns Hopkins University
- OLSON, CARIN M., Adjunct Associate Professor, 1994; MD, 1978, Ohio State University
- PATRICK, DONALD L. \* Adjunct Professor, 1987; MS, 1968, Columbia University, PhD, 1972, Columbia University; aging, disablement, and health-related quality of life
- PENDERGRASS, THOMAS W, Adjunct Professor, 1975; MD, 1971, University of Tennessee, MPH, 1979, University of Washington
- PETERS, ULRIKE \* Research Assistant Professor, 2004; MA, 1988, University of Kiel (Germany), PhD, 1998, University of Kiel (Germany), MPH, 1999, University of North Carolina; Nutritional, Molecular, and Genetic Epidemiology of Cancer
- PORTER, MICHAEL, Adjunct Assistant Professor, 1997; MD, 1997, University of Iowa, MS, 2001, University of Washington
- POTTER, JOHN D \* Professor, 1995; MBBS, 1971, University of Queensland (Australia), PhD, 1984, University of Queensland (Australia); Epidemiology, biology, and prevention of cancer, particularly colon cancer
- PROBSTFIELD, JEFFREY L. \* Adjunct Professor, 1993; MD, 1967, University of Washington; Hyperlipidemia, high blood pressure, and clinical trials methods
- PSATY, BRUCE M. \* Professor, 1984; MA, 1975, Indiana University, PhD, 1979, Indiana University, MD, 1981, Indiana University; cardiovascular disease, coronary heart disease, hypertension, pharmacoepidemiology, and pharmacogenetics
- REED, SUSAN D., Adjunct Associate Professor, 1991; MS, 1979, Sarah Lawrence College, MD, 1986, Stanford University
- REIBER, GAYLE \* Professor, 1991; MPH, 1975, Johns Hopkins University, PhD, 1989, University of Washington; epidemiology and health services research on preventing complications of diabetes
- REINER, ALEXANDER P. \* Research Associate Professor, 1989; MD, 1984, Johns Hopkins University; Molecular epidemiology of cardiovascular disease
- RIDZON, RENEE, Affiliate Assistant Professor, 2004; MD, 1986, St. Louis University
- RIVARA, FREDERICK P. \* Adjunct Professor, 1978; MD, 1974, University of Pennsylvania, MPH, 1980, University of Washington; pediatric epidemiology and injury prevention and research
- ROSENDAAL, FRITS R. \* Affiliate Professor, 1994; MD, 1985, Erasmus University (Netherlands); clinical and genetic epidemiology of hemostasis and thrombosis
- ROSSING, MARY ANNE \* Research Associate Professor, 1992; DVM, 1980, University of Illinois, MPH, 1988, University of Washington, PhD, 1993, University of Washington; cancer epidemiology, particularly cancers of the reproductive system
- SCHIFF, MELISSA A \* Associate Professor, 1999; MD, 1987, University of Michigan; Injury epidemiology, and perinatal and reproductive epidemiology
- SCHOLES, DELIA \* Affiliate Professor, 1994; MS, 1977, University of New Mexico, PhD, 1990, University of Washington; Health issues of young women, including STD/HIV prevention and contraceptive options
- SCHWARTZ, STEPHEN MARC \* Professor, 1990; MPH, 1984, Yale University, PhD, 1990, University of Washington; cancer epidemiology, neuroepidemiology, reproductive epidemiology, epidemiologic methods
- SHERMAN, KAREN J \* Affiliate Associate Professor, 1983; PhD, 1983, Cornell University, MPH, 1986, University of Washington; Epidemiologic methods for complementary and alternative medicine
- SHOULTZ, DAVID A, Affiliate Assistant Professor, 1997; MS, 1995, University of Washington, PhD, 1997, University of Washington
- SHY, KIRKWOOD K \* Adjunct Professor, 1973; MD, 1973, Wayne State University, MPH, 1979, University of Washington; epidemiologic applications to problems in obstetrics and gynecology
- SISCOVICK, DAVID S. \* Professor, 1976; MD, 1976, University of Maryland, MPH, 1981, University of Washington; epidemiology
- SMITH, JODI, Adjunct Assistant Professor, 1999; MD, 1995, McGill University (Canada)
- SMITH, NICHOLAS L \* Associate Professor, 2000; MPH, 1993, University of California (Berkeley), PhD, 1997, University of Washington; Cardiovascular pharmacoepidemiology, clinical epidemiology, and health services research
- STANFORD, JANET L. \* Research Professor, 1986; MPH, 1982, Emory University, PhD, 1985, Johns Hopkins University; Cancer epidemiology and genetic susceptibility
- STARR, JACQUELINE R \* Research Assistant Professor, 2003; MPH, 2000, University of Washington, MS, 2000, University of Washington, PhD, 2003, University of Washington; Epidemiology of craniofacial malformations, molecular epidemiology, clinical epidemiology
- STEHMAN-BREEN, CATHERINE O \* Affiliate Associate Professor, 1990; MD, 1990, University of Chicago, MS, 1996, University of Washington; Cardiovascular epidemiology among patients with end-stage renal disease
- STEHR-GREEN, PAUL, Affiliate Associate Professor, 1995; MA, 1975, University of Pittsburgh, MPH, 1979, University of Pittsburgh, DPH, 1982, University of Pittsburgh
- STERGACHIS, ANDREAS S \* Professor, 1980; MS, 1976, University of Minnesota, PhD, 1979, University of Minnesota; pharmacoepidemiology, pharmacy administration
- STEVENS, NANCY G \* Adjunct Professor, 1982; MD, 1979, University of Washington, MPH, 1982, University of Washington; family medicine
- SUGARMAN, JONATHAN R. \* Clinical Professor, 1981; MD, 1981, Albert Einstein College of Medicine, MPH, 1990, University of Washington; American Indian and Alaska Native health; Health Care Quality Assessment and Improvement
- THOMAS, DAVID B \* Professor, 1975; MD, 1963, University of Washington, MPH, 1969, Johns Hopkins University, DPH, 1972, Johns Hopkins University; cervix and breast carcinoma epidemiology
- TSU, VIVIEN D. \* Affiliate Associate Professor, 1992; MA, 1971, University of California (Berkeley), MPH, 1977, University of California (Los Angeles), PhD, 1991, University of Washington; Maternal and child health in developing countries
- TSUANG, DEBBY W., Adjunct Associate Professor, 1992; MD, 1988, University of Iowa, MS, 1992, University of Iowa
- ULRICH, CORNELIA M. \* Associate Professor, 2000; MS, 1992, Oregon State



University, PhD, 1998, University of Washington; Molecular and Nutritional Epidemiology, Pharmacogenetics

VANDER STOEP, ANN \* Associate Professor, 1998; MS, 1979, University of Oklahoma, PhD, 1997, University of Washington; Psychiatric epidemiology, children's mental health services, public health research methodology

VANEENWYK, JULIET \* Clinical Assistant Professor, 1993; MS, 1975, Roosevelt University, PhD, 1990, University of Illinois; Non-infectious conditions

VAUGHAN, THOMAS L \* Professor, 1984; MD, 1978, University of Illinois, MPH, 1983, University of Washington; cancer, environmental epidemiology

VERNEZ-MOUDON, ANNE \* Adjunct Professor, 1980; DSc, 1987, Ecole Polytechnique Federale De Lausanne; urban design, city form and neighborhood studies, design research

WALD, ANNA \* Professor, 1989; MD, 1985, Mt Sinai School of Medicine, MPH, 1994, University of Washington; The epidemiology, natural history and therapeutics of HSV and other herpesviruses infections

WASSERMAN, CATHY R., Affiliate Assistant Professor, 1998; MPH, 1990, University of California (Berkeley), PhD, 1996, University of California (Berkeley)

