UNIVERSITY OF WASHINGTON

GENERAL CATALOG 2002-2004

GRADUATE AND PROFESSIONAL STUDY

UNIVERSITY ADMINISTRATION

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The University of Washington

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

Enrollment at the University in autumn quarter 2001 was almost 40,000, including its campuses in Bothell and Tacoma, of which 11,000 were in professional and graduate programs and the balance were undergraduates. In 2001, the full-time teaching faculty of the University numbered 3,400 members.

Mission Statement

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 diverse 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 programs, 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 towards achieving an excellence that well serves the state, the region and the nation.

Board of Regents
February 1981; revised February 1998

President’s Message

A university is a community of scholars and artists, a place where faculty and students communicate with each other to enrich human understanding. Universities have played an essential role in societies for hundreds of years, promoting learning and culture, generating new knowledge, and training professionals in specialized callings. The University of Washington is one of the finest universities in the world.

It is also an exciting place to be, with a lively interplay of teaching, research, and public service. Its contributions to the state, the nation, and the world will continue to grow as we face the challenges of the twenty-first century.

Richard L. McCormick, President
ACADEMIC CALENDAR

2002-2003

Summer Quarter 2002
Full-term and term a classes begin ........ June 24
Independence Day holiday .................... July 4
Term a classes end ............................... July 24
Term b classes begin ............................ July 25
Full-term and term b classes end ............ August 23

Autumn Quarter 2002
Classes begin ................................. September 30
Veterans Day holiday ........................... November 11
Thanksgiving recess ............................. November 28, 29
Last day of instruction .......................... December 11
Final examinations ............................. December 12-19

Winter Quarter 2003
Classes begin ..................................... January 6
Martin Luther King, Jr.’s Birthday holiday  January 20
Presidents Day holiday ........................... February 17
Last day of instruction ........................... March 14
Final examinations .............................. March 17-21

Spring Quarter 2003
Classes begin ...................................... March 31
Memorial Day holiday ........................... May 26
Last day of instruction ........................... June 6
Final examinations ............................... June 9-13
Commencement ................................... June 14

2003-2004

Summer Quarter 2003
Full-term and term a classes begin ........ June 23
Independence Day holiday .................... July 4
Term a classes end ............................... July 23
Term b classes begin ............................. July 24
Full-term and term b classes end ............ August 22

Autumn Quarter 2003
Classes begin ................................. September 29
Veterans Day holiday ........................... November 11
Thanksgiving recess ............................. November 27, 28
Last day of instruction .......................... December 10
Final examinations ............................. December 11-18

Winter Quarter 2004
Classes begin ..................................... January 5
Martin Luther King, Jr.’s Birthday holiday  January 19
Presidents Day holiday ........................... February 16
Last day of instruction ........................... March 12
Final examinations .............................. March 15-19

Spring Quarter 2004
Classes begin ...................................... March 29
Memorial Day holiday ........................... May 31
Last day of instruction ........................... June 4
Final examinations ............................... June 7-11
Commencement ................................... June 12

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 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, academic programs, employment, and patient and hospital services.


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 206-543-6452/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; 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.

Copies may be purchased from the University Book Store, 4326 University Way Northeast, Seattle, Washington 98105, 206-634-3400.

USING THE GENERAL CATALOG

The material in this catalog has been compiled and organized to provide the reader with a comprehensive overall view of the programs and courses at the University of Washington. It includes academic requirements and procedures necessary for admission and graduation. Information on programs, faculty, and courses is usually arranged in alphabetical order following departmental structure within each school or college.

Because curriculum revisions and program changes usually occur during the two-year period the General Catalog is in circulation, students should assume the responsibility of consulting the appropriate academic unit or adviser for more current or specific information. The General Catalog is updated regularly at the University’s Web site (www.washington.edu). The quarterly Time Schedule gives information on courses offered, class hours, and classroom locations, and has the latest calendar dates, fees, and details on registration.

Contact information has been provided wherever possible. All phone numbers, unless noted, are in the 206 area code and are voice numbers. Unless noted, all addresses with @ are email addresses. Many programs and offices at the University can be found through the University’s homepage at http://www.washington.edu.

All announcements in the General Catalog are subject to change without notice and do not constitute an agreement between the University of Washington and the student.
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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 ensure 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.
THE GRADUATE SCHOOL: GRADUATE STUDY

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 programs and ensuring their quality by reviewing them through periodic reviews. Periodic reviews 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 and the schedule of program reviews at www.grad.washington.edu/Acad/Academicprograms.htm, or contact the Office of Academic Programs in the Graduate School at 206-685-3519.

Collaborative Degree Programs

College of Medicine

Medical Degree Programs

- M.D.
- J.D.
- M.D., M.S.
- M.D., M.S.
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The Application to Graduate Study is obtained from the program to which you wish to apply.

- 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 on availability of resources. Visiting graduate applicants must have been admitted to another recognized graduate school and be currently pursuing a graduate degree. A Certificate of Status 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. Any 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 to 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:

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 program degree 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. The following are graduate admissions closing dates. It is important to remember that individual departments often have much earlier deadlines which supersede those listed below, particularly for autumn quarter.

- Autumn Quarter—July 1
- Winter Quarter—November 1
- Spring Quarter—February 1
- Summer Quarter—May 15

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

Information about the application process for both graduate and graduate non-matriculated status must be obtained directly from the department. Visiting graduate applicants should go to 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.

Required Examinations

The Graduate Record Examination (GRE) is required for admission as a graduate student except in the following circumstances:

- Applicants to Art, Dance, Drama, and to the Master of Music and Doctor of Musical Arts degree in Music.
- Applicants holding earned doctorates (such as Ph.D., D.D.S., M.D., Ed.D., J.D.) from accredited U.S. institutions.
- Applicants to the M.B.A., M.P.Acc., or Ph.D. degrees in the School of Business Administration, who must submit scores from the Graduate Management Admission Test (GMAT).

Scores must be sent directly from the Educational Testing Service to the University of Washington.

For further information you may write to:

Graduate Record Examinations
Educational Testing Service
P.O. Box 6000
Princeton, NJ 08541-6000
609-771-7670 or 510-654-1200
gre-info@ets.org
www.gre.org

International Applicants

Email inquiries from international applicants should be sent to intlgrad@u.washington.edu. You may also refer to the World Wide Web at www.grad.washington.edu for further information.

In addition to the other requirements for all applicants, a minimum score of 500 on the Test of English as a Foreign Language (TOEFL) or 173 on the computer-based test (TOEFLC) 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.
- Applicants holding bachelor’s or advanced degrees from accredited institutions in the United States or in one of the countries listed above.

Applicants offered admission with TOEFL scores between 500 (173 TOEFLC) and 580 (237 TOEFLC) must fulfill an English as a Second Language (ESL) requirement before a graduate degree will be conferred by the University of Washington.

With the exception of citizens of the countries listed above, all international and immigrant status applicants who intend to apply for teaching assistantships must also take the Test of Spoken English (TSE).

Official test scores must be received by the University of Washington within two years of the test date. No waivers of this English competency requirement will be given.

Due to the time required for evaluation of applications, overseas applicants for autumn quarter are strongly encouraged to submit the application and transcripts to the Office of Graduate Admissions no later than the prior November 1. Applications received after this date will be processed as soon as possible but significant delays may result.

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 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, 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.

Graduate Student Service Appointments

The University provides for the appointment of many graduate students as teaching, research, and staff assistants; predoctoral associates; predoctoral instructors; and predoctoral lecturers. Approximately 3,000 such appointments were made during the past year.

The University’s policy regarding these appointments is set forth in detail in Executive Order 28. Copies of this statement are available from the graduate program coordinator or the Graduate School, or can be obtained from the Graduate School Web site at www.grad.washington.edu/fellow/execor28.htm. Some of the information is provided below.

Appointments are granted only to graduate students who have carefully defined educational goals and who exhibit the highest intellectual competence and attainment. Succeeding appointments may be made if the student maintains high scholarship and continues to make satisfactory progress toward the degree.

Graduate appointments are granted to graduate students only. An initial appointment may be offered to a student before being admitted formally to the Graduate School, but the appointment is contingent upon admission to graduate status before the beginning of the appointment.
2000-2002 Graduate Student Service Appointments

Students holding these appointments for at least 20 hours per week and for at least five of the six pay periods of an academic quarter will receive a waiver of the resident operating fee (ROF) portion of “tuition and fees” as well as a waiver for the $37 per quarter technology fee. Appointees who are not state residents are treated as residents for tuition purposes during the term of the appointment. Appointees are required to pay approximately $192 tuition per quarter.

All appointees who are eligible for the ROF waiver also receive paid graduate appointee health insurance. See www.grad.washington.edu/insurance/insurance.htm for details.

Salary for Half-Time Service

(20 hours per week)

Effective July 1, 2002 – June 30, 2003

<table>
<thead>
<tr>
<th>Title</th>
<th>Monthly salary</th>
<th>Academic year (9 months) salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Assistant</td>
<td>$1,260</td>
<td>$11,340</td>
</tr>
<tr>
<td>Predoctoral Teaching Associate I</td>
<td>1,351</td>
<td>12,159</td>
</tr>
<tr>
<td>Predoctoral Teaching Associate II</td>
<td>1,455</td>
<td>13,095</td>
</tr>
<tr>
<td>Predoctoral Instructor*</td>
<td>1,455</td>
<td>13,095</td>
</tr>
<tr>
<td>Predoctoral Lecturer*</td>
<td>1,455</td>
<td>13,095</td>
</tr>
<tr>
<td>Research Assistant</td>
<td>1,260</td>
<td>11,340</td>
</tr>
<tr>
<td>Predoctoral Research Associate I</td>
<td>1,351</td>
<td>12,159</td>
</tr>
<tr>
<td>Predoctoral Research Associate II</td>
<td>1,455</td>
<td>13,095</td>
</tr>
<tr>
<td>Predoctoral Researcher*</td>
<td>1,455</td>
<td>13,095</td>
</tr>
<tr>
<td>Staff Assistant</td>
<td>1,260</td>
<td>11,340</td>
</tr>
<tr>
<td>Predoctoral Staff Associate I</td>
<td>1,351</td>
<td>12,159</td>
</tr>
<tr>
<td>Predoctoral Staff Associate II</td>
<td>1,455</td>
<td>13,095</td>
</tr>
</tbody>
</table>

* Minimum

Graduate students appointed to the beginning level of graduate teaching appointments are not permitted to be in overall charge of a course, but are given an appropriate degree of responsibility and supervision of laboratory or classroom work so that they may be introduced to teaching activities gradually and effectively. Student appointees may also serve as assistants in research activities for which a faculty member is responsible.

Two special categories for teaching appointments and one for research appointments are provided above the predoctoral associate level: Predoctoral Instructor, for the graduate student who has achieved Candidate status and is ready for increased teaching responsibility; Predoctoral Lecturer, for a mature and competent graduate student who, though he or she need not be a Candidate, has had exceptional previous teaching or other professional experience; and Predoctoral Researcher, for the student who has special skills or qualities obtained outside of his or her experience as a graduate student or who carries major responsibilities in relation to research activities. For the 2002-2003 academic year these appointments carry a minimum stipend of $1,455 per month (half-time) with no designat-ed maximum so that the stipend may be adjusted to a level appropriate to the appointee’s experience and his or her teaching and research responsibilities.

International students with teaching appointments (Teaching Assistant, Predoctoral Teaching Associate I and II, Predoctoral Instructor, Predoctoral Lecturer) must meet a spoken-English requirement before they may be given classroom duties.

An additional series of appointments titled Graduate Staff Assistant and Predoctoral Staff Associates I and II is provided for University service activities that are not appropriately described as teaching or research but are closely related to the student’s field of advanced study. Appointments of specific graduate students to these positions may not be made until after the position itself has been specifically approved.

Students who hold any of the above appointments are required to render 20 hours of service per week to the University. The appointments may be on a nine-month basis and ordinarily cover the period from September 16 through June 15. Some of these appointments may be extended to 11 or 12 months. Graduate student appointments do not provide for paid vacations or sick leave. Students who accept these University service appointments normally confine their employment to such appointments.

A graduate student service appointee must register for, and carry throughout each quarter except summer quarter, a minimum of 10 credits in formal courses or in research, thesis, or dissertation work. For summer quarter, the requirement is at least 2 credits.

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 the 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/ffasform.html. The Office of Student Financial Aid Financial Aid may also be reached by email (osfa@uwashington.edu) or on the Web at 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/.

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 calling gomap@uwashington.edu.

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

<table>
<thead>
<tr>
<th>Numeric grade-point equivalent</th>
<th>Letter grade</th>
<th>Numeric grade-point equivalent</th>
<th>Letter grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>A</td>
<td>2.8</td>
<td>B-</td>
</tr>
<tr>
<td>3.9</td>
<td>A-</td>
<td>2.7</td>
<td>B</td>
</tr>
<tr>
<td>3.8</td>
<td>A</td>
<td>2.6</td>
<td>C-</td>
</tr>
<tr>
<td>3.7</td>
<td>A+</td>
<td>2.5</td>
<td>C</td>
</tr>
<tr>
<td>3.6</td>
<td>B-</td>
<td>2.4</td>
<td>C+</td>
</tr>
<tr>
<td>3.5</td>
<td>B</td>
<td>2.3</td>
<td>B</td>
</tr>
<tr>
<td>3.4</td>
<td>B+</td>
<td>2.2</td>
<td>B-</td>
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<tr>
<td>3.3</td>
<td>C-</td>
<td>2.1</td>
<td>C</td>
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<tr>
<td>3.2</td>
<td>C</td>
<td>2.0</td>
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<td>3.1</td>
<td>D-</td>
<td>1.9</td>
<td>D</td>
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<tr>
<td>3.0</td>
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<td>1.8</td>
<td>D+</td>
</tr>
<tr>
<td>2.9</td>
<td>D+</td>
<td>1.7</td>
<td>E</td>
</tr>
<tr>
<td>0.0</td>
<td>0.0</td>
<td>1.6</td>
<td>F</td>
</tr>
</tbody>
</table>

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.

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/ regwtd offence.html#W3.

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.

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.
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

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) 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 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.

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**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/atsv/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 Publishing Manual, 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/stsw/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.

Special Programs and Facilities
Graduate School Support for Interdisciplinary Units and Graduate Student Recruitment
The objective of the Graduate School Fund for Excellence and Innovation (GSFEI) is to support the overall goals of graduate education and research through funding in the following areas: (1) program support for interdisciplinary units on campus, (2) graduate student recruitment support to Ph.D.-degree granting units on campus, (3) honoraria and colloquia support for the dissemination of research, (4) matching support on proposals to establish research centers, (5) graduate student travel to present the results of research, (6) book publication subsidies for faculty, and (7) other uses that benefit graduate education and research on campus.

GSFEI revenues come from various sources that include state funds provided in the University’s biennial budget, private donations, institutional allowances provided with fellowships and traineeships, patent, invention, and copyright royalties accruing to the University, and various special, short-term and renewable awards from the President’s and Provost’s Offices for maintenance of certain unique needs.

GSFEI policies and procedures may be accessed on the Web at grad.washington.edu or obtained from the Graduate School, G-1 Communications, Box 353770, or requested by calling 206-543-7436.

Related to its primary responsibilities for graduate education, the Graduate School has responsibility for the following programs.

Special Professorships and Lectureships
The Walker-Ames Fund was established in the 1930s through a bequest from the estates of Maud Walker Ames and her husband, Edwin Gardner Ames. Its stated purpose is to enable the University of Washington “to guarantee to the state of Washington the scholarly and educational services of the most distinguished minds available in this and other countries.”

Chaired by the Dean of the Graduate School, a committee of University faculty members considers nominations from their colleagues and makes recommendations to the President for the appointment to Walker-Ames Professorships of distinguished scholars of national and international reputation.

Since 1936, when the first Walker-Ames Visiting Professor was appointed, over 345 scholars and members of the profession have come to the University as temporary members of the faculty, enriching the intellectual life of the University community and the state.

The Jessie and John Danz Fund was established in 1961 by a gift and bequest from John Danz; an additional gift was made to the Danz fund in 1969 by his wife, Jessie Mohr Danz. The Danz fund is intended primarily to enable the University to bring to the campus each year two “distinguished scholars of national and international reputation who have concerned themselves with the impact of science and philosophy on man’s perception of a rational universe.”

Nominations and appointments for the Danz lectureships are made in the same manner as the Walker-Ames professorships. Since 1961 when the lectureship was established there have been more than 100 appointed lectureships. Other arrangements compatible with the Danz bequest (e.g., the publicizing of the Danz Lectures) may be made upon approval of the committees involved.

Questions pertaining to the Walker-Ames Fund and the Jessie and John Danz Fund may be directed to the Dean of the Graduate School.

In addition to regular academic offerings, the University maintains a wide range of programs and facilities that provide special opportunities for graduate study and research. The following units are administered by the Graduate School.

Center for Law and Justice
Joseph G. Weis, Director
117 and 119 Savery, Box 353340

The Center for Law and Justice is a multidisciplinary research center established in 1975. Its goals are to engage in research, to contribute to the education and training of students, to offer consultation, and to provide liaison to the community in the areas of law and justice. To achieve these goals the Center (1) appraises faculty members of research opportunities and assists in the development of proposals, (2) involves students from different disciplines in research, training and education and sponsors biweekly colloquia, and (3) provides consultation to the criminal justice system and responds to the broader informational needs of the community.

University of Washington Press
Pat Soden, Director
1326 Fifth Avenue, Suite 555, Box 359120

The University of Washington Press, the book-publishing division of the University, has over a thousand titles in print, with special emphasis on art, anthropology, Asian-American studies, Asian studies, environmental studies, ethnology, history, international studies, and regional subjects. The Press publishes about 60 new books each year, including reprints and imports. Authors include both members of the University faculty and scholars outside the University. In addition to its own publishing program, the Press distributes art books and catalogues for numerous museums.
Procedures and Fees

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

It is the University’s expectation that all students follow University regulations and procedures as they are stated in the General Catalog. Appeals may be filed with the student’s dean or with the Vice President for Student Affairs in nonacademic matters. Students are expected to observe the standards of conduct contained in the Student Conduct Code (WAC 478-125).

Registration

Instructions for registration are available on MyUW (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/addrpolicy.html

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

Registration Period II

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

Registration Period III

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

Late Add Period

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

Unrestricted Drop Period

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

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

Late Course Drop Period (Annual Drop)

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

Credits Required for Full- or Half-Time Status Requirements

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

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

To be classified as a half-time student by the University, a professional student must register for at least 6 credits per quarter and a graduate student must enroll for at least 5 credits per quarter.

Restrictions on Attending Classes

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

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

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

Adding Courses/Permission Guidelines

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

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

1. Through the second week of the quarter, departments may choose to overload courses up to 115% of the room capacity to offset anticipated student course drops and withdrawals as demonstrated by past registration activity.

   Students must secure entry codes from instructors or departments to add closed courses. However, if enrollment is at 115% of room capacity, registration requests are denied. Students should be informed when receiving entry codes to overload courses that registration is not guaranteed if enrollment exceeds 115% of room capacity.

   If centralized room-capacity records do not correctly reflect the actual seating capacity, notification should be made to the Room Assignments/Time Schedule Office in the Office of the Registrar.

2. Students may add courses during the Late Add Period or through the twenty-first calendar day of the quarter. Adds after the seventh calendar day of the quarter require an entry code or faculty number. Departments may also add students to departmental courses during this period through departmental registration screens. To add courses after this period, students must submit a faculty-approved Late Add Petition form to the Registration Office.

3. A course may not be changed to or from an audit registration after the first two weeks of the quarter. See below for transcript entry.

Dropping a Course

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

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

A course drop made during the third through the seventh weeks of the quarter is recorded on a student's transcript with a W grade and a number designating the week of the quarter in which the course drop was transacted. Only one drop after the fourteenth day of a quarter is permitted each academic year (autumn through summer quarter).

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

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

Students receiving veterans’ benefits should contact the Office of Special Services, 460 Schmitz, when dropping courses.

Complete Withdrawal from the University for a Registered Quarter

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 98195-3850. 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.

**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 Special Services, 480 Schmitz.

Veterans and members of the armed forces who apply for admission to the University are subject to the same minimum requirements as regular students and are expected to enroll in accordance with University requirements.

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

### Tuition, Fees, and Special Charges

#### Estimated Expenses

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

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.

<table>
<thead>
<tr>
<th>Description</th>
<th>Resident tuition and fees</th>
<th>Nonresident tuition and fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td>$ 777</td>
<td></td>
</tr>
<tr>
<td>Room and Board</td>
<td>8,319</td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td>747</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous personal expenses</td>
<td>2,043</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$11,886</strong></td>
<td></td>
</tr>
</tbody>
</table>

This budget assumes room and board is paid for by the student.

Tuition and fees are subject to change.

* Tier I comprises all Ph.D. students and all master's degree programs not specified in tiers II and III.

† Tier II comprises Education masters, Forest Resources masters, nonprofessional School of Medicine masters, Nursing masters, Oceanography and Aquatic and Fishery Sciences masters, Public Affairs masters, and Public Health and Community Medicine masters

‡ Tier III comprises Architecture and Urban Planning masters, Engineering masters, and Information School masters

### Enrollment Confirmation Deposit

[dept.washington.edu/hsp/first2.html](http://dept.washington.edu/hsp/first2.html)

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

1. A new or returning matriculated 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. 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.

2. 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.

3. 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.

4. 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

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 Summer Quarter Bulletin and Time Schedule 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.

Estimated Quarterly Tuition Rates Effective Autumn Quarter 2002

Graduate Program—Tier I

<table>
<thead>
<tr>
<th>Credits</th>
<th>Technology Fee</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 credits (minimum)</td>
<td>$12</td>
<td>$616</td>
<td>$1,400</td>
</tr>
<tr>
<td>3 credits</td>
<td>17</td>
<td>922</td>
<td>2,219</td>
</tr>
<tr>
<td>4 credits</td>
<td>22</td>
<td>1,228</td>
<td>2,958</td>
</tr>
<tr>
<td>5 credits</td>
<td>27</td>
<td>1,534</td>
<td>3,697</td>
</tr>
<tr>
<td>6 credits</td>
<td>32</td>
<td>1,840</td>
<td>4,436</td>
</tr>
<tr>
<td>7-18 credits</td>
<td>37</td>
<td>2,146</td>
<td>5,175</td>
</tr>
<tr>
<td>Additional fee per credit for more than 18 credits</td>
<td>NA</td>
<td>288</td>
<td>721</td>
</tr>
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</table>

Graduate Program—Tier II

<table>
<thead>
<tr>
<th>Credits</th>
<th>Technology Fee</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 credits (minimum)</td>
<td>$12</td>
<td>$635</td>
<td>$1,504</td>
</tr>
<tr>
<td>3 credits</td>
<td>17</td>
<td>954</td>
<td>2,255</td>
</tr>
<tr>
<td>4 credits</td>
<td>22</td>
<td>1,273</td>
<td>3,006</td>
</tr>
<tr>
<td>5 credits</td>
<td>27</td>
<td>1,592</td>
<td>3,757</td>
</tr>
<tr>
<td>6 credits</td>
<td>32</td>
<td>1,911</td>
<td>4,508</td>
</tr>
<tr>
<td>7-18 credits</td>
<td>37</td>
<td>2,230</td>
<td>5,259</td>
</tr>
<tr>
<td>Additional fee per credit for more than 18 credits</td>
<td>NA</td>
<td>300</td>
<td>733</td>
</tr>
</tbody>
</table>

Graduate Program—Tier III

<table>
<thead>
<tr>
<th>Credits</th>
<th>Technology Fee</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 credits (minimum)</td>
<td>$12</td>
<td>$663</td>
<td>$1,527</td>
</tr>
<tr>
<td>3 credits</td>
<td>17</td>
<td>993</td>
<td>2,290</td>
</tr>
<tr>
<td>4 credits</td>
<td>22</td>
<td>1,323</td>
<td>3,053</td>
</tr>
<tr>
<td>5 credits</td>
<td>27</td>
<td>1,653</td>
<td>3,816</td>
</tr>
<tr>
<td>6 credits</td>
<td>32</td>
<td>1,983</td>
<td>4,579</td>
</tr>
<tr>
<td>7-18 credits</td>
<td>37</td>
<td>2,313</td>
<td>5,342</td>
</tr>
<tr>
<td>Additional fee per credit for more than 18 credits</td>
<td>NA</td>
<td>312</td>
<td>745</td>
</tr>
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</table>

Doctor of Pharmacy (PharmD)

<table>
<thead>
<tr>
<th>Credits</th>
<th>Technology Fee</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 credits (minimum)</td>
<td>$12</td>
<td>$733</td>
<td>$1,574</td>
</tr>
<tr>
<td>3 credits</td>
<td>17</td>
<td>1,099</td>
<td>2,361</td>
</tr>
<tr>
<td>4 credits</td>
<td>22</td>
<td>1,465</td>
<td>3,148</td>
</tr>
<tr>
<td>5 credits</td>
<td>27</td>
<td>1,831</td>
<td>3,935</td>
</tr>
<tr>
<td>6 credits</td>
<td>32</td>
<td>2,197</td>
<td>4,722</td>
</tr>
<tr>
<td>7-18 credits</td>
<td>37</td>
<td>2,563</td>
<td>5,509</td>
</tr>
<tr>
<td>Additional fee per credit for more than 18 credits</td>
<td>NA</td>
<td>348</td>
<td>768</td>
</tr>
</tbody>
</table>

Law

<table>
<thead>
<tr>
<th>Credits</th>
<th>Technology Fee</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 credits (minimum)</td>
<td>$5</td>
<td>$971</td>
<td>$1,707</td>
</tr>
<tr>
<td>3 credits</td>
<td>9</td>
<td>1,454</td>
<td>2,559</td>
</tr>
<tr>
<td>4 credits</td>
<td>13</td>
<td>1,937</td>
<td>3,411</td>
</tr>
<tr>
<td>5 credits</td>
<td>17</td>
<td>2,420</td>
<td>4,263</td>
</tr>
<tr>
<td>6 credits</td>
<td>21</td>
<td>2,903</td>
<td>5,115</td>
</tr>
<tr>
<td>7-18 credits</td>
<td>25</td>
<td>3,387</td>
<td>5,967</td>
</tr>
<tr>
<td>Additional fee per credit for more than 18 credits</td>
<td>NA</td>
<td>465</td>
<td>834</td>
</tr>
</tbody>
</table>

Graduate Business Programs

<table>
<thead>
<tr>
<th>Credits</th>
<th>Technology Fee</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 credits (minimum)</td>
<td>$12</td>
<td>$800</td>
<td>$1,668</td>
</tr>
<tr>
<td>3 credits</td>
<td>17</td>
<td>1,200</td>
<td>2,501</td>
</tr>
<tr>
<td>4 credits</td>
<td>22</td>
<td>1,600</td>
<td>3,334</td>
</tr>
<tr>
<td>5 credits</td>
<td>27</td>
<td>2,000</td>
<td>4,167</td>
</tr>
<tr>
<td>6 credits</td>
<td>32</td>
<td>2,400</td>
<td>5,000</td>
</tr>
<tr>
<td>7-18 credits</td>
<td>37</td>
<td>2,800</td>
<td>5,833</td>
</tr>
<tr>
<td>Additional fee per credit for more than 18 credits</td>
<td>NA</td>
<td>381</td>
<td>815</td>
</tr>
</tbody>
</table>

Medical and Dental

<table>
<thead>
<tr>
<th>Credits</th>
<th>Technology Fee</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 credits (minimum)</td>
<td>$12</td>
<td>$583</td>
<td>$1,404</td>
</tr>
<tr>
<td>3 credits</td>
<td>17</td>
<td>874</td>
<td>2,100</td>
</tr>
<tr>
<td>4 credits</td>
<td>22</td>
<td>1,165</td>
<td>2,814</td>
</tr>
<tr>
<td>5 credits</td>
<td>27</td>
<td>1,456</td>
<td>3,519</td>
</tr>
<tr>
<td>6 credits</td>
<td>32</td>
<td>1,747</td>
<td>4,224</td>
</tr>
<tr>
<td>7-18 credits</td>
<td>37</td>
<td>2,038</td>
<td>4,929</td>
</tr>
<tr>
<td>8 credits</td>
<td>41</td>
<td>2,329</td>
<td>5,634</td>
</tr>
<tr>
<td>9 credits</td>
<td>45</td>
<td>2,620</td>
<td>6,339</td>
</tr>
<tr>
<td>10 credits</td>
<td>49</td>
<td>2,911</td>
<td>7,044</td>
</tr>
<tr>
<td>11 credits</td>
<td>53</td>
<td>3,202</td>
<td>7,749</td>
</tr>
<tr>
<td>12 credits</td>
<td>57</td>
<td>3,493</td>
<td>8,454</td>
</tr>
<tr>
<td>13 or more credits</td>
<td>61</td>
<td>3,784</td>
<td>9,159</td>
</tr>
</tbody>
</table>

1 Tier I comprises all Ph.D. and Masters degrees not specified in tiers II and III.

2 Includes technology fee.

3 Tier II comprises Education masters, Forest Resources masters, non-professional School of Medicine masters, Nursing masters, Oceanography and Aquatic and Fishery Sciences masters, Public Affairs masters, and Public Health and Community Medicine masters.

4 Tier III comprises Architecture and Urban Planning masters, Engineering masters, and Information School masters.

5 For the purposes of assessing tuition, a law student is any student solely pursuing the Juris Doctor degree. Visiting law students will be considered law students for tuition purposes. Students solely pursuing graduate degrees in the School of law—i.e., degrees other than the Juris Doctor degree—pay graduate tuition. A student concurrently pursuing the Juris Doctor degree and a graduate degree (concurrent law student) will be assessed the law tuition rate for all credits taken in a quarter when 6 or more credits are in School of Law courses. Concurrent law students, who have completed 135 credits for the Juris Doctor degree and are pursuing a graduate law degree, pay graduate tuition.
6 Does not apply to law students exclusively in Juris Doctor program.

7 A student concurrently pursuing a medical degree and a graduate degree will be assessed the medical tuition rate for all credits taken in a quarter when 6 or more credits are in School of Medicine courses.

Fees are subject to change without notice.

Tuition rates for resident and nonresident students apply to the academic year (autumn, winter, and spring quarters). Summer quarter tuition is listed in the Summer Quarter Bulletin and Time Schedule.

Tuition charges are based on student classification, e.g., undergraduate, graduate, or professional, and not on course level. Students pursuing the Doctor of Pharmacy degree are charged graduate tuition.

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; Medicine, Dentistry, $35; Law, $50.

Former students returning in the same classification, $35.

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, $52; abstract-only microfilming fee, $50; optional copyright service fee, $35.

Replacement Fees: Duplicate diploma, $10; student identification card, $5 (non-photo), $10 (photo).

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 $35 (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 of the quarter must pay full tuition.

New and Returning Students
1. A student who withdraws on or before the seventh calendar day forfeits 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.
Tuition Exemptions and Reductions

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 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.

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

“Access” Program for Older Adults
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.

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.

This content is a part of the University of Washington's Student Services and Financial Aid. For more information, please visit www.washington.edu/students/reg.

Category
Contact Office
Active duty military assigned to Washington and their children and spouses
Office of Special Services, 460 Schmitz, 206-543-6122, resquest@u.washington.edu
American Indian students who meet specific eligibility requirements
Office of Special Services, 460 Schmitz
Children of POWs or MIAs
Office of Special Services, 460 Schmitz
Children of Washington law enforcement officers or firefighters who died or became totally disabled in the line of duty
Office of Special Services, 460 Schmitz
UW faculty members and their children and spouses who are not Washington state residents
Academic Personnel Office, 85 Gerberding, 206-543-5630
Immigrants holding a refugee classification who have been in the United States less than one year
Office of Special Services, 460 Schmitz
Senior citizens under the Access Program
Registration Office, 206-543-8580, regoff@u.washington.edu
UW staff members and their children and spouses who are not Washington state residents
Office of Special Services, 460 Schmitz
TAs/RAs with half-time appointments
Graduate School, 201 Gerberding
Veterans who served in the Persian Gulf combat zone in 1991
Office of Special Services, 460 Schmitz
Veterans who served in Southeast Asia during the period of August 5, 1964-May 7, 1975
Office of Special Services, 460 Schmitz
Medical students in the WWAMI Program
School of Medicine, Office of Academic Affairs, A300 Health Sciences
Award recipients under the Washington State Scholars and Washington Award for Vocational Excellence (WAVE) programs
Office of Student Financial Aid, Outreach Services, 172 Schmitz
Students participating in the WICHE Program
Student Accounts and Cashiers Office, 129 Schmitz
The University

Academic Assessment
As part of an ongoing effort to ensure the quality of the education received by its students, the UW has instituted a comprehensive assessment program designed to measure student learning outcomes. This assessment program conforms with guidelines established by the state’s Higher Education Coordinating Board. From time to time, students may be asked to participate in outcomes assessment by completing satisfaction surveys, sitting for achievement examinations, compiling portfolios of their academic work, or providing other academic performance indicators. The purpose of all such activities is to monitor the quality of the University’s academic programs.

While it is a University requirement that students participate in these assessment activities when asked to do so, participants can be assured that assessment results will be treated in the strictest professional confidentiality. Whenever those results appear in University assessment reports or other public documents, they will be presented anonymously and in aggregate fashion.

Academic Sessions
University instruction is offered during autumn, winter, and spring quarters, each lasting approximately 11 weeks. The 8-week summer quarter is divided into two 4 1/2-week terms.

Accreditation
The University 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 associations 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 department to review programmatic accreditation documents.

Academic Programs
The University offers a wide range of undergraduate, graduate, and professional degree programs. In addition to these programs, the following educational opportunities are available.

Certificate Programs
www.extension.washington.edu/extinfo/
UW Extension offers more than 80 specially designed credit and non-credit evening certificate programs of study in many areas, primarily to working adults. Some certificate programs address such personal-interest areas as film, writing, and sound production. Other programs focus on specific careers in business, industry, and technology, offering specialized training that supplements other education and work experience. Students are prepared to enter new fields or to grow professionally in areas ranging from accounting to computer programming to project management. All certificate programs and instructors have been approved by the appropriate academic units. Programs are designed by advisory boards consisting of leading professionals in the field and UW faculty. To accommodate working professionals, UW Extension schedules most classes to meet evenings or weekends. Several certificate programs are offered to students at a distance through various technologies. Course fees and admission requirements vary, and enrollment in all certificate programs is limited. More information may be obtained by consulting the quarterly UW Extension catalog, available by telephone, 206-543-2320 or by UW Extension’s Web site.

Evening Classes
Opportunities for evening study at the University are varied to serve individual student interests and academic goals. For nonmatriculated (not formally admitted) students, UW Extension offers hundreds of evening credit courses and evening non-credit courses, which are described in the UW Extension section of this catalog.

Evening Degree Program
www.evedegree.washington.edu/evedeg/
Students can complete a bachelor’s or graduate degree in the evening through the University of Washington Evening Degree Program. A wide variety of courses are scheduled for the convenience of evening-degree students. Some programs use technology for the delivery of courses to make the degrees more accessible.

Evening Degree Program graduate-level programs include the Master of Science in Construction Management, the Master of Social Work (M.S.W.), the Master of Professional Accounting (M.P.Acc.), the Master of Public Administration (M.P.A.), Master of Business Administration (M.B.A.), the Master of Education (M.Ed.) and the Doctor of Education (Ed.D.) in educational leadership and policy studies with an emphasis in higher education, the Master of Applied Physics (M.S.), the Professional Master’s in Computer Science and Engineering (M.S.), the Master of Library and Information Sciences (M.L.S.), the External Doctor of Pharmacy Program (Pharm.D.), the Master of Health Administration (M.H.A.), and the Master of Medical Engineering (M.M.E.) which is offered by the Department of Bioengineering.

Distance Learning Degree Programs
Degree programs available to students that incorporate distance learning technologies include the Master of Social Work (M.S.W.), the Professional Master’s in Computer Science and Engineering (M.S.), the External Doctor of Pharmacy (Pharm.D.), the Master of Health Administration (M.H.A.), and the Education at a Distance for Growth and Excellence program for engineers (M.S.).

For more information on these programs call 206-543-6160 or 206-543-2320, or visit the Evening Degree Web site.

Summer Quarter
www.summer.washington.edu/uwsq/
During summer quarter, more than two thousand courses in most major fields are available to graduate and undergraduate students pursuing degree programs on a year-round basis as well as to summer-only students seeking to broaden, intensify, or refresh subject-matter competence. Summer-only students can apply for admission as nonmatriculated students and can earn credits which may apply toward a degree at another college. This status also accommodates teachers and school administrators who take special-interest courses to earn additional university credits and postbaccalaureate students who do not desire formal admission to a graduate or second undergraduate program.

Credits earned during summer quarter are evaluated as residence credits and, with the exception of separate fee schedules for medical and dental students, summer quarter fees closely parallel those of the other quarters. A complete listing of summer-quarter courses is published in the Summer Quarter bulletin, available on request from the University of Washington, Office of Summer Quarter, Box 354224, Seattle, Washington 98195, 206-543-2320 or 1-800-543-2320 or visit the summer-quarter Web site.
Resources and Facilities

Burke Museum
www.washington.edu/burkemuseum/

The Burke Museum of Natural History and Culture serves both the University and the public in its mission to encourage understanding of, and appreciation for, the natural and cultural heritage of Washington state, the Pacific Northwest, and the Pacific Rim. The Burke has three scientific divisions—anthropology, geology, and zoology—holding more than four million specimens. Collections of national and international ranking include Northwest Indian art, Northwest archaeology, vertebrate and invertebrate paleontology, mammals, and birds. Other noteworthy collections include Asian and Pacific ethnography, minerals and gems, paleobotany, arachnids, lepidoptera, and micropaleontology.

The collections are accessible for research by UW faculty, students, and visiting scientists. The museum’s public galleries feature long-term exhibits (“Life and Times of Washington State” and “Pacific Voices”), as well as a series of changing shows on Pacific-region cultures and natural history. Hours are 10 a.m. to 5 p.m. daily, except July 4th, Thanksgiving, December 25th, and January 1st. Admission is free to UWire staff and students.

Computing Resources
www.washington.edu/computing/
www.washington.edu/oep/

The diverse computing and networking needs of instructional and research groups on campus are served by central organizations as well as individual schools, colleges, and departments. Together these provide a variety of computer, facilities, and support services to the UW community. A wide array of computing options and services is offered by Computing and Communications (C&C), the central UW organization for computing and networking, and by UWired, a collaborative effort to integrate information technology into teaching and learning.

Students, faculty, and staff members can create accounts on computers provided by C&C, which give them access to tools for teaching, learning, and research. They can use Internet and Web resources including MyUW, a personal portal to UW resources, and servers where they can create Web pages. They can browse the UW course catalog and Time Schedule; use email, get news and campus events; research term papers; search library catalogs; and use software for statistics, graphics, programming, and text formatting. In addition, UW Internet Connectivity Kit software allows them to connect their own computer to the Internet, either from home (via a modem and a phone line) or from a residence hall or office (usually via Ethernet). To obtain the personal network identification (UW NetID), that provides access to these resources, see www.washington.edu/computing/uwnetid/.

The University’s largest drop-in labs are operated by SACG. These labs are more than just a place to check email and do word processing—they are information commons, co-located with other services to provide students with a rich set of resources required to enhance learning. The labs offer PC and Macintosh computers connected to the campus network, free workshops, student consultation, and computers with special adaptive equipment to assist people with motor, visual, hearing, or learning impairments. For hours, locations, and additional information see depts.washington.edu/sacg/.

The Educational Technology Development Group operates the university’s Center for Teaching, Learning and Technology (CTLT), providing free assistance, workshops, and one-on-one faculty consultation. The CTLT is equipped with a variety of hardware and software to allow faculty to experiment with different technology options and receive assistance in using them effectively. In addition, resources are available for a fee in the John Locke Computer Center in Health Sciences. Students, faculty, and staff working on UW-related projects can use this campus lab for printing, posters, scanning, and digital video. For information, see net.hs.washington.edu/locke/

The CTLT also is home to the development efforts behind Catalyst, a project to support innovation in teaching via the Web. Catalyst provides educators with a variety of hardware and software to allow faculty to experiment with different technology options and receive assistance in using them effectively. In addition, resources are available for a fee in the John Locke Computer Center in Health Sciences. Students, faculty, and staff working on UW-related projects can use this campus lab for printing, posters, scanning, and digital video. For information, see net.hs.washington.edu/locke/

Ethnic Cultural Center and Theatre

The Ethnic Cultural Center and Theatre complex is a facility for student-organized events and activities. Twenty-four of the University’s student organizations use the ECC/TC as their center of activity. The staff of the center offers students opportunities for the development of cultural, social, and student-government programs. The Ethnic Cultural Center/Theatre complex also maintains an outstanding theatre facility which provides opportunities for students interested in participating in or creating on-stage productions, symposia, and other events.

Office of Educational Assessment
www.washington.edu/oea/

Testing and educational evaluative services for University departments and individual students are available at the Office of Educational Assessment. Of particular interest to prospective and entering students are the office’s programs for admissions testing, including the Scholastic Assessment Test (SAT), and for placement testing in mathematics and foreign languages. Also, the Office administers a variety of tests for international students and others for whom English is not their native language. These tests are used for admission and Academic English Program (AEP) placement or waiver. For the University student approaching graduation, the Office administers tests required for admission to graduate, law, medical, and other professional schools, as well as those tests often requested by prospective governmental or private employers. The Office is located at 453 Schmitz. For more information, and test times and dates, call 206-543-1170.

English As A Second Language Department
www.eduoutreach.washington.edu/esl/

The English As A Second Language Department offers a variety of courses to help students improve their English and learn more about American culture. Additional information appears in the University Extension section of this catalog.

Hall Health Primary Care Center
depts.washington.edu/hhpcweb

The University provides outpatient health and medical care for students, faculty, staff, and their families, and others through the Hall Health Primary Care Center. Located on campus, the Center is staffed by physicians and nurse practitioners affiliated with the UW Physicians group (UWP) and is accredited by the Accreditation Association for Ambulatory Health Care.

Services include immunizations, acute care, diagnosis and treatment of illness or injury, employee health, and health education.

The following specialties are represented: internal medicine, family practice, women’s health, sports medicine, physical therapy, mental health, adolescent medicine, pediatrics and prenatal services, dermatology, minor out-patient surgery, nutrition services, and travel medicine. Common conditions in other specialties also may be treated. The Health Education staff offer a variety of health-
promotion services including providing learning resources, assistance with self-care, and educational programs.

The following services are provided at no cost for students: unlimited visits with HHPCP consulting nurses; advice about concerns for HIV and STD exposures; reproductive health counseling for women; unlimited access to the Wellness Resource Center; blood pressure screening on a first come, first served basis; after hours consulting nurse service for urgent medical problems; one visit per quarter for acute illness/injury (excluding routine physicals and annual women's exams); and one crisis intervention counseling session per full academic year. Fees are charged for follow-up visits and preventative care visits, as well as specialty services, including but not limited to mental health, nutrition services, physical therapy, travel clinic, lab work, and x-rays.

UW Student Accident and Insurance Plan is not necessary to use Hall Health Primary Care Center. Student insurance is recommended if the student is not otherwise covered by a private insurance plan. Hall Health Primary Care Center accepts most insurance plans.

Dependents of students, faculty, and staff, and others are welcome at Hall Health Primary Care Center and are eligible for care on a fee-for-service basis.

Student health insurance, available through the UW, should not be confused with services through Hall Health Center. A student may use Hall Health Center services without having student insurance. Occasionally, injuries and illnesses occur which may require extensive diagnostic lab tests, x-rays, medications, and treatment in an emergency room, off-campus clinic, or hospital, and which may involve surgery, rehabilitation, or prolonged therapy. The student should protect himself or herself against such major medical expenses by obtaining student health insurance (if not covered by family health insurance or other health plans). This low-cost medical-surgical-hospital policy, designed to meet those specific needs, may be purchased at the time of registration.

Hall Health Primary Care Center is open five days a week, Monday through Friday, 8 a.m. to 5 p.m., except Tuesdays, when the clinics open at 9 a.m. Selected clinics may offer appointments before or after the usual hours.

Additional information may be obtained from Hall Health Primary Care Center, Box 354410, University of Washington, Seattle, WA 98195, 206-685-1011, or from the Hall Health Web site (www.hallhealthcenter.com).

Henry Art Gallery
www.henryart.org

The Henry Art Gallery, the art museum of the University, brings nationally noted special exhibitions of contemporary and historical work in all media to the campus community. The museum’s offerings include exhibitions, lectures, symposia, and an active publishing program. The Henry's permanent collection includes a large research collection of ethnic textiles and Western dress as well as a small but distinguished collection of European and American paintings, prints, drawings, photographs, and contemporary American ceramics and Japanese folk pottery.

Hailed as the Northwest's premier contemporary art museum, the Henry Art Gallery offers challenging, thought-provoking visual art exhibitions and brings innovative programming to the region. The Henry organizes exhibitions and hosts nationally and internationally touring exhibitions including such recent shows as the wildly popular Superflat and the intriguing exhibition Gene(sis): Contemporary Art Explores Human Genomics. Founded in 1927, the museum’s major renovation, completed in April 1997, quadrupled its size.

The Henry Gallery Association offers membership to students, faculty members and the community for the purpose of supporting the museum’s programs. UW students are admitted free at all times. For details, please call the Henry at 206-543-2281 or visit its Web site at www.henryart.org.

Intercollegiate Athletics
www.gohuskies.com

The Department of Intercollegiate Athletics operates an integrated program for men and women. Intercollegiate competition is limited to full-time students.

There are twelve women's teams: cross-country, soccer, volleyball, gymnastics, basketball, swimming, indoor track, tennis, golf, softball, outdoor track and field, and crew. Women’s competition is in the ten-team Pacific-10 Conference (Pac-10).

Eleven sports are offered for men's competition: baseball, basketball, crew, cross-country, football, golf, soccer, swimming, tennis, outdoor track, and field. Men’s teams compete on a full Pac-10 Conference schedule, as well as with other institutions locally, regionally, and nationally. The University is a member of the National Collegiate Athletic Association.

Facilities available to intercollegiate athletic teams are Bank of America Arena at Hec Edmundson Pavilion, Pavilion Addition, Husky Stadium, Dempsey Indoor Practice Facility, Husky Baseball Field, Husky Softball Field, Conibear Shellhouse and other crew facilities on Lake Washington at the eastern boundary of the campus, the Lloyd Nordstrom Tennis Center, Husky Soccer Field, and the Washington National golf course in Auburn.

Office of International Programs and Exchanges
depts.washington.edu/ipe/

The Office of International Programs and Exchanges (IP&E) administers and cooperates in more than 80 international-study programs in Latin America, Europe, the Middle East, Africa, and Asia. Qualified undergraduate and graduate students are enrolled concurrently at the University and abroad, earning UW credit and maintaining residency and financial aid eligibility. Quarter, semester, and academic-year programs are offered. Opportunities for study include language and liberal arts courses, advanced language programs requiring two to three years of college-level language preparation, and specialized professional programs. The University also has more than 100 reciprocal exchange agreements with major research institutions abroad, including universities. These arrangements allow qualified UW students to enroll in regular courses at the foreign university while maintaining full UW standing.

Many overseas programs are supported by scholarships from private endowments. Additional scholarship support is available to undergraduate students and special consideration is given to underrepresented groups of students.

Program information and counseling are available from the Office of International Programs and Exchanges, 516 Schmitz, Box 355815; 206-543-9272; ipe@u.washington.edu.

Language Learning Center
depts.washington.edu/llc/

The Language Learning Center (LLC) provides technological and pedagogical resources for faculty and students to teach, learn, and research languages and cultures. The LLC develops and acquires software, audio, and video materials for course work, reading and aural/oral teasing, and class assignments. The LLC offers audio, video, satellite, and cable TV facilities and services, with multi-standard video and videodisc equipment available upon reservation. The LLC recording studio is used to create original native-speaker resources for use in language instruction. Audio media sales to large language classes augment Web-based resources. Computer-assisted language materials integrating interactive digitized audio, video, and graphics/animation are developed for student use in the LLC. The Language and Culture Room is a general-purpose facility used for informal language practice, moderated conversation groups, and special events, such as cultural activities, feature and documentary video and film viewing, and technology and pedagogy seminars. Two computer labs provide digital multi-media coursework, multi-lingual word processing, email, and Web browsing. Two digital multi-media classrooms can be reserved by instructors.

The media sales office provides take-home media for students. The LLC is located on the ground floor of Denny Hall and is open during regular academic sessions.

University Libraries
www.lib.washington.edu

The University Libraries, with more than six million volumes, consists of the Suzzallo and Allen Libraries, Odegaard Undergraduate Library, the Health Sciences Library and Information Center, East Asia Library, 15 branch libraries, and the UW Bothell and UW Tacoma Libraries. The University Libraries maintains nationally ranked collections in fisheries, forestry, East Asian languages and literatures, Scandinavian studies, and Slavic and South Asian area studies. In addition to printed books and periodicals, the Libraries' holdings include e-books and e-journals, archival materials and manuscripts, maps, newspapers, microforms, research reports, media materials, CD-ROMs, government publications, photographs, and architectural drawings.

The Libraries Information Gateway provides access to the UW Libraries Catalog, dozens of licensed databases (many of which are full text) covering a wide array of subjects, e-journals, links to Internet resources selected by UW Libraries subject specialists, tools, and UW Libraries self-initiated services like renewing checked-out material and requesting materials from other University Libraries units online. The Information Gateway is accessible from all Libraries locations or from anywhere in the world at www.lib.washington.edu.

The Suzzallo and Allen Libraries, a combined facility, house the major social sciences and humanities collections. The Suzzallo Library serves as the central acquisitions and processing unit of the campus libraries system and contains the interlibrary borrowing service, fee-based document delivery service (Library Express), and the public-service divisions of Government Publications, Map
Collections, Microform and Newspaper Collections, Reference and Research Services, Periodicals, and International Studies (Near East, Slavic and Eastern European, South Asia, and South America). Reference and research assistance is available during most library hours. The 1925 and 1935 sections of the Suzzallo Library, including the beautiful Suzzallo Reading Room, have been closed since 2000 for seismic renovation, but will open again in the fall of 2002. The Allen Library houses the Natural Sciences Library, and Manuscripts, Special Collections, University Archives, which includes the Pacific Northwest Collection. The University Libraries’ administrative offices are located also in Allen.

The Odegaard Undergraduate Library (OUGL) supports undergraduate teaching and learning through an extensive collection of books, periodicals, and media; collaborative learning spaces; specialized reference services; and general-access computing. The collection is interdisciplinary, with an emphasis on materials in the social sciences and the humanities. OUGL is the primary reserve unit for non-health-sciences classes. Many reserve materials are available electronically through the Libraries Catalog or MyUW (myuw.washington.edu). Media services and materials for course-related usage are provided in the University Libraries Media Center in OUGL. OUGL librarians also offer classes on how to use the library, including computerized indexes and search strategies for term papers.

The Health Sciences Libraries (HSL) house the largest and most comprehensive collection of health-sciences materials in the Pacific Northwest at three locations: Health Sciences Library and Information Center, located in the Health Sciences Center; the Social Work Library, located in the School of Social Work; and the K.K. Sherwood Library at Harborview Medical Center. HSL supports education, research, and patient care in the fields of dentistry, medicine, nursing, pharmacy, public health, and social work, as well as in the related behavioral, biological, and quantitative sciences. In addition to a print collection of 350,000 volumes, the libraries offer access to a wide range of non-print resources and provide extensive user services, including curriculum-based instructional support; interlibrary loan services for health-sciences personnel, and document delivery services for affiliates and non-affiliates. HSL serves as headquarters for the National Network of Libraries of Medicine/Pacific Northwest Region (NN/LM PNR), with responsibility for promoting access to biomedical information resources in Alaska, Idaho, Montana, Oregon, and Washington. In partnership with the Health Sciences Center, HSL houses the Integrated Advanced Information Management System Program, the Research Funding Service, the Primate Information Center, the Bioinformatics Consultation Service, and the Health Sciences Microlab.

The East Asia Library is one of the major resource centers of its kind in the United States and is an international leader in the provision and development of electronic services for its subject areas. The collections are especially strong in anthropology, archaeology, economics, history, art, languages, literature, law, music, political science, religion, and sociology with respect to the histories and cultures of China (including Taiwan and Hong Kong), Japan, Korea, Inner Asia, and Tibet.

Fifteen subject-oriented branch libraries, generally located in close proximity to the schools, colleges, and departments they serve, provide a wide range of library services to faculty, students, and staff. Larger branches include the business, engineering, music, and natural sciences libraries.

University Research Facilities

In addition to the campus facilities described in this section, the University has numerous educational and cultural resource centers. Academic or research activities and facilities that are of general significance in all or many fields of knowledge throughout the University are listed in the Research section of this catalog; others are described in individual school or college sections.

University Theatres

The School of Drama operates three theatres: the Playhouse, with a thrust stage; the Penthouse Theatre, the first theatre-in-the-round built in America; and Meany Studio Theatre, which seats 225. Faculty- and student-directed plays drawn from the full range of world dramatic literature are presented throughout the year.

The School also gives technical and design support to opera and dance productions of the School of Music and the Department of Dance.

Women's Center

The Women's Center, located in Imogene Cunningham Hall, promotes the advancement of women on campus and in the community by offering a wide variety of non-credit workshops and classes including college success classes (GRE preparation courses, computer, and writing classes); career and financial classes; fitness, health, and creativity classes; the Noontime Lecture Series; the Women for the Common Good lecture series; the Distinguished UW Women's Scholar Series; and the Feminist Research and Activist Forum. The Center provides services for women re-entering the University and houses a modest library with a job board and scholarship information.

Housing and Food Service

University-Owned Housing

Residence Halls

The UW provides housing for more than 5,300 students in eight residence halls. All are located within easy walking distance of classrooms and other campus facilities. Food service is available to residence hall students at locations throughout the campus through the use of the À La Carte Plus¹⁷ debit-card system. Students live in an environment of responsible freedom, and a residential-life staff enhances the University experience through a variety of educational, cultural, and social programs.

Single-Student Apartments

Family Housing

Convenient apartment housing is available for about 500 student families.

For detailed information on housing or the Husky Card, visit the Housing and Food Services (HFS) Web site (above); email HFS at hfsinfo@u.washington.edu; write to the Student Services Office, Box 355842, Seattle, WA 98195-5842; or call 206-543-4059.

Food Service

University Food Services operates dining facilities throughout the campus. The diverse schedules and dietary preferences of the campus community are accommodated by providing full meal service, à la carte menu items, and catering services, as well as convenient hours of operation.

Food may be purchased through the Husky Card program at all University Food Services facilities and on-campus convenience stores. This program, available to the entire campus community, offers prepaid meal service through use of a debit card. The Husky Card (your UW ID card) provides the flexibility for purchase of food at many locations on campus. The card may also be used at the UW Bookstore and other UW facilities. For more information on the opening an account, call 206-543-7222, or visit the HFS Web site at www.washington.edu/hfs/.

Transportation and the U-PASS

Walking and biking are the best ways to get to campus, but when you need another transportation method, use the U-PASS. The U-PASS program provides students with many benefits at a highly discounted price. With a U-PASS sticker, you get free rides on all regular Metro, Community Transit and Sound Transit Express bus service throughout the region, discounted rides on the Sounder commuter train service, free trips on the Night Ride shuttle, free parking when you drive with other U-PASS holders, subsidized vanpool fares, discounted bike helmets and light sets, and discounts at many local merchants. In addition, the U-PASS funds bicycle improvements, including more secure racks and lockers.

The U-PASS sticker is sent with registration confirmation materials before each quarter.

Having a U-PASS provides many alternatives. Although expensive, parking is available for those students that must drive. An easy way to avoid paying for parking is to ride or drive with someone else. Two U-PASS holders in a car get free parking in the E1 lot (near the stadium) when they arrive between 7:00 and 10:00 a.m., and three U-PASS holders get free parking on the main campus. Other student parking is available for a daily fee in the E1 lot, which fills up quickly. A limited number of parking permits are available from Parking Services to commuter students on a first-come, first-served basis the first day of each quarter.

For more information, visit the U-PASS Web site at www.washington.edu/upass/ or contact the Transportation Office at upass@u.washington.edu or 206-543-0450.
Student Services

Office of the Vice President for Student Affairs

The Division of Student Affairs assists the University in fulfilling its academic mission by providing a broad range of services and programs designed to further the educational and personal development of students. The Division consists of ten units: Admissions and Records, Center for Career Services, Student Counseling Center, Disabled Student Services, Housing and Food Services, Recreational Sports Programs, Student Financial Aid, Student Publications, and Student Activities and Union Facilities.

Students are encouraged to contact the Office of the Vice President for Student Affairs, 206-543-4972, 476 Schmitz, for information concerning various aspects of extra-class life at the University.

Center for Career Services

deps.washington.edu/careers/

The University’s Center for Career Services, which includes a Minority Job Placement Program, offers career information and services to assist undergraduates, graduate students, and alumni (1) to make a viable connection between their academic backgrounds and their career or long-range employment objectives, (2) to develop effective job-seeking strategies, and (3) to find suitable employment upon leaving the University or to change employment thereafter.

A variety of programs are offered and include individual and group career counseling, career options and job-search seminars, employer and alumni career panels, mock interviews a résumé database, career-related internships and career fairs, credential files, online job listings, campus interviews, employee information, and student employment listings (including on-campus jobs). Students may also send questions to ccsscnslr@u.washington.edu.

Students are encouraged to begin using the services of the Center early in their academic careers. This is best accomplished by visiting the Center at 134 Mary Gates Hall or calling 206-543-0535 to make an appointment with a career counselor. The Center also maintains a Web site at deps.washington.edu/careers/.

Childcare Program

www.washington.edu/students/ovpsa/cc/

The Childcare Program provides eligible student-parents with direct financial assistance to purchase services at licensed childcare facilities in the Seattle-King County area. To apply, students must submit the Free Application for Federal Student Aid (FAFSA) to the designated processor by the end of February each year and a Childcare Request Application to the Childcare Office, 482 Schmitz, before the end of May each year. Brochures describing the program are available at the Childcare Office, 206-543-1041.

Student Counseling Center

deps.washington.edu/sccc/

All currently enrolled, matriculated students at the University may make use of the services of the Student Counseling Center and its staff of psychologists and counselors to discuss educational progress, personal concerns, or career goals. Individual, couples, and group counseling is provided for a variety of issues including academic, career, personal, and social issues. Because of the number of students seeking help, the Center offers only short-term therapy. Psychological tests, when necessary, are provided as part of the Center’s counseling service. Workshops on special topics such as test anxiety, time management, test taking, note taking, and stress management are available.

There is a $15 fee for the first assessment appointment, which is provided to determine if the Student Counseling Center’s services are appropriate. Individual appointments after the first visit currently cost $30 each. For students financially unable to pay the fee, an extended-payment plan is offered. The Center is located on the fourth floor of Schmitz Hall, 206-543-1240. Additional information may be found at the Center’s Web site.

Disabled Student Services

The University is committed to ensuring facility and program access to students with either permanent or temporary physical, sensory, or psychological disabilities through a variety of services and equipment. The Disabled Student Services (DSS) Office coordinates academic accommodations for enrolled students with documented disabilities. Accommodations are determined on a case-by-case basis and may include classroom relocation, sign language interpreters, recorded course materials, note taking, and priority registration. DSS also provides needs assessment, mediation, referrals, and advocacy as necessary and appropriate. Requests for accommodations or services must be arranged in advance and require documentation of the disability, verifying the need for such accommodation or service.

Technical and adaptive equipment is available through both DSS and Computing and Communications. Information about adaptive-technology computer software and equipment and their locations on campus may be obtained from DSS. Publications include Access Guide for Persons with Disabilities, (showing classroom access, elevator locations, ramps, parking, and restrooms), and the Campus Mobility Route Map, as well as other publications.

To the maximum extent possible, students with disabilities are integrated into the general student population and their problems are solved through the usual channels. Various other departments offer additional services: the Transportation Department provides free on-campus transportation with wheelchair lifts for students with mobility limitations through Dial-a-Ride, 206-685-1511, and UW Night Ride, 206-799-4151 after 6 p.m.

Additional information is available from Disabled Student Services, 448 Schmitz, Box 355839, 206-543-8924 (Voice), 206-543-8925 (TTY), uwsss@u.washington.edu.

Student Health Insurance Program

www.washington.edu/students/ovpsa/insurance.html

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 Student Insurance Office, 469 Schmitz, 206-543-6202; 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
www.washington.edu/students/gencat/front/international.html
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 Special Services
The Office of Special Services, 460 Schmitz, assists students eligible for veterans’ educational benefits, advises and monitors students who must meet English As A Second Language requirements, and administers certain tuition-reduction programs (see Procedures and Fees section).

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 on the Web at www.washington.edu/students/osfa/ or may be obtained by calling 206-685-9535.

There is a limited amount of grant aid for graduate students and assistance is generally limited to long-term loans and work opportunities. Information on graduate fellowships, scholarships, and teaching and research assistantships may be obtained from the graduate program coordinator in the individual department or program (see the Graduate School section of this catalog).

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, 2002, for the academic year beginning in September 2002).

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
www.washington.edu/students/handbook/legal.html
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. To make an appointment or learn more about SLS, call 206-543-8486 or visit the office, 31 Brooklyn Building, Box 354563, 4045 Brooklyn Avenue NE. No legal advice is given over the phone.

Student Publications
www.washington.edu/students/studentdir.html
www.thedaily.washington.edu
Student publications at the University include The Daily and the Student Directory. 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
depths.washington.edu/sauf/
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
depths.washington.edu/sao/
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
depths.washington.edu/asuweb/
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 has an annual budget of approximately $1 million, 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
Sports Skills Instruction: Recreational Sports offers non-credit classes in aikido, archery, climbing, cycling, equestrian, fencing, ice hockey, judo, karate, kayaking, kendo, kung fu, lacrosse (men's and women's), rowing, rugby, sailing, scuba diving, snow skiing, soccer, tae kwon do, tai chi, tennis, weight training, and yoga. For more information, call Sports Skills Instruction at 206-543-2571.

Club Sports: Recreational Sports offers club sports, including aikido, archery, climbing, cycling, equestrian, fencing, ice hockey, judo, karate, kayaking, kendo, kung fu, lacrosse (men's and women's), rowing, rugby, sailing, scuba diving, snow skiing, soccer, tae kwon do, ultimate Frisbee (men's and women's), volleyball (men's and women's), and water polo (men's and women's). For more information, contact Club Sports at 206-543-9499.

Intramural Sports are offered for men, women, and men and women combined in a variety of activities, including basketball, bowling, crew, flag football, inner-tube basketball, soccer, softball, swimming, tennis, track and field, ultimate Frisbee, and volleyball, as well as special events. For more information, call Intramural Sports at 206-543-8558.

The Golf Driving Range is located at the foot of the 45th Street viaduct and is the center for all golf activities on campus. The facilities include 43 hitting tees, and two putting and chipping greens, and are open seven days a week. Group lessons are available for beginning players. For more information, contact the Golf Driving Range at 206-543-8759 or seagreen@uwashington.edu.

Waterfront Activities Center (WAC): The campus center for water sports (e.g., canoe rentals, sailing, kayaking, rowing) is located at the WAC southeast of Husky Stadium. The WAC offers locker rooms with saunas, private boat storage for non-motorized craft, and group rental of the lounge and meeting rooms. The facility is open from 10 a.m. to dusk, seven days a week. For more information, contact the WAC at 206-543-9433 or h2o@uwashington.edu.

Student Rights and Responsibilities

Student Conduct Code [www.washington.edu/students/handbook/conduct.html]

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 President for Student Affairs, 476 Schmitz.

Computer Use Policy [www.washington.edu/computing/rules/]

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 Computing and Communications Information at 206-543-5970.

University Policy on Student Education Records [www.washington.edu/students/reg/ferpa.html]

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 [www.washington.edu/students/handbook/harrass.html]

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, 206-543-0283, 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.
The Office of Research

Acting Vice Provost for Research
Malcolm R. Parks

Associate Vice Provost for Research
E. James Davis

Director, Grant and Contract Services
Carol A. Zeuches

www.washington.edu/research/

The Office of Research provides a range of services in support of scholarly and scientific inquiry at the University of Washington. The Vice Provost for Research works with faculty to establish appropriate research policies, develop research-related initiatives, increase resources available for research, and guarantee that the successes of faculty and the public benefits of research programs are widely known and understood. The Office of Research cooperates with the Graduate School and other units within the University that depend on or are affected by the research and graduate education activities of UW faculty. The Office of Research also serves as a point of contact with the public and private sectors on issues relating to research, including the solicitation of corporate research support. The Office of Research works with the Office of Intellectual Property and Technology Transfer (OIPPT) to facilitate the transfer of research discoveries, and the promotion of economic development.

The Office of Grant and Contract Services (GCS) reviews and approves all proposals to outside agencies for support of UW research. The Director of GCS is responsible for negotiating the terms and conditions for grants and contracts in consultation with the principal investigator and appropriate UW administrators. All grant and contract awards received by the University are communicated to GCS, which maintains a historical record of grant activity. GCS is also responsible, through its Human Subjects Division, for managing the human subjects review process at the University in cooperation with University's Human Subjects Review Committees.

Funding for UW Research

External Support for Research and Training is fundamental to the UW’s established role as one of the nation’s leading research institutions. During fiscal year 2001, the University received roughly $707 million in grant and contract support for a wide array of research and training programs. Since the late 1960s, the University has ranked among the top five institutions in the United States in the receipt of federal research awards. About 80 percent of the University’s grant and contract funds comes from federal agencies, most of the remainder coming from foundations, industry, and other private sources. These funds are awarded in response to faculty-initiated, University-approved proposals for funds to support specific projects in accord with the University’s research, education, and public-service goals. Grant and contract funding supports about 5,900 full- and part-time employees and provides significant opportunities for students who work with faculty members in the conduct of research as a vital component of their education.

In addition to federal research funding, corporations provide an increasing amount of funding for research. Last year, the UW received more than $44 million in corporate research awards. Private gifts to the University total more than $103 million per year and also add significantly to the opportunities of students and faculty to pursue research interests.

Internal Support for Research at the UW is based in part on the principle of directing revenue that arises from UW research discoveries back into the University’s research enterprises. The Office of Research administers the Royalty Research Fund (RRF), which is derived from the UW’s central share of royalty and licensing income negotiated by OIPPT and the Washington Research Foundation with companies that commercialize University technologies. The goal of the RRF is to stimulate additional scholarly initiatives, to encourage faculty to explore new directions in research and scholarship, and to improve the environment for intellectual endeavors at the University. Proposals must demonstrate a high probability of generating important new scholarly materials or resources, significant data or information, or essential instrumentation resources that are likely to lead to external funding or that might lead to a new technology.

The RRF guidelines, procedures, and application forms are available from the Office of Research.

Special Facilities

In support of scholarship, research activities, and regular academic offerings, the University maintains a wide range of special facilities that provide unique educational opportunities. The following list is illustrative of the range and diversity of special facilities at the UW.

Applied Physics Laboratory
A research and development organization within the College of Ocean and Fishery Sciences, APL is one of four university research centers in the United States affiliated with the U.S. Navy. APL conducts a program of fundamental research, technology development, engineering, and education, emphasizing naval applications of ocean and polar science, acoustics, and engineering. APL has a $30 million annual research and development budget. The staff conduct research for the Navy, NSF, NASA, NOAA, ARPA, and other federal agencies and who participate in partnerships with private companies. In addition, about 60 graduate and undergraduate students participate in research at APL.

Burke Memorial Washington State Museum
An educational and cultural center whose function is to collect, preserve, research, exhibit, and interpret the natural and cultural objects of the human environment, particularly the Pacific Ocean, its islands, and mainland shores.

Henry Art Gallery
The Henry Art Gallery is a major art museum serving the campus community and the public. The newly renovated gallery contains a number of art galleries, study and research laboratories, and an auditorium.

Friday Harbor Laboratories
The Friday Harbor Laboratories facility is the principal marine-science field station of the University of Washington. Its faculty is drawn from various academic units of the University, including botany, fisheries, oceanography, and zoology, as well as visiting faculty members from many other U.S. and foreign institutions.

The Laboratories, located approximately 80 miles north of Seattle near the town of Friday Harbor on San Juan Island, offer a biological preserve of nearly 500 acres of wooded land with about two miles of shoreline. The island is one of the largest of the 172 that make up the San Juan Archipelago, located in the northwest section of the state of Washington between Vancouver Island and the United States mainland. In addition to the Friday Harbor site, the Laboratories’ administration has the responsibility for overseeing biological preserves leased or owned by the University on San Juan Island and Lopez Island. Goose and Deadman islands, biological preserves owned by the Nature Conservancy, are also under the stewardship of the Laboratories.

The Laboratories are located close to seawaters that range from oceanic to those highly diluted by streams, some with depths to 1,000 feet, others with bottoms varying from mud to rock, and water movements ranging from those of quiet bays and lagoons to those of swift tideways. The waters about the San Juan Archipelago abound in varied marine flora and fauna.

The Laboratories offer opportunities for independent and supervised research, as well as a varied program of instruction for graduate and undergraduate students. Throughout the year, use of the Laboratories’ facilities for research in various areas of marine science is encouraged.

Nuclear Magnetic Resonance Facility
The UW has one of the most advanced facilities for nuclear magnetic resonance (NMR), with high-field superconductivity magnets capable of investigating biomolecules, macromolecules, and solid state samples at frequencies of 500 MHz for protons. The UW also has a state-of-the-art 750 MHz spectrometer.

Center for Experimental Nuclear Physics and Astrophysics
The Center for Experimental Nuclear Physics and Astrophysics (CENPA) supports a broad range of experimental physics research. Investigators do basic research using in-house accelerators and are also engaged in non-accelerator research in solar neutrino physics in collaboration with investigators in Canada and Russia.
THE OFFICE OF RESEARCH

Oceanographic Research Vessels
These are operated for field study and research in Puget Sound and the Pacific Ocean. Of particular note is the R/V Thomas G. Thompson, a modern vessel capable of multidisciplinary research in most oceans of the world.

Speech and Hearing Clinic
Serves as a center for research in speech science, speech and language pathology, and audiology, and provides services to the public.

University of Washington Medical Center/ Harborview Medical Center
The University operates two major teaching hospitals: its own 450-bed University of Washington Medical Center and, under contract with King County, the 351-bed Harborview Medical Center.

University Libraries
With nearly six million volumes, an equal number of microforms, several million items in other formats, and more than 50,000 serial titles, the University of Washington Libraries houses one of the top research collections in the country and forms a part of one of the most innovative electronic campus information networks in the world. The fully integrated, computerized UW Libraries Catalog provides bibliographic information and circulation status for the cataloged holdings of the Libraries. The UW Libraries Catalog and an increasing number of other databases (ERIC, MEDLINE, INSPEC, PsychINFO, MLA Bibliography, etc.) may be searched by author, title, subject, publisher, keyword, and various numbers, including call number, International Standard Book Number (ISBN), International Standard Serial Number (ISSN), and Superintendent of Documents Number. Publication date and date ranges are among the limit options available.

The UW Libraries Information Gateway provides access through a single World Wide Web location to all the Libraries' resources, print and electronic, as well as tools, services, and the ability to search a wide range of Internet resources. For more information, call Reference and Research Services, 206-543-0242, or consult the Libraries' Web site (www.lib.washington.edu).

The Libraries also offer an extensive array of services at each of its 22 units. The Suzzallo and Allen Libraries, the Odegaard Undergraduate Library, the Health Sciences Library and Information Center, the East Asia Library, and 15 branch libraries each provide reference services and offer instruction in the use of library resources.

X-Ray Beamline Facility
Located at the Advanced Photon Source of the Argonne National Laboratory in Argonne, Illinois, this facility is operated by a Pacific Northwest consortium led by the UW. It supports the investigation of the properties of x-rays and their interaction with matter. The Advanced Photon Source uses synchrotron radiation to provide the most brilliant source of x-rays currently available.

Centers, Institutes, and Other Research Organizations
More than 170 centers, institutes and other organizations operate at the UW in support of faculty research activity. In many cases, centers and institutes are created to facilitate interdisciplinary research or to coordinate research involving many participants, some from outside the UW community.

Addictive Behaviors Research Center
Advanced Power Technologies Center (APT)
Aerospace & Energetics Research Program
Alcohol and Drug Abuse Institute
Alzheimer's Disease Research Center
APEC Internet Collaboration Center
APEC Study Center
AVID Clinical Trial Center
Behavioral Research and Therapy Clinics (BRTC)
Biomolecular Structure Center
Bone and Joint Center
Canadian Studies Center
Cardiovascular Research and Training Center
Cascade Center for Public Service
Cascadia Community and Environment Institute (CCEI)
Center for Advanced Research in the Arts and Humanities (CAR-TAH)
Center for Advanced Study and Research on Intellectual Property (CASRIP)
Center for AIDS and STD
Center for AIDS Research
Center for American Politics and Public Policy
Center for Anxiety and Depression
Center for Applied Microtechnology (CAM)
Center for Child Environmental Health Risks Research
Center for Clinical Research
Center for Clinical Research of Epilepsy
Center for Community Development and Real Estate
Center for Cost and Outcomes Research (CCOR)
Center for Design of Analog-Digital Integrated Circuits (CDADIC)
Center for Disability Policy and Research
Center for Ecogenetics and Environmental Health
Center for Educational Renewal
Center for Effective Schools
Center for Engineering, Learning, and Teaching (CELT)
Center for Environmental Design and Education
Center for Health Education and Research
Center for Health Management Research
Center for Inherited Diseases
Center for Instructional Development and Research
Center for Intelligent Materials and Systems (CIMS)
Center for International Business Education and Research (CIBER)
Center for International Trade in Forest Products (CINTRAFOR)
Center for Internet Studies
Center for Labor Studies
Center for Law, Commerce, and Technology
Center for Medical Education Research
Center for Multicultural Education
Center for Nanotechnology
Center for Process Analytical Chemistry (CPAC)
Center for Social Science Computation and Research (CSSCR)
Center for Streamside Studies
Center for Studies in Demography and Ecology
Center for Studies in Social Psychology
Center for Sustainable Communities
Center for the Study and Teaching of At-Risk Students (C-STARS)
Center for the Study of Teaching and Policy
Center for the Study of the Pacific Northwest
Center for Urban Culture
Center for Urban Water Resources Management
Center for Vascular Biology
Center for Videoendoscopic Surgery (CVES)
Center for West European Studies
Center for Women's Health Research
Center of Excellence for Chemically-Related Illness
Center on Human Development and Disability
Center on Reinventing Public Education
Child Health Research Center
Clinical Nutrition Research Unit
Columbia Basin Research
Comprehensive Center for Oral Health Research
Consortium for Risk Evaluation with Stakeholder Participation
Core Center for Gene Therapy
Cystic Fibrosis Center
Dart Center for Journalism and Trauma
deTornyay Center for Healthy Aging
Diabetes Endocrinology Research Center
Diagnostic Imaging Sciences Center
East Asian Studies Center
Electron Microscopy Consortium
Engineering Center for Surfaces, Polymers, and Colloids
EPA Northwest Research Center for Particulate Matter and Health
European Union Center
Fetal Alcohol and Drug Unit
Field Station for Protected Area Research
Fiscal Policy Center
Fisheries Research Institute
Friday Harbor Laboratories
General Clinical Research Center
George M. O'Brien Kidney Research Center
George Taylor Institute
George M. O'Brien Research Center
Geriatric Research, Education, and Clinical Center
Halbert Robinson Center for the Study of Capable Youth
Harborview Center for Sexual Assault and Traumatic Stress
Harborview Injury Prevention and Research Center
Human Interface Technology Laboratory (HIT LAB/HITL)
Human Services Policy Center (HSPC)
Institute for Economic Research
Institute for Ethnic Studies in the United States
Institute for International Policy
Institute for Nuclear Theory (INT)
Institute for Public Policy and Management
Institute for Risk Analysis and Risk Communication
Institute for the Study of Educational Policy
University's research sites is available in necessary for research universities. Detailed information about each of the many academic disciplines, and access to appropriate field sites is vital and

Field Stations

Field work is an essential component of research and instructional programs in many academic disciplines, and access to appropriate field sites is vital and necessary for research universities. Detailed information about each of the University's research sites is available in University of Washington Field Stations, an inventory available from the Office of Research. The following list of 30 sites represents a broad spectrum of types and locations.

Apache Point Observatory, Archaeology Field School, Big Beef Creek, Blue Glacier, Cheeka Peak Atmospheric Research Station, Chignik Lake, Clifford A. Barnes Research Vessel, Energy Test Homes, Friday Harbor Laboratories, Joe E. Monahan Findlay Lake Reserve, Lake Iliamna and Porcupine Island, Lee Forest, Manastash Ridge Observatory, Olympic Natural Resources Center,


The Impact of UW Research

Research programs at the UW benefit students, the state, and the nation. Over the last decade, these programs have produced life-saving advances in medical technology, support for key state and regional industries, research and analysis on critical public-policy issues, patented technologies, training for more than 10,000 graduate and professional students each year, as well as contributions to scholarly literature in virtually all major fields of the arts, sciences, and humanities. The following sections contain brief descriptions of a few of the many interesting research projects currently underway at the UW.

Earth, Ocean, and Atmospheric Sciences

UW earth scientists have long a tradition of concentrating on regional studies to learn more about the forces that continue to shape the Pacific Northwest. Recent evidence suggests that great earthquakes of magnitude 7 or 8 have occurred in the Pacific Northwest in the not-too-distant past, and are likely to recur at some time in the future. Data gathered from a network of seismic stations throughout the Pacific Northwest are permitting new faults in the region to be mapped and characterized. The first three-dimensional images of structures within the earth in this region are being generated. Lessons learned from seismic studies since the eruption of Mount St. Helens are being applied to eruptive activity around the globe, from Alaska to Mount Pinatubo.

Underwater observing platforms have been installed to monitor volcanic activity on the sea floor more than a mile and a half below the surface of the Pacific Ocean off the coast of Washington State. These undersea volcanoes and hydrothermal vents that out heated mineral-laden waters to nourish exotic ocean life forms and form rich metal deposits. The heat-loving organisms, capable of existing without light from the sun, are among the most ancient forms of life on earth.

UW atmospheric scientists have long been interested in polar research, including both the Arctic and the Antarctic. The University is one of the major centers in the world for studies of ocean currents, ice formation, ice movement, and air-sea-ice interaction in these regions. UW personnel have developed unusual expertise for operating in polar regions. Through the Applied Physics Laboratory, UW investigators regularly conduct studies from bases sited on Arctic pack ice and have deployed a series of weather buoys on the ice and in Arctic waters that form part of a worldwide weather-forecasting system.

An ice core containing an unprecedented record of climate conditions in a near-coastal area of Antarctica has been obtained by scientists in the UW Quaternary Research Center. The ice sample, which goes back 140,000 years through a complete ice-age cycle, was taken at Taylor Dome, the site of major changes in glacier cover that affected sea level at the end of the last ice age.

Work by UW atmospheric scientists has established the role of sulfate aerosol in global climate change. Other studies are shedding light on past and future El Niño weather events—intervals of especially warm ocean temperature that periodically appear around December in the equatorial Pacific and that disrupt weather patterns around the globe. UW researchers have developed a theoretical understanding of the mechanisms that give rise to the El Niño phenomenon. Cores obtained from coral formations in the Pacific provide a record of past El Niño events and may lead to more accurate forecasts of these weather changes in the future.

UW atmospheric scientists pioneered the study of clouds and weather systems by flying into the heart of storms approaching the Washington coast. Now, aeronautical engineering researchers at the UW will be able to gather weather data using a fleet of unmanned airplanes. With the advent of global positioning satellite technology, these unmanned aircraft can be piloted by computer on flights of more than a thousand miles to gather data to improve the accuracy of northwest weather forecasts.

The School of Fisheries, renowned for the development of the Donaldson salmon as well as for its contributions to the High Seas Salmon Program and Alaska Salmon Program, also has made many important contributions to the development of shellfish aquaculture in Puget Sound and around the world. The triploid oyster, prized for its superior characteristics, was developed by UW fisheries researchers.
mysterious content of "dark matter." Other studies range from the nature of cosmological subjects, from the study of solar system bodies to the nature of the universe. Astronomers at the University conduct research in a wide variety of astronomical subjects, from the study of solar system bodies to the nature of the universe. The UW's Interplanetary Dust Laboratory has pioneered the discovery and study of cometary and asteroidal dust. The Stardust mission led by UW astronomer Don Brownlee will gather and return samples of interstellar dust from a comet called Wild-2 in January 2004. Stardust, which was selected by NASA as the fourth flight mission in its Discovery program, was launched on an expendable launch vehicle in February 1999. The return capsule carrying the comet dust samples will parachute to Earth in January 2006.

The University has been a leader in the development and use of XAFS, a sophisticated x-ray tool for determining the structure of materials. Physicists studying condensed matter are engaged in the development of the Advanced Photon Source, a high-energy x-ray source that will be the most intense in the world. With this source it will be possible to carry out detailed studies of topics such as the growth and structure of liquid-crystal films; the structure on an atomic scale of proteins and new, specially tailored drugs; and the structure of thin films, ranging from one atom thick to multiple-layered heterostructures with many layers of atoms. The University of Washington Physics Department operated the Advanced Photon Source through 2005 as a member of the national user community. The University has been a leader in the development and use of XAFS, a sophisticated x-ray tool for determining the structure of materials. Physicists studying condensed matter are engaged in the development of the Advanced Photon Source, a high-energy x-ray source that will be the most intense in the world. With this source it will be possible to carry out detailed studies of topics such as the growth and structure of liquid-crystal films; the structure on an atomic scale of proteins and new, specially tailored drugs; and the structure of thin films, ranging from one atom thick to multiple-layered heterostructures with many layers of atoms.

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Biological Sciences

Research programs in the biological and zoological sciences take research teams to sites in the Pacific Northwest region and beyond, to remote corners of the world. Research in zoology has focused on the neurological basis of behavior and the origin of circadian rhythms, the physiology of insect development, and the role of hormones in metamorphosis, and the ecology of intertidal communities. Pioneering field studies of the male red-winged blackbird conducted by UW zoologists have helped to explain the phenomenon of territorial dominance in animals.

A multidisciplinary team of UW scientists has been intensely involved in the study of the recovery of life in the blast zone that resulted from the eruption of Mount St. Helens in 1980. Findings from that effort are changing how scientists understand and study the recovery of volcanic sites around the world.

In order to study the tops of trees and tips of branches where most budding, branching, and photosynthesis occur, and to understand what makes forests thrive, the UW has erected a construction crane in the Gifford Pinchot National Forest in southwest Washington. The crane's gondola can be moved in a 550-foot circle, giving researchers access to nearly six acres of old-growth canopy. The crane is the largest forest research crane in the world and the only one located in a temperate forest.

Forest nutrition studies initiated decades ago by UW researchers have produced one of the largest databases in the world on the growth characteristics of Douglas fir and western hemlock, and spawned a highly successful research cooperative comprising over 35 organizations. Today, the Stand Management Cooperative integrates research in forest nutrition, silviculture, wood quality, and modeling.

UW microbiologists have pioneered genetic engineering techniques for plants. A UW group applied the latest gene mapping techniques to the problem of how much genetic change is required in order for a new species to evolve, one of the central mysteries of evolutionary biology. Investigators from the College of Forest Resources and the Departments of Biochemistry and Botany have teamed up in this effort.

Researchers in the Department of Genetics in the College of Arts and Sciences have conducted basic research in yeast genetics that has led to a vaccine against Hepatitis B.

Health Sciences

Since its establishment many decades ago, the UW Health Sciences Center has become well known for its teaching, research, and patient care. University physicians and staff members pioneered the first successful long-term kidney dialysis techniques, which have led to lifesaving treatments for tens of thousands of people. Continuing research is leading to the production of simpler and more portable devices for patients suffering from kidney failure.

University physicians have been leaders in the development of bone marrow transplantation, which offers the hope of curing several forms of leukemia. E. Donnall Thomas, former head of medical oncology at the University, now professor emeritus and director emeritus of clinical research at the Fred Hutchinson Cancer Research Center, received the Nobel Prize in 1990 for developing bone marrow grafting techniques.

Fundamental research in biochemistry is unlocking the secrets of life processes at the molecular and cellular level. The discovery of protein phosphorylation—the reactions that regulate energy use, growth, and transformation of cells—by UW scientists Edmond Fischer and Edwin Krebs was recognized with the Nobel Prize for Medicine in 1992.

In 2001, Dr. Lee Hartwell, professor of genetics at the University of Washington and director of the Fred Hutchinson Cancer Research Center, received the Nobel Prize. His pioneering work in yeast genetics provided the foundation for understanding how normal cells divide and the mechanisms leading to the uncontrolled growth of cancer cells.

Building on work over the past three decades to understand the structures of ion channels in the cellular membrane, new efforts are directed toward the relationship between ion channel abnormalities and various diseases such as cystic fibrosis, certain bacterial infections, and forms of muscular dystrophy.

UW scientists have made important progress in understanding the causes of atherosclerosis, in understanding and isolating blood growth and blood clotting factors, and in studying the processes involved when white blood cells engulf and destroy bacteria. On another front, a UW team has developed a novel method to measure bone loss and to monitor the effectiveness of therapies to treat osteoporosis; the technology is being commercialized by a Seattle company.

In the School of Public Health and Community Medicine, a center in ecogenetics explores the genetic basis for cellular responses to environmental insults or other stresses. Research programs at the UW in the study of heart disease, diabetes, and sexually transmitted diseases have achieved international recognition.

Genetic engineering techniques leading to the transgenic mouse and the use of transgenic animals in the study of new treatments for disease have been pioneered at the University.

The School of Pharmacy has a strong program in pharmacokinetics, the study of how drugs are metabolized and the rate at which they affect target organs and are eliminated by the body. Research is aimed at the analysis and prediction of dangerous drug interactions.

The University's Center on Human Development and Disability is recognized for its pioneering work in the causes, prevention, and treatment of diseases and disorders leading to mental retardation and other developmental disabilities.

The UW School of Dentistry is renowned for its work in periodontology, the study of infectious diseases of the tissues surrounding the teeth. The School has the largest clinical service in the world dedicated to the challenges of treating patients with dental fears and phobias.

Social Sciences

Interactions among individuals and groups determine the texture of society. The study of these interactions is the province of social scientists, whose work ranges from basic research on perception to the effect of interest groups on public policy.

Nationwide attention has been given to the work of UW investigators studying couples and the common factors that underlie successful relationships. In related research, several investigators are examining the processes of interaction in small groups, from families to work teams.

The award-winning Social Development Research Group in the School of Social Work conducts innovative research on the causes and prevention of violence, crime, drug use, school dropout, and other problems that affect children and families.

Important research in leadership and motivation, in human memory, and in alcoholism and addictive behavior is being carried on in a number of academic disciplines. Alcoholism studies range from physiological experiments to model counseling programs for pregnant women to participant-observer studies of addictive behavior. The focus for this effort is the Alcohol and Drug Abuse Institute.

Social scientists have performed provocative studies on the changing role of urban neighborhood organizations. Another group has concentrated on deviant behavior, including juvenile delinquency and possible prevention strategies. Its work is part of a larger effort by faculty members and graduate students to explore the ways that society's institutions react to deviant behavior.

Anthropologists are studying the changes in fertility, medical history, and cultural adaptation of the Japanese-American community in the Pacific Northwest, and the challenges faced by immigrants from Vietnam and Laos. Other faculty members are pursuing problems in distant locales and times, such as the beginning of agriculture in the Nile Valley.

Geographers are studying regional issues, such as the economic linkages between the Pacific Northwest and other parts of the country, the design and financing of efficient and equitable transit systems, the recent surge in population of nonmetropolitan areas and its policy implications, and the geography of access to health care.

Economists continue working on models to predict the results of federal monetary and fiscal policy. A group of researchers is breaking ground in a relatively unexplored area, the economics of natural resources, comparing the costs and benefits of different patterns of usage. These investigations are designed to help policy makers evaluate alternatives.

Social scientists at the University have a special interest in international relations. The University has been a pioneer in research concerning the Near and Far East. In the Henry M. Jackson School of International Studies, scholars in political science, anthropology, sociology, and the humanities study the role of culture in international affairs. Economists and geographers study development, resource management, and international economics. Historians complement the work of social scientists in exploring the basis of current thought, and scholars in languages and literature provide essential knowledge of original texts and the relationship of language to culture.
Humanities and the Arts

Research in the humanities often fulfills a primary mission of humanistic study—the preservation of the literary and artistic achievements of mankind. One aspect of this research is textual scholarship, involving the identification and authentication of original texts and artifacts. New knowledge is also generated through reassessment of earlier texts and works of art.

Texts that form part of Egypt’s Nag Hammadi Library, found more than a quarter of a century ago but only recently translated from Coptic, may lead to a reinterpretation of early Christianity. Located near the upper Nile, the library contains documents from little-known monastic groups, previously unknown Christian gospels, and both familiar and unfamiliar sayings of Jesus. A UW scholar studying these texts expects them to have as great an impact as the discovery of the Dead Sea Scrolls. The texts also will shed more light on the heretical Gnostic movement, which offers a radically different interpretation of Genesis.

The earliest history of Buddhism is largely lost, because the first documented efforts to commit Buddhist scriptures to writing did not occur until 400 years after the death of the Buddha. This gap has been filled in part by the recent discovery of 57 fragments of Buddhist texts, the earliest yet found. UW professors and graduate students from the Department of Asian Languages and Literature are engaged in a joint project with the British Library to transcribe and interpret the texts, which are expected to help clarify the early development of Buddhist doctrine and literature.

Research often is meant to describe exclusively the generation of new knowledge, but in the humanities a growing number of faculty members explore the theoretical basis underlying our knowledge and the means of transmitting it. The focus for these studies has been a colloquium in theory involving faculty members and graduate students. Discussions on problems in the theory of narrative, for instance, may span literature, history, science, and psychoanalysis—in fact, wherever the written word is used. The colloquia have acted as catalysts for several scholarly articles and may lead to an expanded program encompassing other disciplines.

Theoretical studies also form an important component of research in the arts. Some faculty in the School of Music conduct extensive research in the scientific analysis of sound, known as systematic musicology. Studies in this field include the influence of vibrato on judgments of vocal blend; context and time in musical perception; and rhythmic responses of preschool children. Other faculty members are exploring new ways of creating music, including the use of computers.

The concept of scholarly achievement in the arts often is synonymous with performance or exhibition. The UW School of Music has on its faculty a number of nationally recognized composers, including two long-time recipients of research funds from the American Society of Composers, Authors, and Publishers (ASCAP). The awards are designed to encourage and assist writers of serious music. The School of Music also is home to one of the finest opera programs in the country.