WEIGLER, BENJAMIN J \* Adjunct Associate Professor, 1997; DVM, 1986, Colorado State University, MPH, 1988, University of California (Berkeley), PhD, 1991, University of California (Davis); Infectious disease epidemiology in laboratory animal medicine and management

WEISS, NOEL S \* Professor, 1973; MD, 1967, Stanford University, MPH, 1969, Harvard University, DPH, 1971, Harvard University; chronic disease epidemiology

WHITE, J EMILY \* Professor, 1982; ScB, 1968, Brown University, MS, 1978, University of Washington, PhD, 1982, University of Washington; cancer epidemiology and prevention

WILLIAMS, MARCIA FRANCES \* Senior Lecturer, 1978; MPA, 1992, University of Washington, PhD, 2000, University of Washington; High-risk infants: low-birthweight, prenatal substance exposure, intrauterine infection; CSHCN (children with special health care needs); racial disparities

WILLIAMS, MICHELLE A. \* Professor, 1991; MS, 1986, Tufts University, MS, 1988, Harvard University, DSc, 1991,

Harvard University; reproductive and perinatal epidemiology, cancer epidemiology

WINER, RACHEL L., Acting Instructor, 2006; MPH, 2002, University of Washington, PhD, 2005, University of Washington

ZHAO, LUE-PING \* Affiliate Professor, 1993; MS, 1985, Shanghai Medical University (China), MS, 1987, University of Washington, PhD, 1989, University of Washington; Estimating equations, correlated data analysis, missing data and sampling

ZHU, TUOFU \* Adjunct Associate Professor, 1997; MD, 1984, Tiangxi (Jiangxi) Medical School, China, PhD, 1990, Peking Union Medical College (China); HIV-1 pathogenesis, host genetics, therapy, and vaccine

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## Health Services

ALTAMORE, RITAA \* Clinical Professor, 1981; MD, 1977, Boston University, MPH, 1984, University of Washington; Healthcare ethics

AMTMANN, DAGMAR \* Adjunct Research Asst Professor, 2000; MS, 1982, Institute of Economics (Czechoslovakia), MA, 1995, University of Washington, PhD, 2002, University of Washington; Measurement of patient reported outcomes, cognitive disabilities, assistive technology, latent variable modeling

ANDERSEN, MARIN ROBYN \* Affiliate Assistant Professor, 1999; MA, 1992, State University of New York (Stony Brook), PhD, 1994, State University of New York (Stony Brook), MPH, 1996, University of Washington; Cancer Screening and Cancer Survivorship

BALDWIN, LAURA M. \* Adjunct Professor, 1984; MD, 1980, University of Southern California, MPH, 1986, University of Washington; Rural health, access to care for vulnerable populations, Native American health, health workforce

BEATON, RANDAL D \* Adjunct Research Professor, 1977; PhD, 1972, University of Washington; assessment and treatment of temporomandibular joint pain and dysfunction

BEERY, WILLIAM L., Affiliate Professor, 1986; MPH, 1973, University of North Carolina

BEKEMEIER, ELIZABETH R. \* Adjunct Assistant Professor, 1997; MN, 1994, Johns Hopkins University, MPH, 1994, Johns Hopkins University; Public Health,

PhD, 2007, University of Washington; Public Health

BELL, JANICE F. \* Assistant Professor, 2005; MPH, 2001, University of Washington, MN, 2001, University of Washington, PhD, 2005, University of Washington; Maternal and child health, childhood obesity, health services research, social determinants of health, medical geography, health disparities, life course and intergenerational health influences

BELL, MICHELLE \* Associate Professor Emeritus, 1985; MSW, 1967, University of Washington, PhD, 1984, University of Washington; Health and social policy; Organization and delivery of community-based services; Adolescent health; Minority health

BELZA, BASIA \* Adjunct Professor, 1991; MN, 1982, University of Virginia, PhD, 1991, University of California (San Francisco); chronic illness, gerontology, fatigue prevention and management in rheumatic diseases

BERKOWITZ, BOBBIE \* Adjunct Professor, 1988; MN, 1981, University of Washington, PhD, 1990, Case Western Reserve University; Administration; leadership and policy development within public health and nursing

BOSTON-FLEISCHHAUER, CAROL \* Clinical Assistant Professor, 2003; MS, 1983, Northern Illinois University, JD, 1991, John Marshall Law School; Healthcare Operations

BOWEN, DEBORAH J \* Clinical Professor, 1986; PhD, 1986, Uniformed Services University of The Health Sciences; health psychology

BRADLEY, KATHARINE A \* Adjunct Associate Professor, 1990; MD, 1987, Stanford University, MPH, 1993, University of Washington; Prevention of alcohol-related problems in medical settings

BRENTLINGER, PAULA \* Clinical Assistant Professor, 2002; MD, 1979, University of California (Davis), MPH, 1986, Harvard University; Primary health services, malaria, and HIV/AIDS in developing countries

BRUNSKILL, ANDREW J. \* Clinical Assistant Professor, 1988; MBBS, 1977, University of Newcastle-On-Tyne (UK), MPH, 1988, University of Washington; Health Policy

CHAPKO, MICHAEL K \* Research Professor, 1978; MA, 1970, Hunter College, PhD, 1972, City University of New York; ambulatory care, long-term care, cost-effectiveness