The School of Art faculty includes nationally and internationally known artists and scholars in nearly every one of its ten studio, art history, and design disciplines. Studio artists carry on the age-old quest for aesthetic quality but also pursue stylistic innovation, as well as developing new techniques in such diverse areas as non-toxic water-soluble printing and computer-generated imagery. Many of the School’s art historians have helped reshape this young discipline through their studies of art as cultural expression.

The UW School of Drama houses the famous Professional Actors’ Training Program, which, besides teaching basic acting skills, provides an intensive introduction to the practice of the theatre arts. The program attracts dedicated students who work for demanding, scrupulous visiting directors from the commercial stage as well as for permanent faculty members with extensive professional experience. Graduate research in the history and practice of theatre forms an integral part of the School’s diverse program.

The University’s program in creative writing is one of the oldest in the country. It achieved prominence in the 1950s and 1960s, when its faculty included Theodore Roethke, winner of the Pulitzer Prize in 1953. The tradition of excellence continues, with current University poets and authors receiving critical acclaim throughout the nation, including Professor Charles Johnson, who was awarded the 1990 National Book Award for Fiction. This concentration of talent has made the University a center for literary activity in the Pacific Northwest.

The Center for advanced Research Technologies in the Arts and Humanities (CARTAH) supports and promotes computer-based research and creative work in the arts and humanities. The center helps foster liaisons between the research community and the University’s arts and humanities departments, and provides state-of-the-art computing and media resources. CARTAH has become known internationally as an important center for producing new digital art and plays a key role in developing educational technology at the UW.
UW Extension

Office of Educational Outreach (UW Extension, Summer Quarter, Evening Degree Program, and Distance Learning)

Vice Provost
David P. Szatmary

www.outreach.washington.edu

Established in 1912, UW Extension brings the University’s resources to the community by providing access to quality educational programs which meet ongoing professional and personal needs.

This section describes the various programs currently part of UW Extension. The quarterly UW Extension catalog contains details of the program offerings. It is mailed without charge to residents of western Washington, who may also receive it by calling 1-800-543-2320, by email at uweo@u.washington.edu or by writing to UW Educational Outreach, 5001 25th Avenue N.E., Seattle, WA 98105-4190. Catalogs can also be requested at UW Extension’s Web site, www.outreach.washington.edu.

Evening Degree Program

Many credit courses are offered each quarter for students pursuing a degree, as well as those who are not formally admitted to the University. The classes are intended for non-traditional degree seekers as well as for postbaccalaureate individuals pursuing new skills and knowledge. All evening credit courses are taught by University faculty members and lecturers, approved by the appropriate academic units. UW credit is awarded and the grades earned are included in GPA calculations. Matriculated students enrolling in these courses pay course fees in addition to regular tuition.

Graduate Nonmatriculated Program

Individuals not admitted to a graduate program who wish to enroll in a graduate-level course may apply for graduate nonmatriculated student (GNM) status. Credits earned as a GNM may be applicable toward a degree upon subsequent admission to a graduate program. Application forms are available from participating departments. The Graduate School: Graduate Study section of this catalog offers more details.

UW Extension Distance Learning

UW Extension Distance Learning delivers approximately 230 credit courses and over a dozen credit certificate programs. Courses are delivered by print, video, audio, and the World Wide Web, and typically consist of assigned texts, study guides, assignments, and examinations. Most courses use interactive Web sites, email and voice mail to enhance interactions with instructors as well as other students. Certain noncredit courses required for University entrance are available to those who wish to qualify for admission. Other courses provide subject matter for professional continuing education.

Courses are open to persons who prefer an alternative to on-campus classroom meetings. Matriculated University students often find distance learning a convenient way to earn credits during summers or during the evening, or a way of taking courses that would otherwise be unavailable due to schedule conflicts.

Formal admission to the University is not required for enrollment in distance learning certificate programs and UW Extension courses. Students may register at any time for most courses and have between three and six months to complete the work. As many as 90 credits earned through distance learning may be applied to a University baccalaureate degree. Upon successfully completing a course, the grade and number of credits earned are recorded on an official University transcript. Grades earned, however, are not computed in the University GPA, which is based solely on courses taken in residence. (This policy is currently under review.) UW Extension offers certificate programs to students at a distance through various technologies (see the Certificate Programs section of this catalog).

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English Language Programs

The English Language Programs (ELP) Department provides non-native speakers of English who are interested in improving language skills with the following services and resources:

The Academic English Program

The Academic English Program offers courses designed to help University of Washington non-native speaking students improve their academic English language skills. Some of these courses are offered online.

Although AEP courses do not carry credit for graduation, the courses are graded and are computed into the student’s GPA. These course require an additional fee separate from regular tuition.

All non-citizen applicants, including transfer students, are evaluated during the University admissions process to determine compliance with the minimum English proficiency standards based on test scores submitted by the applicants. For admission without English language requirements, the University of Washington requires a Test of English as a Foreign Language (TOEFL) computer-based score of 237 or higher, an SAT verbal score of 490 or higher, an ACT score of 20 or higher, or a Michigan Test of English Language Proficiency (MTELP) score of 90 or higher. Admission may be granted to international students with TOEFL scores in the range of 207-233 or MTELP scores in the range of 80-89.

ESL Extension Courses

The ELP offers many other ESL programs, courses and certificates for non-native speakers, including online learning, evening, conversation, grammar, business English, TOEFL preparation, and many more. These courses do not require admission to the University of Washington, and are offered throughout the year.

For more information about ESL services, including complete listings and descriptions of current ESL course offerings, contact the ELP office directly at UW English Language Programs, Box 354232, Seattle, WA, 98195-4232, 206-543-6242, or on the web at www.uwelp.net.

Noncredit Classes

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Advising and Recruitment

UW Extension is committed to providing needed resources and skills to the Puget Sound community. Through its Advising and Recruitment department, companies are contacted and customized training programs are provided. Information meetings on various courses are held at companies, on campus, and in downtown Seattle. Advisers are available to answer questions on any of UW Extension’s credit or noncredit courses or certificate programs. They may be reached at 206-543-6160.

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University of Washington, Bothell

The University of Washington, Bothell (UW Bothell) admitted its first students in autumn quarter 1990 and has grown rapidly since. UW Bothell is fully accredited as part of the University of Washington and awards a University of Washington degree. In addition, professional programs are accredited by their respective accrediting bodies.

All programs give particular attention to the development of skills appropriate to an advanced level of study, to writing and oral communication, to the analysis and assessment of information, and to collaborative work with other students. At present the following programs are offered: Bachelor of Arts in Liberal Studies, Bachelor of Arts in Business Administration, Bachelor of Science in Nursing, Bachelor of Science in Computing and Software Systems, Bachelor of Science in Environmental Sciences, Master of Education, Master of Business Administration, Master of Nursing, Master of Public Policy Studies, and a post-baccalaureate Teacher Certification Program for elementary school teachers. Minors are currently offered in computing, business, and education. A Master of Science in Computing and Software Systems is being planned for the 2003-2004 academic year. As state funding permits, options will be added in existing programs and additional undergraduate and graduate degree programs will be considered.

UW Bothell is committed to increased access to higher education for residents of north, northwest, and northeast Puget Sound. To serve a diverse student population, most programs offer part- and full-time study options, with day, late afternoon, and evening classes. The teacher certification program requires full-time study. Financial aid and a tuition installment plan are available.

UW Bothell is located on the former Truly Farms site, at the intersection of Interstate 405 and State Route 522. The campus is also home to the largest wetlands restoration project in the United States.

Degree Programs

Detailed descriptions of the academic programs offered at UW Bothell may be obtained by calling the Office of Admissions at 425-352-5000 or 1-800-736-6650. A brief overview of the programs is provided below. Undergraduate programs are offered at the upper-division level; students are expected to have completed their first two years (80 to 90 quarter credits) of college study prior to entry, and then to complete at least 90 additional credits at the upper-division level to earn the bachelor’s degree. The teacher certification program is offered as a postbaccalaureate program. The Master of Education degree requires a minimum of 45 credits, and the Master of Business Administration degree requires a minimum of 60 credits.

Interdisciplinary Arts and Sciences: The IAS program is an innovative and interdisciplinary program combining the methods, materials, and intellectual tools of the humanities, social sciences, and sciences. Because the ability to think, write, and speak effectively is a vital part of a liberal studies education, the program is designed to improve competence in these essential skills. The program leads to a Bachelor of Arts in Liberal Studies with degree options in American studies; society, ethics, and human behavior; culture, literature, and the arts; global studies; and science, technology, and the environment. Pending approval and funding, a Bachelor of Science in Environmental Science will begin in autumn 2002.

Business Administration: The business administration program offers an integrated approach to the study of business. The program emphasizes effective oral and written communication, teamwork in a diverse workforce, entrepreneurial management, high technology and the global business environment. With close ties to the greater Seattle business community, a “real world, hands on” approach is offered. In addition, business students complete courses in liberal studies to better understand the larger social and cultural context in which business functions. The undergraduate curriculum focuses on essential business core courses and currently offers options in marketing, management, innovation and technology management, finance, and international environment.

At the graduate level, the business program offers a Master of Business Administration degree with a focus on technology-oriented businesses and is designed for working professionals. The program covers advanced topics in finance, accounting, marketing, project management, and organizational behavior, within the context of the unique opportunities and challenges facing high-tech companies today.

Both the Bachelor of Arts in Business Administration and the Master of Business Administration degrees are accredited by the American Assembly of Collegiate Schools of Business (AACSB).
University of Washington, Tacoma

The University of Washington, Tacoma, whose campus has won national awards for urban design and historic preservation, is changing the face of its region—architecturally and economically, as well as intellectually and culturally. Located on 46 acres in Tacoma's historic warehouse district, across from the Washington State History Museum and Union Station, UWT was established in 1990 as a non-residential campus to offer innovative upper-division, postbaccalaureate, and master's-level programs that serve people in the South Puget Sound region. In 2001 an Institute of Technology at the University of Washington, Tacoma, was launched to address a workforce shortage of bachelor's and master's level professionals available to Washington's high-tech industry and to expand the access of citizens, especially women and people of color, to outstanding professional high-tech education and careers. The UW Tacoma now enrolls more than 1,500 students and is expected to see continued dramatic growth in academic offerings, enrollment, and facilities. (A new science building with science and computing labs and an auditorium building opened in 2002 and five more buildings are scheduled to open in 2004.) An impressive faculty of scholars and researchers devote themselves to UWT students through quality teaching and to the community through service and partnership.

For additional information, call the program office at 253-692-4470 or visit the program's Web site at www.tacoma.washington.edu/social/.

Graduate Degree and Certificate Programs

Students seeking admission to master's degree programs should check with the specific program. Detailed information about the academic programs offered can be obtained by calling the UWT Office of Admissions at 253-692-4400 or 1-800-736-7750, TDD 253-692-4413; or visit UWT's Web site at www.tacoma.washington.edu.

Master's Degree in Foundations of Public Action: This graduate program, leading to a master's degree, prepares students for an enhanced capacity for roles of responsibility and leadership. The program includes four closely integrated core courses: Models and Critical Inquiry; Culture and Public Problems; Evidence and Action; and Values and Action. Elective courses, internships, and a final project or thesis will provide opportunity for extended reflection on the application of the themes of the core to the student's particular area of interest. Program information is available at www.tacoma.washington.edu/ias/concentrations/MA.htm.

Business Administration: The Master of Business Administration degree at UWT is designed for working professionals who want to enhance their ability to manage and lead organizational change. The primary goal is to prepare current and future business managers with the knowledge and skill set they need to succeed in a dynamic and complex environment. Students develop a strong mix of leadership, technological, financial, analytical, relational, and communication skills. The program's objective is to offer a high-quality program that is immediately relevant to practicing managers.

For additional information, visit the program's Web site at www.tacoma.washington.edu/business.

Education: The education program at UWT prepares reflective, collaborative practitioners who are grounded in best practices and sensitive to diversity issues. The Master of Education program is a graduate program intended to build upon the skills, knowledge, and commitment of certificated, experienced teachers. The degree program is founded on a deep respect for practicing educators. It is committed to strengthening and revitalizing teaching. Underlying the education program is a vision of the teacher as one who is broadly educated and continuing to learn, skilled and committed to the craft of teaching, and entrusted to nurture the greatest human potential in every learner.

The Master of Education degree is a graduate course of study for experienced teachers at all levels of education, preschool through adult. Five study options are available: at-risk learner, integrated curriculum, science education, special education, and technology.

UWT also prepares educational administrators for their role in school and district leadership. Unique features of the four-quarter educational administrator program include a cohort of potential leaders from local schools and districts; integrated curriculum grounded in best practice as determined by theory, research, and school-based, experienced faculty; the design and implementation of strategies to improve student achievement; curriculum taught in time synchrony with the school's administrator calendar; leadership in implementation of national and state school reform; and weekly reflective seminars. All quarters of the program include integration of university-based learning and field-based learning.

Nursing: Affiliated with the top-ranked University of Washington School of Nursing at the Seattle campus, UWT's nursing program is accredited by the Commission on Collegiate Nursing Education. The nursing program focuses on the discovery and dissemination of knowledge that promotes health. The curriculum emphasizes and fosters the integration of teaching, inquiry, and service among a community of learners. Partnerships with the community provide learning environments in which students build upon their skills and knowledge to strengthen their understanding of local, national, and global health issues.

The Master of Nursing program prepares RNs for advanced practice. The program offers the following graduate emphases: communities, populations, and health; health care leadership and management; and a blending of the two program emphases. Within the emphases, students may elect to take coursework in nursing education, health, business, or arts and sciences. The core curriculum includes scholarship; health systems, health policy, diversity, and social issues related to health. The program is designed for both full-time and part-time students.

For additional information, call the program office at 253-692-4470 or visit the program's Web site at www.tacoma.washington.edu/nursing/.

Social Work: The Social Work Program is accredited by the Council on Social Work Education as the Alternative Master of Social Work for the University of Washington, Seattle School of Social Work. The MSW program prepares students to function in a wide variety of settings, including health-care agencies, child and family services, public social service organizations, the criminal justice system, and public schools. The advanced curriculum provides an in-depth education employing the classroom and practicum settings to prepare graduates for advanced specialized practice.

The Alternative MSW is currently a three-year, part-time evening program offering one concentration in the area of Children, Youth, and Families. Topics include applied research, social policy, and advanced content in social work practice models and methods.

For more information or to request application materials, please visit the program's Web site at www.tacoma.washington.edu/social/.

Computing and Software Systems: The Master of Science in Computing and Software Systems prepares graduates for high-tech careers as system analysts, support specialists, computer engineers, database administrators, software developers, and project managers, as well as for many positions with related titles. The Bureau of Labor Statistics within the U.S. Department of Labor reports that starting salaries for graduates with a master's degree in CSS are approximately 25 to 30 percent greater than starting salaries for graduates with a bachelor's degree in CSS.

The M.S. in Computing and Software Systems program accommodates both students who have a baccalaureate degree in computing (such as computer science, computing and software systems, and computer engineering) as well as those whose baccalaureate degree was awarded in non-computing-related disciplines. To accommodate such a diverse population of students, as well as those students who may not have the necessary background to immediately matriculate into a master's program, multiple paths of entry, transition, progression, and completion are available within the degree program.

For more information, visit the program's Web site at www.tacoma.washington.edu/tech/.
The symbols, abbreviations, and conventions below are used in the listings of program descriptions, faculty members, and course descriptions. Colleges and schools are presented in alphabetical order; departments and programs are listed alphabetically within the appropriate college or school. If you are unable to locate a department or program, consult the index.

Faculty
Entries include appointment to the Graduate School faculty (indicated by *); year of appointment to the University; graduate or professional degree, date, and institution. Entries also may indicate Acting, Adjunct, Affiliate, Clinical, Emeritus, or Research faculty; and area(s) of interest.

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

Specific information on courses offered in a particular quarter, including descriptions of courses approved since the publication of this catalog, appears in the quarterly Time Schedule.

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

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

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

(PREFIX) 600 Independent Study or Research (*)

Individual readings or study, including independent study in preparation for doctoral examinations, research, etc. Prerequisite: permission of supervisory committee chair or graduate program adviser.

(PREFIX) 601 Internship (3-9, max. 9)

Internship required of students in a graduate degree program. Permission of supervisory committee chair or graduate program adviser is a prerequisite.

(PREFIX) 700 Master’s Thesis (*)

Research for the master’s thesis, including research preparatory or related there-to. Limited to premaster graduate students (i.e., those who have not yet completed the master’s degree in their major field at the University of Washington). Prerequisite: permission of supervisory committee chair or graduate program adviser.

(PREFIX) 750 Internship (*)

Internship required of all graduate students in the Doctor of Arts degree pro-gram.

(PREFIX) 800 Doctoral Dissertation (*)

Research for the doctoral dissertation and research preparatory or related there-to. Limited to graduate students who have completed the master’s degree or the equivalent, or Candidate-level graduate students. Premaster students initi-ating doctoral dissertation research should register for 600. Prerequisite: permis-sion of supervisory committee chair or graduate program adviser.

Credit Designation
ART 500 (5) 5 credits are received for the quarter.

ART 501- (5)- or ART -502 (-5) Hyphenated course. Credit is earned, but may not be applied toward graduation until the entire sequence is completed. (An N grade may be given the first quarter and the final grade the second quarter.)

ART 500- (5) Course may take longer than one quarter to complete. Repeated registration may be necessary. An N grade is received until the final grade is submitted.

ART 500 (2, max. 8) 2 credits per quarter; course may be taken up to four times to earn a maximum of 8 credits.

ART 500 (1-5, max. 15) Up to 5 credits may be taken in a given quarter. Course may be repeated to a maximum of 15 credits.

ART 500 (*, max. 10) Credit to be arranged per quarter; course may be repeat-ed to a maximum of 10 credits.

ART 500 (3/5) 3 or 5 credits are earned in a given quarter. Specific amount is determined by school or college offering the course. The Time Schedule may indicate 3 credits, 5 credits, or 3 or 5 credits. Credits may vary by section.

ART 500 (3/5, max. 15) 3 or 5 credits are earned in a given quarter. Course may be repeated to earn a maximum of 15 credits.

ART 700 (*) Credit is to be arranged with school or college offering the course. No maximum stated. Only 600-, 700-, and 800-level courses do not require a maximum.

Undergraduate General Education Requirement Designators
The following general education requirement designators (on 400-level courses) are for purposes of undergraduate graduation and do not apply to graduate or professional students: VLPA, I&S, NW, QSR.

Background Required
Prerequisites Courses to be completed or conditions to be met before a stu-dent is eligible to enroll in a specific course.

Quarters Offered
A,W,Sp,S Indicates the quarter(s) the course is offered. A = Autumn, W = Winter, Sp = Spring, S = Summer.

Example:

ART 500 AWSp ART 500 offered autumn, winter, and spring quarters.
College of Architecture and Urban Planning

224 Gould

Dean
Robert Mugerauer

Associate Deans
Katrina Deines
Gail L. Dubrow
Vikram Prakash

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 the professional degrees that serve as the educational credentials for careers in their respective fields. The pre-professional undergraduate degree in architectural studies prepares students for professional programs as well as related roles in society. Master’s degrees are also offered in the College: Master of Architecture, 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 Preservation Planning and Design. An interdisciplinary doctoral program in urban design and planning is 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.

The College of Architecture and Urban Planning (CAUP) offers 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 course work 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 studies.

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, the Italian Hill Towns, 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

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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 analysis, 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 UWNetID computing accounts from the University’s central computing organization, Computing and Communications. The UWNetID 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 with 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 a branch of the UW Libraries. It is the primary loca-
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.

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—see below.)

Students must also complete a master's thesis, extending over one or more additional quarters, on design problem or a research topic of their choice. Admission to the professional program requires admission to the Graduate School of the University of Washington.

The Master of Science (M.S.) in Architecture is an advanced research-oriented degree for those who already hold a professional or pre-professional degree in architecture or an allied discipline. Currently the M.S. in Architecture is offered in only a single area of specialization, design computing. (Those interested in professional careers in architecture should apply to the accredited professional program, the Master of Architecture.)

**Graduate Program**

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

**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 a Bachelor of Arts (in architecture) or the equivalent, usually undertake six full-time quarters of study plus completion of a thesis for the M.Arch. degree. This program typically requires 99 credits of course work, including 36 credits of design studio, 36 credits of approved core courses, 9 credits of thesis, and 18 credits of electives. Special interests and certificate programs often can be accommodated within the 18 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 those candidates the program represents a specialization or in-depth study of a specific area of 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.

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.

The M.S. in Architecture program with a focus in design computing involves a minimum of 45 credits of required coursework, including a thesis, and may be completed in four or five quarters.

The M.S. in Architecture program is not accredited by the National Architectural Accrediting Board (NAAB). Candidates seeking to pursue careers in the professional practice of architecture who do not already hold a professionally accredited degree in architecture should apply to the accredited program (the M.Arch.).

The M.S. in Architecture program with a focus in design computing makes intensive use of department, College, and University computing capabilities and equipment. All enrolled students pay a special program fee in addition to tuition.

**Admissions**

Students are admitted in autumn quarter only. All application materials should be received by the department no later than the preceding January 15. Notices of admission are mailed by April 15. Admission to the Master of Architecture program is a competitive process, with priority given to those students whose apparent abilities, as determined by the Department of Architecture Admissions Committee, will enable them to complete the program expeditiously and with a high level of achievement. In evaluating applicants, the Admissions Committee considers the following: a portfolio of work in visual arts and/or design, a Statement of Purpose, Graduate Record Examination general test scores, transcripts of previous degree programs and of additional academic study (with a 3.00 GPA requirement), three letters of recommendation, and the applicant's background and experience in architecture and/or related fields. Incomplete applications and those received after January 15 are not considered by the Admissions Committee.

**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.

**Faculty**

**Chair**
Jeffrey K. Ochsner

**Professors**

Badanes, Steven P. * 1990; MArch, 1971, Princeton University; sustainable building technology; public art; community-based design/build; design.

Bonsteel, David * 1964, (Emeritus); MArch, 1964, University of Washington; design process, computer applications, research.

Bosworth, Thomas L. * 1968, (Emeritus); MA, 1954, Oberlin College, MArch, 1960, Yale University; design process, history, professional practice.

Ching, Francis D.K. * 1985; BArch, 1966, University of Notre Dame; design drawing, process and principles.

Clausen, Meredith L. 1979; MA, 1972, PhD, 1975, University of California (Berkeley); nineteenth- and twentieth-century architecture.

Dietz, Robert H. * 1975, (Emeritus); MArch, 1944, Massachusetts Institute of Technology; design, housing.

Emery, Ashley F. * 1961, (Adjunct); MS, 1958, PhD, 1961, University of California (Berkeley); experimental design, heat transfer, HVAC, thermal stress/ fracture, bioengineering.

Finrow, Jerry V. * 1995; MArch, 1968, University of California (Berkeley); housing architecture.

Hildebrand, Grant * 1964, (Emeritus); MArch, 1964, University of Michigan; history, preservation design.

Jacobson, Phillip L. * 1962, (Emeritus); MArch, 1969, Finnish Institute of Technology (Finland); design, professional practice.

Johnston, Norman J. * 1985, (Emeritus); PhD, 1964, University of Pennsylvania; urban design, history.
Kiyak, H. Asuman * 1977, (Adjunct); MA, 1974, PhD, 1977, Wayne State University; geriatric dentistry, behavioral aspects of health care.

Kolb, Keith R. *1952, (Emeritus); MArch, 1950, Harvard University; design, professional practice.

Lohvett, Wendell H. * 1983, (Emeritus); MArch, 1948, Massachusetts Institute of Technology; architecture.

Miller, David E. * 1989; MArch, 1972, University of Illinois; design, design development, systems integration.

Millet, Marietta * 1976, (Emeritus); MArch, 1972, Massachusetts Institute of Technology; illumination, environmental controls.

Mugerauer, Robert 2000; PhD, 1973, University of Texas (Austin); built and natural environments.

Nybørg, Folke E. * 1969, (Emeritus); MArch, 1960, Yale University; theory, urban design, professional practice.

Ochsner, Jeffrey K. * 1987; MArch, 1976, Rice University; design, history, preservation design, urban design.

Pyatok, Michael * 1990; MArch, 1967, Harvard University; design of affordable housing for lower income communities - urban and suburban regions.

Seligmann, Claus * 1964; DIPARC, 1950, London Polytechnic (UK); design, design process, theory.

Small, Robert * 1965, (Emeritus); MArch, 1955, University of Oregon; design, community practice, barrier-free design, housing, site planning, design process.

Staub, Christopher 1967, (Emeritus); Cert, 1944, Institute for Industrial Design, Arts, and Crafts; photography.

Streatfield, David C. * 1974, (Adjunct); MArch, 1965, University of Pennsylvania; regional landscape planning, environmental history, landscape studies.

Streissguth, Daniel M. * 1983, (Emeritus); MArch, 1949, Massachusetts Institute of Technology; design process.

Sutton, Sharon E. * 1998; MArch, 1973, Columbia University, PhD, 1982, City University of New York; the effect of the environment on learning and community well-being.

Thiel, Philip * 1961, (Emeritus), MS, 1948, University of Michigan; visual design, design process, person-environment relations, experiential notation.

Vernez Moudon, Anne * 1980; DSc, 1987, Ecole Polytechnique Federale de Lausanne; urban design, city form and neighborhood studies, design research.

Zarina, Astra * 1970; MArch, 1955, Massachusetts Institute of Technology; design, foreign studies.

Assistant Professors

Albrecht, Robert G. * 1960, (Emeritus); MSCE, 1960, University of Massachusetts; structures.

Curtis, J. William * 1962, (Emeritus); MA, 1969, University of Washington; design process, professional studies.

Deines, Katrina * 1985; MA, 1975, University of Minnesota, MArch, 1979, University of Washington; design theory and foreign studies, history.

Donnette, James J. * 1966, (Emeritus); MArch, 1969, University of Washington; graphics, design.

Dubrow, Gail Lee * 1989; MA, 1979, University of Oregon, PhD, 1991, University of California (Los Angeles); the social history of the built environment; historic preservation; issues of race, class and gender.

Goldblatt, Steven M. 1982, (Adjunct); JD, 1977, Golden Gate University; construction law, labor relations, and accounting.

Gross, Mark D. * 1999; PhD, 1986; Massachusetts Institute of Technology; design and planning methods, architecture, computational models, human computer interaction.

Heerwagen, Dean Reese * 1975; MS, 1967, MArch, 1971, Massachusetts Institute of Technology; environmental controls (passive and active).

Hill, Kristina * 1997, (Adjunct); MLA, 1990, PhD, 1997, Harvard University; human dimensions of landscape change; urban ecology; urban design related to water and biodiversity.

Jones, Susan H. 2001, (Affiliate); MArch, 1988, Harvard University; architectural design; the conceptual and tectonic ideas of making space.

Latourelle, Elaine Day * 1975; MArch, 1964, Yale University; architecture, landscape and urban design, professional practice.

Leibert, Edgar A. 1965; MS, 1967, University of Washington; structures.

Loveland, Joel E. * 1986; MArch, 1980, University of California (Los Angeles); energy conservation, design, lighting design and research.

Minah, Galen F. * 1970; MArch, 1968, University of Pennsylvania; design process, design, color and light, professional practice.

Mohler, Richard Ernest J. * 1986; MArch, 1984, University of Pennsylvania; design, architecture and community, design of housing and urban public open space.

Pallorini, Sergio A. * 1992; MS, 1987, Massachusetts Institute of Technology; design, design/build, cultural studies, cross-cultural education.

Prakash, Vikramaditya 1996; MA, 1989, PhD, 1994, Cornell University; Non-western, Asian, Indian Architecture; cultural and postcolonial studies; LeCorbusier; modernism.

Rohrer, John * 1948, (Emeritus); BArch, 1937, University of Washington; graphics, design.

Rolfe, George R. * 1984, (Adjunct); MArch, 1968, MCP, 1968, University of Pennsylvania; urban development process, finance, feasibility and market analysis, urban design processes.

Rosner, Arnold S. * 1966, (Emeritus); MSCE, 1949, California Institute of Technology; design process, building technology, computers.

Ryan, Dennis M. * 1974; PhD, 1976, University of Pennsylvania; educational democracy, theory and practice of interdisciplinary education; urban design and planning.

Sasanoff, Robert * 1963, (Emeritus); MCP, 1968, University of California (Berkeley); design process, person-environment relations.

Winterbottom, Daniel M. * 1993, (Adjunct); MLA, 1988, Harvard University; urban landscape architecture, cultural landscapes, therapeutic and healing landscapes, landscape conservation.

Assistant Professors

Anderson, Alex Thomas * 1998; MArch 1990, PhD, 1997, University of Pennsylvania; history and theory of architecture and decorative arts.

Crisman, Phoebe A. 2000; MArch 1991, Harvard University; design, urban design, theory.

Do, Yi-Luen Ellen * 1999; MDes, 1991, Harvard University; PhD, 1998, Georgia Institute of Technology; diagramming and freehand sketching, creativity, computer-aided design, cognitive studies.

Heerwagen, Judith 2001, (Affiliate); PhD, 1982, University of Washington; workplace ecology and human factors of sustainable design.

Johnson, Brian Robert * 1978; MArch, 1981, University of Washington; computing in architectural design, 3D modeling and rendering, Web-based collaboration.

McLaren, Brian 2001; MSc, 1986, Columbia University, PhD, 2001, Massachusetts Institute of Technology; architectural history, theory and design.

Strauss, David 2002, (Affiliate); MArch, 1985, University of Washington, PhD, 1999, University of Pennsylvania; design, architectural practice.

Senior Lecturers

Onouye, Barry S. * 1967, MSCE, 1969, University of Washington; integration of structural technology into architectural design education.

Vanas, Andris 1969; BFA, 1968, University of Washington; design, building science, design and materials, furniture; craft in design.

Zuberbuhler, Douglas * 1967; MArch, 1968, University of Washington; graphics, design, building technology.

Lecturers

Dee, Jennifer 1982; MArch, 1984, University of Washington; theory, design.

Nicholls, James Keith 1995; BArch, 1986, University of British Columbia (Canada); design, industrial design, construction technology.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

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 Architectural Design VI (6) Selection of studio sections that introduce advanced architectural design theories and methods. Focus and format vary. Prerequisite: ARCH 401.

ARCH 403 Architectural Problems (6)

ARCH 412 Architectural Illustration and Presentation (3) Issues, conventions, and tech-
ARCH 415 Architectural Sketching (3)
ARCH 413 Architectural Photography Projects (3)
images, entourage, reflections, and media.
position, organization, advanced perspective, scale
line drawings, shaded drawings, use of color, com-
iques used in architectural renderings, including
line drawings, shaded drawings, use of color, com-
position, 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 313.
ARCH 415 Architectural Sketching (3) Architects use freehand
representation 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
studies, tables, and lab exercises to design 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 advances in digital
image creation and production through a book, film,
Web project. Each student completes and
publishes a project during the quarter. Prerequisite:
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 reinforced concrete introduced in
examining bending, shear, and axial forces. Topic
areas include beams, slabs systems, columns,
fundations, retaining walls, and an introduction to pre-stressed concrete. Prerequisite: ARCH 322.
ARCH 421 Structural Design II (4) Design of steel
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 direct-
et toward the nature, properties, 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) Heerwagen Daylighting of buildings, reducing noise
and enhancing sound for communication, and regu-
lating heat transfer for occupant thermal comfort; description of passive means for environmental con-
trol, including presentation of scientific explanations and design guidelines for utilizing these means;
design guidelines are intended for use in the prelimi-
nary 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, commer-
cial exterior envelope, and interior partitioning build-
ing constructions systems. Prerequisite: either ARCH 400 or CM 313.
ARCH 433 Active Control Systems for Building Operation (3) NW Heerwagen Electrical, mechan-
cal (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 strate-
gies, and short cuts for anticipating system design and use. Prerequisite: either ARCH 331 or ARCH 431.
ARCH 434 Color and Light (3) Millet 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) Millet Perception-based approach to principles of natural and artificial light-
ing. 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 351 or ARCH 431.
ARCH 436 Building Acoustics (3) NW Heerwagen Description of principles and practices for man-
lating and enhancing sound in buildings. Information
about sound behavior and the organization of archi-
tectural elements (deployment of design features, including various geometries and materials) for the control of sound in enclosed spaces and between adjacent spaces.
ARCH 437 Passive Thermal Controls (3) NW Heerwagen Devices for achieving energy-efficient
buildings, analytical methods for evaluating likely ther-
mal performances of buildings and building envelopes, resistance and capacitance of building materials, air flow through and around buildings, energy codes and industry standards, and strategies for integrating analytic techniques and guidelines into the architectural design process. Prerequisite: either ARCH 331 or ARCH 431.
ARCH 439 Light Frame Building Assemblies (3) Vanags Fundamentals of light-frame construction from soils examination, foundation systems to fram-
ing systems, and the integration of electrical, plumbing,
and heating/cooling into the structure. Prerequisite: either ARCH 332 or CM 313.
ARCH 443 Iberoamerican Architecture I: Meso-
America (3) VLPA Palleroni Advanced introduction to precolombian, colonial, and postcolonial architec-
ture and urbanism of Mexico and Meso-America. Using methodologies drawn from culture studies, covers approximately four distinct periods spanning from Teotihuacan to the late twentieth century.
ARCH 444 Iberoamerican Architecture II (3) VLPA Palleroni Advanced introduction to postcolombian and modern architecture and urbanism of the Iberian peninsula and Latin America. Using methodologies drawn from culture studies, covers the cultures of Spain, Portugal, and Latin America after the period of colonization and the nature of their continued relationship.
ARCH 445 South Asian Architecture I (3) VLPA Prakash Advanced introduction to precolombial archi-
tecture and urbanism of South Asia. Using method-
ologies drawn from culture studies, examines select Hindu, Buddhist, and Islamic case studies on a compara-
tive genealogy.
ARCH 446 South Asian Architecture II (3) VLPA Prakash Advanced introduction to colonial and post-
colonial architecture and urbanism of South Asia.
Colleges of Architecture and Urban Planning / Architecture

ARCH 463 Theories of Representation (3) Anderson Seminar focusing on the development of representation 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 476 Design and the Uniform Building Code (3) Lectures, case studies, and exercises to provide a detailed review of non-structural sections of the Uniform Building Code (UBC) including designer responsibility, code background, purpose, and requirements based on occupancy, construction type, and building design features. Prerequisite: either ARCH 502 or CM 313.

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: ASP.

ARCH 481 3D Modeling and Rendering (3) Johnson 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) Gross, 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) E. Do 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) Do, Gross Introduction to fundamental concepts of computer programming for design applications with an emphasis on interactive graphics. Basic concepts 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 495, 496, or 497.

ARCH 495 Architectural Studies Abroad (9) Urban history and development of the city of Rome through firsthand studies of its topography and morphology. City’s more recent quarters become subject of group research relative to problems and potentials of growth and future development. Students may be registered concurrently in an appropriate studio section. Prerequisite: ARCH 493.

ARCH 496 Architectural Studies Abroad (9) Studio-oriented projects and application of experience gained during preceding program. Seminars held in collaboration with Italian students, professionals, and educators. Prerequisite: ARCH 495.

ARCH 497 Italian Hilltowns (9) I&S/VLPA Zarina Introduction to origins and development of built forms prevalent in the hilltowns of central Italy, a comparative analysis of domestic architecture in the agricultural context of the confluence zone of Tuscany, Umbria, and Latium and a historical survey of fortresses, castles, palaces, villas, and gardens of upper Latium. 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) Courses for Graduates Only

ARCH 500 Architectural Design Studio (6) Architectural design, with emphasis on development of professional skills in design synthesis. Specific focus on preservation design. Majors only.

ARCH 501 Architectural Design Studio (6) Architectural design, with emphasis on development of professional skills in design synthesis. Specific focus on urban design. Majors only.

ARCH 502 Architectural Design Studio (6) Architectural design, with emphasis on development of professional skills in design synthesis. Specific focus on design development. Majors only.

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 studies 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) Albrecht Design methods related to wood structures. Nature considered as building material, plywood, glued laminated wood structures, timber piles and pile foundations, pole buildings, and conventional wood building framing.

ARCH 535 Graduate Seminar: Study Topics in Environmental Lighting (3) Millet Focus on individual student projects involving research and design for lighting.

ARCH 540 Evolution and Aesthetics (3) Hildebrand Exploration of new views toward the theory and philosophy of architectural aesthetics in which responses are seen as driven, in part, by predilections contributive to biological survival and evolution.

ARCH 551 Scandinavian Architecture of the Nineteenth and Twentieth Centuries (3) Nyberg Introduction to the contribution of Scandinavian architecture to early functionalism with emphasis on its relationship to neoclassicism and vernacular architecture.

ARCH 553 Special Studies in Architecture in the Ancient World (3) Nyberg Theoretical and critical analysis of architecture, its relationship to neoclassicism and vernacular architecture.

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) Hildebrand 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) Dee, Nyberg, Seligmann 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: URBD P 479 or permission of instructor.

ARCH 562 Regionalism (3) Nyberg 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) Prakash 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 571 Project Feasibility (3) Social, political, and economic factors affecting the location, design, financing, construction, and marketing of buildings.
ARCH 572 Specifications and Contracts (3) Brown 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 (3) Sutton Examines how to facilitate community design processes. Explores theories and methods of participation and applies them to creating community visions. 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 581 Historic Preservation of Architecture, USA (3) Pundt American achievements in historic preservation and restoration of architecture. Prerequisite: specialization in preservation design or permission of instructor.

ARCH 582 Technical Issues in Preservation Design (3) Sivinski Issues, practices, and procedures involved in preservation and reuse of old and historic buildings. Technical and aesthetic 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 583 History of Historic Preservation in Europe (3) Pundt European achievements in historic preservation and restoration of architecture. Prerequisite: specialization in preservation design or permission of instructor.

ARCH 587 Theory of Design Computing (3) Gross 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 599 Thesis Preparation (3) Do 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 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) Lowenthal Advanced introduction to the relationship 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 596 Fieldwork in Professional Practice (*, max. 9) On-location study under the supervision of a practicing professional involved in an aspect of environmental design. Credit/no credit only.

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 600 Independent Study or Research (*) Credit/no credit only.

ARCH 700 Master’s Thesis (*) Credit/no credit only.

Construction Management

116 Architecture

General Catalog Web page: www.washington.edu/students/gencat/academic/Construction_Management.html

Department Web page: depts.washington.edu/cmweb/

The construction industry requires highly qualified professionals to manage its increasingly complex technical and management operations. The Department of Construction Management offers high-quality education and training to meet this demand. The interdisciplinary curriculums contain 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 student presentations.

Construction Management is one of four departments within the College of Architecture and Urban Planning. The department was originally established as the Building Technology and Administration program in 1964; it began offering a Bachelor of Science in Building Construction degree in 1968 and a Master of Science in Construction Management degree in 1994. The mission of the Department of Construction Management is to offer a high-quality education in building construction and to conduct construction-related research.

The major objectives of the department’s education programs are:

1. To provide a valuable education that can prepare individuals to assume technical- and management-level positions in the construction industry.
2. To serve society and the construction industry each year by graduating 45 students who can obtain employment in the construction or related industries.
3. To conduct research that benefits the construction industry and the community.
4. To ensure that the undergraduate program remains in full accreditation status by the American Council for Construction Education.
5. To maintain positive relationships with the construction and related industries.
6. To encourage service projects that benefit the community.

Emphasis is on course work that enables graduates to develop (1) technical skills necessary to define and solve practical construction problems; (2) self-discipline, analytical, and reasoning skills; (3) managerial skills necessary to make and implement sound and timely decisions in a prudent and professional manner; (4) broader perspectives of the humanities and social and natural sciences; and (5) the ability to effectively communicate verbally and in writing.

The department’s faculty consists of a mix of permanent full-time professors and part-time lecturers. The full-time faculty members have construction experience. The part-time lecturers are mostly industry practitioners and include general contractors, specialty contractors, architects, engineers, and attorneys.

Graduate Program

Graduate Program Coordinator 116 Architecture Hall, Box 351610 206-685-4440

Master of Science in Construction Management

The evening Master of Science in Construction Management degree program makes high-quality graduate education accessible to working professionals. All graduate courses are offered during the evening to accommodate people who work during the day. The curriculum was developed with industry input to provide graduates with the skills desired by the construction industry. The graduate curriculum has been structured to build upon the educational foundation gained in an undergraduate building-construction or construction-management curriculums. Students with different educational backgrounds will need to take prerequisite courses, as discussed below. Admission is competitive and students are admitted in autumn, winter, and spring quarters. Applications must be submitted by July 1 for autumn quarter, November 1 for winter quarter, and February 1 for spring quarter.

Admission Requirements: Admission to the Graduate School is granted by the Dean of the Graduate School. Application for admission is made to the Office of Graduate Admissions. The prospective student must hold a baccalaureate degree from an accredited college or university in the United States or its equivalent from a foreign institution. The applicant must submit a completed UW graduate application form and official transcripts from all previously attended colleges, universities, and institutes. A prospective student must present recent scores (within the past five years) from the Graduate Record Examination (GRE) that indicate a potential for successful completion of a Master of Science in Construction Management degree. The applicant should have at least a 3.00 GPA in the last 90 graded quarter hours, or last 60 graded semester hours. International applicants should refer to the Graduate
School section of this catalog for English language testing requirements. In addition, the Department of Construction Management requires a statement of personal goals and three letters of reference. All applications are reviewed by the department’s Graduate Admissions Committee who make a recommendation regarding each applicant to the Dean of the Graduate School.

Prerequisite Requirements: All students admitted to the program who do not possess an undergraduate degree in building construction or construction management must complete the following prerequisite courses prior to admission into the graduate program, or during their graduate studies: CM 333, 410, 411, 421, 422. All these prerequisite courses are offered during the day on a space-available basis with undergraduate students, or during the evening in the Construction Management Certificate Program offered by UW Extension. Three of the 400-level prerequisites may be counted toward elective requirements, if the student has been admitted to the graduate program prior to taking the prerequisites.

All students who do not have undergraduate degrees in building construction, construction management, engineering, or architecture must take the following prerequisites in addition to those previously listed: ARCH 320, 321, 322; CM 310, 313, 320, 321, 322, 323, 331, 332. Most of these prerequisites must be completed prior to admission into the graduate program.

Prerequisite courses may be validated if similar courses are reflected on the student’s undergraduate transcript or if the student desires to take a validation examination. Students desiring to take a validation examination should contact the department’s graduate program coordinator.

Graduation Requirements: The Master of Science in Construction Management degree program requires completion of a minimum of 45 credits of course work with at least a 3.00 cumulative GPA and satisfactory completion of either a thesis or report/project. A maximum of 6 credits may be earned for a report/project, and a maximum of 9 credits may be earned for a thesis.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

CM 410 Construction Estimating II (4) Rojas Principles and techniques for estimating commercial construction projects including a mock bid day exercise on a commercial construction project. Offered: A.

CM 411 Project Planning and Control (3) Pace Introduction to the basic principles, techniques, and practices used as tools by contractors to plan, schedule, and control costs on building construction projects. Offered: A.

CM 412 Construction Practice (3) Rojas Integration of classroom theory with practical experience through a direct, on-the-job internship and guest speakers. For majors in construction management with 135 credits completed. Offered: Sp.

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) Nemati 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. Offered: Sp.

CM 421 Project Management I (3) Introduction to the organization, management, and administrative functions on construction projects including a hands-on and extensive case study of a commercial construction project, cost control, and introduction to the concepts of Value Engineering, partnering, and Total Quality Management. Offered: W.

CM 422 Computer Applications in Construction (3) Nemati Introduction to microcomputer applications in construction industry. Discussion of available hardware and software is combined with practical assignments using estimating and scheduling programs designed for contractors, architects, and developers. Offered: W.

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 normajors on space-available basis. 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 431 Project Management II (4) 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. Offered: Sp.

CM 432 Soils and Foundations (3) Daniiali Origion, 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. Offered: AS.

CM 433 Construction Labor Relations (4) Goldblatt Introduction to construction labor topics, including labor-management organization, legislation, and regulation, collective bargaining, and job site administration. Offered: W.

CM 454 Introduction to Real Estate Finance (4) Rolfe Introduction to the financing of real-estate development projects, including a survey of capital markets, banking regulations, interest/discounting theories, debt instruments, and project financing. Offered: jointly with URBDP 454.

CM 455 Introduction to Real Estate Development Processes (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: jointly with URBDP 455.

CM 456 Real Estate Investment Seminar (4) Rolfe Analysis of private and public real estate investment decisions using case studies of individual development projects. Focuses on application of principles introduced in 453, 454, and 455. Prerequisite: CM 455/URBDP 455. Offered: jointly with URBDP 456; W.

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.

Courses for Graduates Only

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)
Schaufelberger
Study of innovative concepts and trends in project management such as partnering, construction automation, and their application to construction projects. Total Quality Management, effective communication principles, leadership, and team building are also examined. Offered: W.

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)
Pace
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 545 Real Estate Development (3)
Leathy
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)
Leathy
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 I (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 560 Independent Study or Research (*, max. 6)
An in-depth independent investigation of some facet of construction management. Offered: AWSpS.

CM 700 Master's Thesis (*, max. 10)
Offered: AWSpS.

**Landscape Architecture**

348 Gould Hall

**Graduate Program**
Graduate Program Coordinator
448 Gould Hall, Box 355734
206-543-2564, 206-616-3582
cauc@u.washington.edu

**Department Web page:**

**General Catalog Web page:**
www.washington.edu/students/gencat/academic/Landscape_Arch.html

**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 Ecology.** 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. This 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 students exposure to the social, cultural, and natural environment of central Mexico as an international example of community development and design.

- **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 will provide them with self-confidence and adaptability in a rapidly changing professional world. The primary areas in which students are encouraged to develop leadership skills 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 students 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 individual 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 course work with the Required Graduate Curriculum studios, while students from other educational backgrounds begin with the Basic Core design studios. The Required Graduate Curriculum sets the academic work required for the degree at 72 approved credits. In addition, a specialization must be developed in the area of a student’s individual interests, which is worth 12 credits. This encourages students to deepen their knowledge in a particular area, while maintaining substantial flexibility for each individual.

A thesis is required of all master’s degree program students. This is a creative, scholarly project which includes a rigorous written component. The thesis process allows students to develop greater intellectual maturity through independent inquiry, and to demonstrate mastery of a specialized subject area. Students select an appropriate methodology for the thesis in cooperation with their thesis advisor, and present the final product in either written and graphic form, or only in written form.

**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 in 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 to the Master of Landscape Architecture program is a competitive process with priority given to applicants whose abilities, as determined by the department’s admissions committee, will enable them to complete the program expeditiously and with a high level of achievement. Please contact the department for additional information.
Faculty

Chair
Iain M. Robertson

Professors
Beyers, William B. * 1962, (Adjunct); PhD, 1967, University of Washington; regional science, economic geography, location theory, regional analysis.

Bradley, Gordon A. * 1972, (Adjunct); MLA, 1972, University of California (Berkeley); PhD, 1986, University of Michigan; forest land use planning, Conservation area planning and design.

Haag, Richard 1958, (Emeritus); MLA, 1952, Harvard University; theory and perception of landscapes, master planning, urban recreation, recycling landscapes.

Johnston, Norman J. * 1985, (Emeritus); PhD, 1964, University of Pennsylvania; urban design, history.

Ochsner, Jeffrey K. * 1987, (Adjunct); MArch, 1976, Rice University; history, preservation design, urban design.

Schauman, Sally * 1979, (Emeritus); MS, 1971, University of Michigan; visual resource analysis and evaluation, resource planning and conservation of stressed landscapes.

Streatfield, David C. * 1974, MLA, 1965, University of Pennsylvania; regional landscape planning, environmental history, landscape studies.

Sutton, Sharon E. * 1998, (Adjunct); MArch, 1973, Columbus University, PhD, 1982, City University of New York; the effect of the environment on learning and community well-being.

Vernez Moudon, Anne * 1980; DSc, 1987, Ecole Polytechnique Federale de Lausanne; urban design, city form and neighborhood studies, design research.

Associate Professors
Alberti, Marina * 1996, (Adjunct); PhD, 1992, Massachusetts Institute of Technology; environmental planning, urban ecology, impact assessment, geographic information systems.

Booth, Derek B. * 1980, (Adjunct Research); PhD, 1984, University of Washington; environmental geography, particularly human influences on hilltops, runoffs, and rivers.

Dubrow, Gail Lee * 1989; MA, 1979, University of Oregon, PhD, 1991, University of California (Los Angeles); the social history of the built environment; historic preservation; issues of race, class and gender.

Ewing, Kern * 1990, (Adjunct); MS, 1978, PhD, 1982, University of Washington; wetland plant ecology, restoration ecology, ecosystem management.

Gross, Mark D. * 1999, (Adjunct); PhD, 1986, Massachusetts Institute of Technology; design and planning methods, architecture, computational models, human computer interaction.

Hill, Kristina * 1997; MLA, 1990, PhD, 1997, Harvard University; human dimensions of landscape change; urban ecology; urban design; urban hydrology.

Horner, Richard R. * 1981; PhD, 1978, University of Washington; effects of human activities on water resources in urban areas.

Loveland, Joel E. * 1986, (Adjunct); MArch, 1980, University of California (Los Angeles); energy conservation, design, research.

Palleroni, Sergio A. * 1992, (Adjunct); MS, 1987, Massachusetts Institute of Technology; design, design/build, cultural studies, cross-cultural education.

Roberto, Iain M. * 1982; MLA, 1975, University of Pennsylvania; designing with plants, planning and design of botanical gardens/arboretum.

Winterbottom, Daniel M. * 1993; MLA, 1988, Harvard University; urban landscape architecture, cultural landscapes, therapeutic and healing landscapes.

Assistant Professors
Do, Yi-Luen Ellen * 1999, (Adjunct); MDes, 1991, Harvard University, PhD, 1998, Georgia Institute of Technology; diagramming and freehand sketching, creativity, computer-aided design, cognitive studies.

Hou, Jeffrey * 2001; PhD, 2001, University of California (Berkeley); community design, cultural landscapes, grassroots actions, environmental planning and activism.

Johnson, Julie M. * 1995; MCP, 1988, Massachusetts Institute of Technology; community design, urban design, children’s outdoor learning and play environments.

Manzo, Lynne C. * 2001; PhD, 1994, City University of New York; place attachment, place identity, politics of space, community development.

Rottle, Nancy D. * 2001, MLA, 1987, University of Oregon; ecological and sustainable design; educational and interpretive landscapes.

Wolf, Kathleen L. * 1994, (Adjunct Research); MLA, 1987, PhD, 1993, University of Michigan; urban and community forestry, environment and behavior, urban landscape visual assessment.

Lecturer
Hamilton, Roxanne 1990; MLA, 1992, University of Washington; cultural landscapes; native American community design; therapeutic, restorative landscapes.

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) Delineation techniques for landscape perspectives, sections, rendering of plant materials. Historical and contemporary examples of landscape drawing.

L ARCH 412 Landscape Communications (2) Multimedia and video production techniques and presentation methods suitable for public hearings, citizen groups, design commissions, and private clients. Individual projects and case-study examples.

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 425 Advanced Planting Design Studio (1-6, max. 6) Advanced seminar/studio in planting design. Provides opportunity to explore ecological, technical, and aesthetic 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 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 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) Specialized 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 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.

Courses for Graduates Only

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 communities. Social, economic, political, and individual forces affecting community development and growth. Comparison of several communities, identifying pertinent landscape issues, potential design solutions, and methods for achieving design goals through the political process.

L ARCH 504 Regional Landscape Planning (1-6) Studio in applied regional landscape planning in metropolitan regions to examine conflicting land-use pressures of urban/rural fringe. Ecosystematic approach emphasizes maintenance of landscape quality. Computer applications in design.

L ARCH 505 Regional Landscape Design (1-6) Theory/technical 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 approach 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 nineteenth 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) Seminar on objectives, philosophy, history, and theory of regional landscape planning. Basic design. Overview of the context of regional landscape planning, examination of critical issues in the Pacific Northwest, and opportunities and role of the landscape architect in addressing these issues.

L ARCH 570 Scholarship and Research in Landscape Architecture (3) Seminar on the trends and results of research related to landscape architecture. Introduction to important scholars and researchers. Open to nonmajors with permission of instructor.

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 need/interests. 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 (*)

Urban Design and Planning

410 Gould

General Catalog Web page: www.washington.edu/students/gencat/academic/Urban_Des.html

Department Web page: 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 coordinating public- and private-sector action. Urban design and planning constitutes a professional field of growing complexity, responding to the urban complexities of this century and the next. 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.

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
• community development and real estate including public/private development processes
• preservation planning and design
• land-use planning, including its environmental, socioeconomic, legal, information systems, and administrative aspects.

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.

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, regional, 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: 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 32 credits covering the history and theory of planning and urban design, urban form, communication methods, quantitative methods, processes and methods of land use planning, planning law, research methods, and a planning studio. Also required are 17 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, 14 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. Six major specialized areas offered in the department include land-use planning and growth management, community development and real estate, urban design, preservation planning, environmental planning, and transportation planning.

Students are admitted to the MUP program primarily in autumn quarter and all application material should be received by the department no later than the preceding February 1 (November 1 for international applicants). Graduate Record Examination general test scores, 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.

**Faculty**

**Chair**

Hilda J. Blanco

**Professors**

Amoss, Harold L. * 1963, (Emeritus); MA, 1947, University of New Mexico, PhD, 1951, University of California (Berkeley); planned social change, community organization.

Bell, Earl J. * 1966, (Emeritus); PhD, 1965, University of California (Berkeley); application of operations research methods to urban and regional planning problems.

Beyers, William B. * 1962, (Adjunct); PhD, 1967, University of Washington, regional science, economic geography, location theory, regional analysis.

Bradley, Gordon A. * 1972, (Adjunct); MLA, 1972, University of California (Berkeley); PhD, 1986, University of Michigan; forest land use planning. Conservation area planning and design.

Grey, Arthur L. * 1963, (Emeritus); PhD, 1954, University of California (Berkeley); scope of urban planning, land and development policy, uses of remote sensing in urban planning.

Hancock, John L. * 1969, (Emeritus); PhD, 1964, University of Pennsylvania; planning history, urban history, planning theory, social analysis and social evaluation methods.

Johnston, Norman J. * 1985, (Emeritus); PhD, 1964, University of Pennsylvania; urban design, history.

Ludwig, Richard L. * 1971; PhD, 1971, University of Pittsburgh; housing development planning, social factors in development planning.

Miller, Donald H. * 1970; PhD, 1972, University of California (Berkeley); urbanization processes, urban spatial structure, planning theory and evaluation.

Ochsner, Jeffrey K. * 1987, (Adjunct); MArch, 1976, Rice University; history, preservation design, urban design.

Rutherford, G. Scott * 1981, (Adjunct); PhD, 1974, Northwestern University; transportation planning and engineering, transit planning, demand forecasting.

Streetfield, David C. * 1974; MLA, 1965, University of Pennsylvania; regional landscape planning, environmental history, landscape studies.

Sutton, Sharon E. * 1998, MArch, 1973, Columbia University, PhD, 1982, City University of New York, the effect of the environment on learning and community well-being.

Untermann, Richard K. * 1971, (Emeritus); MArch, 1967, Harvard University; urban design and site planning, housing, recreation, nonmotorized circulation.

Vernez Moudon, Anne * 1980; DSc, 1987, Ecole Polytechnique Federale de Lausanne; urban design, city form and neighborhood studies, design research.

**Associate Professors**

Alberi, Marina * 1996; PhD, 1992, Massachusetts Institute of Technology; environmental planning, urban ecology, impact assessment, geographic information systems.

Blanco, Hilda J. * 1996; MRP, 1984, PhD, 1989, University of California (Berkeley); factors influencing urban sprawl; the implications of cognitive science and evolutionary theory for.

Booth, Derek B. * 1980, (Adjunct Research); PhD, 1984, University of Washington; environmental geology; particularly human influences on hillslopes, runoff, and rivers.

Dubrow, Gail Lee * 1989; MA, 1979, University of Oregon; PhD, 1991, University of California (Los Angeles); the social history of the built environment; historic preservation; issues of race, class and gender.

Kasprisin, Ronald J. * 1989; MUP, 1968, University of Washington; community design studies, town planning; planning/design communications, urban design principles.

Norton, Thomas J. * 1968, (Emeritus); MUP, 1960, University of Washington; urban community facilities; planning administration.

Rolfe, George R. * 1984; MArch, 1968, MCP, 1968, University of Pennsylvania; urban development process, finance, feasibility and market analysis, urban design processes.

Ryan, Dennis M. * 1974; PhD, 1976, University of Pennsylvania; educational democracy, theory and practice of interdisciplinary education; urban design and planning.

Waddell, Paul A. * 1997; PhD, 1989, University of Texas (Dallas); urban policy, regional planning, growth management, land use, transportation, GIS.

Westerlund, Frank * 1971; PhD, 1977, University of Washington; remote sensing applications, energy development and conservation, regional environmental planning.

**Assistant Professors**

Bae, Christine * 1996; MRP, 1986, State University of New York (Albany), PhD, 1994, University of Southern California; transportation; environmental planning; land use; planning methodologies.

Campbell, Christopher D. 2000; MA, 1996, PhD, 2002, University of California (Los Angeles).

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

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) AlbertiPrinciples 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. Site, environmental evaluation and inventories, and modeling. Prerequisite: 3.0 in URBDP 420. Offered: W.

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 454 Introduction to Real Estate Finance (4) Rolfe Introduction to the financing of real estate development projects, including a survey of capital markets, banking regulations, interest/discounting theories, debt instruments, and project financing. Offered: jointly with CM 454.

URBDP 455 Introduction to Real Estate Development Processes (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: jointly with CM 454.

URBDP 456 Real Estate Investment Seminar (4) Rolfe Analysis of private and public real-estate investment decisions using case studies of individual development projects. Focuses on application of principles introduced in 453, 454, and 455. Prerequisite: CM 455/URBDP 455. Offered: jointly with CM 456; W.

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 465 Land Use (3) I&S
Westerdlund
Land use and 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 478 Urban Planning Uses of Remote Sensing (3) Westerdlund
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 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 494 Alaska Field Study (2) Kasprisin
Westerlund
Travel to Alaskan communities for interpretative purposes, and going to the sites of general and group interests to express their values and goals in the design of their cities. Special attention given to both historical and modern examples.

URBDP 497 History of Urban Design (3) I&S/VLPA
Kasprisin
Street-level Aspects of form, pattern, and space that make up the design of urban greening through comprehensive views of city building; the role of urban design in the fields of architecture, landscape architecture, and urban planning.

URBDP 499 Special Projects (1-12, max. 12)
Independent study for undergraduates. URBDP 499 requires written approval from the faculty adviser most appropriate for the project proposed. A report on the purposes, procedures, and results of the study is required.

Courses for Graduates Only

URBDP 500 Survey of Urban Planning (3) 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 503 Communication and Analysis (4) Kasprisin
Kasprisin Development of communication skills understanding, interpreting, and analyzing public planning documents, and presentation of issue analysis, public opinion, and analysis of alternatives. Prerequisite: Consent of instructor. Offered: F.

URBDP 507 General Urban Planning Laboratory (5) Blanco
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. Prerequisite: Consent of instructor. Offered: F.

URBDP 508 Specialized Planning Laboratory (5, max. 10) Blanco
Blanco, Dubrow, Kasprisin, Rolfe, Westerdlund
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 510 Theories and Methodologies of Planning I (4) Bae
Survey of the philosophy, methods, and analytical techniques used in urban planning, and urban design, 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 520 Quantitative Methods in Urban Planning (4) Bae
Methods of statistical and mathematical analysis in design and planning. Emphasis on 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) Wadell
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 546 Practicum (4, max. 8) Rolfe
Rolfe Off-campus use 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. Enrollment credit only. Prerequisite: permission of instructor.

URBDP 547 Professional Project (1-9, max. 9)
Independent development of client-oriented course involving application of professional planning/design methods and approaches. Professional-quality report relates project to larger professional context, addressing 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 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 analytical 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 and urban planning impacts of development, financing, 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 the field. Focuses on developing thesis topics that explore this intersection. Offered: jointly with PB AF 563.

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 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 select-
ed contemporary issues in neighborhood and
dwelling design, methods and practices. Offered:
jointly with ARCH 593.

URBDP 580 Legal and Administrative Framework
for Planning (4) Blanco Political, legal, and admin-
istrative 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 prac-
tices associated with historic preservation planning.
Overview of preservation planning programs at fed-
eral, 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) Analysis of recent case studies in imple-
mentation of preservation planning and urban design
in terms of planning and design products and relat-
ed processes, decision-making, administration, man-
agement. Tools and techniques include design
analysis, policy-making, regulation, design review,
taxation, financing, public participation. Prerequisite:
introductory course in preservation or urban design.

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 recent research work.
Presentation and critique of research proposed by
members of the seminar. Prerequisite: master’s
degree or equivalent in a planning discipline.

URBDP 598 Special Topics (1-6, max. 15)
Systematic study of specialized subject matter. Top-
cics vary for each quarter, depending upon cur-
rent 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 (*)
College of Arts and Sciences

Dean
David C. Hodge
050 Communications

Divisional Deans
Michael R. Halleran—Arts and Humanities
Craig J. Hogan—Natural Sciences
Susan Jeffords—Social Sciences
Julie K. Stein—Research

General Catalog Web page:
www.washington.edu/students/gencat/
académica/arts_sci.html

College Web page:
www.artsci.washington.edu

The departments and schools of the College of Arts and Sciences offer graduate study leading to master’s and doctoral degrees. Students who intend to work toward advanced degrees must apply for admission to the Graduate School and meet the general requirements of the Graduate School as outlined in this 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.

Afro-American Studies

See American Ethnic Studies.

American Ethnic Studies

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsctcat/

American Ethnic Studies

AES 489 Ethnicity, Gender, and Communication (5) I&S Media portrayal of women and people of color; creation of alternative media systems by women and people of color in the United States. Offered: jointly with COM 489/WOMEN 489.

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 Seminar II (5) I&S Second of a two-part senior seminar sequence required of all majors. Research and writing of a senior paper under supervision of an appropriate faculty adviser. Prerequisite: AES 495. Offered: AWSpS.

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

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

Afro-American Studies

AFRAM 401 Intermediate Swahili (5) VLPA Readings from prose to traditional poetry. Emphasis on acquiring the ability to manipulate ideas in Swahili. Review of structure. Prerequisite: either AFRAM 306 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 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.

Asian-American Studies

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

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

Chicano Studies

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

CHSTU 416 Comparative Social Movements: Mexico and the United States (5) I&S 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; A.

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.

American Indian Studies

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsctcat/

AIS 425 Indians in Western Washington History (3) 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 440 Reading Native American Women's Lives (5, max. 10) I&S Jacobs, Ross Seminar based on social science writings, autobiographies, biographies, and fiction written by, with, or about indigenous women of the United States and Canada.
Prerequisite: either WOMEN 342, WOMEN 423, AIS 201, AIS 330, or AIS 423. Offered: jointly with WOMEN 440.

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. Prerequisite: AIS 330; WOMEN 200. Offered: jointly with WOMEN 442.

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.

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

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

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

The department recognizes four principal subfields of anthropology within its faculty, programs, and curriculum: archaeology, biocultural anthropology, environmental anthropology, and sociocultural anthropology (including anthropological linguistics). The department offers four distinct Ph.D. programs within the subdisciplines. 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 Graduate School Application, official transcripts, the Supplementary Information Form, 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, 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.

Financial Aid
One-year fellowships are awarded to one or two outstanding entering students. A limited number of teaching and research assistantships and hourly positions are offered primarily to advanced students. Some students may be qualified for a few National Resource Fellowships for Language Studies. Work-study positions may also be available for eligible graduate students.

Faculty
Acting Chair
Eugene S. Hunn

Professors
Close, Angela E. * 1995; MA, 1974, PhD, 1976, Cambridge University (UK); archaeology; lithic analysis; prehistory of North Africa; human origins.

Dunnell, Robert C. * 1967, (Emeritus); PhD, 1967, Yale University; archaeological theory, field method, eastern North America.

Grayson, Donald K. * 1975; PhD, 1973, University of Oregon; North American prehistory, paleoecology, vertebrate faunal analysis, history of archaeology.

Harrell, Stevan * 1974; PhD, 1974, Stanford University; family systems, demography, social evolution, religion, China, Taiwan.

Hunn, Eugene S. * 1972; PhD, 1973, University of California (Berkeley); cognitive anthropology, ethnobiology, cultural ecology and evolution, North American Indians.

Hutterer, Karl L. * 1990, (Affiliate); PhD, 1973, University of Hawaii; prehistory, ethnology of Southeast Asia, East Asia.

Jacobs, Sue-ellen * 1974, (Adjunct); PhD, 1970, University of Colorado (Boulder); women studies, socio-cultural and applied anthropology, anthropological studies of women.

Kahn, Miriam * 1986; PhD, 1980, Bryn Mawr College; museum exhibits, cultural representations, senses of place, tourism, Pacific Islands.

Keyes, Charles F. * 1965; PhD, 1965, Cornell University; interpretive anthropology, religion and political-economic change, ethnic group relations, sociology.

Miller, Marc * 1979, (Adjunct); PhD, 1974, University of California (Irvine); maritime anthropology, cognitive anthropology and social/cultural change.

Muecke, Marjorie A. * 1979, (Adjunct); PhD, 1976, University of Washington; community health, medical anthropology, reproductive health, Southeast Asia (Thailand).

Nason, James * 1970; PhD, 1970, University of Washington; sociocultural anthropology, museology, material culture, cultural heritage, Micronesia, North America.

Newell, Laura L. * 1957; PhD, 1967, University of Washington; primatology growth and development, human biology, evolutionary aspects of dermatoglyphics.

Nute, Peter E. * 1970, (Emeritus); PhD, 1969, Duke University; genetics and evolution.

Pena, Devon G. * 1999; PhD, 1983, University of Texas (Austin); agroecosystems (southwestern U.S.); environmental history; political ecology of complex systems.

Smith, Eric A. * 1980; PhD, 1980, Cornell University; ecology, evolutionary theory, hunter-gatherers, demography, Native Americans, Canadian Inuit.

Spain, David H. * 1968, (Emeritus); PhD, 1969, Northwestern University; psychocultural anthropology, African studies, research methods.

Stein, Julie K. * 1980; MA, 1976, PhD, 1980, University of Minnesota; New World archaeology, Northwest coast archaeology, geoarchaeology, shell middens.

Wenke, Robert J. * 1975; PhD, 1975, University of Michigan; archaeology of Egypt, the Middle East, and quantitative methods.

Winans, Edgar V. * 1957, (Emeritus); PhD, 1959, University of California (Los Angeles); politics, economics and law, Africa, the developing world.

Witthenspon, Gary J. * 1987; PhD, 1970, University of Chicago; language, art and history of the Southwest.

Associate Professors
Anagnost, Ann S. * 1990; PhD, 1985, University of Michigan; ethnography of the state, ideology and popular culture, peasant society, China.
Eck, Gerald G. * 1974; PhD, 1977, University of California (Berkeley); primate paleontology, especially African Pliocene-Pleistocene monkeys and hominids.

Ellington, Terry J. * 1983; (Adjunct); PhD, 1979, University of Wisconsin, MA, 1979, University of Chicago; ethnomusicology, anthropology, religion, Tibet, Nepal, Buddhism.

Feathers, James K. * 1983; PhD, 1990, University of Washington; luminescence dating of sediments and pottery from archaeological sites.

Kyes, Randall C. * 1994, (Adjunct Research); PhD, 1989, University of Georgia; primate behavior and ecology, neural mechanisms of behavior.

Leonetti, Donna * 1978; PhD, 1976, University of Washington; sociobiology, human reproductive biology and ecology, reproductive strategies; variability in social organization and land use; power relations between the sexes; ritual and belief; contemporary ethics and anthropology.

Assistant Professors

Shell-Duncan, Bettina * 1995; MS, 1988, University of Wisconsin; medical anthropology, anthropological research among the traditional peoples of South America; study of health and disease in South America; research on the social construction of health and illness in South America.

Rhodes, Lorna A. * 1983; PhD, 1973, Cornell University; medical anthropology, medical sociology, gender.

Holman, Darryl J. * 1999; MS, 1990, University of Wisconsin; biological and sociocultural interactions in population adaptation, epidemiology, post-colonial theory, identity, gender.

McGrath, Barbara B. * 1987, (Adjunct Research); PhD, 1993, University of Washington; ethnographic research with U.S. Pacific Islanders on health issues, specifically, HIV/AIDS prevention.

Assistant Professors

Fitzhugh, J. Ben * 1997; PhD, 1996, University of Michigan; archaeology, anthropology, evolutionary ecology, complex hunter-gatherers, social evolution.

Holman, Darryl J. * 1999; MS, 1990, University of Wisconsin, PhD, 1996, Pennsylvania State University; health assessment in traditional societies, including immunity, nutrition.

Sorensen, Clark W. * 1989, (Adjunct); PhD, 1981, University of Washington; Korea, social change in East Asia, development, ethnic identity.

Senior Lecturer

Green, James W. * 1975; PhD, 1972, University of Washington; cross-cultural, mental health, compara-

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsclat/.

Anthropology

ANTH 401 West African Societies (3) I&S Social and cultural features of coastal and interior West African societies, including the Sudanese. Detailed study of selected societies. Prerequisite: one 200-level ANTH course or LING 203.

ANTH 402 Societies of Eastern and Southern Africa (5) I&S Historical background and contemporary life of cultural groups in eastern and southern Africa with special study of selected cases of political and economic organization and cultural change. Prerequisite: one 200-level ANTH course or LING 203.

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: one 200-level ANTH course or LING 203.

ANTH 412 South Asian Social Structure (5) I&S Caste class, and community in modern India. Transitions from colonial to post-colonial 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 Peña 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 workplace, immigration, peasants, women, indigenous peoples, and students as forces of collective mobilization and social, cultural, and political change. Offered: jointly with CHSTU 416; A.

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: one 200-level ANTH course or LING 203.

ANTH 420 Psychoanalysis and the Study of Culture (3) I&S S. Spaulding Comparative examination of psychoanalytic theory and psychoanalytic theory of culture. Prerequisites: either LING 200 or LING 400; recommended: prior or concurrent registration in ANTH 451 or LING 450. Offered: jointly with MUSIC 480; alternate years.

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 sociocultural analysis. Foraging and human evolution; rationality of foraging societies; population and productive strategies; variability in social organization and land use; power relations between the sexes; ritual and belief; contemporary status of hunter-gatherer populations. Prerequisite: 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 SISSA 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 urban consequences; family and kinship organization as an adaptation to urban community; the nature of urban voluntary associations; law and politics; and the developments in anthropological method. Prerequisite: 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: 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 folklore, music, dance, humor and tragedy, and play and games. Prerequisite: one 200-level ANTH course or LING 203.

ANTH 430 The Anthropology of Music (3) I&S/LVPA Analysis of aspects of anthropological thought influential in ethnomusicology. Critical evaluation of dominant theoretical schools and modes of explanation, e.g., ethnomusicology, diffusionism, historical particularism, structuralism, functionalism, symbolism, and semiology, through detailed examination of semiotic texts. Offered: jointly with MUSIC 480; alternate years.

ANTH 432 Sociolinguistics I (5) I&S/LVPA Social variation in the phonology, morphology, syntax, lexi-

ANTH 433 Sociolinguistics II (3) I&S/LVPA Wassink Examines field methods linguists use in socially oriented studies of language variation and change. Students learn to target and design interviews appropriate for eliciting specific kinds of lin-
guistic data. Discussion of issues related to recording, ethics, and analysis of large bodies of data. Prerequisite: LING 432. Offered: jointly with LING 434.

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 Mancini. Prerequisite: 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, especially political and economic issues to political changes. Focuses on 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: one 200-level ANTH course or LING 203.

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 major topics, including totemism, 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 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: one 200-level ANTH course or LING 203. Offered: jointly with SISEA 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 Religion in China (5) I&S - Place of religion in Chinese society, examining the doctrines, practices, and social consequences of the eclectic folk religion, the elite Confucian, Taoist, and Buddhist traditions, syncretic sects, and imported Christianity. Prerequisite: either one 200-level ANTH course, ANTH 370, LING 203, HSTAS 211, HSTAS 454, RELIG 202, SISEA 370, or SISEA 443. Offered: jointly with SISEA 445.


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 courses of East Asia courses. Offered: jointly with SIS 449.

ANTH 450 Language and Gender (5) I&S/VLPA - Bilianiu - 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 and other aspects of identity such as sexuality, class, and age. Prerequisite: LING 200; either LING 201, LING 203, or ANTH 203. Offered: jointly with WOMEN 450/LING 458.


ANTH 454 Women, Words, Music, and Change (5) I&S/VLPA - Comparative analysis of use of myths, tales, music, and other expressions of expressive culture 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 contact. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400. Offered: jointly with LING 455.

ANTH 456 Contemporary Ethnography (5) I&S - Bilaniuk - Critical overview of theories of mass culture and their relationship to current anthropological prac- tice. Analyses of the historical interconnections among capitalism and commodity fetishism, modernity and representation, and media and consumption.

ANTH 456 Anthropology of Education (5) I&S - Critical overview of theories of mass culture and the relationship of educational policies and practice to current anthropological prac- tice. Analyses of the historical interconnections among capitalism and commodity fetishism, modernity and representation, and media and consumption.

ANTH 457 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 colo-
anthropology, nationalist responses, and postcolonial positions.

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 HSEV 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 mediating force. Case studies from Western medicine as well as from other medical systems, incorporating both interpretive and critical approaches. Offered: jointly with HSEV 475.

ANTH 487 Anthropology and Medicine (5) I&S Explores the relationship between the body and society, with emphasis on the role of medicine as a mediating force. Case studies from Western medicine as well as from other medical systems, incorporating both interpretive and critical approaches. Offered: jointly with HSEV 475.

ANTH 488 Academics (5) I&S Explores the relationship between the body and society, with emphasis on the role of medicine as a mediating force. Case studies from Western medicine as well as from other medical systems, incorporating both interpretive and critical approaches. Offered: jointly with HSEV 475.

ANTH 489 Anthropology Practicum (3-9, max. 15) Faculty-supervised off-campus internships in organizations utilizing anthropological skills in academic and nonacademic settings. Establishing educationally valuable individual projects for internships with faculty sponsor. Offered: jointly with HSEV 475.

ANTH 491 Honors Colloquium (2, max. 12) I&S Introduction to anthropological research. Students read original articles and papers and discuss research with authors. Research presenters include department faculty, visiting faculty, and advanced graduate students. Credit/no credit only.

ANTH 493 Advanced Problems in Ethnology (3-5, max. 10) I&S Current problems in ethnology. Seminar format.

ANTH 499 Undergraduate Research (*, max. 12) Offered: jointly with MUSEUM 499.

ANTH 480 Introduction to Museology (3) I&S Museum history, philosophy, and basic operations, including organization, income, collection management, conservation, exhibition, security, education, research, and ethics. Offered: jointly with MUSEUM 480.

ANTH 481 Museum Collection Management: Ethnology (3) I&S Lecture and work experience in museum collection management in the ethnology collections of the Burke Memorial Washington State Museum, including identification, cataloguing, fumigation, storage, cleaning, inventory, and specimen preparation for exhibition of archival and nonarchival museum specimens from North America, the Pacific, and Pacific Rim areas. Offered: jointly with MUSEUM 481.

ANTH 482 Museum Conservation (3) 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. Offered: jointly with MUSEUM 482.

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, 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 488 Agroecology (5) I&S Explores the relationship between the body and society, with emphasis on the role of medicine as a mediating force. Case studies from Western medicine as well as from other medical systems, incorporating both interpretive and critical approaches. Offered: jointly with HSEV 475.

ANTH 489 Anthropology Practicum (3-9, max. 15) Faculty-supervised off-campus internships in organizations utilizing anthropological skills in academic and nonacademic settings. Establishing educationally valuable individual projects for internships with faculty sponsor. Offered: jointly with HSEV 475.

ANTH 491 Honors Colloquium (2, max. 12) I&S Introduction to anthropological research. Students read original articles and papers and discuss research with authors. Research presenters include department faculty, visiting faculty, and advanced graduate students. Credit/no credit only.

ANTH 493 Advanced Problems in Ethnology (3-5, max. 10) I&S Current problems in ethnology. Seminar format.

ANTH 499 Undergraduate Research (*, max. 12) Offered: jointly with MUSEUM 499.

ANTH 500 Preceptorial Reading (6) For beginning graduate students who have not had adequate training 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. Offered: jointly with MUSEUM 503.

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 518 Regional Seminar (1-3, 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 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 535 Research Issues in Demography and Population Studies (1-2, max. 7) Interdisciplinary seminar for 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) 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. Prerequisite: ANTH 437, ANTH 439, or permission of instructor.

ANTH 538 Politics of Representation (3) Representations of power and the powers of representation. Critical approaches to representation in colonial and postcolonial worlds. Divine kings, exemplary centers, the New World Order, voting subjects, and the possibilities of transgression.

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 became a central social, cultural, and political category during the postcolonial era. The concept of process and its application to the study of social and cultural systems. Not open to graduate students in the sociocultural anthropology program.

ANTH 543 Cultural Aspects of Professionalism (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 writ-
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 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 parental care. Prerequisite: upper-division course in evolutionary biology, population genetics, behavioral ecology, primate, 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 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 (3) 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 (3) 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 (3) 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 570 Environmental Anthropology (5) Current issues in the study of human environment interaction from a cross-cultural perspective: ecological adaptation and maladaptation; ethnography 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 574 Socio-Cultural Perspectives of Public Health Genetics (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, hypochondriasis, and hysteria. Anthropology of psychosomatics and psychiatry, including cultural analysis of selected biomedical, indigenous folk medical, and popular commonsense conceptualizations of illness.

ANTH 581 Dissertation Writing (3) Students experiment with different styles of anthropological writing. They apply writing techniques and styles to their 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 564.

ANTH 590 Seminar in Museum Theory (3) Fundamental theoretical issues involved in current museum administrative and operations work, including administrative structure, organizational conflicts, museum-community relations, and museum educational programming. Prerequisite: permission of instructor. Offered: jointly with MUSEUM 590.

ANTH 591 Seminar in Museum Operations (3) 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 592 Seminar in Museum Specimen Documentation (3) Seminar discussion of museum specimen documentation research approaches, including technological and raw material analyses, contextual studies, and esthetic studies. Documentation of a collection and reference work. Recommended: 590 and 591. Offered: jointly with MUSEUM 592.

ANTH 599 Effective Teaching of Anthropology (1) Class required of all graduate students who accept teaching assistantships; instruction in teaching methods, including methods in anthropological teaching 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 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 465 Issues in Cultural Resource Management (3) I&S Examines practical application of archaeology to cultural resource management. Topics include role in environmental permitting, inventory and significance evaluation of resources, project impacts and design of mitigation measures, consultation with government agencies and Indian tribal organizations, and practical aspects of cultural resource management business operation.

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 prehistoric issues involving cultural resource 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. 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 through the modern era. Topics 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 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 interaction in 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 typological, macroscopic, microwear, and technological analyses. Introduction to the use of stone tools and the techniques of lithic analysis (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 490 Museum Curation Practicum (1-5, max. 15) Application of museological training in curation of ethnographic, archeological, geological, or numismatic collection materials in the Burke Museum. Supervised work ranges from fundamental collection documentation and research to preventive conservation, storage, and other special curation projects. Offered: jointly with MUSEUM 490.

ARCHY 495 Quantitative Archaeological Analytic Techniques (5) I&S Introduction to quantitative approaches to archaeological data analysis. Includes computerized data screening, numeric methods of classification and identification, graphical and computer-based regression techniques, and the analysis of spatial patterns 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) Courses for Graduates Only

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 anthropology 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. Focuses 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 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 North America north of Mexico. Prerequisite: permission of instructor.

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, interpretative 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 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 variabilities 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) Individual research under the direction of a thesis advisor, culminating in a senior honors thesis. Open only to upper-class students in departmental honors programs.

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 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 world-wide, and debates these impacts, within a theoretical framework provided by evolutionary ecology and biogeography. Offered: jointly with ENVIR 475.

BIO A 477 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 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. Mathematics beyond high school not required. Prerequisite: BIO A 201.


BIO A 485 Research in Growth and Development (2, max. 8) NW Focus on topics relating to principles of 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 Sociocoeology (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 ecological 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 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 Juvenile 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 species with human conditions. Prerequisite: BIO A 370.

BIO A 499 Undergraduate Research (*, max. 12) Courses for Graduates Only

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 field work. 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 590 Current Issues in Human and Non-Human Primate Evolution (2, max. 18) Biweekly
preparation 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 (*)

Applied Mathematics

408 Guggenheim

General Catalog Web page: www.washington.edu/students/gencat/academic/applied_math.html

Department Web page: www.amath.washington.edu/

The Department of Applied Mathematics is concerned with mathematical modeling and analysis of problems from the physical, biological, and social sciences, and from engineering. The department offers both undergraduate and graduate courses for all interested students at the University, as well as degree programs for students at both levels who wish to major in applied mathematics.

Graduate Program

Graduate Program Coordinator
408L Guggenheim, Box 352420
206-543-5077

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 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, Doctor of Philosophy

Admission Requirements: Prospective students for the Master of Science program should hold an undergraduate degree either in mathematics or an area of application 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. Students who wish to apply to the doctoral program need to show evidence of completion of coursework equivalent to that described for the master's degree, with at least a 3.40 GPA, and indication of the ability or potential to perform independent research. It is required that the Graduate Record Examination be taken and the results sent to Graduate Admissions. Three letters of recommendation are required in support of each application and should be sent directly to the department. After receiving notification of admission to the Graduate School and a registration appointment, the student should contact the department. (On the Application for Graduate School Admission form, the student should be sure to indicate the desire to enter the Department of Applied Mathematics, rather than Mathematics.)

Master of Science

The M.S. degree program is designed to provide the student with a working knowledge of several basic areas of applied mathematics, together with exposure to at least one specific area of application. The applied mathematics areas include complex variables, ordinary and partial differential equations, applied linear algebra, numerical analysis, calculus of variations or optimization, and applied probability and statistics. The specific area of application is chosen by the student from a broad range of outside fields, such as engineering, the physical, biological, and certain areas of medical science. After fulfilling the basic course requirements, the student can obtain the M.S. degree by additional course work to complete the required minimum of 36 credits for the degree. Students may elect to do an M.S. thesis in lieu of a maximum of 6 course credits. Detailed requirements for the M.S. degree are listed in the Applied Mathematics graduate program guidelines.

Doctor of Philosophy

The Doctor of Philosophy degree in applied mathematics is primarily a research degree, not conferred as a result of course work alone. The granting of the degree is based on general proficiency and attainment in applied mathematics, together with a demonstrated ability to carry out an independent investigation which is described in a doctoral dissertation. Proficiency and attainment in applied mathematics is demonstrated by passing the General Examination that tests the student's ability to probe a new area of research and to exercise critical judgment on a technical issue of current importance in the chosen field of research. The doctoral dissertation must exhibit original mathematical contributions in a significant area of application. The Final Examination and defense of the dissertation is a research seminar presentation open to the public. The detailed requirements for the doctoral degree are listed in the Applied Mathematics graduate program guidelines.

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.

Faculty

Chair
Ka Kit Tung

Professors

Baker, Marci A * 1980, (Adjunct); MS, 1960, Stanford University, PhD, 1971, University of Washington; cloud physics, atmospheric geophysics.

Bretherton, Christopher S. * 1984; PhD, 1984, Massachusetts Institute of Technology; convective cloud systems, boundary layer meteorology, numerical modeling, tropical meteorology.

Bube, Kenneth P. * 1986, (Adjunct); PhD, 1978, Stanford University; numerical analysis, partial differential equations.

Burke, James V. * 1985, (Adjunct); PhD, 1983, University of Illinois; optimization, nonsmooth analysis.

Criminale, William O. * 1968; PhD, 1960, Johns Hopkins University; fluid dynamics, nonlinear mechanics, stability theory.

Durran, Dale R. * 1987, (Adjunct); MS, 1975, University of California (Berkeley), PhD, 1981, Massachusetts Institute of Technology; atmospheric dynamics and modeling, numerical methods, mountain meteorology, mesoscale meteorology.

Ford, E. David * 1985, (Adjunct); PhD, 1968, University College, London (UK); quantitative science, ecosystem analysis, forest productivity.

Greenbaum, Anne * 1997, (Adjunct); PhD, 1981, University of California (Berkeley); applied analysis and computational mathematics.

Kevorkian, Jiří * 1964; PhD, 1961, California Institute of Technology; partial differential equations, perturbation theory.

Koszai, George * 1980, (Adjunct); PhD, 1974, Eotvos Lorand University (Hungary), DSc, 1979, Hungarian Academy of Sciences; turbulent combustion, nuclear reactor dynamics.

Leveque, Randall J. * 1985; PhD, 1982, Stanford University; numerical analysis, hyperbolic conservation laws, computational fluid dynamics.

Murray, James D. * 1988, (Emeritus); PhD, 1956, DSc, 1968, Oxford University (UK); mathematical biology, biological pattern formation, wound healing, spread of epidemics.
O’Malley, Robert E., Jr. * 1990; PhD, 1966, Stanford University; singular perturbations and asymptotic methods.

Pearson, Carl E. * 1967, (Emeritus); PhD, 1949, Brown University; wave propagation, fluid dynamics, numerical analysis, optimization.

Riley, James J. * 1983, (Adjunct); PhD, 1971, Johns Hopkins University; fluid mechanics, especially turbulent flows.

Rockafellar, R. T. * 1966; PhD, 1963, Harvard University; variational analysis and optimization.

Sarachik, Edward S. * 1984, (Adjunct); PhD, 1966, Brandeis University; atmospheric dynamics, air-sea interactions, greenhouse warming, equatorial dynamics, climate change.

Sylvester, John * 1987, (Adjunct); PhD, 1980, New York University; partial differential equations.

Tung, Ka Kit * 1988; PhD, 1977, Harvard University; atmospheric and geophysical fluid dynamics.

Vagners, Juris * 1967, (Adjunct); PhD, 1967, Stanford University; optimal control and estimation theory, applications to aircraft systems.

Yeh, Harry H. * 1983, (Adjunct); PhD, 1983, University of California (Berkeley); fluid mechanics, water wave motions, coastal and hydraulic engineering.

**Associate Professors**

Adams, Joyce M. * 1985; PhD, 1983, University of Virginia; numerical algorithms for parallel computers.

Kot, Mark * 1989; PhD, 1987, University of Arizona; mathematical ecology, nonlinear dynamics, and population biology.

Kutz, J. Nathan 1997; PhD, 1994, Northwestern University; nonlinear waves, dynamical systems, asymptotic and perturbation methods, scientific computing.

Schmid, Peter J. * 1993; PhD, 1993, Massachusetts Institute of Technology; computational fluid dynamics, hydrodynamic stability theory, transition to turbulence.

Storl, Duane W. * 1983, (Adjunct); PhD, 1983, Cornell University; nonlinear dynamics and vibrations, dynamical systems, perturbations and bifurcations.

**Assistant Professors**

Qian, Hong 1997; PhD, 1989, Washington University; mathematical, physical chemistry and biology, statistical physics, stochastical mathematics.

Winters, Kraig B. * 1984, (Affiliate); PhD, 1989, University of Washington; stratified fluid flows, scientific computation and inverse problems.

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the **General Catalog** or visit the online course catalog at www.washington.edu/students/crs/.

**AMATH 400 Mathematical Communication for Undergraduates (2) NW** Techniques of effective writing and oral presentations in the mathematical sciences. Offered: jointly with MATH 400 and STAT 400. Prerequisite: at least 15 credits in MATH, STAT, AMATH, or CSE at the 300 or 400 level, including MATH 307 or AMATH 351 and MATH 308 or AMATH 352.

**AMATH 401 Introduction to Methods in Applied Mathematics I (4) NW** Emphasis on acquisition of solution techniques; ideas illustrated with specific elementary differential equations; review of elementary concepts for first and second order equations; power series and Frobenius solutions. Laplace transforms, systems of differential equations, eigenvalues. Prerequisite: either AMATH 351 or MATH 307. Offered: A.

**AMATH 402 Introduction to Methods in Applied Mathematics II (4) NW** See 401. Applications of ordinary differential equations; review of elementary concepts for first and second order equations; power series and Frobenius solutions. Laplace transforms, systems of differential equations, eigenvalues. Prerequisite: either AMATH 351 or MATH 307. Offered: W.

**AMATH 403 Introduction to Methods in Applied Mathematics III (4) NW** See 401. Applications of partial differential equations; 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 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, biochemical oscillators and switches. Prerequisite: either AMATH 351, MATH 136, or MATH 307. Offered: W.

**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 molecular reactions. Prerequisite: either AMATH 351 or MATH 307, MATH/STAT 390. Offered: Sp.

**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, concepts 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: A/Wsp.

**AMATH 499 Undergraduate Reading and Research (1-6, max. 6)** Credit/no credit only. Offered: A/Wsp.

**Courses for Graduates Only**

**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: A/Wsp.

**AMATH 502 Applied Mathematics Clinic (1)** The clinic provides consulting service for problems from different academic units requiring assistance in formulating, 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. Prerequisites: AMATH 568, AMATH 569, and AMATH 584. Offered: A/Wsp.

**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.) Prerequisites: 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-lower 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 I (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 and uniqueness 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 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)

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 519 Introduction to Applied Stochastic Analysis (5)
Introduction to the theory of probability and stochastic processes based on differential equations. Poisson processes and Markov chains, Brownian motion and renewal processes, continuous-time Markov processes and Brownian motions, introductory stochastic differential equations, stochastic fractals, large deviation principle and randomly perturbed dynamical systems. Prerequisite: STAT 506 or AMATH 506.

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 dynamic systems, 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-forming 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 geometric 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 568. Offered: odd years.

AMATH 564 Methods of Partial Differential Equations III (3)
Nonlinear first-order partial differential equations: characteristics, applications to geometric 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 Methods of Applied Mathematics I (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 Methods of Applied Mathematics II (5)

AMATH 569 Methods of Applied Mathematics III (5)
Analytical solution techniques for linear partial differential equations. Discussion of how these arise in science and engineering. Transform and Green’s function methods. Introduction to second order integral equations, characteristics. Conservation laws, shocks. Prerequisite: AMATH 403, AMATH 568 or MATH 428 or permission of instructor. Offered: Sp.

AMATH 570 Advanced Methods in Applied Mathematics I (5)
Analytical techniques of applied mathematics. Topics include systems of and nonlinear partial differential equations, shock waves, Green’s functions, perturbation and multiple-scale analysis, linear integral equations, calculus of variations. Prerequisite: AMATH 567, AMATH 568, AMATH 569. Offered: A.