- CHAPMAN, RACHEL R \* Adjunct Assistant Professor, 2004; MA, 1988, Yale University, MA, 1991, University of California (Los Angeles), PhD, 1998, University of California (Los Angeles); gender systems and reproductive health disparities in marginalized communities, urban U.S., South East Africa
- CHEADLE, ALLEN D. \* Research Professor, 1988; PhD, 1987, University of California (Berkeley); Community-based program evaluation
- CHERKIN, DANIEL C \* Affiliate Professor, 1974; MS, 1974, University of Washington, PhD, 1978, University of Washington; Back Pain, Complimentary and Alternative Medicine Healing
- CHRISMAN, NOEL \* Adjunct Professor, 1973; PhD, 1966, University of California (Berkeley), MPH, 1967, University of California (Berkeley); health beliefs and practices, social networks and social support
- CHRISTAKIS, DIMITRIA., Adjunct Professor, 1993; MD, 1993, University of Pennsylvania
- CONNELL, FREDERICKA \* Professor, 1976; MD, 1972, New York University, MPH, 1978, University of Washington; maternal and child care, health services
- CONRAD, DOUGLAS A \* Professor, 1977; MHA, 1973, University of Washington, MBA, 1977, University of Chicago, PhD, 1978, University of Chicago; alternative vertical and horizontal market structures in health care, hospital and health administration, cost effectiveness of dental treatment
- COOMBS, JOHN B. \* Adjunct Professor, 1972; MD, 1972, Cornell University; Health care outcomes, rural health policy, healthcare workforce issues and applied nutrition
- CRITTENDEN, ROBERT A, Adjunct Professor, 1981; MD, 1976, University of Washington, MPH, 1987, University of Washington
- CURTIS, JARED R. \* Adjunct Professor, 1988; MD, 1988, Johns Hopkins University, MPH, 1994, University of Washington; Improving end-of-life care for patients with critical illness and chronic pulmonary disease
- DAY, ROBERT W \* Professor Emeritus, 1968; MD, 1956, University of Chicago, MPH, 1958, University of California (Berkeley), PhD, 1962, University of California (Berkeley); health-information systems
- DIEHR, PAULA K. \* Professor, 1970; MS, 1967, University of California (Los Angeles), PhD, 1970, University of California (Los Angeles); health services applications, years of healthy life
- DIEKEMA, DOUGLAS S. \* Adjunct Professor, 1990; MD, 1985, University of North Carolina, MPH, 1993, University of Washington; pediatric bioethics
- DOESCHER, MARK \* Adjunct Associate Professor, 1996; MA, 1983, National-Louis University, MD, 1989, University of California (San Francisco), MSPH, 1992, University of Colorado (Denver)
- DOWLING, WILLIAM L \* Professor, 1974; MBA, 1961, University of Chicago, MA, 1970, University of Michigan, PhD, 1971, University of Michigan; Health services research and applied behavioral science in Pediatric Dentistry
- DOWNER, ANN E. \* Adjunct Senior Lecturer, 1982; MS, 1984, University of Washington
- DUNBAR, PETER J., Adjunct Associate Professor, 1991; MBChB, 1978, University of Aberdeen (UK)
- DURAN, BONNIE M \* Associate Professor, 2007; MPH, 1989, University of California (Berkeley), DPH, 1997, University of California (Berkeley); Native American mental health, community-based participatory research
- EDWARDS, TODD \* Affiliate Assistant Professor, 2004; PhD, 1994, Claremont Graduate School, MS, 1994, Claremont Graduate School; Quality of life of youth with chronic conditions and disabilities.?
- EL-BASTAWISSI, AMIRA Y, Affiliate Assistant Professor, 1997; MBChB, 1981, Alexandria University, Egypt, MSC, 1984, Ohio State University, PhD, 1993, University of Texas (Houston)
- ELORANTA, SHARON \* Clinical Assistant Professor, 2007; MD, 1986, Georgetown University; Prevention of medical error
- ENSIGN, B. JOSEPHINE \* Adjunct Associate Professor, 1994; MS, 1986, Virginia College of Medicine, MPH, 1992, Johns Hopkins University, DrPH, 1994, Johns Hopkins University; health care program planning and evaluation for marginalized populations
- ETZIONI, RUTH B. \* Affiliate Professor, 1991; MS, 1987, Carnegie Mellon University, PhD, 1990, Carnegie Mellon University; statistical methods in cancer screening, Bayesian methods in biostatistics
- FIHN, STEPHAN \* Professor, 1977; MD, 1977, St Louis University, MPH, 1981, University of Washington; internal medicine
- FINK, KENNETH S. \* Affiliate Assistant Professor, 1996; MD, 1996, University of Pennsylvania; Medicare and other health services programs
- FISHMAN, PAUL A \* Affiliate Associate Professor, 1990; MA, 1983, American University, PhD, 1990, University of Washington, MA, 1990, University of Washington; Estimating cost of chronic illnesses and health behaviors; risk assessment and adjustment
- FLUM, DAVID R \* Adjunct Associate Professor, 2000; MD, 1991, University of Miami (Florida), MPH, 2002, University of Washington; Epidemiologic features of surgical care, quality of care/outcomes research
- FOUGHT, SHARON G. \* Adjunct Associate Professor, 1986; MN, 1976, University of Texas (Austin), PhD, 1983, University of Texas (Austin); emergency care/critical care nursing; simulation gaming educational strategies
- FULLER, SHERRILYNNE \* Adjunct Professor, 1988; MLS, 1968, Indiana University, PhD, 1984, University of Southern California; Analysis, representation and mapping of research findings (data mining.)
- GLOYD, STEPHEN S. \* Professor, 1973; MD, 1973, University of Chicago, MPH, 1983, Harvard University; political economy, epidemiology, and primary health care in developing countries
- GOLDBAUM, GARY M. \* Adjunct Associate Professor, 1989; MD, 1978, University of Colorado (Denver), MPH, 1989, University of Washington; the epidemiology of human behaviors that increase risk for disease
- GONZALES, VIRGINIA \* Senior Lecturer, 1994; MSW, 1971, University of California (Berkeley), MPH, 1974, University of California (Berkeley), EdD, 1988, Harvard University
- GORMAN, E. MICHAEL, Affiliate Assistant Professor, 1997; PhD, 1980, University of Chicago, MPH, 1982, University of California (Berkeley), MSW, 1994, University of California (Berkeley)
- GREMBOWSKI, DAVID \* Professor, 1980; MA, 1975, Washington State University, PhD, 1982, University of Washington; Health services research, survey research, program evaluation, performance of health care systems, preven-

tion, access to health care, quality of health care

GROSSMAN, DAVID C. \* Professor, 1988; MD, 1982, University of California (Los Angeles), MPH, 1990, University of Washington; Injury Control, Native American Health, and Pediatric Health Services Research

HANKEN, MARY A., Senior Lecturer, 1991; MEd, 1974, Seattle University, PhD, 1989, University of Washington

HARRIS, JEFFREY R \* Professor, 2001; MD, 1978, University of Texas (Southwestern), MPH, 1993, Johns Hopkins University, MBA, 2003, University of Washington; Health care quality, economic evaluation, chronic disease prevention

HAZLET, THOMAS K. \* Adjunct Associate Professor, 1996; PharmD, 1977, University of California (San Francisco), DPH, 1991, University of California (Berkeley); pharmaceuticals policy, outcomes and bioethics

HEDRICK, SUSAN \* Professor, 1983; MA, 1975, Michigan State University, PhD, 1982, Michigan State University; long term care, health services

HEGYVARY, SUE T. \* Adjunct Professor, 1986; MN, 1966, Emory University, PhD, 1974, Vanderbilt University; administration and productivity of health care and nursing services

HELGERSON, STEVEN D. \* Clinical Associate Professor, 1973; MA, 1971, University of Washington, MD, 1973, University of Washington, MPH, 1980, University of Washington; Public health practice and epidemiologic field investigation

HEREFORD, JAMES F \* Affiliate Assistant Professor, 2002; MS, 1989, Montana State University; Use and impact of organizational improvement frameworks on health care operations

HOLT, VICTORIA L. \* Adjunct Associate Professor, 1991; MPH, 1987, University of Washington, PhD, 1990, University of Washington; reproductive health epidemiology, intimate partner violence

HORWITCH, CARRIE A \* Clinical Assistant Professor, 1993; MPH, 1983, University of California (Berkeley), MD, 1987, University of Arizona

HSU, CLARISSA W. \* Affiliate Assistant Professor, 2001; PhD, 2000, University of Washington; Anthropological, qualitative and evaluation research on women's health, midwifery, end-of-life care, and community-based public health

HUEBNER, COLLEEN ELLEN \* Associate Professor, 1991; PhD, 1991, University of Washington, MPH, 1994, University of Washington; The social bases of developmental problems in early childhood

JARVIK, JEFFREY G \* Adjunct Assistant Professor, 1993; MD, 1987, University of California (San Diego); health services research as it relates to diagnostic imaging

JOHNSON, DONNA \* Associate Professor, 1991; MS, 1979, Syracuse University, PhD, 1995, University of Washington; Maternal and child nutrition promotion and services in communities

JOHNSON, WENDY L. \* Clinical Assistant Professor, 2006; MD, 1995, Ohio State University, MPH, 2004, Johns Hopkins University; integrated maternal and child health care, public policy and advocacy in global health

JOHNSTON, BRIAN D. \* Adjunct Associate Professor, 1990; MD, 1990, University of California (San Diego); childhood injury prevention, pediatric health services

KATON, WAYNE J \* Adjunct Professor, 1976; MD, 1976, University of Oregon; Depression, panic disorder, somatization, adherence

KATZ, AARON \* Senior Lecturer, 1993; Certificate of Public Health, 1975, University of Toronto (Canada); public policy in the health sector, U.S. and international

KIENAST, PHILIP K \* Adjunct Associate Professor, 1970; MLIR, 1966, Michigan State University, PhD, 1972, Michigan State University; human resources management

KINNE, SUSAN \* Affiliate Associate Professor, 2004; MA, 1979, University of Washington, PhD, 1986, University of Washington; disability (statistics and health promotion); program evaluation; GIS; neighborhood and health

KLASTORIN, THEODORE \* Adjunct Professor, 1974; PhD, 1973, University of Texas (Austin); operations management, facility location, project management, waiting lines, logistics, inventory