AMATH 571 Advanced Methods in Applied Mathematics II (5)
Numerical techniques of applied mathematics. Topics include numerical solution of hyperbolic conservation laws, Hamiltonian chaos, fractal geometry, conformal mappings, Fourier and spectral methods. Prerequisite: AMATH 584, AMATH 585, AMATH 586. Offered: W.

AMATH 572 Advanced Methods in Applied Mathematics III (5)
Application of analytical and numerical techniques to problems in science and engineering. Topics include dynamical systems and bifurcation theory, wave propagation, wavelet analysis, stochastic processes, stochastic differential equations. Prerequisite: AMATH 571. Offered: Sp.

AMATH 574 Nonlinear Dynamics and Chaos (3)
Overview of ways in which complex dynamics arise in nonlinear dynamical systems. Topics include bifurcation theory, universality, Poincare 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 580 Mathematical Communication for Graduates (2)

AMATH 581 Mathematical Problem Solving Using Computers (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 MATLAB. Offered: AMATH 581 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 eigenvalue 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 584/MATH 584 which may be taken concurrently. Offered: jointly with MATH 585; W.

AMATH 586 Numerical Analysis of Time Dependent Problems (5)

AMATH 587 Asymptotics and Special Functions (3)
Origin and properties of higher transcendental functions, theoretical basis and applications of Legendre, Bessel, and elliptic functions; 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)

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
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.

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.

Admission is on a competitive basis. Annual deadline for applications is February 1, for consideration of full-time study (six quarters, excluding summer), earning a minimum of 63 credits of scheduled studio and class work and 9 credits of thesis for a total of 72 credits. Individual programs have specific requirements.

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.

Graduate Program

Graduate Program Coordinator
104E Art, Box 353440
206-685-1714 or 206-543-0646

The School of Art offers eight art and design programs leading to the Master of Fine Arts degree: ceramics, fibers, metals, painting, photography, printmaking, sculpture, and visual communications design. Students are required to enroll for two years of full-time study (six quarters, excluding summer), earning a minimum of 63 credits of scheduled studio and class work and 9 credits of thesis for a total of 72 credits. Individual programs have specific requirements.

The thesis consists of a studio project representing a body of work, a written thesis statement, and documentation of the work in the form of slides. A selection of thesis work is exhibited at the School of Art’s Master of Fine Arts Thesis Exhibition.

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.

Faculty

Chair
Christopher Ozubko

Professors

Berger, Paul E. * 1978; MFA, 1973, State University of New York (Buffalo); photography.

Blythe, Lawrence J. * 1963; PhD, 1968, Stanford University; Greek Art, Greek historiography and historians, Greek and Roman medicine and private life.

Bravmann, Rene A. 1972; MA, 1963, University of Wisconsin, PhD, 1971, Indiana University; African art.

Carraher, Ronald G. * 1967, (Emeritus); MA, 1961, San Jose State College; photography.

Casteras, Susan P. * 1966; PhD, 1977, Yale University; nineteenth- to mid-twentieth-century British, American, European art; museology; women’s studies.

Celentano, Francis * 1963, (Emeritus); MA, 1957, New York University; painting, drawing.

Christofides, Constantine * 1966, (Emeritus); PhD, 1956, University of Michigan; medieval, seventeenth century, Romanesque.

Clausen, Meredith L. 1979; MA, 1972, PhD, 1975, University of California (Berkeley); twentieth-century architecture.

Dahn, Richard F. * 1965, (Emeritus); MFA, 1959, Yale University; graphic design.

Dailey, Michael D. * 1963, (Emeritus); MFA, 1963, University of Iowa; painting, drawing.

Du Pen, Everett 1945, (Emeritus); MFA, 1937, Yale University; sculpture.

Failing, Patricia A. * 1982; MA, 1974, University of California (Berkeley); contemporary art and criticism.

Goldsmith, Layne * 1983; MA, 1975, San Jose State College, MFA, 1979, Cranbrook Academy of Art; fiber arts and related historic and contemporary textile structures and processes.

Hixson, William J. * 1950, (Emeritus); MFA, 1950, University of Oregon; painting.

Holm, Bill * 1968, (Emeritus); MFA, 1951, University of Washington; Northwest Coast Indians.

Hu, Mary L. * 1980; MFA, 1967, Southern Illinois University; metal design.

Hurley, Denzil * 1994; MFA, 1979, Yale University; abstraction involving painterly practice which establishes form.

Jones, Robert C. * 1960, (Emeritus); MS, 1959, Rhode Island School of Design; painting, drawing.

Kartsonis, Anna D. 1983; MA, 1968, PhD, 1982, New York University; Byzantine and medieval art.


Kingsbury, Martha 1968; MA, 1963, PhD, 1969, Harvard University; nineteenth- and twentieth-century art.

Lundin, Norman K. * 1964, (Emeritus); MFA, 1963, University of Cincinnati; painting, drawing, art history, contemporary art, art theory.

Marshall, John C. * 1970, (Emeritus); MFA, 1968, Syracuse University; metal design.

Mason, Alden 1981, (Emeritus); MFA, 1947, University of Washington; painting.

Opperman, Hal N. * 1967, (Emeritus); PhD, 1972, University of Chicago; seventeenth- and eighteenth-century European art.

Ozubko, Christopher * 1981; MFA, 1981, Cranbrook Academy of Art; visual communication design.

Pizzuto, Eugene * 1957, (Emeritus); MFA, 1951, Cranbrook Academy of Art; painting, drawing.

Smith, Charles W. * 1948, (Emeritus); MFA, 1956, Cranbrook Academy of Art; sculpture.

Snow-Smith, Joanne * 1981; PhD, 1976, University of California (Los Angeles); Italian Renaissance.

Solberg, Ramona L. * 1967, (Emeritus); MFA, 1957, University of Washington; art education, metal design.

Spafford, Michael C. * 1969, (Emeritus); MA, 1960, Harvard University; painting, drawing.


Wadden, Douglas J. * 1970; MFA, 1970, Yale University; graphic design, photography.

Walker, Jamie * 1989; MFA, 1983, Rhode Island School of Design; ceramic arts.

Waramshia, M. Patricia * 1970, (Emeritus); MFA, 1964, University of Washington; ceramics.

Whitehill-Ward, John * 1975, (Emeritus); MS, 1974, Illinois Institute of Technology; graphic design.

Young, John T. * 1984; MFA, 1978, Rhode Island School of Design; sculpture, conceptual art.

Associate Professors

Brody, David * 1996; MFA, 1983, Yale University; painting and drawing.

Cabeen, Louise * 1993; MFA, 1989, The School of Art Institute of Chicago; socially critical art with research specialties in textile history and techniques.

Collins, Jeffrey L. * 1994; MA, 1989, Yale University, MA, 1992, Cambridge University (UK); PhD, 1994, Yale University; 17th-18th-century European art and architecture; American material culture.


Govedare, Philip B. * 1991; MFA, 1984, Tyler School of Art; painting and drawing.

Koenig, Hazel L. * 1967, (Emeritus); MFA, 1950, University of Washington; fiber arts.

Labitzke, Curt W. * 1984; MFA, 1984, University of Notre Dame; printmaking: intaglio and lithography emphasizing hand-drawn techniques.

Oliver, Marvin E. 1974, (Adjunct); MFA, 1973, University of Washington; Northwest coast Indian art, Native American art; wood design, glass, metals.

Pruczowski, Edward * 1965, (Emeritus); MFA, 1965, Cranbrook Academy of Art; painting, drawing.

Proctor, Richard M. * 1962, (Emeritus); MA, 1962, Michigan State University; fiber arts.

Scheier, Shirley E. * 1986; MFA, 1985, University of Wisconsin; printmaking.


Welman, Valentine S. * 1964, (Emeritus); MFA, 1954, University of Colorado (Boulder); painting, drawing.

Wright, Robin K. 1990; MA, 1977, PhD, 1985, University of Washington; Native American art, Native art of the Pacific Northwest Coast, Haida art.

Assistant Professors

Bogel, Cynthia J. 1999; MA, 1985, PhD, 1995, Harvard University; Buddhist arts; Japanese art, architecture; ritual aesthetic meaning, changing values.

Brewster, Riley P. 2000; MFA, 1982, Yale University; painting, drawing.

Cheng, Karen * 1997; MDes, 1996, University of Cincinnati; professional practice of graphic design in both the print and Web mediums; typeface and font design.

Cummins, Rebecca 2001; MA, 1982, University of New Mexico; photography.


Goetler, Christine E. 1998; MA, 1985, PhD, 1991, University of Zurich (Switzerland); Northern European art (late medieval to Baroque); religious/devotional art; iconoclasm.

Lin, Zhi 2001; MFA, 1992, University of Delaware, MFA, University of London (UK); painting.

Looewensteine, Daniel F.* 1999; MFA, 1980, University of California (San Diego); sculpture and installation which explores symbol and metaphor using manipulated found objects.

Lyall, Marta * 1999; MFA, 1987, The School of Art Institute of Chicago; new media.

O’Toole, Helen J. *; MFA, 1989, The School of Art Institute of Chicago; studio drawing, painting, and art history.

Rousseau, John 2001; MFA, 1996, Cranbrook Academy of Art; visual communication design.

Scott, George W. * 1995; MFA, 1993, Cranbrook Academy of Art; industrial design; product design and development.

St. Pierre, Louise M.* 1995; BFA, 1983, University of Alberta (Canada); design of products/exhibits which educate and enable children.

Wiewczorek, Marek K. 1997; MA, 1990, University of Amsterdam (Netherlands), PhD, 1997, Columbia University; modern European art; Mondrian and De Stijl; critical theory.

Lecturer

Nichols, James Keith 1995; BArch, 1986, University of British Columbia (Canada); design, industrial design, construction technology.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

ART 421 Video Art (5, max. 15) VLPA Prerequisite: ART 360.

ART 428 Senior Thesis in Fiber Arts (5, max. 20) VLPA Specialized investigation involving surface design and/or fabric structures. Prerequisite: ART 324; ART 326; ART 237.

ART 436 Sculpture Composition (5, max. 15) VLPA Individual compositions in various media in large scale.

ART 440 Senior Thesis in Photography (5, max. 15) VLPA Development of a coherent photographic theme or topic evolved over two consecutive quarters resulting in a finished thesis portfolio. Prerequisite: ART 343. Offered: A/WSp.

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 445.

ART 474 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. Prerequisite: ART 345; ART 350.

ART 460 Advanced Metal Design (5, max. 25) VLPA Advanced individual projects in metal design.

ART 463 Advanced Painting (5, max. 15) VLPA Development of individuality in painting through creative exercises. Prerequisite: ART 360.

ART 464 Advanced Painting/Drawing (5, max. 15) VLPA Advanced problems in composition. Prerequisite: ART 463.

ART 466 Publications Design (5) VLPA Research, development, organization, design, and presentation of a complex communications document, such as a journal, annual report, or a large publication. All aspects of design, content, image creation and production are addressed in a quarter-long project. Prerequisite: ART 368; ART 378.

ART 467 Exhibition 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 468 Portfolio/Exhibition Presentation (5) VLPA Examines the relationship between problem solving in the educational and professional environments. Emphasis on effective evaluative skills in the development, presentation, discussion, revision, and resolution of individual work. Students present their work at the BFA Exhibition. Prerequisite: ART 467.

ART 478 Information Design (5) VLPA Explores the strategies for enhancing and visually presenting complex statistics and data. Identifies the principles underlying the successful presentation of information. Prerequisite: ART 368; ART 378.

ART 479 Media Information Design (5) VLPA Explores program authoring, communication, and complex information design. Assigned information-design problems are addressed using multimedia authoring tools. Design of effective user interface, navigation techniques, and enhanced content communication. Prerequisite: ART 478.

ART 480 Senior Project/Presentation (3) VLPA Increased opportunity for self-directed design research and study in the context of an advanced studio seminar. Investigation and integration of visual communication skills. Student present their work at the BFA Exhibition. Prerequisite: ART 479.

ART 485 Advanced Ceramic Art (5, max. 20) VLPA Pottery design and construction, stoneware, clay bodies, glazes. Prerequisite: ART 353.

ART 487 Senior Research Project, Ceramics (5) VLPA Independent research on a topic in ceramics.

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 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 (3/5, max. 15) VLPA

ART 499 Individual Projects-Design (3/5, max. 15) VLPA

Courses for Graduates Only

ART 512 Graduate Seminar (3, max. 9)

ART 513 Contemporary Studio Theories and Problems (3)

ART 515 Photography (3-15, max. 60)

ART 520 Seminar in Painting (3, max. 18) Designed as a forum for the presentation and discussion of student work as well as for discussion of contemporary directions in visual art. Credit/no credit only.

ART 522 Sculpture (3-15, max. 60)

ART 525 Graduate Studio: Drawing (3-15, 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 540 Fiber Arts (3-15, max. 60)

ART 547 Industrial Design (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 563 Painting (3-15, max. 60)
ART 581 Graduate Seminar in Design (5, max. 30)
ART 590 Interdisciplinary Graduate Seminar in Contemporary Practices (5, max. 25)
Constructive form for developing dialogue and critique in practicum-based setting. Professional development highlights the student’s experience.
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 (*)

Art History
209 Art

General Catalog Web page: www.washington.edu/students/gencat/academic/art_history.html
Department Web page: net.art.washington.edu/SOASite/programs/AH/ahhome.html

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.

Students studying in the field of Art History can expect to develop strong writing, research, analytical, critical thinking, and problem-solving skills. Course work 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.

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; and (4) samples of the applicant’s written work. Taking the Graduate Record Examination is required.

Graduation Requirements: (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 400-level courses may be counted toward the minimum credit requirement for the Master of Arts degree. (2) A minimum of 5 numerically graded credits must be taken in four of five major areas: African or Native American; Eastern Asian; Andean; Classical; and Medieval; Italian and Northern Renaissance, Baroque, and Rococo; eighteenth- to twentieth-century Western. (3) A minimum of 15 credits must be taken in 500-level seminars, in addition to ART H 500, Methods of Art History I, 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) A knowledge of either 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 of 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 will be 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 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) statement of professional objectives in the discipline; and (5) samples of written research work in art history. Taking the Graduate Record Examination is required.

Graduation Requirements: Minimum of 90 credits, which 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) a 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) a 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.

Faculty

Chair
Patricia Failing

Professors
Blyuez, Lawrence J. * 1969; PhD, 1968, Stanford University; Greek art, Greek historiography and historians, Greek and Roman medicine and private life.

Bravmann, Rene A. 1972; MA, 1963, University of Wisconsin, PhD, 1971, Indiana University; African art.

Casteras, Susan P. * 1996; PhD, 1977, Yale University; nineteenth- to mid-twentieth century British, American, European art; museology; women’s studies.

Clausen, Meredith L. 1979; MA, 1972, PhD, 1975, University of California (Berkeley); twentieth-century architecture.

Failing, Patricia A. * 1982; MA, 1974, University of California (Berkeley); contemporary art and criticism.

Hildebrand, Grant * 1964, (Emeritus); MArch, 1964, University of Michigan; history, preservation design.

Kartsonis, Anna D. 1983; MA, 1968, PhD, 1982, New York University; Byzantine and medieval art.

Kingsbury, Martha 1968; MA, 1963, PhD, 1969, Harvard University; nineteenth- and twentieth-century art.

Opperman, Hal N. * 1967, (Emeritus); PhD, 1972, University of Chicago; seventeenth- and eighteenth-century European art.

Snow-Smith, Joanne * 1981, PhD, 1976, University of California (Los Angeles); Italian Renaissance.

Associate Professors
Collins, Jeffrey L. * 1994; MA, 1989, Yale University, MA, 1992, Cambridge University (UK); PhD, 1994, Yale University; 17th-18th-century European art and architecture; American material culture.

Langdon, Merle K. * 1976; PhD, 1972, University of Pennsylvania; Greek archaeology, epigraphy, topography, and history.

ART H 430 Chinese Cinema (5) I&S/VLPA Silberberg 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, 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 Guineas 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 Zaïre, Angola, the Swahili coast, and Southern Africa. Recommended: some background in African art, history, languages, or literature.

ART H 443 Roman Painting (3) VLPA Study of surviving painting from the Roman World, 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 444 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 Roman period. Attention given to the material remains and their relationships 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 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 463 Italian Renaissance Sculpture (3) VLPA From Nicola Pisano to Giambologna. 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, Tintoretto, 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 peculiarities of English art, and on the final triumph of the native tradition. Recommended: some background in English history.

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 484 Topics in Modern Art (3, max. 9) VLPA Approach to art of the nineteenth and twentieth cen-
Asian American Studies

See American Ethnic Studies.

Asian Languages and Literature

223 Gowen

General Catalog Web page: www.washington.edu/students/gencat/academic/asian_lang_lit.html

Department Web page: depts.washington.edu/asianlit/

The Department of Asian Languages and Literature offers instruction in the principal languages and literatures of Asia, including East, Southeast, 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.

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. All graduate students in the department must affiliate themselves with one of these three programs. The department does not offer degrees or specializations in language pedagogy.

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.

A full range of courses in other disciplines and aspects of Asian cultures and civilizations is available from other departments and schools of the University, such as the departments of Anthropology, Art History, History, Linguistics, Comparative Literature, the Political Science, and the Henry M. Jackson School of International Studies. Students in the Department of Asian Languages and Literature are encouraged to avail themselves of these offerings to complement and supplement their language and literature studies.

Admission Requirements

Applicants for admission should present an undergraduate major in the language and literature of the principal languages of Asia. Some familiarity with certain aspects of Asian cultures and civilizations is also desirable.

Applicants who meet the requirements for admission to the University of Washington and who have a B average in an undergraduate program are eligible for admission to the graduate programs in the Department of Asian Languages and Literature.

The Graduate Program Coordinator is the point person for students applying to graduate programs in the department.

Courses for Graduates Only

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) Language 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 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 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.
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. Besides an application and one original set of transcripts of prior postsecondary education (international students are required to send a second original set directly to the Office of Graduate Admissions), the department requires a statement of academic goals, and three letters of recommendation addressed to the Graduate Program Coordinator.

Degree Requirements
The research component of the Master of Arts degree may be satisfied by the writing of either a thesis or two research papers. The Doctor of Philosophy degree requires a dissertation. In addition to the language of specialization, reading knowledge of a second (usually Western) language is required for the Master of Arts degree, and of a third (usually Asian) language for the Doctor of Philosophy degree. Neither English nor, usually, the student’s native language may be used to fulfill these additional requirements.

Faculty
Chair
William Boltz

Professors
Boltz, William * 1981; PhD, 1974, University of California (Berkeley); classical Chinese.

Cox, Collett D. * 1985; PhD, 1983, Columbia University; Buddhist studies (East and South Asian), Indian philosophy and religion, comparative religion.

Knechtges, David R. * 1972; MA, 1965, Harvard University, PhD, 1968, University of Washington; Han and Six Dynasties literature.

Norman, Jerry * 1971, (Emeritus); PhD, 1969, University of California (Berkeley); Chinese language and linguistics, Altaic linguistics.

Salomon, Richard G. * 1981; PhD, 1975, University of Pennsylvania; Sanskrit language and literature, Buddhist studies.

Shapiro, Michael C. * 1970; PhD, 1974, University of Chicago; South Asian language, literature, and linguistics.

Yue-Hashimoto, Anne O. * 1980; PhD, 1966, Ohio State University; Chinese linguistics, grammar (historical and modern), dialectology, historical reconstruction.

Associate Professors
Boltz, Judith M. 1988; MA, 1976, PhD, 1985, University of California (Berkeley); Chinese narrative literature.

Brandauer, Frederick P. * 1973, (Emeritus); PhD, 1973, Stanford University; traditional Chinese vernacular fiction and modern Chinese literature.

Cooke, Joseph R. * 1967, (Emeritus); PhD, 1965, University of California (Berkeley); Thai language and literature.

Kano, Tamako-niwa * 1982, (Emeritus); PhD, 1956, Radcliffe, Japanese language.

Ohta, Amy * 1990; PhD, 1993, University of California (Los Angeles); applied linguistics, especially second language acquisition, discourse analysis, and Japanese.

Tsutsui, Michio * 1990, (Adjunct); PhD, 1984, University of Illinois; computer-aided instruction, international communication, Japanese linguistics, technical Japanese.

Assistant Professors
Braester, Yomi 2000, (Adjunct); PhD, 1998, Yale University; modern Chinese literature, film, literary criticism, theory of art.

Handel, Zev * 1999; MA, 1992, PhD, 1998, University of California (Berkeley); Chinese historical phonology; Sino-Tibetan linguistics.


Pauwels, Heidi R. * 1997; PhD, 1994, University of Washington; Hindi language and literature: medieval and modern; Sanskrit language and literature; Hinduism.

Senior Lecturers
Nguyen, Kim O. 1984; PhD, 1973, University of California (Los Angeles); Vietnamese language and literature.

Ohta, Kaoru * 1989; PhD, 1994, University of California (Los Angeles); syntax, morphology, Japanese linguistics, language acquisition, and Japanese pedagogy.

Lecturers
Bi, Nyan-Ping 2000; MA, 1988, Indiana University; second language acquisition, Chinese linguistics, Chinese language pedagogy.


Kesavatana-Dohrs, Wiworn 1989; PhD, 1989, University of Michigan; Thai language and literature.

Kim, Soohee 1999; PhD, 1999, University of Washington; Korean language, morphology, phonology-phonetics interface, and historical linguistics.


Singh, Kunwar P. 2000; PhD, 2000, University of Wisconsin; Hindi language.


Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsctal/

Asian Languages and Literature

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, Salmonon 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) I&S/VLPA 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 498 Special Topics (1-5, max. 15) VLPA Offered occasionally by permanent or visiting faculty members. Topics vary. Offered: AWSp.

Courses for Graduates Only

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 585 Seminar in Buddhism (3, max. 27) Cox Systems and history of Buddhist thought. Original and secondary sources are used. Combines the methods of specialists in south, central, and east Asian Buddhism with those of historians of religion and philosophy. Prerequisite: permission of instructor. Offered: AWSp.

ASIAN 600 Independent Study or Research (*) Offered: AWSp.

ASIAN 700 Master’s Thesis (*) Offered: AWSp.


Altai

ALTAL 401 Written Mongol (3) Introduction to Mongolian written in the vertical script. Texts of different periods and genres. Offered: alternate years; A.

ALTAL 402 Written Mongol (3) Introduction to Mongolian written in the vertical script. Texts of different periods and genres. Offered: alternate years; W.
ALTAI 403 Written Mongolian (3) Introduction to Mongolian written in the vertical script. Texts of different periods and genres. Offered: alternate years; Sp.

ALTAI 405 Manchu (3) Introduction to Manchu, with principal focus on the structure of the language. Reading of texts of different genres. Offered: alternate years; A.

ALTAI 406 Manchu (3) Introduction to Manchu, with principal focus on the structure of the language. Reading of texts of different genres. Offered: alternate years; W.

ALTAI 407 Manchu (3) Introduction to Manchu, with principal focus on the structure of the language. Reading of texts of different genres. Offered: alternate years; Sp.

ALTAI 415 Spoken Mongolian (5) Introduction to the modern spoken language of Mongolia. Emphasis on correct pronunciation and oral skills. Offered: A.

ALTAI 416 Spoken Mongolian (5) Introduction to the modern spoken language of Mongolia. Emphasis on correct pronunciation and oral skills. Offered: W.


Courses for Graduates Only

ALTAI 579 Comparative Altaic Linguistics (3) Comparative phonology and morphology of Mongolian, Turkic, and other Altaic languages. Prerequisite: permission of instructor. Offered: jointly with LING 579.

Chinese

CHIN 411 Fourth-Year Chinese (5) VLPA Yue-Hashimoto Reading of unedited texts including newspaper articles, literary selections, and academically written essays. Oral discussion, listening comprehension, and composition. Prerequisite: CHIN 303. Offered: A.

CHIN 412 Fourth-Year Chinese (5) VLPA Yue-Hashimoto Reading of unedited texts including newspaper articles, literary selections, and academically written essays. Oral discussion, listening comprehension, and composition. Prerequisite: CHIN 411. Offered: W.

CHIN 413 Fourth-Year Chinese (5) VLPA Yue-Hashimoto Reading of unedited texts including newspaper articles, literary selections, and academically written essays. Oral discussion, listening comprehension, and composition. Prerequisite: 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 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 451 First-Year Classical Chinese (5) VLPA Bolton 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 213. Offered: A.

CHIN 452 First-Year Classical Chinese (5) VLPA Bolton 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 Bolton 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. 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: CHIN 413. 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) VLPA Topics vary.

CHIN 541 Seminar in Chinese Grammar (3, max. 9) Bolton, 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 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) Bolton 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 557 Introduction to Chinese Philology and Textual Criticism (5) Bolton 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 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) Bolton, 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 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 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 580 Readings in Vernacular Chinese Fiction (5, max. 15) Directed study of selected works of pre-modern 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 590 Readings in the Thirteen Classics (5) Boltz Selected readings from the Thirteen Classics, and from their associated exegetical and hermeneutic traditions. Readings and emphases vary from year to year. Prerequisite: two years of Classical Chinese and CHIN 557. Offered: alternate years.

CHIN 592 Studies in the History of Chinese Thought (5) Knechtges Directed readings in select traditional philosophical texts. Sung and Yuan. Prerequisite: permission of instructor.

Hindi

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 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 (2, max. 8) VLPA Conversational practice in contemporary Hindi. Prerequisite: HINDI 323. Offered: Sp.

HINDI 451 Advanced Hindi Reading (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: AWSP.

Courses for Graduates Only

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, Rasikhan, Bihari, and others. Prerequisite: HINDI 403 or equivalent. Offered: A.

HINDI 502 Studies in Medieval Avadhî Literature (3, max. 9) Pauwels Introduction to the Avadhî dialect of Hindi and its literature. Readings from Ramcaritmanas of Tulisidas 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 Japujî 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 Rajasthani. Reading of extracts from representative selections from Rajasthani literature. Prerequisite: HINDI 403 or equivalent.

Indian

INDN 401 Pali (3) VLPA Cox, Salomon Introduction to Pali language and literature. Prerequisite: SNKRT 303.

INDN 402 Pali (3) VLPA Cox, Salomon Introduction to Pali language and literature.

INDN 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, Maharashtri, Sauraseni) from literary, canonical, and insessional sources. Prerequisite: SNKRT 303.

INDN 411 First-Year Intensive Bengali (15) VLPA Salomon Study of modern Standard Bengali, including reading, writing, and conversation. Introduction to Bengali script. Offered: S.

INDN 499 Undergraduate Research (3-5, max. 15) Primarily for South Asian language and literature majors. Offered: AWSP.

courses for Graduates Only

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.

Japanese

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: JAPAN 513.

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: JAPAN 421.

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: JAPAN 422.

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.

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 442 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 513 which may be taken concurrently; recommended: 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 471 Classical Japanese Grammar (5) VLPA Introduction to classical grammatical forms and translation of classical literary texts. Prerequisite: JAPAN 313. Offered: A.

JAPAN 472 Classical Japanese Grammar (5) VLPA Introduction to classical grammatical forms and translation of classical literary texts. Prerequisite: JAPAN 471. Offered: W.


JAPAN 499 Undergraduate Research (3-5, max. 15) For Japanese language and literature majors. Offered: AWSP.

Courses for Graduates Only

JAPAN 532 Advanced Readings in Modern Japanese Literature (5) Rapid reading of modern
Courses for Graduates Only

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)
Lee 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 401 Intermediate Sanskrit (5) VLPA 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) VLPA Cox, Salomon Further study of classical grammar, introduction to classical literature and Vedic language and texts. Offered: W.

SNKRT 403 Intermediate Sanskrit (5) VLPA 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) VLPA Cox, Salomon Reading and analysis of classical texts, chosen according to students’ interests. Offered: W.

SNKRT 413 Advanced Sanskrit (3, max. 9) VLPA Cox, Salomon Reading and analysis of classical texts, chosen according to students’ interests. Offered: Sp.

SNKRT 491 Vedic Studies (3) VLPA Salomon Readings of selected Vedic texts, with linguistic, religious, and historical analyses. Includes background material on Vedic religion, literature, and culture. Prerequisite: SNKRT 303.

SNKRT 494 Readings in Religious Classics of India (5) VLPA Reading and analysis of the older religious brahmanical texts. Prerequisite: SNKRT 402.

SNKRT 495 Studies in Indian Thought (3, max. 9) VLPA Cox Religious and philosophical traditions in South Asia. The original documents studied vary from year to year. Prerequisite: SNKRT 402.

SNKRT 499 Undergraduate Research (3-5, max. 15) Primarily for Sanskrit language and literature majors. Offered: AWSp.

Courses for Graduates Only

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 Kharoshthi, 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.

Thai

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 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.

Vietnamese


Asian Studies

See International Studies.
Modern research in astronomy and astrophysics encompasses a large number of disciplines and specialties, and the faculty members of the Department of Astronomy are active in many of these areas. Research areas of the department include planetary astronomy, stellar structure and evolution, interstellar matter, x-ray sources, galactic structure, extragalactic astronomy, and observational cosmology. The department operates a well-instrumented 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 which operates a 3.5-meter optical/infrared telescope located on Sacramento Peak, New Mexico, and is a partner in the innovative Sloan Digital Sky Survey. 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 SUN, PC, and SGI computers, and on a variety of UW and national supercomputer facilities. Undergraduate majors often assist faculty members in acquisition, reduction, and interpretation of data.

**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.

**Faculty**

**Chair**

Bruce Balick

**Professors**

Adelberger, Eric G. * 1972, (Adjunct); PhD, 1967, California Institute of Technology; experimental gravitation physics, experimental nuclear physics.

Anderson, Scott F. * 1988; PhD, 1985, University of Washington; quasars and active galaxies, x-ray astronomy.

Balick, Bruce * 1975; PhD, 1971, Cornell University; evolved stars, nebular structure, hydrodynamics.

Bardeen, James M. * 1976, (Adjunct); PhD, 1965, California Institute of Technology; general relativity, theoretical astrophysics, cosmology.

Bohm, Karl-Heinz * 1967, (Emeritus); PhD, 1954, University of Kiel (Germany); stellar structure, star formation.

Bohm-Vitense, Erika H. * 1968, (Emeritus); PhD, 1951, University of Kiel (Germany); pulsating star, stellar activity.

Boynton, Paul E. * 1970; PhD, 1967, Princeton University; high-energy astrophysics, astronomy.

Brownlee, Donald E. * 1965; PhD, 1971, University of Washington; origin of the solar system, comets, interplanetary dust.

Haxton, Wick C. * 1984, (Adjunct); PhD, 1976, Stanford University; theoretical physics, nuclear physics.

Hodge, Paul W. * 1965, (Emeritus); PhD, 1960, Harvard University; extragalactic astronomy, stellar evolution.

Hogan, Craig J. * 1990; PhD, 1980, Cambridge University (UK); astrophysical cosmology, especially the origin of astronomical structures in the expanding universe.

Jacobsen, Theodor S. 1979, (Emeritus); PhD, 1926, University of California (Berkeley); astronomy.

Lake, George Russell * 1965; PhD, 1980, Princeton University; stellar dynamics, galaxy structure and formation, cosmology, computational astrophysics.

Margon, Bruce H. * 1980; PhD, 1973, University of California (Berkeley); galactic and extragalactic x-ray astronomy, optical counterparts of x-ray sources.

Stubbins, Christopher * 1981; PhD, 1988, MSc, 1988, University of Washington; observational cosmology and gravitation.

Sullivan, Woodruff T. II * 1973; PhD, 1971, University of Maryland; radio astronomy, galactic and extragalactic structure, history of astronomy.

Szkody, Paula * 1982; PhD, 1975, University of Washington; cataclysmic variables, multiwavelength observations x-r-g-lr.

**Assistant Professors**

Dalcanton, Julieanne * 1998; PhD, 1995, Princeton University; the evolution and formation of galaxies.

Wallerstein, George * 1965, (Emeritus); PhD, 1958, California Institute of Technology; chemical composition of stars, peculiar stars, interstellar matter.

Ward, Peter D. * 1984, (Adjunct); PhD, 1976, McMaster University (Canada); paleontology, paleobiology, regional coastal stratigraphy.

**Associate Professors**

Hawley, Suzanne * 1999; PhD, 1989, University of Texas (Austin); variable stars, magnetic activity, flares, galactic structure, dwarf galaxies.

Quinn, Thomas R. * 1993; PhD, 1986, Princeton University; Solar System dynamics and galaxy formation.

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

**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.

**ASTR 422 Interstellar Material (3) NW**

Description and physics of the matter between the stars. Physical conditions, distribution, evolution, and motions of interstellar atoms, molecules, and dust grains. Exchange of energy and matter between stars and interstellar material.

**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 radiation. Radiative emission, absorption processes, and models derived from observational data. Prerequisite: PHYS 224; PHYS 225.

**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 325, which may be taken concurrently.

**ASTR 481 Introduction to Astronomical Observation (5) NW**

Theory and practice of obtaining optical data at a telescope. Preparation, obtaining data with a CCD on a telescope, and subsequent data analysis for completion of a research project. Prerequisite: ASTR 480.

**ASTR 497 Topics in Current Astronomy (1-3, max. 9) NW**

Recent developments in one field of astronomy or astrophysics. Prerequisite: either ASTR 101 or ASTR 150, either of which may be taken concurrently.

**ASTR 499 Undergraduate Research (*, max. 15)**

Special astronomical problems and observational projects, by arrangement with instructor.
Courses for Graduates Only

ASTR 500 Seminar in Elementary Astronomy
Instruction (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, waves in a plasma.


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; astrophysical neutrinos. Offered: jointly with PHYS 554; A.


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. Offered: jointly with PHYS 555.

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 521.

ASTR 541 Interstellar Matter (3) Physical conditions and motions of neutral and ionized gas in interstellar space. Interstellar 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 planets 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 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 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 (*)

Atmospheric Sciences

408 Atmospheric Sciences-Geophysics Building

General Catalog Web page: www.washington.edu/students/gencat/academic/atmos_sci.html

Department Web page: www.atmos.washington.edu

Graduate Program Coordinator
408B Atmospheric Sciences-Geophysics, Box 351640
206-543-6471
advice@atmos.washington.edu

Master of Science, Doctor of Philosophy
Admission to the graduate program requires a baccalaureate degree in physical science, engineering, or mathematics, or its equivalent, as well as the Graduate Record Examination. The program of graduate study varies with each individual.

During the first year of graduate study, most students concentrate on developing a strong background in the fundamentals that underlie the atmospheric sciences and on getting a broad understanding of the wide range of problems encountered in the atmosphere. A qualifying examination is given toward the end of the first year of graduate study, as soon as possible after the student has completed 24 credits, including 12 credits in courses numbered 500 and above. All students desiring to proceed toward the Ph.D. degree must take this examination, and students desiring the Master of Science degree may elect to take it. This examination tests understanding of the fundamental aspects of the atmospheric sciences and of the relevant mathematics and physics. Physical reasoning, rather than factual information, is stressed. Those who pass the examination with distinction are encouraged to work toward the Ph.D. degree; those who pass continue toward the Master of Science degree. Students whose objective is the Master of Science degree may elect to submit a written-thesis proposal in lieu of the qualifying examination.

Research assistantships and a few teaching assistantships are available to full-time students. Applications are made through the department office.

Faculty

Chair
James R. Holton

Professors
Badgley, Franklin * 1953, (Emeritus); MS, 1948, PhD, 1951, New York University; turbulence.
Baker, Marcia * 1980; MS, 1960, Stanford University, PhD, 1971, University of Washington; cloud physics, atmospheric geophysics.
Battisti, David S. * 1983; MS, 1981, PhD, 1988, University of Washington; large-scale atmosphere-ocean dynamics, climate dynamics, tropical circulation, polar climates.
Breidenthal, Robert E. * 1980, (Adjunct); PhD, 1979, California Institute of Technology; turbulence, entrainment, mixing, vorticity.
Bretherton, Christopher S. * 1984; PhD, 1984, Massachusetts Institute of Technology; convective cloud systems, boundary layer meteorology, numerical modeling, tropical meteorology.
Brown, Robert A. * 1971, (Research); MS, 1962, University of California (Berkeley), PhD, 1969, University of Washington; planetary boundary layers, air-sea interaction, turbulence, remote sensing.
Businger, Joost A. * 1983, (Emeritus); PhD, 1954, University of Utrecht (Netherlands); energy transfer.
Covert, David S. * 1975, (Research); MS, 1971, PhD, 1974, University of Washington; atmospheric chemistry; aerosol physics, chemistry, optics, and instrumentation.
Durrant, Dale R. * 1987; MS, 1975, University of California (Berkeley), PhD, 1981, Massachusetts Institute of Technology; atmospheric dynamics and modeling, numerical methods, mountain meteorology, mesoscale meteorology.
Fleagle, Robert G. * 1948, (Emeritus); MS, 1944, PhD, 1949, New York University; physical and dynamic meteorology, weather modification and public policy.

Graduate Program
air-sea interaction.

Gammon, Richard H. * 1985, (Adjunct); PhD, 1970, Harvard University; atmospheric chemistry, chemical oceanography, environmental chemistry; biogeochemical cycles, global.

Grenfell, Thomas C. * 1968, (Research); MS, 1968, University of Chicago, PhD, 1972, University of Washington; atmospheric radiation, radiative transfer, microwave remote sensing, ice and snow optics.

Harrison, Don Edmunds * 1985, (Affiliate); MS, 1973, PhD, 1977, Harvard University; ocean circulation modeling, air-sea interaction, ocean and climate dynamics.

Hartmann, Dennis L. * 1977; PhD, 1975, Princeton University; climate change, dynamic meteorology, radiation and remote sensing.

Hegg, Dean A. * 1975, (Research); MS, 1976, PhD, 1979, University of Washington; atmospheric chemistry, cloud physics.

Hobbs, Peter V. * 1963; PhD, 1963, University of London; Imperial College; aerosol/cloud/precipitation physics, atmospheric chemistry, air pollution, mesoscale meteorology.

Holton, James R. * 1965; PhD, 1964, Massachusetts Institute of Technology; dynamic meteorology, middle atmosphere meteorology.

Houze, Robert A. * 1972; MS, 1969, PhD, 1972, Massachusetts Institute of Technology; mesoscale meteorology, cloud physics and dynamics, tropical and mountain meteorology.

Jaffe, Daniel A. * 1997, (Adjunct); MS, 1983, PhD, 1987, University of Washington, atmospheric chemistry, urban and global air pollution, environmental education.

Katsaros, Kristina B. * 1959, (Affiliate); PhD, 1969, University of Washington; air-sea interaction, radiative surface fluxes, remote sensing.


Leovy, Conway B. * 1967, (Emeritus); PhD, 1964, Massachusetts Institute of Technology; climatic role of clouds, planetary atmospheres, astrobiology, atmospheric circulation and dynamics.

Mass, Clifford F. * 1981; PhD, 1978, University of Washington; synoptic and mesoscale meteorology.

Maykut, Gary * 1969, (Research); PhD, 1969, University of Washington; polar air-sea interaction, radiative transfer in ice and snow.


Plant, William J. 1992, (Affiliate); MS, 1968, PhD, 1972, Purdue University; microwave remote sensing of the sea surface, atmosphere-ocean interaction.

Radke, Lawrence F. * 1964, (Affiliate); MS, 1966, PhD, 1968, University of Washington; cloud and aerosol physics, wildfire science, remote sensing, airborne instrumentation.

Reed, Richard J. * 1954, (Emeritus); DSc, 1949, Massachusetts Institute of Technology; weather analysis and prediction, numerical modeling.

Rhines, Peter B. * 1984; PhD, 1967, Cambridge University (UK); the circulation of the oceans and evolution of climate.

Sarachik, Edward S. * 1984; PhD, 1966, Brandeis University; atmospheric dynamics, air-sea interactions, greenhouse warming, equatorial dynamics, climate change.

Tillman, James E. 1971, (Research); MS, 1961, Massachusetts Institute of Technology; Mars meteorology; humidity, temperature, and wind instrumentaion, K-12 and public outreach programs.

Understeiner, Norbert * 1957, (Emeritus); PhD, 1950, University of Innsbruck (Austria); air-sea-ice interaction, polar climatology, sea ice physics.

Wallace, John M. * 1966; PhD, 1966, Massachusetts Institute of Technology; atmospheric general circulation, climate variability, global warming.


Associate Professors

Bates, Timothy S. * 1990, (Affiliate); MS, 1978, PhD, 1988, University of Washington; oceanic and atmospheric chemistry, atmosphere-ocean interaction, aerosols and climate.

Bond, Nicholas A. 1997, (Affiliate); PhD, 1986, University of Washington; air-sea interaction, boundary layers, coastal and marine meteorology.

Chen, Shuyi S. * 1991, (Affiliate); MS, 1985, University of Oklahoma, PhD, 1990, Pennsylvania State University; tropical meteorology, air-sea interactions, mesoscale dynamics, numerical modeling.

Colman, Bradley R. 1999, (Affiliate); PhD, 1984, Massachusetts Institute of Technology; weather analysis and forecasting, coastal meteorology and oceanography, numerical modeling.

Ghan, Steven J. 1993, (Affiliate); MS, 1981, PhD, 1988, Massachusetts Institute of Technology; clouds, aerosols and tropospheric chemistry, global and regional climate modeling.

Harrison, Halstead * 1971, (Emeritus); PhD, 1960, Stanford University; atmospheric chemistry, dispersion modeling, radiative transfer.

Smull, Bradley F. 1996, (Research); PhD, 1986, University of Washington, mesoscale and radar meteorology, severe storms, large-scale atmosphere-ocean interactions.

Assistant Professors

Alexander, M. Joan * 1992, (Affiliate); MS, 1989, PhD, 1992, University of Colorado (Boulder); stratospheric data analysis, mesoscale convection modeling, spectral analysis, gravity wave dynamics.

Catling, David C. * 2001; DPhil, 1994, Oxford University (UK); astrobiology, planetary atmospheres, geochemical-atmosphere interaction on early Earth and Mars.

Fu, Qiang * 2000; PhD, 1991, University of Utah; atmospheric radiation, cloud/aerosol/radiation/climate interactions, remote sensing.

Hakim, Gregory J. * 1999; MS, 1993, PhD, 1997, State University of New York (Albany); synoptic and mesoscale meteorology; atmospheric dynamics; stratified turbulence.

Jaegle, Lyatt * 2000; MS, 1992, PhD, 1996, California Institute of Technology; atmospheric chemistry and photochemistry, chemical modeling of atmospheric observations.

Kamenovich, Igor V. 1998, (Research); PhD, 1996, Massachusetts Institute of Technology; atmosphere-ocean coupled modeling, thermohaline circulation.


Stoelinga, Mark T. 2002, (Research); PhD, 1993, University of Washington; synoptic and mesoscale meteorology, cloud and precipitation physics.

Walden, Von P. 2001, (Affiliate); MS, 1990, PhD, 1995, University of Washington; polar meteorology, infrared remote sensing of the atmosphere and surface.

Yuter, Sandra Eilyn * 1990, (Research); PhD, 1996, University of Washington; physical meteorology, mesoscale meteorology, radar and remote sensing.

See page 39 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

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 533 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 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, chemical issues such as climate change, acid 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 “finger-printing” of sources. Emphasizes current problems. Prerequisite: either CEE 381, ATM S 458, or CHEM 458. Offered: jointly with CEE 480. W.

ATM S 492 Readings in Meteorology or Climatology (*) Credit/no credit only. Offered: A/WSp.

Courses for Graduates Only


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 and frontogenesis; life cycles of extratropical cyclones; related mesoscale phenomena. Numerical weather prediction; interpretation of forecast products. Offered: W.

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; inviscid flow; 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 Geochemoical 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 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 internal structure and bulk physical properties. Prerequisite: permission of instructor. Offered: jointly with ESS 534; alternate years; W.

ATM S 514 Ice and Climate Modeling (3) Principles of global climate modeling. Modeling seasonal cycles of snow cover and sea ice. Ice-sheet mass balance and flow. Solar radiation anomalies due to changes in earth’s orbit. Climate/ice-sheet models of Pleistocene ice ages. 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 students and visiting 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: A/WSp.

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: A/WSp.

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: W.

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: ATM S 501 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, cloud dynamics, and cloud models. Prerequisite: ATM S 501 or permission of instructor. Offered: jointly with ESS 573; W.

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 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, 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. Prerequisite: 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 stratosphere; Perturbation of the ozone in the middle atmosphere; Unity of the chemistry in these apparently different regimes. Prerequisite: ATM S 458 or ATM S 501 or CHEM 457 or permission of instructor. Offered: alternate years; Sp.

ATM S 560 Atmosphere/Ocean Interactions (3) Observations and theory of phenomena of the coupled atmosphere-ocean system. El Niño/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 hydrometeor growth. Prerequisite: permission of instructor. Offered: alternate years; W.


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 over 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 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 596/OCEAN 596.

ATM S 587 Climate Dynamics (3) Hartmann, 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 CO2 and other greenhouse gases. Records of past changes in the earth’s carbon cycle from geological, oceanographic and terrestrial archives. Anthropogenic perturbations to cycles. Develop simple box models, discuss results of complex models. Offered: jointly with OCEAN 588/ESS 588; W.


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.

**Biology**

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

**The courses in biology listed below are administered by several departments. Other courses in biology are listed under such headings as Biochemistry, Biological Structure, Botany, Microbiology, and Zoology.**

**BIOL 401 Cell Biology (5)** Nakken, Crowe, Hille, Wakimoto, Wright Selected topics in molecular cell biology. Strong emphasis on understanding original experiments that describe the functions of the cell. Prerequisite: either BIOL 200 or BIOL 402; either CHEM 221, CHEM 224, CHEM 238, or CHEM 336; either BIOL 365, GENET 372, ZOOL 301, ZOOL 455, ZOOL 485, BIOG 405, or BIOG 440.