KLEIN, EILEEN J. \* Adjunct Associate Professor, 1988; MD, 1988, Johns Hopkins University; Sedation and analgesia

KOEPSSELL, THOMAS D \* Professor, 1972; MD, 1972, Harvard University, MPH, 1979, University of Washington; chronic diseases, applying epidemiologic concepts to medical practice

KOPJAR, BRANKO \* Associate Professor, 1997; MD, 1987, University of Zagreb

(Yugoslavia), MSC, 1991, University of Zagreb (Yugoslavia), PhD, 1996, University of Oslo (Norway); Clinical outcomes research, clinical studies, quality of care, health systems reform, injury prevention

KRIEGER, JAMES W. \* Clinical Professor, 1987; MD, 1984, University of California (San Francisco), MPH, 1989, University of Washington; community health assessment, asthma health services research, chronic disease prevention

KUBLIN, JAMES G. \* Clinical Associate Professor, 2006; MD, 1988, Georgetown University, MPH, 1997, Johns Hopkins University; Health informatics management of global research networks, distribution of HIV vaccines

KUSZLER, PATRICIA CAROL \* Adjunct Professor, 1994; MD, 1978, Mayo Medical School/Graduate School, JD, 1991, Yale University; law and medicine: health care finance and regulation; medical malpractice; biotechnology and law

LAFFERTY, WILLIAM E. \* Professor, 1983; MD, 1978, University of Kansas; STDs, HIV/AIDS, surveillance and epidemiology of std, managed care

LALONDE, BERNADETTE \* Research Associate Professor, 1980; PhD, 1980, University of Toronto (Canada); Health care provider competence to treat HIV-infected persons; outcome effectiveness of national AIDS Education and Training Centers; health promotion

LARSON, ERIC B \* Clinical Professor, 1975; MD, 1973, Harvard University, MPH, 1977, University of Washington; internal medicine

LESSLER, DANIEL, Adjunct Associate Professor, 1990; MD, 1986, Stanford University, MHA, 1992, University of California (San Francisco)

LEVIN, CAROL E. \* Affiliate Assistant Professor, 2003; MS, 1983, University of California (Davis), PhD, 1992, Cornell University; Economic evaluation of health technologies and interventions in low-resource settings

LIND, BONNIE K. \* Affiliate Assistant Professor, 2007; MS, 1987, University of Washington, PhD, 2005, University of Washington; Statistical methods, research design, use of insurance claims data, complementary and alternative medicine, nursing workforce supply and demand

LIU, CHUAN-FEN \* Research Associate Professor, 1998; MPH, 1982, National Taiwan University, PhD, 1994, University of Minnesota; health economics, health services research, mental health

LOBER, WILLIAM B. \* Adjunct Associate Professor, 1997; MS, 1992, University of California (Berkeley), MD, 1994, University of California (San Francisco); Architectures and Applications for Clinical and Public Health Informatics

LOGERFO SR., JAMES P \* Adjunct Professor, 1971; MD, 1968, University of Rochester, MPH, 1974, University of Washington; quality-of-care assessment

LOWY, ELLIOTT \* Clinical Assistant Professor, 2006; PhD, 1997, University of Washington; quantitative research methods

LOZANO, PAULA \* Adjunct Associate Professor, 1989; MD, 1989, Harvard University, MPH, 1994, University of Washington; Health care delivery care to children with chronic conditions, asthma and ADHD in particular

MANGIONE-SMITH, RITA M \* Adjunct Associate Professor, 2005; MD, 1991, Wayne State University, MPH, 1997, University of California (Los Angeles); pediatrics, quality of care

MARLATT, G ALAN \* Adjunct Professor, 1972; PhD, 1968, Indiana University; cognitive-behavior therapy and assessment, addictive behaviors, relapse prevention, harm reduction, health psychology

MARTIN, DIANE P \* Professor, 1973; MA, 1972, Temple University, PhD, 1979, University of Washington; health care organization and behavior; benefits and insurance; and quality, cost and outcomes of care

MASTROIANNI, ANNA C. \* Adjunct Associate Professor, 1998; JD, 1986, University of Pennsylvania, MPH, 1997, University of Washington; Law, ethics and policy genetics, reproduction, human subjects research

MAYER, JONATHAN D \* Adjunct Professor, 1977; MA, 1975, University of Michigan, PhD, 1977, University of Michigan; infectious disease ecology, infectious diseases in sub-Saharan Africa, tropical and travel medicine, infectious disease epidemiology, global health, and HIV

MAYNARD, CHARLES C \* Research Professor, 1999; MA, 1974, Washington State University, MSW, 1977, University of Washington; cardiovascular disease, administrative data bases

MAYNARD, CHARLES C \* Research Professor, 1999; PhD, 1986, University of Washington; cardiovascular disease, administrative data bases

MC AFEE, TIMOTHY A. \* Affiliate Assistant Professor, 1989; MPH, 1984, University of California (Berkeley), MS, 1984, University of California (Berkeley), MD, 1986, University of California (San Francisco); Tobacco prevention through population-based approach for those at high risk; methods to help people quit

MCCLURE, JENNIFER \* Affiliate Associate Professor, 2002; MA, 1994, Louisiana State University, PhD, 1996, Louisiana State University; Behavioral interventions for health behavior change; smoking cessation; and relapse prevention

MCGREGOR, BONNIE A. \* Research Assistant Professor, 2004; MS, 1999, University of Miami (Florida), PhD, 2000, University of Miami (Florida); Elucidating nervous, endocrine, and immune system interactions with psychological interventions

MEISCHKE, HENDRIKA W. \* Professor, 1991; MPH, 1987, University of Michigan, PhD, 1992, Michigan State University; health communication, with an emphasis on mass media and health

MELZER, SANFORD M., Adjunct Associate Professor, 1990; MD, 1982, Mt Sinai School of Medicine

MERCER, MARY ANNE \* Senior Lecturer, 1996; MPH, 1981, Johns Hopkins University, DrPH, 1987, Johns Hopkins University

MILGROM, PETER M \* Adjunct Professor, 1974; DDS, 1972, University of California (San Francisco); management of fearful and phobic dental patients, quality of dental care

MITCHELL, PAMELA H \* Adjunct Professor, 1965; MS, 1965, University of California (San Francisco), PhD, 1991, University of Washington; neuroscience nursing, diagnostic strategies

MOCK, CHARLES N. \* Adjunct Associate Professor, 1992; ScB, 1977, Brown University, MD, 1980, Brown University, MPH, 1994, University of Washington; injury: epidemiology, prevention, treatment; especially in less developed countries

MOINPOUR, CAROLA., Affiliate Associate Professor, 1982; MA, 1965, Ohio State University, PhD, 1973, University of Washington

MONSEN, ELAINE R \* Professor Emeritus, 1963; MS, 1959, University of California (Berkeley), PhD, 1961, University of California (Berkeley); nutrition, dietetics

MOURADIAN, WENDY ELYSE \* Clinical Professor, 1977; MS, 1973, Massachusetts Institute of Technology, MD, 1977,

Columbia University; oral health in MCH population, quality of life, ethics

MURPHY, GRETCHEN C., Senior Lecturer, 1992; MEd, 1973, University of Washington

NEFF, JOHN, Adjunct Professor, 1981; MD, 1960, Harvard University

NEIL, NANCY \* Affiliate Associate Professor, 2001; MS, 1984, University of Pittsburgh, PhD, 1985, University of Pittsburgh

NICOLA, RAY MICHAEL \* Affiliate Associate Professor, 1986; MD, 1973, University of Oregon, MHS, 1976, University of Michigan

NORRIS, THOMAS E. \* Adjunct Professor, 1988; MD, 1973, University of Texas (Galveston); Clinical applications, health policy and health workforce needs

OBERLE, MARK W. \* Professor, 1988; MD, 1974, Johns Hopkins University, MPH, 1979, University of California (Berkeley); Public Health; Native American Health