**BIOL 402 Cell Biology Laboratory (3)** Practice in modern methods (restriction enzyme digestion, blotting, hybridization, immunocytochemistry, 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.

**BIOL 405 Cellular and Molecular Biology of Human Disease (3)** Nakken Concepts of cellular and molecular biology as applied to human disease. Emphasis on use of current experimental approaches to investigate disease mechanisms and the contributions of model systems. Selected topics in cancer biology; viral induced disease; gene therapy. Prerequisites: either BIOL 202 or BIOL 220; either BIOL 405, BIOG 440, BIOL 365, BIOL 401, GENET 371, GENET 372, ZOOL 301, ZOOL 455, or ZOOL 485.

**BIOL 438 Biological Monitoring and Assessment (5)** Karr Explores the technical questions (conceptual, sampling, and analytical), the rationale, policy relevance, and legal basis for tools—existing and new—used to assess ecological health. Prepares students to see the biological components of ecological systems in diverse ways. Offered: jointly with FISH 438.

**BIOL 454 Evolutionary Mechanisms (4)** Nakken Evolutionary change as determined by mutation, selection, drift and other mechanisms. Effects of the genetic system, isolating mechanisms, and population structure on speciation and evolution. Genetic, phylogenetic, and macroevolutionary changes from the diversity of life. For advanced undergraduate and graduate students in biological sciences. Prerequisite: either BIOL 102, BIOL 180, or BIOL 203.

**BIOL 470 Biogeography (4)** Nakken 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.

**BIOL 472 Principles of Ecology (5)** Nakken Population biology; interactions between species in biological communities, relationship of community to environment, biodiversity, energy flow, and nutrient cycling in ecosystems. Principles and applications. Prerequisite: either BIOL 102, BIOL 180, or BIOL 203.

**BIOL 473 Limnology (3)** Nakken 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 180, or BIOL 203.

**BIOL 475 Limnology Laboratory (2)** Nakken Examination of biota of fresh waters, survey of limnological methods, analysis of data, and writing of scientific papers. Prerequisite: BIOL 473, which may be taken concurrently.

**BIOL 476 Conservation Biology (5)** Nakken Explores biological, managerial, economic, and ethical concepts affecting survival of species. Application of ecology, 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 180, or BIOL 203.

**BIOL 477 Marine Conservation (3)** Nakken 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: BIOL 476.

**BIOL 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. Consensus restoration in practice. Pre-requisite: 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 WFISH 478; odd years; W.

**BIOL 490 Undergraduate Seminar (1-3, max. 6)** Nakken Supervised readings and group discussion of select topics of broad biological significance. Prerequisite: BIOL 102, BIOL 203, or BIOL 220.

**BIOL 491 Special Topics in Biological Science for Teachers (3-9, max. 9)** Nakken 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 programs. 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 and laboratory techniques. Credit/no credit only. Prerequisite: either BIOL 102, 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 (1-5, max. 15)

Courses for Graduates Only

BIOL 501 Advanced Cytology (1-5, max. 5) Detailed study of the structure and function of the cell.

BIOL 508 Cell Biology (3, max. 6) Four to five topics of current interest in cell biology selected by the enrollees.


BIOL 585 Methods and Problems in Development (3) Schubiger, Comai, Kimelman Special topics in development. Integrates classical and current approaches. Developmental genetics, experimental embryology, molecular mechanisms of developmental regulation, and gene function in cell determination and differentiation in developing systems. Prerequisite: BIOL 455 or equivalent.

BIOL 586 Analysis of Development (3, max. 6) Analysis of structural, physiological, and molecular levels of developmental processes, including gametogenesis, fertilization, cell and tissue movements, induction, and cytodifferentiation. Prerequisite: ZOOL 456 and BIOL 442.

BIOL 591 Problems in Biological Instruction (1-3, max. 3)

BIOL 600 Independent Study or Research (1-9, max. 9)

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**Botany**

426 Hitchcock

**General Catalog Web page:**

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

**Department Web page:**

departs.washington.edu/botweb/

Botany is concerned with the function and structure of plants, algae and fungi, their ecology and evolution, classification, physiology, development and genetics. Emphasis is placed both on organismal and on cellular and molecular biology. Special courses and programs in botany of the Pacific Northwest are shared with related departments.

**Graduate Program**

Graduate Program Coordinator

430 Hitchcock, Box 355325

206-543-1942

botweb@u.washington.edu

The Department of Botany offers programs of graduate study leading to the Master of Science and Doctor of Philosophy degrees. Each program takes into consideration the background and interests of the student.

**Research Facilities**

Special departmental facilities include a herbarium containing vascular plants, bryophytes, algae and fungi, a modern greenhouse, algae and fungal culture collections, growth chambers and rooms, modern instrumentation, and a scanning electron microscope center. The Friday Harbor Laboratories on San Juan Island offer opportunities for the study of marine botany. The great variety of habitats in the Pacific Northwest provide excellent opportunities for field investigations.

**Special Requirements**

A prospective graduate student is expected to have had the equivalent of an undergraduate major in biological science, with training in chemistry (at least through organic chemistry), and background in general botany and genetics. Calculus and/or statistics are recommended.

**Financial Aid**

Teaching assistantships and fellowships are awarded to selected applicants by March of each year. Students should inquire about research assistantships, training grants and other sources of support.

**Faculty**

**Chair**

Joseph F. Ammirati

**Professors**

Ammirati, Joseph F. * 1979; MA, 1967, San Francisco State, PhD, 1972, University of Michigan; mycology, taxonomy and ecology of fungi.

Bendich, Arnold J. * 1970; PhD, 1969, University of Washington; structure and replication of chromosomal DNA molecules in mitochondria, chloroplasts, and bacteria.

Bliss, Lawrence C. * 1978, (Emeritus); PhD, 1956, Duke University; physiological plant ecology and ecosystem development and function, arctic, alpine environments.

Cattolico, Rose A. * 1975; PhD, 1973, State University of New York (Stony Brook); signal transduction and calcium cycle processes in toxic marine algae.

Clailand, Robert E. * 1964, (Emeritus); PhD, 1957, California Institute of Technology; physiology of plant growth.

Comai, Luca * 1989; PhD, 1980, University of California (Davis); chromatin and gene regulation, genetics of polyploidy, functional genomics, plant transformation.

Del Moral, Roger * 1968; PhD, 1968, University of California (Santa Barbara); ecology, primary succession, gradient analysis, community structure.

Ebrey, Thomas 1997; PhD, 1968, University of Chicago; light energy transduction by retinal proteins, especially visual pigments and bacteriorhodopsin.

Hall, Benjamin D. * 1963; PhD, 1959, Harvard University; the evolution of nuclear genes in plants and fungi.

Halperin, Walter A. * 1968, (Emeritus); PhD, 1965, University of Connecticut; plant physiology, plant morphology.

Haskins, Edward F. * 1966, (Emeritus); PhD, 1965, University of Minnesota; cell biology and ultrastructure of microorganisms, especially slime molds.

Hinckley, Thomas M. * 1980, (Adjunct); PhD, 1971, University of Washington; forest tree physiology and autecology, subalpine ecosystems, water stress problems.

Krukeberg, Arthur R. * 1950, (Emeritus); PhD, 1950, University of California (Berkeley); evolution, biosystematics, edaphic ecology.

Leopold, Estella B. * 1976, (Emeritus); PhD, 1965, Yale University; paleoecology, pollen and seed analysis, late Cenozoic environments and climate history.

Nester, Eugene W. * 1962, (Adjunct); PhD, 1959, Case Western Reserve University; genetics and biochemistry, of bacterial-plant cell interactions.

Tsuchida, Matsuo * 1969, (Emeritus); PhD, 1961, Osaka City University (Japan); interpretation of Quaternary events from palynological and kindred data.

Van Volkenburgh, Elizabeth * 1982; PhD, 1980, University of Washington; leaf growth and development, photosynthesis and electrophysiology.

Waaland, J. Robert * 1969; PhD, 1969, University of California (Berkeley); biology of marine algae.

Walker, Richard B. * 1948, (Emeritus); PhD, 1948, University of California (Berkeley); plant physiology, mineral nutrition, water relations.

Whisler, Howard C. * 1963, (Emeritus); PhD, 1960, University of California (Berkeley); mycology, aquatic fungi, slime-molds and phycomycetes, development.

**Associate Professors**

Bradshaw, Harvey D. * 1984, (Adjunct Research); PhD, 1984, Louisiana State University; plant molecular genetics, evolutionary biology, genetic engineering of forest trees.

Halpern, Charles * 1991, (Adjunct Research); PhD, 1987, Oregon State University; plant community ecology, plant succession, effects of forest management on plant diversity.
Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/

BOTANY 428 Molecular and Cellular Biology of Plants (3) NW Bendich, Cattelico, Comai Structure and function of the nucleus, the organelles, and their genomes. Review of the techniques used in cellular and molecular biology such as tissue culture, cell fractionation, nucleic acid characterization, genetic engineering, and genome mapping. Prerequisite: either BIOL 101 or BIOL 203. Offered: W.

BOTANY 429 Plant Nuclear and Cytoplasmic Genetics (3) NW Bendich, Comai Covers genetic aspects specific to plants and algae, including chromosomes, structure, genome mapping, transposon biology, genes for floral and vegetative development, genetic engineering, ploidy levels, and cytoplasmic genetics. Prerequisite: either BIOL 101 or BIOL 203; or GENET 371 or GENET 372. Offered: AWSp.

BOTANY 441 Morphology and Anatomy of Land Plants (5) NW Comparative morphology and anatomy of land plants. Derivation of morphological structures and bases for current classification schemes examined using living and fossil organisms. Laboratories emphasize live plants native to the Pacific Northwest. Prerequisite: either BIOL 102 or BIOL 203. Offered: A.

BOTANY 443 Origins of Our Modern Floras (5) NW Leopold Evolution and biogeographic development of modern forest taxa and associations. Late Cenozoic forests (last 60 million years) of western North American environments, emphasizing geologic and climatic shifts that have shaped temperate and tropical vegetation. Three required weekend field trips. Prerequisite: BOTANY 113; either BIOL 102 or BIOL 203. Offered: A.

BOTANY 445 Marine Botany (8) NW Survey of plants represented in marine environments; natural history; ecology, distribution, habitat, adaptation, and trophic interrelationships. Prerequisite: either BIOL 102 or BIOL 203; ZOOL 430, which may be taken concurrently. Offered: at Friday Harbor Laboratories; Sp.

BOTANY 446 Phylogeny (5) NW Cattelico, Waaland Study of major algal groups emphasizing form, function, reproduction, and distribution. Topics include evolution, and classification. Economically useful and ecologically important algae emphasized. Prerequisite: either BIOL 102 or BIOL 203. Offered: Sp.

BOTANY 455 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. Recommended: either BOTANY 113 or BOTANY 354. Offered: even years; Sp.

BOTANY 456 Plant Community Ecology (5) NW del Moral Development of plant community theory; theory of vegetation structure and typal identification; numerical methods for vegetation description and pattern analysis; gradient analysis; competition in complex systems; vegetation dynamics, niche theory. Laboratory emphasizes field and computer methods. Three weekend field trips required. Prerequisite: either BOTANY 354 or BOTANY 455. Offered: odd years; Sp.

BOTANY 458 Alpine Plant Ecology (5) NW Structure of plant communities in alpine regions of the Pacific Northwest. Characteristics of physical environment which influence species adaptation and distribution. Influence, impact of humans and criteria for preservation and/or management of alpine areas. Three weekend field trips required. Prerequisite: either BIOL 102 or BIOL 203. Offered: S.

BOTANY 461 General Mycology (5) NW Ammirati, Whistler General survey of the fungi with emphasis on life cycles, structure, physiology, economic importance. Prerequisite: either BIOL 102, BIOL 180, or BIOL 203. Offered: A.

BOTANY 462 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 or BIOL 203.

BOTANY 490 Undergraduate Seminar I (1-3, max. 6) NW Preparation of undergraduates to research, including honors projects, and select topics in botany and related biological sciences. Offered: AWSp.

BOTANY 496 Peer Teaching Assistantships in Botany (1-5, max. 15) Direct experience in the classroom, typically teaching a lab section of an undergraduate course. Peer TAs attend lectures and weekly preparation meetings and gain in-depth background in the subject material as well as training in teaching techniques and approaches. Credit/no credit only. Offered: AWSp.

BOTANY 498 Special Problems in Botany (1-15, max. 15) Students with suitable background in botany may enroll for special study in phylogeny, anatomy, ecology, mycology, morphology, paleobotany, physiology, or taxonomy. Offered: AWSp.

Courses for Graduates Only

BOTANY 502 Teaching Assistant Orientation (2) Theory and practice of effective teaching in the laboratory. Students study the theory of being an effective teaching assistant in biological laboratories and receive direct experience in the laboratory setting. Credit/no credit only. Offered: A.

BOTANY 505 Modern Botany (2, max. 4) For incom ing graduate students in botany and certain interdisciplinary programs. Reviews recent advances in modern botany, covering molecular, cellular, organismal, and community plant physiology and ecology. Offered: jointly with ZOOL 561;GENET 573.

BOTANY 577 Molecular Genetics of Plant Development (2) Torii Concepts of plant growth and development approached in modern molecular-genetic terms. Topics include structure and function of meristems, cell fate specification, cell-lineage and positional information, dorso-ventral polarity determination, organogenesis, and floral patterning. Emphasis on the developmental genetics of model plants, Arabidopsis, Antirrhinum, maize, and tobacco. Offered: jointly with ZOOL 561;GENET 573.

BOTANY 598 Field Studies in Botany (1-6, max. 12) Field studies of plants, algae, and fungi. Emphasis on
methods and techniques for gathering and evaluating field data. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSp.

BOTANY 599 Laboratory Studies in Botany (1-6, max. 12) Laboratory studies of plants, algae, and/or fungi. Emphasis on methods, procedures, and evaluating research results. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSp.

BOTANY 600 Independent Study or Research (*) Credit/no credit only. Offered: AWSp.

BOTANY 700 Master’s Thesis (*) Credit/no credit only. Offered: AWSp.

BOTANY 800 Doctoral Dissertation (*) Credit/no credit only. Offered: AWSp.

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Canadian Studies

See International Studies.

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Chemistry

109 Bagley

General Catalog Web page: www.washington.edu/students/gencat/academic/chemistry.html

Department Web page: www.chem.washington.edu

Chemistry is a branch of natural science that deals principally with the properties of substances, the changes they undergo, and the natural laws that describe these changes. Chemistry is a central science, connecting on one side with physics and mathematics, and on the other with biology and medicine.

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, 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.

Master of Science

Admission Requirements: Baccalaureate degree with major in chemistry or allied sciences; Graduate Record Examination.

Graduation Requirements: With Thesis—Minimum GPA of 3.0 required for both degrees.

Doctor of Philosophy

Admission Requirements: Same as for the Master of Science degree.

Graduation Requirements: 18-27 credits of approved courses at the 400 or 500 level, with a total minimum GPA of 3.0; candidacy examinations covering area of specialization; dissertation.

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Faculty

Chair

Paul B. Hopkins

Professors

Andersen, Niels H. * 1968; PhD, 1967, Northwestern University; bioorganic, biophysical, and medicinal chemistry, NMR spectroscopy.

Borden, Weston T. * 1972; PhD, 1968, Harvard University; molecular orbital theory of organic molecules, reactions, and synthesis of unnatural products.

Callis, James B. * 1973; PhD, 1970, University of Washington; instrumentation development, process analytical chemistry, non-invasive clinical chemistry.

Campbell, Charles T. * 1989; PhD, 1979, University of Texas (Austin); physical chemistry of solid surfaces, chemisorption, catalysis, and surface analysis.

Charlson, Robert J. * 1962, (Emeritus); MS, 1959, Stanford University, PhD, 1964, University of Washington; atmospheric chemistry.

Christian, Gary D. * 1972; PhD, 1964, University of Maryland, atomic spectroscopy, clinical analysis, electroanalysis, flow injection analysis, optodes.

Daiton, Larry R. * 1998; PhD, 1971, Harvard University; materials chemistry focused on producing next generation opto-electronic materials.

Dovichi, Norman J. * 2000; PhD, 1980, University of Utah; laser-based microchemical analysis, capillary separation techniques, bioanalytical chemistry.

Drobný, Gary P. * 1981; PhD, 1981, University of California (Berkeley); two-dimensional and multiple quantum studies in nuclear magnetic resonance.

Engel, Thomas * 1980; PhD, 1969, University of Chicago; surface chemistry and catalysis.

Epitosis, Nicholas * 1972; PhD, 1972, Princeton University, applied quantum chemistry.

Floss, Heinz G. * 1987, (Emeritus); PhD, 1961, Technical University of Munich (Germany); bioorganic and natural products chemistry.

Gamm, Richard H. * 1985; PhD, 1970, Harvard University; atmospheric chemistry, chemical oceanography, environmental chemistry, biogeochemical cycles.

Gelb, Michael H. * 1985; PhD, 1982, Yale University; mechanistic enzymology, bioorganic and medicinal chemistry.

Gregory, Norman W. * 1946, (Emeritus); PhD, 1943, Ohio State University; structure and thermodynamic properties of inorganic substances, vaporization reactions.

Hakomori, Sen-Iritoh * 1967, (Adjunct); MD, 1951, DrMedS, 1956, Tohoku Imperial University (Japan); membrane biochemistry and glycoproteins.

Halsey, George D. * 1951, (Emeritus); PhD, 1948, Princeton University; absorption and interaction of rare gases with surfaces, solid solutions of rare gases, catalysis.

Heinekey, Dennis M. * 1991; PhD, 1982, University of Alberta (Canada); organometallic chemistry of the transition metals.

Hopkins, Paul B. * 1982; PhD, 1982, Harvard University; organic synthesis, bioorganic and nucleic acid chemistry.


Jonsson, Hannes * 1988; PhD, 1985, University of California (San Diego); computer simulations and scattering calculation in materials and surface science.

Kahr, Bart E. * 1997; PhD, 1988, Princeton University; design, growth, structure, physical properties of new crystalline materials.

Klevit, Rachel E. * 1983, (Adjunct); DPhil, 1981, Oxford University (UK); protein structure and function; molecular recognition; protein NMR.

Kovacs, Julia A. * 1988; PhD, 1986, Harvard University; synthesis, structure, and reactivity of bio- logically relevant transition-metal complexes.

Krohn, Kenneth A. * 1981, (Adjunct); PhD, 1971, University of California (Davis); chemistry, radiation oncology.

Kwiram, Alvin L. * 1970; PhD, 1963, California Institute of Technology; molecular structure and dynamics in the solid state with emphasis on excited states.

Lingafelter, Edward C. * 1939, (Emeritus); PhD, 1939, University of California (Berkeley); crystal and molecular structure of coordination compounds.

Mayer, James M. * 1984; PhD, 1982, California Institute of Technology; inorganic, organometallic, and bioinorganic transition metal chemistry.

Murray, James W. * 1973, (Adjunct); PhD, 1973, Massachusetts Institute of Technology; marine geochemistry, aquatic chemistry.

Norman, Joe G., Jr. * 1972; PhD, 1972, Massachusetts Institute of Technology; synthesis and structures of transition metal complexes, theoretical calculations on large molecules.

Olmeda, Marjorie A. * 1991, (Adjunct); PhD, 1985, University of California (Berkeley); experimental condensed-matter physics, surface and interface physics.

Palczewski, Krzysztof * 1992; MS, 1980, PhD, 1986, Technical University of Wrocław (Poland); visual transduction.

Parson, William W. * 1967, (Adjunct); PhD, 1965, Case Western Reserve University; bioenergetics, with particular emphasis on photosynthesis, picosecond spectroscopy.

Pocker, Yeshayau * 1961, (Emeritus); PhD, 1953, University College, London (UK); DSc, 1960, University of London (UK); organic reaction mechanisms, chemical and enzymatic catalysis, metalloenzymes, Alzheimer proteins.
Rabinovitch, B. Seymour * 1985, (Emeritus); PhD, 1942, McGill University (Canada); chemical dynamics, energy relaxation, properties of silver surfaces.

Rathod, Pradipsinh K. * 2001; PhD, 1981, Oregon Health Sciences University; biochemistry, immunology.

Raucher, Stanley * 1975; PhD, 1973, University of Minnesota; new methods in synthetic organic chemistry, total synthesis of natural products.

Reid, Brian R. * 1980; PhD, 1965, University of California (Berkeley); biophysical chemistry; NMR of DNA and RNA.

Reinhardt, William P. * 1991; PhD, 1968, Harvard University; theoretical and computational chemistry with applications in thermodynamics and atomic physics.

Robinson, Bruce H. * 1980; PhD, 1975, Vanderbilt University; magnetic resonance, molecular dynamics, polymer dynamics, nonlinear response theory.

Rose, Norman J. * 1966, (Emeritus); PhD, 1960, University of Illinois; design, synthesis, and study of coordination compounds of transition metals, including the lanthanide.

Ruzicka, Jaromir * 1984; PhD, 1963, Technical University of Prague (Czechoslovakia); analysis via flow injection for clinical research and industrial applications.

Schubert, Wolfgang M. * 1947, (Emeritus); PhD, 1947, University of Minnesota; mechanism and steric course of organic reactions, substituent and solvent effects.

Schurr, J. Michael * 1966; PhD, 1965, University of California (Berkeley); physical chemistry of DNA and other biopolymers, photon correlation techniques.

Stuve, Eric M. * 1985, (Adjunct); MS, 1979, PhD, 1983, Stanford University; electrochemical surface science, fuel cell engineering.

Synovec, Robert E. * 1986; PhD, 1986, Iowa State University; multidimensional chemical separation techniques, chromatographic data analysis.

Trager, William F. * 1972, (Adjunct); PhD, 1965, University of Washington; medicinal chemistry, bio- analytical chemistry drug metabolism.

Turecek, Frantisek * 1990; PhD, 1977, Charles University (Czechoslovakia); mass spectrometry and organic structural analysis.

Vandenbosch, Robert * 1963, (Emeritus); PhD, 1957, University of California (Berkeley); nuclear studies, particularly fission and nuclear reaction mechanisms, molecular clusters.

Varani, Gabriele * 2001; PhD, 1987, University of Milan (Italy); physical biophysical.

Woodman, Darrell J. * 1965; PhD, 1965, Harvard University; peptide synthesis, heterocyclic compounds, computers in chemical education.

Yager, Paul * 1987, (Adjunct); PhD, 1980, University of Oregon; physical chemistry, applications of biomembranes, biosensors, microfluidics.

Zoller, William H. * 1984; PhD, 1969, Massachusetts Institute of Technology; analytical, environmental, and nuclear chemistry.

Goldberg, Karen 1995; PhD, 1988, University of California (Berkeley); energetics and mechanisms of fundamental organometallic reactions.

Macklin, John W. * 1968; PhD, 1969, Cornell University; spectroscopic studies of materials in condensed phase and in solutions.

Reid, Philip J. * 1995; PhD, 1992, University of California (Berkeley); ultrafast condensed phase chemical reaction dynamics.

Sasaki, Tomikazu * 1989; PhD, 1985, Kyoto University (Japan); design and synthesis of functional proteins and protein mimetics.

Stenkamp, Ronald E. * 1978, (Adjunct); PhD, 1975, University of Washington; crystallography, metalloproteins, protein engineering, blood clotting proteins.

Beeson, Craig C. * 1996; PhD, 1993, University of California (Irvine); the chemistry and biochemistry of the immune system, regulation of energy metabolism.

Chiu, Daniel T. 2000; PhD, 1998, Stanford University; development of physical and analytical tools for applications in biology.

Frank, Natalia 2000; PhD, 1996, University of California (San Diego); magnetic exchange and charge transport processes in biology and materials.

Gamelin, Daniel R. 2000; PhD, 1997, Stanford University; physical inorganic chemistry; spectroscopy, bio- and materials-related inorganic chemistry.

Keller, Sarah L. 2000; PhD, 1995, Princeton University; biophysics; physical chemistry; soft condensed matter; surfactants; lipids; self-assembly.

Prezhd, Oleg * 1998; PhD, 1997, University of Texas (Austin); excitation dynamics of condensed phase chemical systems.

Sigurdsson, Snorri * 1996, (Research); PhD, 1993, University of Washington; nucleic acids chemistry; RNA catalysts (ribozymes); RNA structure and function.


Xia, Younan * 1997; PhD, 1996, Harvard University; materials chemistry and nanotechnology.

Senior Lecturer

Nyasulu, Frazier W. 1991; PhD, 1985, University of Salford (UK); chemical education, electroanalytical chemistry, electro depositions.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

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 414 Chemistry of the Main Group Elements (3) NW The elements and their compounds in relation to the periodic system. Prerequisite: either CHEM 165 or CHEM 312; either CHEM 452 or CHEM 457; either CHEM 453, CHEM 455, or CHEM 475. 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 452, CHEM 455, or CHEM 475. Offered: alternate years.

CHEM 419 Bioinorganic Chemistry (3) NW Description of transition metal-containing systems for biomedical applications. Structural properties of metalloproteins, 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.

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: 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: W.

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 435 Introductory Biophysical Chemistry (3) NW Survey of the statics and dynamics of biophysical and biochemical processes. Prerequisite: either CHEM 224, CHEM 239, or CHEM 337; either CHEM 452, CHEM 455, or CHEM 475, any of which may be taken concurrently; recommended: either BIOL 405 or BIOL 440. Offered: alternate years; W.

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: 455, 452, 456 (3 credits). Prerequisite: either CHEM 155 or CHEM 162; either MATH 125 or MATH 134; either PHYS 115 or PHYS 122. Offered: AW.

CHEM 453 Physical Chemistry for Biochemists II (3) NW Continuation of 452. Includes transport properties, enzyme kinetics, introduction to quantum mechanics, spectroscopy, and chemical thermodynamics. 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: WSp.

CHEM 456 Physical Chemistry (3) NW Chemical thermodynamics and physical chemistry 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. MATH 308. Offered: WSp.

CHEM 457 Physical Chemistry (3) NW Introduction to statistical mechanics, kinetic theory, and chemical kinetics. Prerequisite: either CHEM 455 or CHEM 456; either MATH 126 or MATH 136; either PHYS 116 or PHYS 123; recommended: MATH 307. MATH 308. Offered: jointly with ATM S 458.

CHEM 458 Global Atmospheric Chemistry (4) NW Global atmosphere as a 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 inorganic chemistry. Prerequisite: either CHEM 224, CHEM 239, or CHEM 337; recommended: either CHEM 455 or CHEM 475. Offered: A.

CHEM 461 Physical Chemistry Laboratory (3-4) NW Physical measurements in chemistry. Vacuum techniques, calorimetry, spectroscopic methods, electrical measurements. Prerequisite: either CHEM 155, CHEM 162, or CHEM E 436; either CHEM 453, CHEM 457, CHEM 477, or both CHEM 452 and CHEM 455; either PHYS 117 or PHYS 131; recommended: PHYS 132, PHYS 133. Offered: AsPrS.

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 spectrometry. 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 microcomputer 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 dynamical problems: quantum wavefunctions, wavepacket propagation, chemical kinetics. Use of computer programs for calculating electronic wavefunctions, molecular conformations, simulations of liquids and solids. Prerequisite: either CHEM 453, CHEM 456, or CHEM 476, any of which may be taken concurrently. Offered: W.

CHEM 471 Physical Chemistry of Macromolecules (3) NW Classical hydrodynamic methods, and modern optical correlation and pulse techniques for studying dynamical motions and conformations of macromolecules, especially biopolymers, in solution. Cooperative thermal transitions, optical properties, and polyelectrolyte effects. Prerequisite: either CHEM 452, CHEM 456, or CHEM 476; either CHEM 453, CHEM 457, or CHEM 477. Offered: alternate years; 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 476 Honors Physical Chemistry (3) NW For chemistry and biochemistry majors and otherwise qualified students. Chemical Thermodynamics. Similar in scope to CHEM 456 with the study of more complicated systems. Emphasis on using computer software to solve problems. Prerequisite: CHEM 475. Offered: W.

CHEM 477 Honors Physical Chemistry (3) NW For chemistry and biochemistry majors or otherwise qualified students. Statistical mechanics, kinetic theory, and chemical kinetics including statistical interpretations of kinetics and transport phenomena. Prerequisite: CHEM 475; either CHEM E 326, which may be taken concurrently, or CHEM 476. Offered: Sp.

CHEM 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. Prerequisite: either CHEM 396 or CHEM 396. Offered: jointly with BIOC 496; Sp.

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 (1, max. 12) Research in chemistry and/or study in the chemical literature. Credit/no credit only. Offered: A.}

Courses for Graduates Only

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: A. W.

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 241, CHEM 239, or CHEM 337; recommended: CHEM 460 or equivalent, CHEM 456 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 (1-3, max. 12) 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 (1-3, max. 12) 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: Sp.

CHEM 521 Analytical Electrochemistry (3) Theory and practice of modern electrochemistry with emphasis on instrumentation and applications in chemical analysis. Offered: alternate years.

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 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 OCEAN S 523/ATM S 508.

CHEM 525 Process Analytical Chemistry (3) Chemical sensors and systems approach to chemical analysis as an integral part of monitoring and controlling chemical, biological, and medical processes. Offered: alternate years.

CHEM 526 Chemometrics (3, max. 9) Mathematical and statistical methods for experimental design, calibration, signal resolution, and instrument control and optimization. Offered: alternate years.
CHEM 530 Advanced Organic Chemistry (3)
Fundamental aspects of organic structures and transformations. Structure and basicity of carbocations, 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, electronic spectra and spectroscopic selection rules. Prerequisite: CHEM 455. Offered: W.

CHEM 552 Statistical Mechanics (3)
General theorems of statistical mechanics, relation of the equilibrium theory to classical thermodynamics, quantal 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: Sp.

CHEM 553 Statistical Mechanics (3)
General theorems of statistical mechanics, relation of the equilibrium theory to classical thermodynamics, quantal 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: A.

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. Prerequisite: CHEM 540. Offered: Sp.

CHEM 561 Macromolecules (3, max. 9)
Physical chemistry of macromolecules and biopolymers. Topics include solution thermodynamics, hydrodynamic properties, molecular weight distributions, optical and electro-optic techniques, chain configuration statistics, cooperative phenomena, theory of rubber elasticity, and polyelectrolytes. Offered: alternate years.

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 BIOL 575; A.

CHEM 580 Topics in Chemistry (1, max. 3)
Special topics of interest relating to chemistry. Credit/no credit only. Offered: A.

CHEM 581 Topics in Inorganic Chemistry (3, max. 18)
Open only to students accepted for doctoral work in chemistry. Credit/no credit only. Offered: AWSp.

CHEM 582 Topics in Analytical Chemistry (3, max. 18)
Open only to students accepted for doctoral work in chemistry. Credit/no credit only. Offered: A.

CHEM 583 Topics in Organic Chemistry (3, max. 18)
Open only to students accepted for doctoral work in chemistry. Credit/no credit only. Offered: A.

CHEM 585 Topics in Physical Chemistry (3, max. 18)
Open only to students accepted for doctoral work in chemistry. Credit/no credit only. Offered: A.

CHEM 590 Seminar in General Chemistry (1, max. 18)
For chemistry graduate students only. Credit/no credit only. Offered: AWSp.

CHEM 591 Seminar in Inorganic Chemistry (1, max. 18)
For chemistry graduate students only. Credit/no credit only. Offered: AWSp.

CHEM 592 Seminar in Analytical Chemistry (1, max. 18)
For chemistry graduate students only. Credit/no credit only. Offered: AWSp.

CHEM 593 Seminar in Organic Chemistry (1, max. 18)
For chemistry graduate students only. Credit/no credit only. Offered: AWSp.

CHEM 595 Seminar in Physical Chemistry (1, max. 18)
For chemistry graduate students only. Credit/no credit only. Offered: A.

CHEM 600 Independent Study or Research (*)
Prerequisite: permission of coordinator. Offered: A.

CHEM 700 Master’s Thesis (*)
Prerequisite: permission of coordinator. Offered: AWSp.

CHEM 800 Doctoral Dissertation (*)
Prerequisite: permission of coordinator. Offered: A.

Chicano Studies
See American Ethnic Studies.

China Studies
See International Studies.

Classics
218 Denny
General Catalog Web page: www.washington.edu/students/gencat/academic/Classics.html
Department Web page: depts.washington.edu/classdept/

Classics embraces the ancient Greek and Roman civilizations 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 philosophical, literary, and technical theory, as well as with classical art and archaeology.

Classical Seminar in Rome: During spring quarter, the department offers instruction in classics for advanced undergraduate majors and graduate students in the University of Washington Rome Center, located in the Palazzo Pio on the Campo di 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 has been designed to ensure 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. A brochure, The Graduate Program in Classics, available from the department, gives additional information.

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 Paulus-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 an Ibycus scholarly computer and a license for the Thesaurus Linguae Graecae, Thesaurus Linguae Latinae, Perseus, and other databases.

Applicants for admission to the M.A. program should present an undergraduate major or its equivalent in Greek, Latin, or Classics. Prospective aspirants for the Ph.D. degree should have had two years of upper-division study in both languages, but may be admitted with less preparation in one language if their preparation in the other language is exceptionally strong. Admission to the Ph.D. program may be granted after completion of the requirements for the M.A. degree.

The M.A. degree requires a minimum of 27 credits in courses or seminars in Greek or Latin or both, and in related subjects approved by the department; a reading knowledge of French, German, or Italian; either an acceptable thesis or 9 additional credits in approved graduate courses and seminars; and a research paper.

The Doctor of Philosophy degree requires a minimum of 72 credits in courses or seminars in Greek, Latin, and related subjects approved by the department; a reading knowledge of German and either French or Italian; Greek and Latin prose composition; translation examinations on Greek and Latin; examinations in two special authors and one field of classical stud-
ies; an oral General Examination; dissertation; and Final Examination. Graduate students must have teaching experience before completing requirements for their terminal degree.

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.

Faculty

Chair
Stephen E. Hinds

Professors

Bilquez, Lawrence J. * 1969; PhD, 1968, Stanford University; Greek Art, Greek historiography and historians, Greek and Roman medicine and private life.

Blondell, Ruby * 1985; PhD, 1984, University of California (Berkeley); Greek and Roman philosophy and literature.

Clauss, James J. * 1984; PhD, 1983, University of California (Berkeley); Latin poetry and prose, Hellenistic literature, Latin literature of the Empire.

Hallinan, Michael R. * 1983; PhD, 1981, Harvard University; Greek literature, especially tragedy; Greek intellectual history.

Harmon, Daniel P. *; PhD, 1968, Northwestern University; Greek and Roman religion, Latin poetry, Greek tragedy, classical linguistics.

McDermott, John B. * 1949; Emeritus; PhD, 1940, University of California (Berkeley); Latin poetry, especially elegy and epic, literary criticism and theory.

Mackay, Pierre A. * 1966; Emeritus; PhD, 1964, University of California (Berkeley); Greek literature, post classical and Byzantine Greek literature, numismatics.

McDermott, John B. * 1949, (Emeritus); PhD, 1940, Johns Hopkins University; Greek literature and philosophy.

Pascal, Paul * 1953; Emeritus; PhD, 1953, University of North Carolina; Latin literature, Roman archaeology, medieval Latin.

Associate Professors

Connors, Catherine M. * 1990; PhD, 1989, University of Michigan; Roman epic, ancient novel, women in Greek and Roman antiquity, representations of nature.

Gowing, Alain M. * 1988; PhD, 1988, Bryn Mawr College; Latin and Greek historiography; Latin literature of the Empire.

Langdon, Merle K. * 1976; PhD, 1972, University of Pennsylvania; Greek archaeology, epigraphy, topography, and history.

Assistant Professor

Stroup, Sarah C. 2000; PhD, 2000, University of California (Berkeley); Latin prose literature, Greek and Roman drama, cultural studies.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsclat.

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 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) VLPACLAuss, Levanjouk 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 Power, Stroup Readings from the comedies of Aristophanes, Plautus, and Terence.

CLAS 430 Greek and Roman Mythology (3/5) VLPA Power Principal myths found in classical and later literature. Offered: AWSp.

CLAS 432 Classical Mythology in Film (3/5) VLPACLAuss 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 cinematic representations of the myth.

CLAS 435 The Ancient Novel (3) VLPA Connors, Power 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) IASVLPA Langdon, Langdon, Levanjouk Religion in the social life of the Greeks and Romans, with emphasis placed on their public rituals and festivals. Attention is given to the priesthoods, personal piety, rituals of purification and healing, and the conflict of religions in the early Roman Empire. Many lectures illustrated by slides. Recommended: 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.

Courses for Graduates Only

CLAS 520 Seminar (5, max. 45) Advanced comparative work on Greek and Latin materials studied in both original languages.

CLAS 700 Master’s Thesis (*)

CLAS 800 Doctoral Dissertation (*)

Classical Archaeology

CL AR 442 Greek Painting (3) VLPA Langdon 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 painting in 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 Langdon 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 Langdon 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.

Courses for Graduates Only

CL AR 513 Athenian Topography (5) Langdon 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) Langdon In-depth study of selected topics and problems of the art of ancient Greece and Rome. Offered: jointly with ART H 541.

Classical Linguistics

Courses for Graduates Only

CL LI 501 Comparative Phonology of Greek and Latin (5) Harmon 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) 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 Morphological and syntactical development of the Latin language; the development of Latin as a literary language.

CL LI 506 Italic Dialects (5) Harmon Principal remains of the non-Latin languages and dialects of ancient Italy.

CL LI 508 Greek Dialects (5) The non-Attic dialects of ancient Greek, based on a study of inscriptions and the literary remains.

Greek

Prerequisite for the following 400-level Greek courses; four years of high school Greek or 307 or permission.

GREEK 413 The Pre-Socratic Philosophers (3) VLPA Blondell

GREEK 414 Plato (3) VLPA Blondell

GREEK 415 Aristotle (3) VLPA Blondell

GREEK 422 Herodotus and the Persian Wars (3) VLPA Bliquez, Langdon, Levaniouk, Power

GREEK 424 Thucydides and the Peloponnesian War (3) VLPA Bliquez, Langdon

GREEK 426 Attic Orators (3) VLPA Bliquez, Langdon

GREEK 428 Imperial Greek Literature (3-5, max. 15) VLPA Clauss, Gowing Readings in imperial Greek prose and poetry from the first century CE onward, including Dio Chrysostom, Apoll. Plutarch, Aelius Aristides, Lucian, Athenaeus, and New Testament Koine.

GREEK 442 Greek Drama (3) VLPA Blondell, Levaniouk, Power

GREEK 443 Greek Drama (3) VLPA Blondell, Levaniouk, Power

GREEK 444 Greek Drama (3) VLPA Blondell, Levaniouk, Power

GREEK 449 Greek Epic (3) VLPA Levaniouk

GREEK 451 Lyric Poetry (3) VLPA Blondell, Levaniouk, Power

GREEK 452 Attic Orators (3) VLPA Bliquez, Langdon

GREEK 453 Pindar: The Epinician Odes (3) VLPA Levaniouk, Power

GREEK 461 Early Greek Literature (3-5, max. 15) VLPA Readings and discussion of selected authors of the early Greek period.

GREEK 462 Literature of Classical Athens (3-5, max. 15) VLPA Readings and discussion of selected authors of classical Athens.

GREEK 463 Hellenistic Greek Literature (3-5, max. 15) VLPA Claude Readings and discussion of selected authors of the Hellenistic Age.

GREEK 490 Supervised Study (*, max. 18) Special work in literary and philosophical texts for graduates and undergraduates.

Courses for Graduates Only

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 Select speeches, oratorical theory, historical questions.

GREEK 510 Greek Historians (5, max. 10) Bliquez

GREEK 512 Greek Tragedy (5, max. 10) Aeschylus, Sophocles, and/or Euripides.

GREEK 515 Greek Epigraphy (5) Langdon 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) Gowing

GREEK 590 Supervised Study (*, max. 18) Prequisite: permission of graduate program coordinator.

GREEK 600 Independent Study or Research (*) Gowing

Latin

LATIN 401 Medieval Latin Literature to 1200 (3) VLPA Hinds Texts read in Latin; cultural and historical contexts discussed. Presupposes year and a half of Latin or equivalent. Informal individual guidance available to members of class handling medieval or renaissance Latin texts in their research. Recommended: LATIN 306.

LATIN 402 Later Medieval and Renaissance Latin Literature (3) VLPA Hinds Texts read in Latin; cultural and historical contexts discussed. Presupposes year and a half of Latin or equivalent. Informal individual guidance available to members of class handling medieval or renaissance Latin texts in their research. Recommended: LATIN 306.

LATIN 412 Lucretius (3) VLPA Blondell, Claus

LATIN 414 Seneca (3) VLPA Blondell, Stroup

LATIN 422 Livy (3) VLPA Claus, Gowing

LATIN 423 Cicero and Sallust (3) VLPA Claus, Gowing, Stroup

LATIN 424 Tacitus (3) VLPA Claus, Gowing

LATIN 447 Roman Lyric (3) VLPA Claus, Harmon

LATIN 449 Roman Elegy (3) VLPA Harmon, Hinds

LATIN 451 Roman Satire (3) VLPA Connors, Stroup

LATIN 457 Roman Drama (3) VLPA Connors

LATIN 458 Roman Epic (3) VLPA Claus, Connors, Hinds

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.

LATIN 462 Latin Literature of the Augustan Age (3-5, max. 15) VLPA Readings and discussion of selected authors from the Augustan era.

LATIN 463 Latin Literature of the Empire (3-5, max. 15) VLPA Readings and discussion of selected authors from the Roman Empire.

LATIN 465 Roman Topography and Monuments (5, max. 10) VLPA Claus, 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. Offered: Sp.

LATIN 490 Supervised Study (*, max. 18) Special work in literary and philosophical texts for graduates and undergraduates.

Courses for Graduates Only

LATIN 500 Grammar and Composition (5) Claus, 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) Claus, Harmon, Hinds

LATIN 502 Horace (5) Claus, 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 Selected speech- es, with attention to rhetorical theory and/or letters.

LATIN 508 Silver Latin Literature (5) Connors, Hinds

LATIN 510 Roman Historians (5, max. 10) Claus, Gowing

LATIN 512 Augustan Poetry (5, max. 10) Claudius, Gowing

LATIN 520 Seminar (5, max. 45) Gowing

LATIN 565 Seminar in Rome (5, max. 10) Claus, Gowing, Harmon, Stroup Study of selected topics and authors in Latin literature. Conducted in Rome.

LATIN 590 Supervised Study (*, max. 18) Prequisite: permission of graduate program coordinator.

LATIN 600 Independent Study or Research (*) Gowing

Communication

102 Communications

General Catalog Web page: www.washington.edu/undergraduates/gencat/ academic/communication.html

Department Web page: www.com.washington.edu

Communication is a process that creates and reveals meanings, relationships, and cultural patterns. The mission of the Department of Communication is to advance the study and practice of communication across a range of contexts, including face-to-face interactions, public discourse, mass media, and digital media.

Graduate Program

Graduate Program Coordinator
221 Communications, Box 353740
206-543-7269
cmuno@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, practition-
ers, 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 variety 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 (www.com.washington.edu/mcdigital/). 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 (depts.washington.edu/native/).

Special Requirements

Students are admitted to programs in the autumn quarter only. Admission into the Ph.D. program requires completion of a master’s degree in communication or a related field. Visit the department Web site noted above for application forms and details. Applicants for M.A. and Ph.D. degrees may be considered for financial assistance in the form of teaching or research assistantships. The application deadline for those wishing to be considered for financial or research assistantships. The application deadline is April 1. In all cases, international students are strongly advised to apply by November 1.

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.

Faculty

Professors

Baldasty, Gerald J. * 1974; MA, 1974, University of Wisconsin, PhD, 1978, University of Washington; communications history and law, government-pressure relations, First Amendment philosophy and theory.

Bennett, W. Lance * 1974; MPhil, 1973, PhD, 1974, Yale University; American politics, comparative politics, political communication, mass media, political culture.

Bosmajian, Haig A. * 1965, (Emeritus); PhD, 1960, Stanford University; rhetoric, freedom of speech.

Carter, Richard Fremont * 1967, (Emeritus); PhD, 1957, University of Wisconsin.

Coney, Mary B. * 1976, (Adjunct); PhD, 1973, University of Washington; writing style and theories of technical communication, rhetoric, reader response theory.

Giffard, Charles A. * 1978, PhD, 1968, University of Washington; international news systems, news flow, editing and reporting.

Lang, Gladys Engel * 1984, (Emeritus); PhD, 1954, University of Chicago; political effects of mass media, sociology of art, political movements and crowd behavior.

Lang, Kurt * 1984, (Emeritus); PhD, 1953, University of Chicago; political and social effects of the media on mass communication; arts and society; public opinion.

Nilsen, Thomas R. 1946, (Emeritus); MA, 1948, University of Washington, PhD, 1953, Northwestern University; contemporary rhetorical theory, ethics of rhetoric.

Pember, Don R. * 1969; PhD, 1969, University of Wisconsin; contemporary law and mass communication, First Amendment history, regulation of mass communication.

Philipsen, Gerry F. * 1978; PhD, 1972, Northwestern University; ethnography of communication.

Scheidel, Thomas M. * 1976, (Emeritus); MA, 1955, PhD, 1958, University of Washington; communication theory and research, small group processes.