O'CARROLL, PATRICK W., Affiliate Professor, 1995; MPH, 1983, Johns Hopkins University, MD, 1983, Johns Hopkins University

PATRICK, DONALD L. \* Professor, 1987; MS, 1968, Columbia University, PhD, 1972, Columbia University; aging, disablement, and health-related quality of life

PAYNE, THOMAS H. \* Clinical Associate Professor, 1991; MD, 1980, University of Washington; Computer-based medical records and automated practitioner order entry

PEARLMAN, ROBERTA \* Adjunct Professor, 1977; MD, 1975, Boston University, MPH, 1980, University of Washington; gerontology

PEARSON, DAVID C., Affiliate Assistant Professor, 1991; MA, 1976, Washington State University, PhD, 1979, Washington State University

PERRIN, EDWARD, Professor Emeritus, 1962; MA, 1956, Columbia University, PhD, 1960, Stanford University

PFEIFFER, JAMES T. \* Associate Professor, 2004; MA, 1989, University of California (Los Angeles), PhD, 1997, University of California (Los Angeles), MPH, 1997, University of California (Los Angeles); Pentecostalism and public health in Africa; AIDS treatment in Mozambique

PHELAN, ELIZABETH A. \* Adjunct Assistant Professor, 1996; MD, 1992,

Tufts University, MS, 1998, University of Washington; Linking healthcare systems and communities to promote health of elders

PHILLIPS, WILLIAM R \* Clinical Professor, 1978; MPH, 1975, University of Washington, MD, 1975, University of Washington; family medicine, preventive medicine

PILCHER, MARTHA G, Adjunct Senior Lecturer, 1987; MS, 1978, Georgia Institute of Technology, PhD, 1985, Georgia Institute of Technology

PLOUGH, ALONZO L. \* Professor, 1996; MA, 1975, Cornell University, MPH, 1977, Yale University, PhD, 1978, Cornell University; Anthropology, sociology or social welfare and public affairs/policy, epidemiology

POINTER, DENNIS \* Clinical Professor, 2001; PhD, 1971, University of Iowa

PRAGER, SARAH W \* Adjunct Assistant Professor, 2006; MD, 2000, University of Texas (Southwestern), MS, 2006, University of California (San Francisco); Women's health

PSATY, BRUCE M. \* Adjunct Professor, 1984; MA, 1975, Indiana University, PhD, 1979, Indiana University, MD, 1981, Indiana University; cardiovascular disease, coronary heart disease, hypertension, pharmacoepidemiology, and pharmacogenetics

RALSTON, JAMES D. \* Affiliate Assistant Professor, 2000; MD, 1994, University of Washington; health informatics, eHealth; Chronic illness care and self-management support, health care disparities patient/provider communication, Patient/provider relationship

RAMSEY, SCOTT D. \* Adjunct Professor, 1990; MD, 1990, University of Iowa, PhD, 1994, University of Pennsylvania; economics in medicine

REIBER, GAYLE \* Professor, 1991; MPH, 1975, Johns Hopkins University, PhD, 1989, University of Washington; epidemiology and health services research on preventing complications of diabetes

REID, ROBERT J. \* Affiliate Assistant Professor, 2005; MD, 1986, University of Alberta, Canada, MPH, 1993, Johns Hopkins University, PhD, 1998, Johns Hopkins University; Ambulatory case-mix adjustment, quality of primary care, and translating prevention research into practice

RICHARDSON, MARY L., Professor Emeritus, 1978; MHA, 1978, University of Washington, PhD, 1984, University of Washington

RIEDY, CHRISTINE A \* Adjunct Research Asst Professor, 1997; MS, 1995, University of Washington, PhD, 1997, University of Washington, MPH, 2002, University of Washington; Children's oral health - cultural diversity, dietary influences; symptom self-report in children

RIVIN, BETH E. \* Research Associate Professor, 1996; MD, 1982, East Carolina University, MPH, 1985, Harvard University; Public health program development and evaluation

RODRIGUEZ, HECTOR P. \* Assistant Professor, 2007; MPH, 1998, University of California (Berkeley), PhD, 2007, Harvard University; Health policy, organizational analysis, team performance research

ROSENBLATT, ROGER A \* Adjunct Professor, 1971; MPH, 1971, Harvard University, MD, 1971, Harvard University; research into the organization and delivery of health services, rural health policy

ROSS, AUSTIN, Professor Emeritus, 1977; MPH, 1955, University of California (Berkeley)

RUTTER, CAROLYN \* Affiliate Associate Professor, 1996; MS, 1988, University of California (Los Angeles), PhD, 1991, University of California (Los Angeles); evaluation of diagnostic tests, ROC curve analysis & correlated data problems

SALES, ANNE \* Affiliate Associate Professor, 1997; MN, 1989, University of North Carolina, PhD, 1998, University of Minnesota; Health economics; health care; nursing labor markets

SAPPINGTON, JEREMY L., Senior Lecturer, 1992; MPH, 1964, University of North Carolina

SEIFER, SARENA D \* Research Associate Professor, 1995; MS, 1985, Georgetown University, MD, 1989, Georgetown University; Principles, best practices and outcomes of community-university partnerships, including community service, service-learning and community-based participatory research

SENTURIA, KIRSTEN D. \* Clinical Assistant Professor, 1997; MA, 1990, University of California (Los Angeles), PhD, 1995, University of California (Los Angeles); medical anthropology, maternal and child health, community and participatory research

SHARP, NANCY \* Affiliate Assistant Professor, 2002; MA, 1979, University of Washington, PhD, 1992, University of Washington; Health services research, qualitative research methods, translating research into practice

SNYDER, KAREN, Affiliate Assistant Professor, 2004; MPH, 1995, University of Washington, PhD, 2001, University of Washington

SOFIAN, NEAL \* Clinical Assistant Professor, 2008; MSPH, 1976, University of Missouri; Behavior change and technology, community development and social networks

SPIGNER, CLARENCE \* Associate Professor, 1994; MPH, 1982, University of California (Berkeley), DPH, 1987, University of California (Berkeley); health of the disadvantaged; race/ethnic relations; societal behavior, popular culture

STARKS, HELENE \* Adjunct Assistant Professor, 2005; MPH, 1989, University of California (Berkeley), PhD, 2004, University of Washington; End-of-life and family caregiver issues; qualitative and mixed methods research; clinician-patient communication

STEINGART, KAREN R. \* Affiliate Assistant Professor, 2000; MD, 1975, New York University, MPH, 1986, University of Washington; Surveillance, Epidemiology

STERGACHIS, ANDREAS S \* Adjunct Professor, 1980; MS, 1976, University of Minnesota, PhD, 1979, University of Minnesota; pharmacoepidemiology, pharmacy administration

STERN, MARC, Affiliate Assistant Professor, 2007; MD, 1982, University of Buffalo, MPH, 1992, Indiana University

STILLMAN, DENNIS, Senior Lecturer, 1988; MHA, 1979, University of Washington

STOUT, JAMES W. \* Adjunct Professor, 1986; MAT, 1981, Duke University, MD, 1986, Wake Forest University; childhood asthma, health services and epidemiology

SULLIVAN, SEAN \* Professor, 1992; MS, 1984, University of Texas (unspecified), PhD, 1992, University of California (Berkeley); Health Economics, Pharmaceutical Outcomes Research and Health Policy

TAYLOR, VICTORIA M. \* Research Professor, 1991; MD, 1978, Nottingham University, MPH, 1989, University of Washington; Special populations, health disparities, cancer control, secondary prevention

THOMPSON, ENGELBERTA \* Professor, 1989; MA, 1978, Western Michigan University, PhD, 1981, Western Michigan University; Community Intervention Studies, Cancer Prevention Research, Smoking Cessation Research, Children's exposure to pesticides

THOMPSON, FRANCES ELAINE A \* Adjunct Professor, 1972; MA, 1972, University of Washington, PhD, 1990, University of Washington; attribution theory, adolescent drug use, suicide

THOMPSON, JOHN R. \* Senior Lecturer, 1989; MSW, 1976, University of Washington; Public health workforce development; community assessment; public and personal health policy development

TOPOLSKI, TERESA D. \* Affiliate Assistant Professor, 2004; MA, 1993, California State University, Fullerton, PhD, 1997, University of Colorado (Boulder); Quality of life among children and adolescents with special health care needs

TU, SHIN-PING, Adjunct Associate Professor, 1993; MD, 1989, University of Cincinnati, MPH, 1996, University of Washington

ULRICH, CORNELIA M. \* Adjunct Associate Professor, 2000; MS, 1992, Oregon State University, PhD, 1998, University of Washington; Molecular and Nutritional Epidemiology, Pharmacogenetics

URBAN, NICOLE D. \* Research Professor, 1977; MS, 1973, Harvard University, DSc, 1978, Harvard University; Breast /ovarian cancer, screening, cost-effectiveness analysis

VALENZUELA, MATIAS, Affiliate Assistant Professor, 2006; MA, 1996, University of California (San Diego), PhD, 2000, University of Washington

VITALIANO, PETER P \* Adjunct Professor, 1976; MS, 1973, Syracuse University, PhD, 1975, Syracuse University; psychiatric methodology (epidemiology, design,

psychometrics), behavioral medicine (stress and coping)

WAGNER, EDWARD H \* Professor, 1984; MD, 1965, State University of New York (Buffalo), MPH, 1972, University of North Carolina; clinical epidemiology and health services research, health promotion and disease prevention

WALKER, EDWARD A., Professor, 1983; MM, 1979, Catholic University of America, MD, 1983, University of Washington

WARD, M. ELIZABETH, Affiliate Assistant Professor, 1991; MN, 1968, University of Washington

WATTS, CAROLYN A. \* Professor, 1975; MA, 1974, Johns Hopkins University, PhD, 1976, Johns Hopkins University; health economics and policy

WEAVER, MARCIA R \* Research Associate Professor, 1984; MA, 1981, University of Chicago, PhD, 1986, University of Chicago; Cost analysis, HIV/AIDS programs

WELTON, WILLIAM E. \* Senior Lecturer, 2001; MHA, 1972, University of Michigan, DPH, 1999, University of Michigan

WEST, PETER A. \* Clinical Associate Professor, 2000; MD, 1969, University of California (Irvine), MPH, 1989, Uniformed Services University of The Health Sciences; healthcare management, insurance analysis

WICKIZER, THOMAS M. \* Professor, 1976; MSW, 1974, University of Washington, MPH, 1979, Northwestern University, MA, 1987, University of Michigan, PhD, 1989, University of Michigan; health promotion evaluation

WIESNER, PAUL J \* Clinical Assistant Professor, 2004; MD, 1967, University of Wisconsin; Governmental public health policy; issues around emergency health preparedness; population issues and reproductive health

WILLIAMS, MICHELLE A. \* Adjunct Professor, 1991; MS, 1986, Tufts University, MS, 1988, Harvard University, DSc, 1991, Harvard University; reproductive and perinatal epidemiology, cancer epidemiology

WOLF, FREDRIC M \* Adjunct Professor, 1997; MEd, 1977, Kent State University, PhD, 1980, Kent State University; Clinical decision making/judgment, evaluation/dissemination/adoption of new technology, social-psychological aspects of chronic illness

ZELIADT, STEVEN BACCHUS \* Research Assistant Professor, 2004; MPH, 2000, University of Washington, PhD, 2004, University of Washington; patient decision-making, quality of life of persons with cancer

ZIERLER, BRENDA \* Adjunct Associate Professor, 1996; PhD, 1996, University of Washington; Research in patient with venous thromboembolism; clinical outcomes, process outcomes (care delivery methods), patient satisfaction, and provider satisfaction

ZIMMERMAN, FREDERICK J. \* Associate Professor, 2000; PhD, 1994, University of Wisconsin (Madison), MS, 1994, University of Wisconsin (Madison); Economic determinants and outcomes of health disparities

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## Reserve Officer Training Corps Programs

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### Aerospace Studies

UM, TAE HAN, Assistant Professor, 2007; MA, 2006, University of Maryland,; Critical Care Medicine: Acute Lung Injury, Subarachnoid Hemorrhage, sedation, Clinical Epidemiology

WHITE, PAUL K., Professor, 2005; MA, 1979, University of Oklahoma

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### Military Science

JEANPIERRE, AMY, Assistant Professor, 2008; MA, 2007, University of Oklahoma

ROGERS, BRIAN, Professor, 2006; MBA, 2001, Benedictine College

RUBIO, BRETT, Assistant Professor, 2008; JD, 2006, Gonzaga University

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### Naval Science

ALLEN, DAWN, Assistant Professor, 2007; MA, 2007, Old Dominion University

CROWE, ARTHUR A. III, Assistant Professor, 2007; MS, 2006, Boston University

FITZPATRICK, RICHARD D., Professor, 2007; MS, 1984, US Naval Postgraduate School, MS, 1996, National Defense University

HENDERSON, MARK D., Associate Professor, 2007; MA, 1999, Naval War College

# School of Social Work

## Social Work

AI, AMY \* Associate Professor, 1999; MA, 1990, University of Michigan, MSW, 1993, University of Michigan, MS, 1994, University of Michigan, PhD, 1996, University of Michigan; Health, mental health, aging, spirituality, coping, depression, psychosocial adjustment, PTSD

AISENBERG, EUGENE \* Assistant Professor, 2002; MA, 1984, St. John's Seminary, MSW, 1994, University of Southern California, PhD, 2001, University of Southern California; Traumatic effects of community violence among Latino and African-American children and families

ALLEN, ALLETHIA LEE, Assistant Professor Emeritus, 1966; MSW, 1950, Boston University, PhD, 1986, Walden University

ALMGREN, GUNNAR R. \* Associate Professor, 1986; MA, 1975, Pacific Lutheran University, MSW, 1979, Portland State University, PhD, 1990, University of Washington; The relationship between race, ethnicity, socioeconomic status, and health outcomes

AMIDEI, NANCY, Senior Lecturer, 1992; MSW, 1968, University of Michigan

ANDERSON, JAMES R, Associate Professor Emeritus, 1968; MA, 1954, Indiana University

ARTHUR, MICHAEL \* Research Associate Professor, 1991; MA, 1987, University of Virginia, PhD, 1990, University of Virginia; Project Director—Community Youth Activity, Six State Prevention Needs and Assessment

AVERILL, LLOYD J., Senior Lecturer Emeritus, 1984; MDiv, 1950, Colgate Rochester Divinity School, MA, 1952, University of Rochester, MTh, 1966, Colgate Rochester Divinity School

BALASSONE, MARY LOU \* Associate Professor, 1986; MSW, 1980, Syracuse University, DSW, 1987, University of California (Berkeley); health care policy and delivery systems, maternal and child health

BALSAM, KIMBERLY F \* Research Assistant Professor, 2003; MA, 1994, University of Oregon, PhD, 2003, University of Vermont; Lesbian, gay, bisexual, and transgender health; Ethnic minority health; Minority stress and coping with stigma and discrimination; Trauma, with an emphasis on domestic violence

and sexual abuse/assault; Same-sex couples and families; Sexual orientation an

BERLEMAN, WILLIAM C, Associate Professor Emeritus, 1965; MSW, 1960, University of Washington

BOYER, DEBRA, Affiliate Assistant Professor, 1988; MA, 1983, University of Washington, PhD, 1986, University of Washington

CARRIGAN, LYNN, Lecturer, 1987; MSW, 1981, University of Washington

CASEY, ERIN \* Adjunct Assistant Professor, 2006; MSW, 1997, University of Washington; domestic violence issues