Shadel, Willard F. 1974, (Emeritus); MA, 1953, University of Michigan; broadcasting.

Stamm, Keith R. * 1973; PhD, 1968, University of Wisconsin; communities and newspapers, new media technology, dynamic models of communication behavior.

Staton, Ann Q. * 1977, (Affiliate); PhD, 1977, University of Texas (Austin); instructional communication.

Warnick, Barbara P. * 1980; PhD, 1977, University of Michigan; rhetorical theory and criticism.

Yerxa, Fendall Winston * 1965, (Emeritus); BA, 1936, Hamilton College; journalism.

Associate Professors

Bowen, Lawrence * 1973, (Emeritus); PhD, 1974, University of Wisconsin; advertising, media research, consumers, information-seeking and -processing behaviors.

Ceccarelli, Leah M. * 1996; MA, 1992, PhD, 1995, Northwestern University; rhetoric of science, rhetorical criticism.

Chan, Anthony B. * 1990; PhD, 1980, York University (Canada); Chinese communications, especially e-commerce, especially dot-com enterprise.

Cranston, Patricia * 1954, (Emeritus); MA, 1954, University of Texas (Austin); broadcast journalism, history, writing and production of documentaries.

Domke, David S. * 1998; PhD, 1996, University of Minnesota; communication effects; political cognition, political elites and public opinion; race, gender, media.

Fearn-Banks, Kathleen A. 1990; MS, 1965, University of California (Los Angeles); crisis communications, history.

Gastil, John W. * 1997; PhD, 1994, University of Wisconsin; deliberation and democracy, group decision making, political discourse, political philosophy, civic.

Jackson, Kenneth M. * 1974, (Emeritus); PhD, 1970, University of Washington; institutional communications, media research, mass media and public policy, cultural communications.

Kielbowicz, Richard B. * 1984; PhD, 1984, University of Minnesota; communication history/law, impact of technology on press and society, Canadian media.

Lau, Tuen-Yu 2001; MA, 1982, Stanford University, PhD, 1991, Michigan State University; media management, international communication, mass media, journalism, social impact of digital media.

Manusov, Valerie L. * 1993; PhD, 1989, University of Southern California; the interplay between communication behaviors and cognitions in interpersonal interactions.

Parks, Malcolm R. 1978, PhD, 1976, Michigan State University; communication theory, interpersonal communication, social uses of the Internet, social network and o.

Post, Robert M. * 1960; PhD, 1961, Ohio University; oral interpretation of literature.

Rivenburgh, Nancy * 1989; MS, 1982, Boston University, PhD, 1991, University of Washington; international communications; the role of media in international and intercultural relations.

Samuelson, Merrill * 1962, (Emeritus); PhD, 1960, Stanford University; research methods, processes of reading, patterns in reader selection of new stories.

Simpson, Roger A. * 1968; PhD, 1975, University of Washington; communication history, law of communication, media economics, editorial journalism.

Underwood, Douglas M. * 1987; MA, 1974, Ohio State University; newspaper economics and management, press and politics, literature and journalism.

Assistant Professors

Bonen, Enrique C. * 1998, (Adjunct); PhD, 1997, University of California (San Diego); race and ethnicity; communication, education and culture; Asian American studies.

Foot, Kirsten A. 2001; MA, 1990, Wheaton College; PhD, 1999, University of California (San Diego); international communication, technology and society, Internet studies, research methods.

Howard, Philip 2002; MS, 1994, London School of Economics and Political Science, PhD, 2002, Northwestern University; political communication, new media and social problems, organizational behavior in new economy firms.

Kawamoto, Kevin Y. * 1992; PhD, 1997, University of Washington; new media technologies, computer-mediated communication and computer crime.

Moy, Patricia * 1998; PhD, 1998, Cornell University; political communication, public opinion, media effects and research methodology.

Prosise, Theodore O. * 2001; PhD, 2000, University of California (Los Angeles); rhetorical theory and criticism, argument, the rhetoric of nuclearism.
Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat.


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 NewMedia 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 411 Seminar in Political Communication (5, max. 10) I&S Topics vary.

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.

COM 418 Communications and the Environment (5) I&S Examines the role of mass media in the resolution of environmental problems. Topics include stress and weakness 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 470.

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, political, social, and political parameters that influence these media.

COM 429 Chinese Communications Systems (5) I&S Examines 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 documentary became prominent through the National Film Board and the Canadian Broadcasting Corporation. Discussion of Flaherty, Greirson, and independent network producers who developed the 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 434 Argumentation Theory (5) I&S/VLPA Theory and research on the structure and properties of argument, argument field, 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 include understanding these texts, the 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 481.

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, broadcast, photography, and more—on individuals and institutions, especially government, business, and the mass media. How do current policies have changed to govern new media forms.

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 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 460 Special Reporting Topics (4) I&S Topics vary.

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 online 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 462 Magazine Writing (5) I&S Techniques of writing and marketing the full-length magazine article.

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 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 political 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 350.

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 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 Speech 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 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 489 Ethnicity, Gender, and Communication (5) I&S Media portrayal of women and people of color; creation of alternative media systems by women and people of color in the United States. Offered: jointly with AES 489/WOMEN 489.

COM 495 Special Topics in Speech 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 498 Independent Research (2-6, max. 6) Work on research projects designed and conducted by undergraduate students. Credit/no credit only.

COM 499 Directed Research (1-5, max. 10) Work on research projects designed by faculty members.

Courses for Graduates Only

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, experiment, 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 Explores the relationship 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 (3-6, max. 12) Methods of fieldwork research in communication studies, with emphasis on participant observation, ethnography, and discourse analysis.

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 communication research. Study of historical methods, bibliographic, 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 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 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 548 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) Survey of contemporary and some historical political communications research, emphasizing quantitative aspects. May include discussions and demonstrations of experimental, survey, aggregate, and content analysis methods. Designed to foster substantive comprehension of political communication literature, familiarity with research techniques, and creation of empirical projects. 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 555 Political Deliberation (5) VLPA I&S/ Gasti/ 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.

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 contexts. Offered: jointly with POL S 594.

COM 557 Government and Mass Communication (5) Legal problems of mass communication, institutions, and media operations.

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 565 Mass Media Structure (5) Research on the structural aspects of mass communication.

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 S 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 580 Nonverbal Communication (5) Reviews primary theories and research on nonverbal communication. Focus on developmental and social aspects of nonverbal cues, including research 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 582 Communication Education Research (5) Communication in instructional environments. Nature of instructional communication, paradigms for instructional communication research, qualitative and quantitative 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 S 584.

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 Seminar (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 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 General Exam Preparation or M.C. Project (*) Prerequisite: permission of supervisory committee chairperson.

COM 700 Master’s Thesis (*)

COM 800 Doctoral Dissertation (*)
Comparative Literature
BS31 Padelford

genetic Lit.html

The comparative literature program works across national and regional boundaries to explore the relationships among multiple literary traditions. Comparative literature focuses on the relationship of literature to the other arts and to fields of knowledge such as philosophy, anthropology, history, or cultural studies. Departmental courses deal with a range of topics in literary and cultural studies, from specific investigations of the patterns of influence and reception across national traditions to the general study of literary theory and criticism.

Graduate Program
Graduate Program Coordinator
BS31 Padelford, Box 354338
206-543-7542
citgrad@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, Germanic, Near Eastern Languages and Civilization, Scandinavian Studies, Slavic Languages and Literatures, Spanish and Portuguese Studies, and Women Studies. Study in this program 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.

Special Requirements
Applicants for the M.A. program are required to have a B.A. degree in comparative literature, English, or any foreign literature, or an equivalent background; applicants for the Ph.D. program are required to have an M.A. in one of the above areas. M.A. students are required to demonstrate advanced reading knowledge in one language other than English and a basic reading knowledge of a second. Ph.D. students are required to demonstrate advanced reading knowledge in two languages other than English and a basic reading knowledge of a third. Language competence is evaluated by Comparative Literature faculty through departmental examinations or by evidence of completion of satisfactory advanced (400- or 500-level) course work in the language.

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.

Ph.D. Program in Theory and Criticism
This is a joint-doctoral program with eleven participating doctoral programs (Asian Languages and Literature; Classics; Comparative Literature; Drama, English; Germanics; French and Italian Studies; Scandinavian Studies; Slavic Languages and Literatures; Spanish and Portuguese Studies; and Speech Communication). The program combines the doctoral program in one of the participating departments with an additional set of courses in theory and criticism into an integrated course of study. The purpose is to broaden a student’s perspective and to increase awareness of different critical approaches to literature and related fields. Study in this program leads to a Ph.D. in the respective major field and theory and criticism.

Admission Requirements
Applicants must have been admitted to one of the participating departments and have received a Master’s degree in a subject represented by these departments or in a related field.

Faculty
Chair
Gary J. Handwerk

Professors
Adams, Hazard S. * 1977, (Emeritus); MA, 1949, PhD, 1953, University of Washington; romanticism, history of literary theory, Anglo-Irish literature.
Ammerlahn, Hellmut H. * 1968; PhD, 1965, University of Texas (Austin); classicism and comparative literature.
Borch-Jacobsen, Mikkel * 1986; Doct, 1981, University of Strasbourg (France); French twentieth-century literature, theory and criticism, psychoanalysis.
Brown, Jane K. * 1988; PhD, 1971, Yale University; eighteenth, nineteenth and twentieth-century literature, comparative literature.
Brown, Marshall J. * 1988; PhD, 1972, Yale University; eighteenth- and nineteenth-century literature, literary theory, music and literature.
Christofides, Constantine * 1966, (Emeritus); PhD, 1956, University of Michigan; medieval, seventeenth century, Romanesque.
Handwerk, Gary J. * 1984; PhD, 1984, Brown University; British, German, and French nineteenth- and twentieth-century narrative; Romantic and post-Romantic.
Huoby, Antonin F. * 1961, (Emeritus); PhD, 1946, Charles University (Czechoslovakia); medieval literature.
Kramer, Karl D. * 1970, (Emeritus); MA, 1957, PhD, 1964, University of Washington; Russian literature.
Leiner, Jacqueline * 1963, (Emeritus); DDSLE, 1969, University of Strasbourg (France); modern French literature.
Leiner, Wolfgang * 1963, (Emeritus); PhD, 1955, University of Saarlandes (Germany); seventeenth- and eighteenth-century French and Italian literature.
Modiano, Raimonda * 1978; PhD, 1973, University of California (San Diego); romanticism.
Reinert, Otto * 1956, (Emeritus); PhD, 1952, Yale University; comparative literature, eighteenth-century literature.
Rossel, Sven H. * 1974, (Affiliate); PhD, 1968, University of Copenhagen (Denmark); Danish language and literature, Scandinavian ballads, comparative literature.
Shavio, Steven * 1984; PhD, 1981, Yale University; film, cyberstudies, postmodernism, contemporary popular culture.
Staten, Henry J. * 1998; PhD, 1978, University of Texas (Austin); 19th-century and 20th-century British literature, history of literary criticism, contemporary theory.
Steele, Cynthia * 1986; PhD, 1980, University of California (San Diego); Latin American literature and society, cinema, postcolonial and feminist theory.
Steele, Birgitta * 1973, (Emeritus); PhD, 1960, University of Washington; Scandinavian drama and film, children’s literature, comparative literature.
Vance, Eugene * 1990; PhD, 1964, Cornell University; medieval literature, the history of criticism, and discourse analysis.
Wang, Ching-Hsien * 1971; PhD, 1971, University of California (Berkeley); Chinese poetry.
Ziareh, Farhat J. * 1966, (Emeritus); LLB, 1940, University of London (UK); Arabic language and literature, Islamic law, Islamic institutions.

Associate Professors
Collins, Douglas P. * 1980; PhD, 1978, University of Missouri; twentieth-century French literature.
Cnkovic, Gordana * 1993; (Adjunct); MA, 1991, PhD, 1993, Stanford University; East European literature, film and cultural studies, former Yugoslavia, theory, American literature.
Elrich, Robert J. * 1964, (Emeritus); PhD, 1960, Harvard University; eighteenth-century French literature.
Fisher, Alan S. * 1968; PhD, 1969, University of California (Berkeley); Renaissance, seventeenth- and eighteenth-century literature, history of literary criticism.
Geist, Anthony L. * 1987; PhD, 1978, University of California (Berkeley); twelfth-century Spanish literature; ideology and literary form.
Kapetanick, Breda * 1975, (Emeritus); LittD, 1966, University of Zagreb (Yugoslavia); theory of comparative literature, 19th and 20th century European literature.
Konick, Willis * 1950; PhD, 1964, University of Washington; Russian literature, nineteenth-century European literature, cinema studies.
McLean, Sammy * 1967, (Emeritus); PhD, 1963, University of Michigan; Western drama, 20th-century poetry, psychoanalysis and literature, literary translation.
Sbragia, Albert J. * 1989; PhD, 1988, University of California (Berkeley); modern and contemporary Italian literature and cinema.
Sehmsdorf, Henning K. * 1967, (Emeritus); PhD, 1968, University of Chicago; folklore and mythology.
Norwegian language and literature, comparative literature.

Vaughan, Miceal F. * 1973; PhD, 1973, MA, 1973, Cornell University; medieval European languages and literature; textual studies.

Warne, Lars G. * 1975, (Emeritus); PhD, 1974, University of California (Berkeley); Swedish language and literature, Scandinavian novel, comparative literature.

Assistant Professors

Bean, Jennifer M. * 1998; PhD, 1998, University of Texas (Austin); film studies, American literature and culture, studies in gender and sexuality.

Braester, Yomi 2000; PhD, 1998, Yale University; modern Chinese literature, film, literary criticism, theory of art.

Senior Lecturer

Dornbush, Jean M. * 1980; PhD, 1976, Princeton University; medieval period, women and literature, writing in comparative literature.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

C LIT 400 Introduction to the Theory of Literature (5) VLPA A selection of major theoretical statements in the history of literary theory, with emphasis on fundamental issues of lasting concern and with attention to some recent emphases.

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 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 460 Cinematic Production (5) VLPA Examines fictional or documentary filmmaking/video production from concept, focus, treatment, research, data gathering, story development, scripting, narrating, performing and postproduction. Students will be exposed to a wide variety of filmmaking styles and will engage in a group creative project.

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.

Courses for Graduates Only

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. 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 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 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 (*)
Comparative Religion
See International Studies.

Dance
258 Meany
General Catalog Web page: www.washington.edu/students/gencat/academic/dance.html
Department Web page: depts.washington.edu/uudance/

The dance program is designed as part of a liberal arts curriculum and provides students with a foundation for future advanced work in performance or movement-related work. It is recommended that majors supplement their dance studies with course work in other disciplines that will provide a foundation for later specialization in dance ethnology, dance history and criticism, performance art, education, movement therapy, or movement science.

Graduate Program
Graduate Program Coordinator
259 Meany, Box 351150
206-543-1640
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.

During the two-year program, a student must complete at least 72 credits, of which a minimum of 24 must be in an area of specialization (e.g., history, criticism, aesthetics, anatomy, ethnology).

Admission Requirements
(1) A letter of application and résumé. (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.

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

Faculty
Chair
Elizabeth Cooper

Professors
Knapp, Joan S. * 1981, (Emeritus); MA, 1964, University of Illinois; dance composition, improvisation, kinesthetic training.

Wiley, Hannah * 1984; MA, 1981, New York University; ballet, scientific aspects of dance, choreography, dance in higher education.

Associate Professor
Cooper, Elizabeth A. 2001; MFA, 1997, University of Washington; dance history, ballet, modern, research methods.

Assistant Professor
Simpson, Maria Quinlan * 1994; MFA, 1996, University of Washington; dance science, dance pedagogy, and the application of both to the dance technique class.

Lecturer
Cohen, Pamela 2001; MFA, 2001, University of Washington; modern, psychology for dance.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

DANCE 420 Dance Aesthetics (3) I&S/VLPA 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. 6) VLPA Special studies designed to address contemporary and historical concerns in the field of dance.

DANCE 493 Anatomy for Dance (3-5) NW/VLPA Simpson Anatomy of the musculoskeletal system and its applications in dance movement.

DANCE 499 Undergraduate Independent Study (*, max. 6)

Courses for Graduates Only
DANCE 510 Chamber Dance Production (3, max. 9) Dance production in the university environment. Publicity, programming, budgeting. Rehearsal, rehearsal direction, and performance of Chamber Dance Company repertoire. Credit/no credit only.

DANCE 515 Dance Research Methods (3) Seminar in problem identification and definition, theory development, research design, data analysis, and interpretation. Examples of various types of dance research.

DANCE 520 Dance in Higher Education (3) Readings, discussion, and observation of teaching methods. Students assist faculty in the instruction of lower-level classes. Selected anatomical, historical, and aesthetic concepts as they relate to dance pedagogy. Development of a personal teaching style appropriate for university-level dance courses.

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 531 Choreographer/Composer Collaborative Performance (3, max. 9) Collaboration between choreographers and composers culminating in public performance. Offered: A.

DANCE 544 Early Dance History (3-5) Study of the evolution of dance from ritual to a theatre art form.

DANCE 545 Late Dance History (3-5) Roots of contemporary dance as an art form and its relationship to developments in ballet since the turn of the century.

DANCE 590 Dance Teaching Methodologies (3-5) Wiley Introduction to dance pedagogy with an emphasis on motor learning skills and biomechanics. Practical teaching experience.

DANCE 595 Master’s Project (3) Project in an 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 (*, max. 10)

Digital Arts and Experimental Media

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

DXARTS 498 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 499 Undergraduate Research (1-5, max. 12)

Courses for Graduates Only
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 professionals.

DXARTS 600 Independent Study or Research (1-9, max. 27)
Drama

101 Hutchinson

General Catalog Web page: www.washington.edu/students/gencat/academic/drama.html

Department Web page: arts.washington.edu/drama

The School of Drama offers instruction in acting, directing, design, theatre history, and dramatic theory. The School uses various theatres including the Penthouse (the first theatre-in-the-round built in the United States), the thrust-stage Playhouse, the end-stage Studio Theatre, and the proscenium opera house in Meany Hall. Faculty- and student-directed plays drawn from the full range of world dramatic literature are produced throughout the year. The School also produces operas in association with the School of Music and utilizes two performance spaces in Hutchinson Hall for student work. All of these provide a rich opportunity for student participation in all aspects of dramatic art.

Graduate Program

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

The School of Drama offers programs of graduate study leading to the Master of Fine Arts and Doctor of Philosophy 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 years to complete 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. Students are also encouraged to do interdisciplinary work with such allied programs as the Ph.D. program in critical theory.

Admission Requirements

Students may enter only in autumn quarter. Since admission requirements vary for each of the graduate programs, applicants should contact the School for current application information and deadlines.

Faculty

Chair
Sarah N. Gates

Professors
Blau, Herbert * 2000; (Adjunct); PhD, 1954, Stanford University; drama and performance, literary and cultural theory.
Clay, Jack D. * 1986, (Emeritus); MA, 1956, Northwestern University; acting.
Comtois, Mary Elizabeth * 1985, (Emeritus); PhD, 1970, University of Colorado (Boulder); playwriting.
Crider, James R. * 1983, (Emeritus); MA, 1950, University of Washington; costume design.
Dahlstrom, Robert A. * 1971; MA, 1967, University of Illinois; design.

Gates, Sarah N. * 1983; MA, 1974, University of California (Santa Barbara); MFA, 1983, Boston University; costume design.
Haaga, Agnes M. 1978, (Emeritus); MA, 1952, Northwestern University; child drama.
Hostetler, Paul S. * 1974, (Emeritus); PhD, 1965, Louisiana State University; theatre history, directing.
Jory, Jon V. 2000; acting, directing.
Siks, Geraldine B. 1977, (Emeritus); MA, 1940, Northwestern University; child drama.
Sydow, John D. 1970, (Emeritus); MFA, 1950, Yale University; directing.
Witham, Barry B. * 1979; PhD, 1968, Ohio State University; theatre history.

Associate Professors
Bryant-Bertall, Sarah * 1990; PhD, 1986, University of Minnesota; Western and Asian drama, theater history, performance practices, film, critical theory.
Forrester, William D. * 1972; MFA, 1969, Yale University; scene design.
Hunt, Robyn * 1988; MFA, 1978, University of California (San Diego); actor training, cross-cultural performances, techniques, and script writing.
Jenkins, Mark F. * 1989; the Stanislavski approach to acting, acting, directing.
Valenti, Aurora, 1943, (Emeritus); MA, 1949, University of Washington; puppetry.

Assistant Professors
Curtis-Newton, Valerie * 1998; MA, 1996, University of Minnesota; Western and Asian drama, theater technique, theatre history.
Johnson, David Odai * 1998; PhD, 1994, University of Texas (Austin); theatre history with an area of emphasis in English Restoration and 18th century.
Madden, Catherine M. 1987; MA, 1977, Washington University; Alexander technique, acting.
Parker, Shanga Kyle Gerard * 1994; MFA, 1991, University of California (San Diego); acting in Shakespearean verse.
Redd, Tina * 1999; PhD, 1996, University of Washington; dramatic theory and criticism, emphasis on representations of race and gender.
Wolcott, John R. * 1967, (Emeritus); PhD, 1967, Ohio State University; theatre history, computing in theatre research.

Senior Lecturers
Harrison, Mark Jeffrey * 1997; PhD, 1989, New York University; director of theatre and opera, head of the Professional Direction Training Program.
Shahn, Judith * 1990; BFA, 1977, Carnegie Mellon University; voice production for the theatre, dialects, Shakespeare and modern text.

Lecturers
Collum, Jerry L. 2001; BFA, 1984, Auburn University; technical direction.
Trout, Deborah L. * 1994; MFA, 1994, Yale University; design for the theatre; costume and set design.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

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 Dahlstrom, Forrester 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 Stage Painting (3, max. 6) VLPA Forrester 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 Forrester Weekly figure-drawing laboratories with live model and weekly field trips for laboratories in drawing natural
phomena 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 in projects directed by graduate directing students. 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 460 Introduction to Directing (3) VLPA Curtis-Newton, Harrison 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 (3) VLPA Curtis-Newton, Harrison Elementary study of the art of the stage director. Recommended: DRAMA 460.

DRAMA 462 Elementary Directing (3) VLPA Harrison 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 begin-nings 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 494 Special Studies in Theatre and Drama (5, max. 20) VLPA Bryant-Bertail, Johnson, Redd, 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: A/W.

DRAMA 499 Undergraduate Research (1-5, max. 15)

Courses for Graduates Only

DRAMA 502 Designer-Director Analysis (4) Dahlstrom 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) Dahlstrom, Forrester, 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) Discussion of work in progress, comparison of production, centering on the physical and poetic work of the designer/director on the production and the methods of execution in the shops and on stage. Offered: A/W.

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 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: A/W.

DRAMA 557 Studio I (12, max. 36) Hunt, Jenkins, Jory, Madden, Pearson, Shahn Skill development in acting, voice, speech, and movement necessary for professional training in acting. Prerequisite: admission to the Professional Actor Training Program. Offered: A/W.

DRAMA 558 Studio II (12, max. 36) Hunt, Jenkins, Jory, Madden, Pearson, Shahn Continuation of 557. Prerequisite: DRAMA 557 and completion of the first year of the Professional Actor Training program. Offered: A/W.

DRAMA 559 Studio III (6, max. 18) Hunt, Jenkins, Jory, Madden, Pearson, 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: A/W.

DRAMA 560 Managing the Rehearsal and Production Process (2) Harrison 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) Harrison 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 pro-
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) Harrison 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 stage exercises; direction of scenes or acts from verse plays.

DRAMA 566 Directing for the Camera (3) Storyboarding, 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, William Methods and techniques of research, interpretation, and writing in the theatre history. Relationship of theatre arts to culture in diverse periods and places.

DRAMA 572 Problems in Theatre History Research (5) Johnson, William Methods and techniques of research, interpretation, and writing in the theatre history. Relationship of theatre arts to culture in diverse periods and places.

DRAMA 573 Problems in Theatre History Research (5) Johnson, William Methods and techniques of research, interpretation, and writing in the theatre history. Relationship of theatre arts to culture in diverse periods and places.

DRAMA 574 Seminar in Theatre History (5) Johnson, William Specific topics in theatre history, examining the drama of various national, linguistic, and religious culture in detail.

DRAMA 575 Seminar in Theatre History (5) Johnson, William Specific topics in theatre history, examining the drama of various national, linguistic, and religious culture in detail.

DRAMA 576 Seminar in Theatre History (5) Johnson, William Specific topics in theatre history, examining the drama of various national, linguistic, and religious culture in detail.

DRAMA 577 Seminar in Theatre History (5) Johnson, William Specific topics in theatre history, examining the drama of various national, linguistic, and religious culture in detail.

DRAMA 581 Analysis of Dramatic Texts (5) Bryant-Bertail, Redd Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

DRAMA 582 Analysis of Dramatic Texts (5) Bryant-Bertail, Redd Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

DRAMA 583 Analysis of Dramatic Texts (5) Bryant-Bertail, Redd Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

DRAMA 585 Seminar in Dramatic Theory (5) Bryant-Bertail, Redd Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

DRAMA 586 Seminar in Dramatic Theory (5) Bryant-Bertail, Redd Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

DRAMA 587 Seminar in Dramatic Theory (5) Bryant-Bertail, Redd 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 (*)

Earth and Space Sciences

63 Johnson

General Catalog Web Page: www.washington.edu/students/gencat/ academic/ess.html

Department Web page: www.ess.washington.edu

The Department of Earth and Space Sciences seeks to further the understanding of the Earth, the solar system, and their histories. The department’s scope extends from the center of Earth to the rim of the solar system, and its activities cut across traditional disciplinary lines of physics, chemistry, biology, geology, and mathematics. The department’s faculty, students, and staff examine 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.

Graduate Program

Graduate Program Coordinator 63 Johnson, Box 351310 206-543-1190 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 Geological Sciences and in Geophysics. Both 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 Departments of Atmospheric Sciences and Oceanography) in the interdisciplinary graduate Program on Climate Change and a participant in the Astrobiology program.

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 and clean laboratory for separations of radiogenic and trace elements (Rb/Sr, Sm/Nd, U/Pb), a computer laboratory, a remote-sensing laboratory with an image-processing system with LANDSAT imagery 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 rocks and minerals as 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 cosmochemical isotope and stable-isotope research laboratories, palynology, snow and ice research, and a periglacial laboratory) and the Burke Memorial Washington State Museum (which houses palaeontological laboratories and extensive reference collections of invertebrate, vertebrate, and plant fossils, and minerals).

Master of Science

Graduation Requirements: 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.

Doctor of Philosophy

Graduation Requirements: Completion of two years of graduate study, passage of the Ph.D. candidacy requirement (which includes the defense of a proposal), General Examination, completion of acceptable dissertation and passage of Final Examination; one-year total program, including dissertation, must be in courses at the 500 level or above; a minimum of 27 credits for thesis (ESS 800); at least 18 credits completed with numerical grade in courses at the 400 and 500 levels.

Graduation Requirements: 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.

Doctor of Philosophy

Graduation Requirements: Completion of two years of graduate study, passage of the Ph.D. candidacy requirement (which includes the defense of a proposal), General Examination, completion of acceptable dissertation and passage of Final Examination; one-year total program, including dissertation, must be in courses at the 500 level or above; a minimum of 27 credits for thesis (ESS 800); at least 18 credits completed with numerical grade in courses at the 400 and 500 levels.
Financial Aid

Most graduate students receive support in the form of teaching or research assistantships, and endowed fellowships and scholarships.

Faculty

Chair
J. Michael Brown

Professors

Adams, John B. * 1975, (Emeritus); MS, 1958, PhD, 1961, University of Washington; remote sensing, planetary geology.

Atwater, Brian F. * 1986, (Affiliate); MS, 1974, Stanford University, PhD, 1980, University of Delaware; Quaternary geology, earthquake hazards.

Baker, Marcia B. * 1980; MS, 1976, Stanford University, PhD, 1981, University of Washington; cloud physics, atmospheric geophysics.

Bergantz, George W. * 1988; PhD, 1988, Johns Hopkins University; volcanology, surface processes, physical petrology.

Booker, John R. * 1971; PhD, 1968, University of California (San Diego); magnetotellurics, tectonics, inverse theory.

Bostrom, Robert C. * 1964, (Emeritus); MA, 1952, PhD, 1961, Oxford University (UK); geotectonics, geophysics.


Businger, Joost A. * 1983, (Emeritus); PhD, 1954, University of Utrecht (Netherlands); energy transfer.

Charlson, Robert J. * 1962, (Emeritus); MS, 1959, Stanford University, PhD, 1964, University of Washington; atmospheric chemistry.

Clark, Kenneth C. * 1948, (Emeritus); PhD, 1947, Harvard University; optical spectroscopy, upper atmosphere.

Cowan, Darrel S. * 1974; PhD, 1972, Stanford University; structural geology, regional tectonics.

Creager, Joe S. * 1958, (Emeritus); PhD, 1958, Texas A&M University; geological oceanography, sedimentology.

Creager, Kenneth C. * 1986; PhD, 1984, University of California (San Diego); seismology, geophysical inverse theory.

Criminale, William O. * 1968; PhD, 1960, Johns Hopkins University; fluid dynamics, nonlinear mechanics, stability theory.

Crosson, Robert S. * 1966; MS, 1963, University of Utah, PhD, 1966, Stanford University; seismology, earth structure, tectonics, earthquake hazards.

Delaney, John R. * 1977, (Adjunct); PhD, 1977, University of Arizona; geological oceanography, origin of oceanic crust, igneous petrology.

Dunne, Thomas * 1973, (Affiliate); PhD, 1969, Johns Hopkins University; geomorphology, hydrology.

Evans, Bernard W. * 1969, (Emeritus); PhD, 1959, Oxford University (UK); mineralogy, metamorphic petrology.

Ghiorso, Mark S. * 1980; MA, 1978, PhD, 1980, University of California (Berkeley); geochemistry.

Ghose, Subrata * 1972; MS, 1955, Calcutta University (India), PhD, 1959, University of Chicago; mineral physics, crystallography, mineralogy.

Gillespie, Alan R. * 1985; MS, 1977, PhD, 1982, California Institute of Technology; Quaternary geology, glacial geomorphology, remote sensing.

Hallé, Bernard * 1980; PhD, 1975, University of California (Los Angeles); glacial and periglacial geomorphology (alpine and Arctic).

Hernandez, Gonzalo * 1988; PhD, 1962, University of Rochester; aeronomy, optics.

Holzworth, Robert * 1982; MA, 1974, PhD, 1977, University of California (Berkeley); experimental space plasma physics, atmospheric/magnetospheric electric fields, thunderstorms.

Johnson, Harlan Paul * 1976, (Adjunct); PhD, 1972, University of Washington; paleomagnetism and marine geophysics.


Leovy, Conway B. * 1967, (Emeritus); PhD, 1964, Massachusetts Institute of Technology; climatic role of clouds, planetary atmospheres, astrophysics, atmospheric circulation and dynamics.

Malloy, V. Standish * 1952, (Emeritus); PhD, 1952, University of California (Berkeley); invertebrate paleontology.

Malone, Stephen * 1972; PhD, 1972, University of Nevada; seismicity of Cascade volcanoes and eastern Washington; computers in seismic network analysis.

Maykut, Gary * 1969, (Research); PhD, 1969, University of Washington; polar air-sea-ice interaction, radiative transfer in ice and snow.

McCallum, I. Stewart * 1970; PhD, 1968, University of Chicago; lunar science, physics of meteories, petrology.

Merrill, Ronald T. * 1967; MS, 1961, University of Michigan, PhD, 1967, University of California (Berkeley); geomagnetism, paleomagnetism.

Montgomery, David R. * 1991; PhD, 1991, University of California (Berkeley); geomorphology (fluvial and hillslope).

Nelson, Bruce K. * 1986; MS, 1979, University of Kansas, PhD, 1985, University of California (Los Angeles); isolate geochemistry, volcanism, mantle chemistry and evolution.

Newhall, Christopher * 1994, (Affiliate); MS, 1977, University of California (Davis), PhD, 1980, Dartmouth College; volcanic processes, eruption forecasting.

Nittouer, Charles * 1998; PhD, 1978, University of Washington; geological oceanography, continental margin sedimentation.

Parks, George K. * 1971, (Emeritus); PhD, 1966, University of California (Berkeley); magnetospheric and space plasma physics.

Porter, Stephen C. * 1962; MS, 1958, PhD, 1962, Yale University; Quaternary stratigraphy, geochemistry, paleoecology.

Raymond, Charles F. * 1969; PhD, 1969, California Institute of Technology; glaciology, ice sheet dynamics.

Rensberger, John M. * 1966; MA, 1961, PhD, 1967, University of California (Berkeley); vertebrate paleontology and evolution.


Smith, Stewart W. * 1970, (Emeritus); PhD, 1961, California Institute of Technology; earthquake processes.

Stuiver, Minze * 1969, (Emeritus); PhD, 1958, University of Groningen (Netherlands); geochronology, isotope geology.

Swanson, Donald A. * 1992, (Affiliate); PhD, 1964, Johns Hopkins University; volcanology, regional geology.

Untersteiner, Norbert * 1957, (Emeritus); PhD, 1950, University of Innsbruck (Austria); air-sea-ice interaction, polar climatology, sea ice physics.

Waddington, Edwin D. * 1984; MS, 1973, University of Alberta (Canada), PhD, 1981, University of British Columbia (Canada); glacier and ice sheet dynamics, paleoclimatology.

Ward, Peter D. * 1984; PhD, 1976, McMaster University (Canada); paleontology, paleobiology, regional coastal stratigraphy.


Wingate, Robert M. * 1991; PhD, 1984, University of Sydney (Australia); space plasma physics, numerical simulation of space plasmas.

Associate Professors

Anderson, Patricia M. * 1982; MA, 1976, PhD, 1982, Brown University; paleoecology, paleoecology, Quaternary environments (Arctic).

Booth, Derek B. * 1980, (Adjunct Research); PhD, 1984, University of Washington; environmental geology, particularly human influences on hillslopes, runoff, and rivers.

Bourgeois, Joanne (Jody) * 1980; PhD, 1980, University of Wisconsin; stratigraphy, sedimentology, Quaternary paleoecology.

Buick, Roger * 2001; PhD, 1986, Western Australia University; Precambrian life, environments, astrobiology.

Cheney, Eric S. * 1964; PhD, 1964, Yale University; economic and regional geology, sequence stratigraphy.

Conway, Howard B. * 1987, (Research); PhD, 1986, University of Canterbury (New Zealand); glacier and ice sheet history, snow avalanches.

Everson, Richard M. * 1990, (Affiliate); PhD, 1984, Stanford University; volcanic hazards, landslides, debris flows, lahars, geomechanics.

McCarty, Michael P. * 1978; PhD, 1988, University of Washington; solar wind and magnetospheric physics.

Mercer, James A. * 1968; PhD, 1983, University of Washington; ocean acoustic tomography, global climate measurements, and ocean dynamic modeling.

Odom, Robert L., Jr. * 1990; PhD, 1980, University of Washington; theoretical seismology, ocean acoustic tomography, wave propagation and scattering.
Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

ESS 400 Field Geology (12) NW Six weeks of geo-
logic mapping in a variety of rock types in the west-
ern United States. Enhances students' knowledge of
geologic phenomena and processes. Development of
skills in mapping, field data interpretation, and report
writing. Students responsible for own living expens-
es while in the field. Prerequisite: either ESS 213 or
GEOL 203; two courses selected from ESS 311/GEOL
392, ESS 312/GEOL 391, and ESS 313/GEOL 393. Offered: S.

ESS 401 Regional Geology of the Pacific Northwest (5) NW Cheney Explores the geologic
diversity of the Pacific Northwest temporally
(Archean to Pleistocene), tectonically (craton, ter-
rane, and cover sequences), and lithologically
(ophiolites to coal). Three weekend field trips
required. Offered: A.

ESS 402 International Field Geology (12) NW Supervised geological field work in classic, instruc-
tive international sites. Venue varies from year to year.
Work may include geologic mapping, construction of
cross sections, measurement and analysis of strati-
graphic sections, field excursion, and supervised
individual or group research. Prerequisite: either ESS
400 or GEOL 401. Offered: S.

ESS 403 Global Geophysics and Plate Tectonics (5) NW Gillespie Introduction to geophysical features of
the earth including gravity, magnetic, and tempera-
ture fields. Use of geophysical methods including
seismology, heat flow, and paleomagnetics to study
global and geological processes in the context of
plate tectonic theory. Prerequisite: PHYS 121. Offered: A.

ESS 404 Great Geological Issues (3) NW Bourgeois History and development of geological and paleon-
tological theories and controversies; philosophy and
methodology that have driven scientific inquiry in the
earth sciences. Recommended: HIST 311; HIST 312.
Offered: alternate years.

ESS 406 Earth Sciences for Middle and High School Science Teachers Field Expo (4) NW Niblett Topics of current scientific interest selected to
meet state academic standards. Topics include
Pacific Northwest earthquakes and volcanoes, glo-
al and regional plate tectonics, history of the Earth,
the Earth's interior, planetary geology, and surface
processes on the Earth. Prerequisite: ESS 101.

ESS 411 Geophysical Continum 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. Offered: A.

ESS 412 Seismology (3) NW Introduction to theo-
retical 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 relationships to
tectonics. Prerequisite: either ESS 411 or GEOL
401; recommended: concurrent registration in ESS
466. Offered: W.

ESS 413 Geophysics: The Earth (3) NW The earth
and its interior; gravity, magnetism, heat flow, seis-
mology. Earth's outer structure, studied through the
unifying concepts of plate tectonic theory. Quantitative
treatment of classical physics. Prerequisite: either ESS
412 or GPHYS 402; PHYS 322. Offered: Sp.

ESS 414 Geophysics: Fluids (3) NW Introduction to
gyroedical fluid dynamics. An overview of fluids in
geochemistry with emphasis on the oceans. Nonrig-
orous development of the equations of motion with
examples drawn from oceanography and solid earth
geochemistry. Prerequisite: either MATH 136 or both
MATH 307 and MATH 308: PHYS 322. Offered: A.

ESS 415 Space and Plasmas (3) NW Survey of var-
ious 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. Offered: W.

ESS 416 Geophysics: The Atmosphere (3) NW Phenomena of the lower atmosphere: some simple
applications of the principles of classical thermody-
namics, fluid dynamics, and radiative transfer to the
atmospheric hydrological cycle, global energy bal-
ance, and atmospheric dynamics and climate.
Prerequisite: either ESS 414 or GPHYS 404. Offered:
Sp.

ESS 421 Introduction to Geological Remote Sensing (4) NW Gillespie Principles of image inter-
pretation for geologists. Study of land forms, struc-
ture, lithology, surface processes using aircraft and
satellite data. Use of digital multispectral images and
radar images for geological mapping. Offered: A.

ESS 422 Intermediate Spectral Remote Sensing (4) NW Gillespie. Weeks Explores spectral image
processing with ENVI software, used in individual-
ized 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, geography, and field geology.
Prerequisite: either ESS 421 or GEOL 410. Offered: W.

ESS 424 Water in the Environment (3) NW Baker, Raymonds, and Wiidtman-Watson 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 fresh water storage in lakes. Prerequisite:
either MATH 124, MATH 126, MATH 129, or MATH
136; PHYHS 123. Offered: jointly with ATM S 460/GPHYS
460. Offered: A.

ESS 426 Fluvial Geomorphology (5) NW Montgomery Hydraulic and morphological charac-
teristics of streams and valley floors. Landscape evo-
lution by stream erosion and deposition. Field exer-
cises emphasize quantitative analysis of fluvial
processes, channel forms, acquisition of various
skills, such as mapping, topographic surveying,
report writing. Prerequisite: either ESS 311, ESS 326,
GEOL 392, or GEOL 411.

ESS 427 Hillslope Geomorphology (5) NW Montgomery Theoretical, laboratory, and field study of
hillslope evolution by mass wasting and water ero-
sion. Prerequisite: either ESS 311, ESS 326, GEOL
392, or GEOL 411. Offered: alternate years; W.

ESS 428 Landscape Evolution (5) NW Hallett Advanced examination of landscape evolution.
Emphasis on interactions among tectonics, climate,
and hillslope, fluvial, and glacial processes. Intended
for seniors and graduate students in geomorphology
and related disciplines. Prerequisite: either ESS 426,
ESS 427, GEO 412, GEO 413, or GEO 418. Offered: alternate years; W.

ESS 431 Principles of Glaciology (3) NW Hallet, Porter, Raymond, Waddington, Warren 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; PHYS 122. Offered: A.

ESS 432 Glacial Geology (3) NW Porter Interpretation of glacial environments and history through study of sediments and landforms; stratigraphic approaches, chronology, reconstructions, applications. Recommended: either ESS 431 or GEO 415.


ESS 437 Mineralogy (5) NW Ghiorso, McCallum 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; PHYS 123; either ESS 212 or GEO 202; either ESS 312 or GEO 391. Offered: A.

ESS 438 Optical Mineralogy (2) NW McCallum Petrographic microscopy and recognition of common minerals in thin section. Prerequisite: either ESS 212 or GEO 202. Offered: A.

ESS 439 Petrology of Igneous Rocks (5) NW McCallum 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: either ESS 312 or GEO 391; either ESS 438 or GEO 423. Offered: W.

ESS 440 Petrography and Petrology of Metamorphic Rocks (5) NW Evans Mineralogy, textures, and origins of metamorphic rocks; metamorphic facies and metamorphic phase equilibria; controls of metamorphism. Prerequisite: either ESS 312 or GEO 391; either ESS 438 or GEO 423. Offered: A.

ESS 441 Petrology and Petrography of Sedimentary Rocks (5) NW Stewart Mineralogy, textures, and origin of sedimentary rocks, using petrographic microscope. Prerequisite: either ESS 312 or GEO 391.

ESS 445 Geology of Ore Deposits (5) NW Cheney The geologic principles, environmental aspects, and exploration strategies of selected types of metallic and nonmetallic ore deposits and coal. Prerequisite: either ESS 312 or GEO 391.

ESS 450 Principles of Paleobiology (4) NW Ward Fossil record and methods of analysis. Biologic systems in geologic time, including preservation, variation, population structure, adaptation, functional morphology, biostratigraphy, paleoecology, evolution, and biogeography.

ESS 451 Invertebrate Paleontology (5) NW Ward Important larger invertebrate groups; morphology, classification, stratigraphic distribution, evolution, paleoecology.

ESS 452 Fossil Vertebrates (5) NW Rensberger Highlights in evolutionary history of the fossil vertebrates, from early Paleozoic fishes through late Cenozoic mammals. Morphology, adaptations, relationships of the major groups. Bone structures and systematic relationships. Field trip. Prerequisite: either BIOL 101, ESS 100, or GEO 100.

ESS 453 Fossil Mammals (5) NW Rensberger Evolutionary relationships of fossil mammals, from mammal-like reptiles of late Paleozoic to diverse Cenozoic groups. Morphology, adaptations, extinction, evolutionary patterns. Structures and relationships of most major groups. Field trip. Prerequisite: either BIOL 101, ESS 100, ESS 452, GEO 100, or GEO 437.

ESS 455 Stratigraphy (4) NW Bourgeois 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: either ESS 213 or GEO 203. Offered: A.

ESS 456 Depositional Environments (4) NW Bourgeois Principles of sedimentary facies analysis, including surficial and subaqueous 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: either ESS 213 or GEO 203. Offered: Sp.

ESS 458 Isotope and Trace Element Geology: Lithosphere (3) NW Nelson Radioactive isotopes and trace element as petrogenetic indicators; evolution of earth's major geochemical reservoirs; application to problems in igneous, metamorphic, sedimentary petrology; stable isotope geothermometry; nucleosynthesis, origin, and chronology of solar system formation; U-Th disequilibrium series. Prerequisite: either CHEM 150, CHEM 152, or CHEM 155; either ESS 312 or GEO 391.

ESS 459 Isotope Geology (3) NW Steig The geochemistry of stable isotopes. Topics covered include the chemical properties of isotopes, a survey of isotope systems, and use of stable isotopes to 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: either ESS 312 or GEO 391.

ESS 461 Geological Time (3) NW Stone 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, tec-tonics, and Earth evolution. Offered: odd years; W.

ESS 462 Volcanic Processes (3) NW Bergantz, Nelson, Newhall, Qamar Pre-eruption, eruption, and post-eruption processes. Examines origins of magma ascent, controls on volatile build-up and loss, magma fragmentation, magma-groundwater interaction, eruption column dynamics, gravity-controlled eruptive phenomena, syn- and post-eruption lahars and other re-working of deposits. Prerequisite: either ESS 311, ESS 312, GEO 391, or GEO 392. Offered: Sp.

ESS 463 Structure and Tectonics (5) NW Cowan Geometry, kinematics, and tectonic setting of major types of structures, including those in contractual fold-and-thrust belts; extended crust; strike-slip-dominated regimes, and ice surfaces. Glacier flow, ice exercises develop basic tools of structural geology. Prerequisite: either ESS 213 or GEO 203; either ESS 311 or GEO 392. Offered: Sp.

ESS 464 Geodynamics (4) NW Principles of continuum mechanics, their application to flow of water, mud, magma, deformation of soil, rock, ice. Emphasis on sound physical understanding of these principles and use of elementary mathematics in their application to earth sciences problems. Prerequisite: either ESS 311 or GEO 392; either MATH 126, MATH 129, or MATH 136; PHYS 121.