CATALANO, RICHARD F \* Professor, 1979; MA, 1976, University of Washington, PhD, 1982, University of Washington; crime, violence and drug abuse prevention, promotion of positive youth development, Prevention/Intervention design and testing, Etiology of positive and problem development

CHERIN, DAVID, Affiliate Assistant Professor, 1999; MSW, 1993, California State University, Long Beach, PhD, 1996, University of Southern California

CONTE, JON \* Professor, 1990; MSW, 1974, University of Washington, PhD, 1979, University of Washington; effects of sexual abuse on children and adult survivors, prevention of sexual abuse

COURTNEY, MARK \* Professor, 2007; MA, 1987, John F. Kennedy University, PhD, 1992, University of California (Berkeley), MSW, 1992, University of California (Berkeley); Child welfare services, Child welfare policy, Foster care, Residential care, Adoption, Welfare reform, Youth services

CROOK, BARBARA J., Affiliate Assistant Professor, 1996; MSW, 1976, University of Washington

DEAR, RONALD BRUCE, Associate Professor Emeritus, 1970; MSW, 1957, University of Pittsburgh, DSW, 1972, Columbia University

DELONG, JAMES B., Lecturer, 1985; MSW, 1979, University of Washington

DIEHM, THOMAS M. \* Adjunct Senior Lecturer, 1998; MA, 1980, Indiana University of Pennsylvania, MSW, 1993, University of Denver; Gay men's issues, human diversity, hate crime, community organizing

DUPLICA, MOYA M, Associate Professor Emeritus, 1963; MSW, 1956, St Louis University

DURAN, BONNIE M \* Adjunct Associate Professor, 2007; MPH, 1989, University of California (Berkeley), DPH, 1997, University of California (Berkeley); Native American mental health, community-based participatory research

ELLIS, JACK A N, Associate Professor Emeritus, 1966; MSW, 1955, University of British Columbia (Canada)

EMLET, CHARLES \* Adjunct Associate Professor, 1999; MSW, 1979, California State University, Fresno, PhD, 1998, Case Western Reserve University; Gerontology, community based long term care, older adults with HIV/AIDS

ENGLISH, DIANA, Affiliate Associate Professor, 1988; MSW, 1978, California State University, Sacramento, PhD, 1985, University of Washington

ERERA, PAULINE \* Associate Professor, 1993; MSW, 1981, University of Haifa, Israel, PhD, 1983, Cornell University; Non-traditional families including: step-families, foster families, single-parent families, gay and lesbian families

EROSHEVA, ELENA A. \* Assistant Professor, 2002; MS, 1998, Utah State University, PhD, 2002, Carnegie Mellon University; Statistical methodology in the social sciences, latent variable models

EVANS-CAMPBELL, TERESAA \* Associate Professor, 2000; MSW, 1994, University of California (Los Angeles), PhD, 2000, University of California (Los Angeles); Indian child welfare practice

FARWELL, NANCY \* Associate Professor, 1998; MSW, 1989, University of California (Berkeley), PhD, 1998, University of California (Berkeley); Population displacement and psychosocial health; children and war; community development; Horn of Africa

FINN, JERRY \* Adjunct Professor, 2005; MSW, 1974, University of Hawaii, PhD, 1980, University of Wisconsin (Madison)

FRANKS, JEANNETTE S., Affiliate Assistant Professor, 1997; MA, 1980, University of Washington, PhD, 1996, University of Washington

FREDRIKSEN GOLDSSEN, KAREN \* Associate Professor, 1993; MSW, 1986, University of Washington, PhD, 1993, University of California (Berkeley);



gerontology, work and family dependent care, non-traditional families, social policy

GARNER, MICHELLE D. \* Adjunct Assistant Professor, 2006; MSW, 1998, University of Washington, PhD, 2007, University of Washington; spirituality and social work

GAVIN, AMELIA \* Assistant Professor, 2004; MSW, 2000, University of Michigan, PhD, 2004, University of Michigan; African-American Women and Depression. Racial Disparities in Birth Outcomes

GERRING, CHARYL E, Affiliate Assistant Professor, 1992; MA, 1951, Northwestern University, MA, 1955, University of Chicago

GILCHRIST, LEWAYNE D \* Professor Emeritus, 1986; MA, 1967, Stanford University, MSW, 1977, University of Washington, PhD, 1981, University of Washington; health promotion and disease prevention in community settings, women's health, research methods

GILLMORE, MARY LOUISE \* Professor Emeritus, 1983; MS, 1970, University of Michigan, MA, 1977, University of Washington, PhD, 1983, University of Washington; Family, human sexuality, gender roles, social psychology, adolescent problem behaviors, research and statistics

GROTE, NANCY \* Research Associate Professor, 2007; MEd, 1968, Tufts University, MSW, 1980, University of Pittsburgh, PhD, 1992, University of Pittsburgh; Individual and couple distress during the transition to parenthood Psychoneuroimmunology; Risk and resilience in economically disadvantaged, minority women; Behavioral medicine; Association between chronic and acute stress and psychological distress in v

HAGGERTY, KEVIN P., Lecturer, 1990; MSW, 1989, University of Washington

HALEY-LOCK, ANNA \* Assistant Professor, 2003; MA, 1995, University of Michigan, PhD, 2003, University of Chicago; Organizational analyses, workplace opportunity structures, nonprofit human services management

HARACHI, TRACY \* Associate Professor, 1992; MSW, 1988, University of Washington, PhD, 1991, University of Washington; child development, interventions for children and families, cultural adaptation and ethnic identity

HARRIS, MARIAN \* Adjunct Assistant Professor, 2002; MSW, 1977, Florida State University, PhD, 1997, Smith College; birth mothers and their children in the child welfare system

HAWKINS, JOHN D \* Professor, 1976; MA, 1969, Northwestern University, PhD, 1975, Northwestern University; crime and delinquency, substance abuse, social development, research, prevention

HERRENKOHL, TODD \* Associate Professor, 1998; MSW, 1993, Simmons College, PhD, 1998, University of Washington; The etiology and prevention of antisocial behavior among children and adolescents

HERRICK, JAMES E, Associate Professor Emeritus, 1966; MSW, 1958, University of California (campus unspecified), DSW, 1966, University of Southern California

HILL, KARL GORDON \* Research Associate Professor, 2003; PhD, 1991, Brandeis University; Positive and problem youth & adult development; Intergenerational mechanisms in development

HOOYMAN, NANCY \* Professor, 1979; MSW, 1970, University of Michigan, PhD, 1974, University of Michigan; aging, caregivers of dependents, feminist practice, community organization development

HORMANN, SHANA D.L., Affiliate Assistant Professor, 1995; MSW, 1978, University of Washington

ISHISAKA, ANTHONY H \* Associate Professor, 1971; MSW, 1968, University of California (Berkeley), DSW, 1978, University of California (Berkeley); social work practice, mental health services, services to minority communities, human development

JACKSON, THOMAS R., Affiliate Professor, 1984; MSW, 1976, University of Washington

KAHN, TIMOTHY J., Affiliate Assistant Professor, 1984; MSW, 1980, University of Washington

KELLEY, JERRY LEE, Associate Professor Emeritus, 1961; MA, 1949, University of Chicago

KEMP, SUSAN \* Associate Professor, 1997; MA, 1981, University of Auckland (New Zealand), PhD, 1994, Columbia University; Supports to low-income families; public child welfare; social welfare history; social work theory

KOSTURN, CAROLE, Affiliate Assistant Professor, 1979; MSW, 1974, University of Washington

KRUZICH, JEAN \* Associate Professor, 1991; MSW, 1975, University of Minnesota, MA, 1976, University of Minnesota,

PhD, 1982, University of Washington; child maltreatment and substance abuse, influence of organizational characteristics on human service providers and clients

LAAKSO, JANICE \* Adjunct Associate Professor, 1999; MS, 1973, University of Texas (Austin), PhD, 1999, University of Texas (Austin); Social cognitive reasoning of adolescents with emotional and behavioral disorders

LANGER, SHELBY L. \* Research Assistant Professor, 2000; MS, 1992, Villanova University, PhD, 1996, Lehigh University; Emotion, Psychoneuroimmunology, Psycho-oncology, Behavioral medicine, Caregivers, Patient/ physician communication

LAZZARI, MARCELINE \* Adjunct Professor, 1998; MSW, 1971, St Louis University, PhD, 1990, University of Denver; Women, human diversities, and teaching/learning collaboration

LEVY, RONAL \* Professor, 1975; MSW, 1972, University of Michigan, PhD, 1974, University of Michigan, MPH, 1975, University of Michigan; research methodology, single-case evaluation, health care, behavioral medicine, biofeedback

LINDHORST, TARYN \* Associate Professor, 2001; MSW, 1988, Southern University At New Orleans, PhD, 2001, Louisiana State University; Violence against women and welfare reform/poverty issues

LONGRES, JOHN F., Professor Emeritus, 1993; MSW, 1966, University of California (Los Angeles), PhD, 1970, University of Michigan

LUSTBADER, WENDY, Affiliate Associate Professor, 1989; MSW, 1982, University of Washington

MACY, JANE, Senior Lecturer, 2000; MSW, 1980, University of Wisconsin, PhD, 1999, University of Minnesota

MARCENKO, MAUREEN \* Associate Professor, 1997; MSW, 1978, Wayne State University, PhD, 1988, McGill University (Canada); research on the efficacy of interventions for families

MASON, WALTER A \* Research Associate Professor, 2007; MA, 1993, University of Northern Colorado, PhD, 1998, University of Nevada; Adolescent development; Substance abuse; Mental health; Prevention; Longitudinal methods

MEYERS, MARCIA \* Professor, 2001; MPA, 1987, Harvard University, PhD, 1992, University of California (Berkeley), MSW, 1992, University of California (Berkeley);

Social policies, politics, and programs, with an emphasis on poverty and income inequality

MILLER, SIDNEY, Associate Professor Emeritus, 1962; MS, 1953, Columbia University

MORRISON, DIANE M \* Professor, 1983; MS, 1979, University of Washington, PhD, 1982, University of Washington; sexual decision-making, attitudes and behavior, teen pregnancy

NAGDA, BIREN A \* Associate Professor, 1996; MSW, 1989, University of Michigan, PhD, 1996, University of Michigan, MA, 1996, University of Michigan; multicultural and empowerment approaches in social work, organizations and education

NORRIS, JEANETTE, Affiliate Associate Professor, 1988; MS, 1980, University of Washington, PhD, 1983, University of Washington

NURIUS, PAULA S. \* Professor, 1984; MSW, 1980, University of Hawaii, MA, 1983, University of Michigan, PhD, 1984, University of Michigan; social cognition, violence against women, stress and coping, critical thinking

NYSTROM, NANCY M, Lecturer, 2004; MSW, 1994, University of Washington, PhD, 1997, University of Washington

OESTERLE, SABRINA \* Research Assistant Professor, 2002; MA, 1994, Portland State University, PhD, 2001, University of Minnesota; Adolescent and young adult development, Life course research, The etiology of substance use, health, and mental health, Quantitative research methods

OXFORD, MONICA L. \* Research Associate Professor, 2001; MSW, 1995, University of Washington, PhD, 2000, University of Washington; Research interests include child and youth development, parenting, and longitudinal data analysis

PECORA, PETER \* Professor, 1990; MSW, 1977, University of Wisconsin (Milwaukee), PhD, 1982, University of Washington; child welfare practice, foster care, family preservation services, personnel management

RESNICK, HERMAN, Professor Emeritus, 1967; MSS, 1956, New York University, PhD, 1970, Bryn Mawr College

RICHARDS, MARTHA, Affiliate Assistant Professor, 1979; MSW, 1970, University of Washington

RICHEY, CHERYLA, Professor Emeritus, 1971; MSW, 1971, University of California (Berkeley), DSW, 1974, University of California (Berkeley)

ROFFMAN, ROGER ALAN \* Professor, 1972; MSW, 1965, University of Michigan, DSW, 1983, University of California (Berkeley); alcoholism and drug abuse, research methodology, program evaluation

ROMICH, JENNIFER \* Assistant Professor, 2002; MA, 2000, Northwestern University, PhD, 2002, Northwestern University; Social policy and low-income working families, family resources and child well-being

RYAN, ROSEMARY \* Research Associate Professor, 1991; MPA, 1979, Portland State University, PhD, 1987, University of Washington, MSW, 1987, University of Washington; Behavioral HIV transmission risk reduction among HIV+ gay/bisexual men

RYDER, RITA M, Affiliate Assistant Professor, 1982; MSW, 1971, Catholic University of America

SHAW, MARY E., Affiliate Assistant Professor, 1998; MSW, 1989, University of Washington

SOHNG, SUE \* Associate Professor, 1990; MSW, 1979, Wayne State University, PhD, 1989, University of Pittsburgh; action research and chronic mental illness, cross-cultural social work practice

SPIEKER, SUSAN J \* Adjunct Professor, 1983; PhD, 1982, Cornell University; developmental psychology, infant security, mother-infant interaction

STIER, FLORENCE E, Professor Emeritus, 1964; MS, 1941, University of Pittsburgh, DSW, 1973, Columbia University

STUBER, JENNIFER \* Assistant Professor, 2006; PhD, 2002, Yale University; Stigma, discrimination and prejudice and the role these social processes play in the production of poor health, health disparities and in some cases improved health (such as with smoking-related stigmatization)

SUTTON, SHARON E. \* Adjunct Professor, 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; The effect of the environment on learning and community well-being

TAJIMA, EMIKO A. \* Associate Professor, 1999; MS, 1987, University of Pennsylvania, PhD, 1999, Bryn Mawr College; Domestic violence; child abuse; parenting practices; law and social policy

TAKEUCHI, DAVID \* Professor, 2002; MA, 1974, University of Hawaii, PhD, 1986, University of Hawaii; Investigates how race, ethnicity, and SES influences health and illness

TEATHER, EDWARD CHARLES, Associate Professor Emeritus, 1966; MSW, 1962, University of British Columbia (Canada)

UEHARA, EDWINA \* Professor, 1990; MSW, 1977, University of Michigan, PhD, 1987, University of Chicago; qualitative/quantitative research methods, cross-cultural mental health, human services organization

VAN SOEST, DOROTHY \* Professor, 2002; MSW, 1975, University of Minnesota, DSW, 1994, Catholic University; Education around diversity and social justice issues; cultural competence; violence prevention

WALTERS, KARINA \* Associate Professor, 2000; MSW, 1990, University of California (Los Angeles), PhD, 1995, University of California (Los Angeles); American Indian health and mental health research and multicultural counseling

WEATHERLEY, RICHARD A, Professor Emeritus, 1975; MA, 1963, University of Chicago, PhD, 1975, Massachusetts Institute of Technology

WELLS, ELIZABETH A. \* Research Professor, 1984; PhD, 1984, University of Washington; Understanding, assessing, and intervening with issues related to psychoactive substance use

WEST, MARGARET A, Affiliate Assistant Professor, 1973; MSW, 1968, University of Washington, PhD, 1984, University of Washington

WHITTAKER, JAMES \* Professor Emeritus, 1970; MSW, 1966, University of Michigan, PhD, 1970, University of Minnesota; Evidence-Based Practice in Child Mental Health Interpersonal Practice with Individuals, Families and Small Groups; Child & Family Policy, Practice and Research Social Networks & Social Support Social Welfare History