ESS 467 Seismic Exploration (5) NW Brown Introduction to theory and practice of seismic exploration. Application of refraction and reflection techniques to problems in engineering geology and mineral exploration. Constraints in the interpretation of subsurface structure. Prerequisite: either ESS 311 or GEO 392; either MATH 126, MATH 129, or MATH 136; PHYS 123.

ESS 471 Introduction to Space Physics (3) NW Holzworth, Wingler 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. 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. Offered: AWSpS.

ESS 495 NASA Science and Engineering Research Seminar (1, max. 4) NW DeCosmo 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. Offered: Sp.

ESS 498 Undergraduate Thesis (5) NW The thesis must be submitted at least one month before graduation.

ESS 499 Undergraduate Research (* max. 15)

Courses for Graduates Only

ESS 504 Great Geological Issues (3) NW Bourgeois History and development of geological and paleontological theories and controversies; philosophy and methodology of studies that have generated significant inquiry in the earth sciences. Requires a term paper analyzing primary material. Prerequisite: either ESS 404 or GEO 409, and graduate standing in earth sciences, or in history of science, or permission of instructor.

ESS 511 Geophysical Continuum Mechanics (3) NW Analysis of stress and strain, measurement and interpretation of wave train in geophysical materials. Elastic waves 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. Offered: A.

ESS 512 Seismology (3) NW Theoretical and observational seismology. Elastic plane wave propagation through stratified media. Surface waves, eigenvibra-
ions, ray theory. Structure of Earth's mantle and core. Seismicity distributions, earthquake focal mechanisms and relationship to tectonics. Advanced, research-oriented problems. Prerequisite: either ESS 511 or GPHYS 501; recommended: concurrent registration in ESS 466. Offered: W.

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: either ESS 512 or GPHYS 502; PHYS 322. Offered: Sp.

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. Offered: A.

ESS 515 Geophysics: Space (3) Various phenomena occurring in outer regions of Earth's atmosphere, ionosphere, magnetosphere, and Van Allen radiation belts. Laboratory investigations in 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. Offered: W.

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: either ESS 514 or GPHYS 504. Offered: Sp.

ESS 521 Remote Sensing of the Atmosphere and Climate System (3) Leovy, Warren 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 or GPHYS 532; ESS 572 or GPHYS 533. Offered: jointly with ATM S 513.

ESS 522 Geophysical Data Collection and Analysis (3) Crosson 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. Offered: A.

ESS 523 Geophysical Inverse Theory (3) Booker 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: either ESS 522 or GPHYS 563, or permission of instructor. Offered: odd years. Sp.

ESS 526 Sediment Dynamics and Boundary-Layer Physics (4) Parsons 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, density flows, and suspensions) and its application to the geological record. Offered: jointly with OCEAN 542; W.

ESS 528 Interpretation of Sedimentary Structures (2-4, max. 4) Bourgeois Physical and environmental analysis of sedimentary structures, including biogenic sedimentary structures. Clastic sediments and rocks. Field trips required.

ESS 529 Transport Theory and Applications in Geology (3) Bergantz Introduction to the quantitative treatment of transport phenomena with applications to igneous processes and metamorphism, magma and mantle convection, flow and reaction in regional and contact metamorphism. Emphasis on the governing equations of heat transfer, fluid and momentum, and radiation flow. Solution of analytical, numerical, and scaling solutions. Prerequisite: AMATH 402.

ESS 531 Physics of Ice (3) Raymond 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 511; alternate years.


ESS 533 Structural Glaciology (3) Raymond 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 ATM S 513; even years.

ESS 535 Ice and Climate Modeling (3) Warren Principles of global climate modeling. Modeling seasonal cycles of snow cover and sea ice. Ice-sheet models, climate and radiation balance and their evolution due to changes in earth’s orbit. Climate/ice-sheet models of Pleistocene ice ages. Prerequisite: permission of instructor. Offered: jointly with ATM S 514; alternate years.

ESS 537 Advanced Mineralogy (3) Ghiorso 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. Various properties of earth's mantle, crystal chemistry, solid state reactions. Offered: jointly with MSE 518.

ESS 538 Petrogenesis of Igneous Rocks (3) McCammon 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: either ESS 439 or GEOL 424 or equivalent. Offered: alternate years.

research themes introduce students to a variety of digital and analog seismograms and techniques for their interpretation. Studies present results of short investigations in an informal seminar setting. Credit/no credit only. Prerequisite: either ESS 412, ESS 512, GPHYS 402, or GPHYS 502 or permission of instructor. Offered: AWSp.


ESS 565 Low-Frequency Seismology (3) Creager Represent seismic displacement field, including surface and body waves, as superposition of normal modes. Rigorous development of equations of motion, their solution, energy integrals, Rayleigh’s Principle, perturbation theory, attenuation, and excitation formulae. Moment-tensor representation of seismic sources. Prerequisite: either ESS 412, ESS 512, GPHYS 402, or GPHYS 502, or permission of instructor. Offered: odd years; Sp.

ESS 568 Physics of the Oceanic Lithosphere I (3) Physical processes responsible for the formation and evolution of the oceanic lithosphere. Thermodynamic mechanisms of mantle creep; fluid dynamics of mantle flow; decompressional melting, formation of oceanic crust, and cooling of the oceanic lithosphere. Prerequisite: either ESS 511 or GPHYS 501; either ESS 514 or GPHYS 504; or permission of instructor. Offered: jointly with OCEAN 545.

ESS 571 Atmospheric Radiation: Introductory (3) Fundamentals of radiative transfer; absorption and scattering by atmospheric gases; elementary applications to computer solutions of the thermal balance equation; photochemistry, and remote sensing. Prerequisite: PHY 225 or permission of instructor. Offered: jointly with ATM S 532; Sp.

ESS 572 Atmospheric Radiation: Advanced (3) Optical properties and particle absorption and scattering; solutions of radiative transfer equation in multiple scattering atmosphere; 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; A.

ESS 573 Cloud Microphysics and Dynamics (3) Baker, Haurwitz 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; W.

ESS 574 Atmospheric Electrical Dynamics (3) Holzworth Global and local dynamic electric field models, including upper atmospheric and tropospheric sources as modified by propagation delays, orographic features, and transient phenomena. Radiation and plasma waves along with microphysics of condensation and charge separation mechanisms. Prerequisite: either ESS 415 or GPHYS 405; either ESS 416 or GPHYS 406; or permission of instructor. Offered: A.

ESS 576 Space and Laboratory Physics (3) Holzworth, Parks, Wingee Discussion of waves, equilibrium and stability, diffusion and reactivity, basic plasma kinetic theory, and wave-particle interactions. Prerequisite: either ESS 415 or GPHYS 405, or equivalent or permission of instructor. Offered: jointly with A A 556; Sp.

ESS 577 Advanced Space Plasma Physics (3) Holzworth, Parks, Wingee Formation by the interaction of solar wind with geomagnetic field. Trapped particles. Electromagnetic waves in anisotropic plasma. Dynamic disturbances and plasma instabilities. Prerequisite: either ESS 415 or GPHYS 405, or permission of instructor. Offered: A.

ESS 578 Kinetic Theory and Simulation of Space Plasmas (3) Wingee Wave-particle interactions in space plasmas. Generation of different wave modes, electrostatic and electromagnetic, Langmuir waves to Alven waves. Beam, Weibel, and masers instabilities, heavy ion interactions. Particle simulations, electrostatic and electromagnetic, for non-linear wave evolution and particle heating. Offered: even years; W.

ESS 579 Computational Methods and Modeling in Geophysics I (3) Holzworth Solution of complicated partial differential 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. Offered: odd years; W.

ESS 581 Planetary Atmospheres (3) Leovy Problems of origin, evolution, and structure of planetary atmospheres, emphasizing elements common to all planetary atmospheres; roles of radiation, chemistry, and dynamic processes; new results on the atmospheres of Venus, Mars, Jupiter, and other solar-system objects in the context of comparative planetology. Offered: jointly with ASTR 555/ATM S 555, alternate years.

ESS 583 Origin of the Solar System (3) 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 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) Hartman, Thompson Examines Earth’s climate system; distribution of temperature, precipitation, wind ice, salinity, and ocean currents; fundamental processes underlying 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. Offered: A.

ESS 588 The Global Carbon Cycle and Climate (3) Quay Oceanic and terrestrial biogeochemical processes controlling atmospheric CO2 and other greenhouse gases. Records of past changes in the earth’s carbon cycle from geological, oceanographic, and ice-core archives. Anthropogenic perturbations to cycles. Develop simple box models, discuss results of complex models. Offered: jointly with ATM S 588/OCEAN 588; W.


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. Offered: AWSp.

ESS 595 Earth and Space Science 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. Offered: AWSp.

ESS 599 Seminar (1, max. 15) Review of current literature in geophysics and graduate student research with faculty participation. Credit/no credit only. Offered: AWSp.

ESS 600 Independent Study or Research (*) Credit/no credit only.

ESS 700 Master’s Thesis (*)

ESS 800 Doctoral Dissertation (*)

Economics
302 Savery

General Catalog Web page: www.washington.edu/students/gencat/academic/economics.html

Department Web page: www.econ.washington.edu

The Department of Economics is concerned with the analysis of the ways in which societies organize the production of goods and services and the distribution of these among groups and individuals.

Graduate Program
Graduate Program Coordinator
304A Sociology Box 353300
206-685-1384 econadv@uwashington.edu

The department offers programs of study leading to the Master of Arts and the Doctor of Philosophy degrees. The academic programs in economics are 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).

Graduate requirements for the M.A. degree include ECON 500, 501, 502, 503, 508, 580, 581, and 582. In addition to this core program, M.A. students must take at least seven elective courses in economics at the graduate level. At least three of these courses must be in applied areas, and at least two must be in the same area (the field of specialization). M.A. students also must complete 6 credits of a supervised internship. Well-prepared students should be able to complete the M.A. program in two years.

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 most students take slightly longer.

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.

Research and Computing Resources

The Institute for Economic Research 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.

Faculty

Chair
Neil Bruce

Professors
Barzel, Yoram 1961; MA, 1956, Hebrew University (Israel); PhD, 1961, University of Chicago; price theory.
Brown, Gardner 1965, Emeritus; PhD, 1964, University of California (Berkeley); resource economics.
Bruce, Neil 1990; PhD, 1975, University of Chicago; public finance (economics of the public sector), especially taxation.
Crutchfield, James A. 1960, Emeritus; PhD, 1954, University of California (Berkeley); natural resources economics, policy and management, especially marine and environmental resources.
Deolalikar, Anil B. 1989; PhD, 1981, Stanford University; economic development, economics of human capital, economics of population, technology transfer.
Halvorsen, Robert 1972; PhD, 1973, Harvard University; natural resource economics.
Hartman, Michael C. 1971; PhD, 1971, University of California (Berkeley); economic theory.
Lundberg, Shelly J. 1984; PhD, 1981, Northwestern University; labor economics.
Mah, Fong-Hwa 1961, Emeritus; PhD, 1959, University of Michigan; Chinese economy and foreign trade.
McCaffree, Kenneth M. 1981, Emeritus; PhD, 1950, University of Chicago; labor economics and the economics of medicine.
McGee, John S. 1966, Emeritus; PhD, 1952, Vanderbilt University; industrial organization.
Morris, Morris D. 1949, Emeritus; PhD, 1954, University of California (Berkeley), economic history and the economy of India.
Nelson, Charles R. 1975; PhD, 1969, University of Wisconsin; time series analysis, economic statistical analysis, advanced macroeconomic theory.
North, Douglas C. 1950, Emeritus; PhD, 1952, University of California (Berkeley); economic history.
Parks, Richard 1970; PhD, 1966, University of California (Berkeley); econometrics.
Plotnick, Robert D. 1984, Adjunct; MA, 1973, PhD, 1976, University of California (Berkeley); economics of poverty, labor and social welfare policy.
Silverberg, Eugene 1967; PhD, 1964, Purdue University; price theory.
Startz, Richard 1984; PhD, 1978, Massachusetts Institute of Technology; macroeconomics, econometrics, finance, economics of tax.
Thornton, Judith Ann 1961; PhD, 1960, Harvard University; economics of transition, resources.
Turnovsky, Stephen J. 1987; PhD, 1968, Harvard University; monetary and macroeconomics, international economics, theory of economic stabilization.
Watts, Carolyn A. 1975, Adjunct; MA, 1974, PhD, 1976, Johns Hopkins University; health economics and policy.

Associate Professors

Brock, Philip L. 1991; PhD, 1982, Stanford University; economic liberalization with emphasis on financial markets and capital accumulation.
Hadimichalakis, Michael 1969; PhD, 1970, University of Rochester; monetary theory and policy, macroeconomics, growth.
Huppert, Daniel D. 1987, Adjunct; PhD, 1975, University of Washington; economics and management of natural resources, especially marine fisheries.
Khalil, Fahad A. 1991; PhD, 1991, Virginia Polytechnic Institute and State University; information economics and the theory of contracts.
Kochin, Lewis A. 1972; PhD, 1975, University of Chicago; macroeconomics, industrial organization.
Lawrence, Jacques P. 1990; PhD, 1990, University of California (Berkeley); institutional organization, contract theory, game theory.
Leffler, Keith B. 1978; PhD, 1977, University of California (Los Angeles); industrial organization, microeconomics.
Rose, Elane 1993; PhD, 1993, University of Pennsylvania; economics of the household in developed and developing countries.
Thomas, Robert P. 1968; PhD, 1964, Northwestern University; economic history.
Zivot, Eric W. 1993; PhD, 1992, Yale University; time series, econometrics, applied macroeconomics, empirical finance.

Assistant Professor

Liu, Wen-Fang 1998; PhD, 1998, University of Chicago; macroeconomics, financial economics, risk and uncertainty.

Senior Lecturers

Salehi-Esfahani, Haideh 1990; PhD, 1985, University of Pennsylvania; international economics, economic development.
Turnovsky, Michelle H. L. 1987; MBA, 1965, Harvard University; PhD, 1978, Australian National University; international economics, economics of the European Union.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

ECON 400 Advanced Topics in 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: ECON 300; either MATH 124, MATH 127, MATH 134, or MATH 145; recommended: MATH 126.
ECON 401 Advanced Topics in 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: ECON 301; either MATH 126, MATH 129, or MATH 136.

ECON 403 The Economics of Property Rights (5) I&S Property rights as an economic concept. Definitions of rights as a subject of optimization. Formation of organizations to induce efficient use of resources and minimize losses to personal property. Formation of organizations to induce efficient use of resources and minimize losses to public domain. Prerequisite: 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: ECON 300.

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 407 Development of Economic Thought (5) I&S From the early modern period to the present. The main subjects treated are Adam Smith and the classical school, Karl Marx, the neoclassical reformulation, and its current limitations. Prerequisite: ECON 300.

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: 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: ECON 300; either ECON 311, STAT 311, QMETH 201, or STAT 220.

ECON 431 Government and Business (5) I&S Economic effects of various governmental regulatory agencies and policies. Antitrust legislation as a means of promoting competition in the economy. Analysis of observed economic effects of policies intended to regulate business practices, control prices, conserve resources, or promote competition. Prerequisite: 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, and policy methods for damage assessment, and estimating benefits of environmental improvement. Prerequisite: 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 choice among alternative food sources, games animals play, evidence of risk aversion in animals. Prerequisite: 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. Includes decisions to work and retire, education and occupation choices, compensation, discrimination, poverty, unemployment and unions. Examination of policy issues affecting the labor market. Prerequisite: ECON 300.

ECON 444 Topics in Labor Market Analysis (5) I&S In-depth study of current problems in labor markets and public policies affecting incomes and employment. Course content varies by instructor. Prerequisite: ECON 300.

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: ECON 300. Offered: jointly with WOMEN 447.

ECON 448 Population and Development (5) I&S Survey of topics in population economics, including 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: 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: 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, the role of social rate of return, marginal willingness-to-pay for non-market goods, social risk, and special topics. Prerequisite: ECON 300.

ECON 460 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 institutional change. Prerequisite: ECON 201. Offered: jointly with HIST 481.

ECON 462 Economic History of the United States to the Civil War (5) I&S Systematic study of the changing pre-Civil War economic conditions and the consequences of these changes for the American society. Prerequisite: ECON 201.

ECON 463 Economic History of the United States From the Civil War to the Present (5) I&S Systematic study of the changing economic conditions since the Civil War and the consequences of these changes for the American society. Prerequisite: ECON 201.

ECON 468 China’s Economic Reforms-Integration Into World Economy (5) I&S Systematic survey of China’s economic reforms since 1978, including China’s increasing integration into the world economy. Prerequisite: ECON 201. Offered: jointly with SISEA 468.


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: 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 in the European union. Prerequisite: 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 and correlation, bivariate normal. (Credit allowed for only one of 390, 481, and ECON 580.) Prerequisite: STAT/ECON 311; either MATH 129, MATH 136, or MATH 126 with either MATH 308 or MATH 309. Offered: jointly with STAT 481; A.

ECON 482 Econometric Methods (5) NW Application of statistical modeling to empirical work in economics. A mixture of theory and applied computer work. Primary focus is regression analysis. Prerequisite: ECON 300; ECON/STAT 311.

ECON 483 Applied Econometric Modeling (5) NW Provides undergraduates the opportunity to learn econometric model building for a particular problem while applying the theory learned in various courses to specific economic cases. Students estimate, test, and forecast economic models. Extensive use of the computer and econometric programs. Prerequisite: ECON 301; either ECON/STAT 311, STAT 341, STAT 390, or QMETH 300; either MATH 112, MATH 124, MATH 127, MATH 134, or MATH 145.

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; recommended: ECON 300; ECON 404.
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: 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: ECON 301.

ECON 494 Economy of Japan (5) I&S Analysis of the economic growth of Japan since about 1850 to the present. The reasons for rapid industrialization, various effects of sustained economic growth, and significant contemporary issues are investigated. Prerequisite: ECON 201. Offered: jointly with SISEA 494.

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: 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 consultation with the student's advisor. Previously arranged supervision of an economics faculty advisor is required. 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 economics 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.

Courses for Graduates Only


ECON 501 Microeconomic Analysis II (4) General equilibrium and welfare economics. Introduction to game theory. Prerequisite: ECON 500.

ECON 502 Macroeconomic Analysis I (4) An introduction to modern macroeconomics. Theories of income, employment, inflation, and growth. Prerequisite: ECON 300 and ECON 301.


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 516 Contract Theory (3) Basic contract theory models, including hidden action and hidden information models. Current developments in contract theory. Prerequisite: ECON 508 and ECON 516 or permission of instructor.

ECON 520 The Economics of Property Rights (3) Application of standard economic theory to analyze various forms of property rights as constraints of competition; the costs associated with delineation and enforcement of rights; the costs of negotiating and enforcing contracts for right transfers; resource allocation and income distribution implied by different property right and transaction cost constraints. Prerequisite: ECON 500 and 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 and ECON 501 or permission of instructor.

ECON 530 Government Regulation of Business (3) Policy in the United States with respect to industrial organization and business conduct. Economic issues in antitrust policy emphasized. Prerequisite: ECON 500, ECON 501.

ECON 532 Theory of Industrial Organization II (3) The application of game theory to problems of strategic behavior that arise in the study of imperfectly competitive markets. Topics include vertical integration, short- and long-run price competition, folk theorems, empirical tests of oligopoly pricing models, entry deterrence, research and development, and product differentiation. Prerequisite: ECON 500, ECON 501.

ECON 535 Economics of Natural Resources I (3) First half of integrated two-course sequence. Nonrenewable resource extraction and exploration, including effects of market structure, uncertainty, and taxation. Externality theory and pollution-control policies. Prerequisite: ECON 500, ECON 501, or permission of instructor.

ECON 536 Economics of Natural Resources II (3) Second half of integrated two-course sequence. Renewable resources, including fisheries and forests. Valuation of environmental amenities. Prerequisite: ECON 535.

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 541 Labor Economics (3) Theoretical and empirical analysis of the labor market. The dynamics of labor supply and demand, human capital investment, the pattern of compensation, employment contracts and incentives, unemployment and labor market dynamics.

ECON 546 Health Economics (3) Theoretical and empirical models of the demand for health and health care; supply of health care from physicians and hospitals; government programs that subsidize health care; occupational health; cost-benefit analyses of preventive health care and new medical technologies. Prerequisite: graduate-level microeconomics, HSERV 585, or permission of instructor.

ECON 547 Health Policy Economics (3) Selected topics in health economics, including risk and insurance, medical malpractice, the market for physician services, and industry regulation. Prerequisite: a course in intermediate microeconomics or permission of instructor. Offered: jointly with HSERV 587.

ECON 550 Public Finance: Expenditure Policy (3) Theory of public finance with emphasis on public expenditures. Social welfare maximization, public goods, and externalities. Seigniorage, cost-benefit analysis, 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 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 571 or permission of instructor.

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 intro-
duced 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 include the use of panel data and models with limited and qualitative dependent variables. Prerequisite: ECON 582 or equivalent.

ECON 591 Theoretical Issues in Economic Development (3) Analysis of issues in economic development with application to the less-developed countries of the world today. Prerequisite: ECON 500, ECON 501, or permission of instructor.

ECON 592 Development Policy (3) Theoretical and empirical analysis of economic 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 role of market-oriented economic reform programs. Prerequisite: ECON 503; recommended: ECON 591.

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 596 Research Practicum in Microeconomics (1, max. 6) Provides opportunity to practice research and presentation skills in applied and theoretical microeconomics. Students develop and refine thesis topics under faculty supervision. Peer criticism a significant part of participation requirement. Maximum of 6 credits allowed in 596, 597, and 598 combined. Credit/no credit only.

ECON 597 Research Practicum in Macroeconomics (1, max. 6) Provides opportunity to practice research and presentation skills in applied and theoretical macroeconomics. Students develop and refine thesis topics under faculty supervision. Peer criticism a significant part of participation requirement. Maximum of 6 credits allowed in 596, 597, and 598 combined. Credit/no credit only.

ECON 598 Research Practicum in Labor and Development (1, max. 6) Provides opportunity to practice research and presentation skills in economics of labor currently referred to as development economics. Students develop and refine thesis topics under faculty supervision. Peer criticism a significant part of participation requirement. Maximum of 6 credits allowed in 596, 597, and 598 combined. Credit/no credit only.


ECON 600 Independent Study or Research (*) Credit/no credit only.

ECON 601 Internship (3-9, max. 9) Credit/no credit only.

ECON 602 Teaching Introductory Economics (1) Examines problems encountered in preparing and presenting courses in introductory economics. Credit/no credit only.

ECON 800 Doctoral Dissertation (*) Credit/no credit only.

English

A101 Padelford

General Catalog Web page: www.washington.edu/students/gencat/academic/english.html

Department Web page: 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 study, cultural studies, and creative writing.

Graduate Program

Graduate Program Coordinator A105 Padelford, Box 354330 206-543-6077 englgrad@uw.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-centered program. Students in the English-College of Arts and Sciences International English Language Program may participate in the Master of Fine Arts program in creative writing. Projects in imaginative writing in fiction and poetry, supported by courses in criticism and literary periodical requirement. Maximum of 6 credits allowed in 596, 597, and 598 combined. Credit/no credit only.

ECON 598 Research Practicum in Labor and Development (1, max. 6) Provides opportunity to practice research and presentation skills in economics of labor currently referred to as development economics. Students develop and refine thesis topics under faculty supervision. Peer criticism a significant part of participation requirement. Maximum of 6 credits allowed in 596, 597, and 598 combined. Credit/no credit only.


ECON 600 Independent Study or Research (*) Credit/no credit only.

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Graduate Program

Graduate Program Coordinator A105 Padelford, Box 354330 206-543-6077 englgrad@uw.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-centered program. Students in the English-College of Arts and Sciences International English Language Program may participate in the Master of Fine Arts program in creative writing. Projects in imaginative writing in fiction and poetry, supported by courses in criticism and literary periodical requirement. Maximum of 6 credits allowed in 596, 597, and 598 combined. Credit/no credit only.

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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 study, cultural studies, and creative writing.

Graduate Program

Graduate Program Coordinator A105 Padelford, Box 354330 206-543-6077 englgrad@uw.washington.edu

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ECON 600 Independent Study or Research (*) Credit/no credit only.

ECON 601 Internship (3-9, max. 9) Credit/no credit only.

ECON 602 Teaching Introductory Economics (1) Examines problems encountered in preparing and presenting courses in introductory economics. Credit/no credit only.

ECON 800 Doctoral Dissertation (*) Credit/no credit only.
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 (English as a Second Language)**

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.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.

**Faculty**

**Chair**
Shawn H. Wong

**Professors**
Alexander, Edward * 1962; MA, 1959, PhD, 1963, University of Minnesota; Romantic and Victorian literature.
Allen, Carolyn * 1972; MA, 1966, Claremont Graduate School, PhD, 1972, University of Minnesota; twentieth-century literature, women writers, contemporary critical theory.
Bierds, Linda L. * 1981; MA, 1971, University of Washington; poetry writing; contemporary American poetry.
Blake, Kathleen * 1971; PhD, 1971, University of California (San Diego); Victorian literature, children's literature, women's studies.
Blau, Herbert * 2000; PhD, 1954, Stanford University; drama and performance, literary and cultural theory.
Brown, Marshall J. * 1988; PhD, 1972, Yale University; eighteenth- and nineteenth-century literature, literary theory, music and literature.
Burns, Wayne 1979. (Emeritus); MA, 1940, Harvard University, PhD, 1946, Cornell University; Victorian literature.
Butler, Johnnella E. * 1987. (Adjunct); EdD, 1979, University of Massachusetts; Afro-American literature, American ethnic women's literature, Afro-Caribbean literature, pedagogy.
Coldewey, John C. * 1972; PhD, 1972, University of Colorado (Boulder); medieval and Renaissance drama and literature.
Dillon, George L. * 1986; PhD, 1969, University of California (Berkeley); rhetoric, composition.
Dunn, Richard J. * 1967; PhD, 1964, Case Western Reserve University; Victorian literature, English novel.
Fowler, David C. * 1952, (Emeritus); PhD, 1949, University of Chicago; medieval literature, comparative religion.
Frey, Charles Hubbard * 1970; PhD, 1971, Yale University; Renaissance literature, Shakespeare.
Gerstenberger, Donna * 1960, (Emeritus); PhD, 1958, University of Oklahoma; twentieth-century literature, Anglo-Irish literature, feminist criticism.
Handwerk, Gary J. * 1984; PhD, 1984, Brown University; British, German, and French nineteenth- and twentieth-century narrative; Romantic and post-Romantic.
Heilman, Robert B. 1976, (Emeritus); MA, 1930, Ohio State University, MA, 1931, PhD, 1935, Harvard University; drama.
Irmscher, William F. * 1985, (Emeritus); PhD, 1950, Indiana University; rhetoric and theory of composition.
Johnson, Charles R. * 1983; MA, 1973, Southern Illinois University, PhD, 1988, State University of New York (Stony Brook); fiction writing.
Kaplan, Sydney J. * 1971; PhD, 1971, University of California (Los Angeles); twentieth-century literature, women writers, feminist criticism.
Korg, Jacob * 1955, (Emeritus); PhD, 1962, Columbia University; Victorian, twentieth-century literature.
Lockwood, Thomas * 1967; PhD, 1967, Rice University, eighteenth-century literature.
Matchett, William H. * 1983, (Emeritus); PhD, 1957, Harvard University; Renaissance literature, Shakespeare.
McCracken, J. David * 1966; PhD, 1966, University of Chicago; eighteenth-century literature; Blake; Wordsworth; biblical literature (esp. gospels, parables).
McClellan, Colleen J. * 1972; PhD, 1973, University of Washington; Black literature, women writers, poetry writing.
Modiano, Raimonda * 1978; PhD, 1973, University of California (San Diego); romanticism.
Reinert, Otto * 1956, (Emeritus); PhD, 1952, Yale University; comparative literature, eighteenth-century literature.
Russ, Joanna * 1977, (Emeritus); MFA, 1960, Yale University; fiction writing.
Sale, Roger H. * 1962, (Emeritus); PhD, 1957, Cornell University; Renaissance literature.
Shavio, Steven * 1984; PhD, 1981, Yale University; film, cyber studies, postmodernism, contemporary popular culture.
Shields, David * 1988; MFA, 1980, University of Iowa; fiction writing, screen writing, twentieth-century literature, autobiography, mass media, film.
Shulman, Robert * 1961; PhD, 1959, Ohio State University; American literature.
Silberstein, Sandra V. * 1982; PhD, 1982, University of Michigan; applied/critical linguistics; TESOL, ethnicity and gender.
Simonsen, Harold P. * 1967, (Emeritus); PhD, 1958, Northwestern University; American literature.
Staten, Henry J. * 1998; PhD, 1978, University of Texas (Austin); 19th- and 20th-century British literature, history of literary criticism, contemporary theory.
Stevick, Robert D. * 1962, (Emeritus); PhD, 1956, University of Wisconsin; medieval language and literature.
Streitberger, William R. * 1973; PhD, 1973, University of Illinois; Renaissance literature, textual criticism, paleography.
Tollefson, James W. * 1984; PhD, 1978, Stanford University; English as a second language, language planning.
Wagoner, David R. * 1957, (Emeritus); MA, 1949, Indiana University; twentieth-century literature, fiction and poetry writing.
Wong, Shawn H. * 1984; MA, 1974, San Francisco State; creative writing, Chinese-American area studies.
Woodward, Kathleen * 2000; PhD, 1976, University of California (San Diego); American literature, women studies.

**Associate Professors**
Abrams, Robert * 1979; PhD, 1973, Indiana University; American literature.
Altieri, Joanne S. * 1977, (Emeritus); PhD, 1969, University of North Carolina; Shakespeare studies.
Brenner, Gerald J. * 1966, (Emeritus); PhD, 1969, University of New Mexico; American literature, fiction writing.
Butwin, Joseph M. * 1978; PhD, 1971, Harvard University; Jewish studies, the literature of American immigration and Victorian studies.
Cummings, Katherine * 1985; PhD, 1985, University of Wisconsin; cultural studies, critical theory, queer studies, twentieth-century Americanist.
Duniop, William M. * 1962, (Emeritus); MA, 1965, Cambridge University (UK); Shakespeare, nineteenth-century literature, poetry writing.

Fisher, Alan S. * 1968; PhD, 1969, University of California (Berkeley); Renaissance, seventeenth- and eighteenth-century literature, history of literary criticism.

Fuchs, Barbara * 1997; PhD, 1997, Stanford University; early modern English and Spanish literature and culture; literature and imperialism.

Griffith, John W. * 1968; PhD, 1969, University of Oregon; American literature.

Guerra, Juan C. * 1990; MA, 1983, PhD, 1992, University of Illinois; literacy, ethnography, composition, pedagogy and Chicano literature.


Laguardia, Eric * 1961; PhD, 1961, University of Iowa; Renaissance literature.

Longyear, Christopher R. * 1972, (Emeritus); PhD, 1961, University of Michigan; linguistics.


Musseter, Sally Ann * 1978; PhD, 1975, Cornell University; medieval language and literature.

Palomo, Dolores J. * 1971, (Emeritus); PhD, 1972, State University of New York (Buffalo); Renaissance literature, women writers.

Patterson, Mark R. * 1981; PhD, 1981, Princeton University; American literature.

Remley, Paul G. * 1988; PhD, 1990, Columbia University; Old and Middle English, medieval languages and literatures, critical theory.


Simpson, Caroline Chung * 1994; MA, 1989, University of Houston, PhD, 1994, University of Texas (Austin); Asian American studies and postwar American culture.

Smith, Eugene H. * 1958, (Emeritus); PhD, 1963, University of Washington; rhetoric and theory of composition.

Sonnenberg, Maya * 1993; MA, 1984, Brown University; fiction writing, twentieth-century fiction, postmodern fiction, women writers.

Stanton, Robert B. * 1993, (Emeritus); PhD, 1953, Indiana University; American literature.

Stygall, Gail * 1990; PhD, 1989, Indiana University; discourse analysis, rhetoric and composition, English language linguistics, forensic linguistics.

Van Den Berg, Sara J. * 1980, (Emeritus); PhD, 1969, Yale University; early modern and seventeenth-century literature, psychoanalytic theory, medicine and literature.

Vaughan, Miceal F. * 1973; PhD, 1973, MA, 1973, Cornell University; medieval European languages and literature; textual studies.

Webster, John M. * 1972; PhD, 1974, University of California (Berkeley); Renaissance literature.

Assistant Professors

Bawarshi, Anis 1999; PhD, 1999, University of Kansas; rhetoric and composition studies, with an emphasis in genre theory, invention.

Burstein, Jessica L. * 1998; PhD, 1998, University of Chicago; British and American modernist literature (1890-1930).

Curzan, Anne L. * 1998; PhD, 1998, University of Michigan; history of English, language and gender, sociolinguistics, lexicography.

Griffith, Malcolm A. * 1966, (Emeritus); PhD, 1966, Ohio State University; twentieth-century literature, modern criticism, American literature.

Halmi, Nicholas * 2001; PhD, 1995, University of Toronto (Canada); English and German literature, Enlightenment and Romantic science.

Kaup, Monika 2000; PhD, 1991, Ruhr University (Germany); U.S. Latina/o literature; comparative literature of the Americas.

Reddy, Chandan C. 2001; PhD, 2001, Columbia University; multi-ethnic literature, American studies, queer theory.

Reed, Brian 2000; PhD, 2000, Stanford University; modernist and postmodernist American poetry.

Weinbaum, Alys E. * 1998; PhD, 1998, Columbia University; feminist theory; representations of race and reproduction in modern literature.

Senior Lecturers

George, E. Laurie * 1991; PhD, 1984, University of Oregon; computer-integrated pedagogy (writing and literature) feminist pedagogies, rhetoric.

Graham, Joan Adelle 1974; MA, 1972, University of Washington; expository and interdisciplinary writing.

Harris, Jana N. 1986; MFA, 1972, San Francisco State University.

McNamara, Robert J. 1985; PhD, 1985, University of Illinois; literacy, ethnography, composition, pedagogy and Chicano literature.


Lecturers

Gillis-Bridges, Kimberlee 1989; PhD, 1989, Claremont Graduate School; film studies, contemporary U.S. literature and cinema, interdisciplinary writing.

Simmons-O’Neill, Elizabeth 1989; PhD, 1989, University of Washington; expository and interdisciplinary writing, service learning.


Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/undergraduate.
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 non-fictional prose, such as biographical sketches, informational reports, literary reviews, and essays.

ENGL 483 Advanced Verse Writing (5, max. 15) VLPA Intensive study of ways and means of making a poem. Prerequisite: ENGL 385.

ENGL 484 Advanced Short Story Writing (5, max. 10) VLPA Experience with the theory and practice of writing the short story. Prerequisite: 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 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 its 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) VLPA Survey of current issues confronting literary critics today. Readings begin with work in the New Criticism that followed World War II and move forward to consider issues such as changing student population and role of the critic, revisions of the past, emergent technologies, and rise of interdisciplinary teaching and research.

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.

Courses for Graduates Only

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 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 Critical Approaches to Literary Texts (5) Examination of a range of critical theories and practices appropriate to the study of literature.

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 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 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
European Studies
See International Studies.

Genetics
See Genome Sciences.

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.

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.

Financial Aid
The department usually awards approximately 15 to 20 teaching assistantships for the academic year. Most of the assistantships are for teaching section 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.

Faculty
Chair
James W. Harrington

Professors
Beyers, William B. * 1962; PhD, 1967, University of Washington; regional science, economic geography, location theory, regional analysis.
Chan, Kam Wing * 1991; PhD, 1988, University of Toronto (Canada); economic development, urbanization, migration, labor market, China.
Chrisman, Nicholas R. * 1987; PhD, 1982, University of Bristol (UK); geographic information systems, science and technology studies, geography of geographic information.
Ellis, John Mark 1999; PhD, 1988, Indiana University; race, ethnicity, immigration and local labor markets.
Fleming, Douglas K. * 1963, (Emeritus); PhD, 1965, University of Washington; transportation geography (especially ocean and air), regional organization of western Europe.
Harrington, James W. * 1997; PhD, 1983, University of Washington; roles of industrial change and labor processes in sub-national, regional economic development.
Assistant Professors

Chang, Stephanie E. * 1997, (Research); PhD, 1994, Cornell University; economic geography, urban infra-structure systems, natural disasters, United States and Japan.

Herbert, Steven K. 2000; PhD, 1995, University of California (Los Angeles); policing and social control; American criminal justice; geography and law.

Jhaiver, Nayna J. 1997; MSc, 1984, PhD, 1999, University of Edinburgh (UK); political and cultural ecology, consumption and environment, common property systems, Asia.

Withers, Suzanne D. * 1997; PhD, 1992, University of California (Los Angeles); urban housing, residential mobility and migration, longitudinal methods, life-course dynamics.

Lecturer

Purcell, Mark H. 1999; PhD, 1998, University of California (Los Angeles); urban, political, citizenship, scale.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

GEOG 401 Culture, Capital, and the City (5) I&S
Examines current trends in social theory as they apply to the urban landscape. Includes the intercon-nections of cultural and economic processes and the spatial patte-rning of race, class, and gender in the modern urban context. Offered: A.

GEOG 425 Qualitative Methodology in Geography (5) I&S
Jarosz, Lucy A. Hist-Orical and philosophical overview of qualitative methodology in design of geography research strategies. Techniques of interviewing, par-ticipant 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 Quantitative Methods in Geography (5) I&S
Withers, Suzanne D. Quantitative methods for empirical research in geography. Emphasis on statistical analy-sis; 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: Sp.

GEOG 430 Contemporary Development Issues in Latin America (5) I&S
Jarosz, Lucy A. Determinations of spatial models. Examining the construction of gender in particular places. Offered: A.

GEOG 431 Geography and Gender (5) I&S
Jarosz, Lucy A. Examines theories and case studies across interna-tional, national, and regional scales in order to illus-trate the impacts of social and economic processes upon the construction of gender in particular places. Offered: Sp.

GEOG 435 Industrialization and Urbanization in China (5) I&S

GEOG 439 Gender, Race, and the Geography of Employment (5) I&S
Ellis, Focuses on the geogra-phy of employment for men and women of different racial and ethnic backgrounds in American cities. Presents the impact of labor market inequality for differ-ent 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 analy-sis and projection of regional population and employment patterns, regional growth differentials, and regional impact analysis. Recommended: GEOG 207. Offered: Sp.

GEOG 442 Social Geography (5) I&S
Brown, Michael P. * 1997; PhD, 1994, University of British Columbia (Canada); urban policies, health, sexuality, political theory, social theory, human geog-raphy.

Chang, Kuei-Sheng * 1966, (Emeritus); PhD, 1955, University of Michigan; economic geography of China, historical geography of exploration, Third World development.

England, Kim L. V. 1999; MA, 1984, PhD, 1988, Ohio State University; employment studies (especially women), families, child care, feminist theory and methodology.

Jarosz, Lucy A. * 1997; PhD, 1990, University of California (Berkeley); critical development studies, food and agriculture, rural poverty and inequality, political ecology.

Kakichi, George H. * 1957, (Emeritus); PhD, 1957, University of Michigan; Japan, agriculture, internal migration, regional geography.

Mitchell, Katharyne 1993; PhD, 1993, University of California (Berkeley); urban economic and cultural geography, with focus on social theory, the Pacific Rim.

Sparkh, Matthew * 1995; MA, 1991, PhD, 1996, University of British Columbia (Canada); political geography, social theory, cultural studies, globalization.

Waddell, Paul A. * 1997, (Adjunct); PhD, 1989, University of Texas (Dallas); urban policy, regional planning, growth management, land use, transporta-tion, GIS.
GEOG 460 Geographic Information Systems Analysis (5) & S Chrisman Methods of Analysis provided by geographic information systems (GIS). Operations on map information including map overlay, aggregation/dissaggregation, 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) & 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 463 Geographic Information Systems Workshop (5) & S Chrisman, Nyerges Practical experience applying geographic information system (GIS) tools to analyze spatial data. Workshop format requires student-motivated projects; diverse background encouraged. Prerequisite: either 2.0 in GEOG 460 or 2.0 in GEOG 461. Offered: Sp.

GEOG 465 Analytical Cartography (5) & S Chrisman Algorithms and data structures for selected topics in computer-assisted cartography. Emphasis on point, line, area, and surface data representation, map design, generalization, and data transformations. Prerequisite: either 2.0 in GEOG 460 or 2.0 in GEOG 461. Offered: odd years; W.

GEOG 466 Regional Economic Development (5) & S Harrington Provides a theoretical overview of sub-national, regional economic growth and structural change, including the roles of interregional interaction and national trade, technological change, social, and local 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 472 Ecoscapes: Nature, Culture, and Place (5) & S Jhaveri 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 473 Geography and the Law (5) & S Herbert Examines the relationship between geography, law, and socio-legal analysis; reviews significant cases 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) & 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 478 Intraurban Spatial Patterns (5) & 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 urban trends and future trends in urban development. Recommended: GEOG 277. Offered: Sp.

GEOG 479 Race, Ethnicity, and the American City (5) & S Ellis Explores American 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 ethnic-racial future.

GEOG 480 Environmental Geography, Climate, and Health (5) & S Mayer Demonstrates and investigates how human-environmental 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) & S Burbidge, 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 sharps proposal writing skills. Offered: jointly with CFR 474; A.

GEOG 487 Applied Theory and Methods in Urban Ecology (5) & S Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen Discusses broad perspectives in urban ecology and how to analyze data relevant to urban ecology problems, with objective and subjective methods for a selected urban ecology problem that critiques different methodological approaches and reviews/synthesizes literature. Prerequisite: CFR 474/GEOG 486. Offered: jointly with CFR 475; W.

GEOG 488 Research in Urban Ecology (5) & S Alberti, Bradley, Hill, Marzluff, Ryan, ZumBrunnen How to analyze, present, and begin to interpret data 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: CFR 475/GEOG 487. Offered: jointly with CFR 476; Sp.

GEOG 490 Field Research: The Seattle Region (6) & S Wheelock 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 493 Assessing Geographic Learning (2) Harrington Encourages 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) & S Supervised individual research and writing of major paper during senior year. Offered: AWSp.

GEOG 495 Special Topics (, max. 15) & 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) & S ZumBrunnen Intensive directed study and tutoring. Literature reviews, formulations of project outlines and research designs, orientation in contemporary geographical thought and trends. Directed writing. Required for honors students. Offered: AWSpS.

GEOG 498 Undergraduate Seminar in Economic Geography and Regional Science (3) & S Krumme Selected advanced topics and current problems in economic geography. Emphasis on formulating research questions, developing an appropriate research process, selecting methods, searching for resources, writing up and documenting research results, and using the Internet for research purposes. 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.

Courses for Graduates Only

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 (3, max. 6) Consideration of the spatial dimensions of Canadian socioeconomic, cultural, and political development, with emphasis on resource potentials and their 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) Work on 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) Sparkes Introduces the main strands of philosophical debate shaping the discipline of human geography, including description, prediction, explanation, abstraction, structuration, representation, and instrumentalization. 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 analysis. Prerequisite: one course in GIS.

GEOG 531 Latin American Development Seminar (5, max. 10) Lawton 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) Jarouz Contemporary issues in international development theory related to regional and agrarian change, with emphasis on Africa.

GEOG 540 Research Seminar: Industrial Geography (5, max. 10) Bayers 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) Morrill Offered: jointly with CS&SS 542; W.

GEOG 543 Research Seminar: Immigration, Ethnicity, and Employment (5) Ellis Employment patterns and outcomes for immigrants and ethnic minorities. Emphasis is on the U.S. experience and international 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. Offered: jointly with CS&SS 544.

GEOG 550 Research Seminar in Location Theory (3) Krumme Current research topics in economic and business geography. Focus shifts from year to year. Examples include spatial structures and economic development, economic geography of information, transaction cost perspectives of the location problem, and relationships between organization theory and theories of spatial organization.

GEOG 553 Advanced Topics in Cultural Geography (5, max. 10) Mitchell Focuses on important contemporary topics in cultural geography. Examines current theoretical debates in anthropological, sociological, and 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 Geographic Information and Analysis (5, max. 10) Chrisman Current research topics in geographic information systems. Particular emphasis on analytical methods, and their use in practical circumstances. Prerequisite: graduate status in GIS or related field. Offered: W.

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, government, 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) Jha/ven Engages in an eco-critique of mainstream managerial environmental liberalisms 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. Offered: A.

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) Sparkes Provides resources for theorizing how political 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 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 post-structuralism, 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 Research and methodologies in medical geography; critical analysis of readings in medical geography; interrelations of medical geography with other geographical specialities and other health sciences. Prerequisite: GEOG 580. Offered: odd years; W.

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: AWSp.

GEOG 700 Master's Thesis (*) Offered: AWSp.


Geological Sciences

See Earth and Space Sciences.

Geophysics

See Earth and Space Sciences.

Germanics

340C Denny

General Catalog Web page: www.washington.edu/students/gencat/academic/germanics.html

Department Web page: 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.

The department's mission is the dissemination of German intellectual and artistic traditions. In the service of this mission, the Department of Germanics is committed to excellence in educating undergraduates who pursue majors and minors in German language, literature, and culture. The department offers a wide spectrum of courses conducted in English on aspects of German culture and history for general humanistic education.
The Department of Germanics offers a closely integrated program leading to the Master of Arts and Doctor of Philosophy degrees. The doctoral curriculum serves the needs of the future professors at universities and colleges, stressing scholarship and research. The master’s curriculum requires a minimum of 40 credits, a final comprehensive examination, and two papers. The study period of the doctoral program is two years (minimum number of post-master's credits is 60). The completion of the necessary course work is followed by general written and oral examinations. A third doctoral year is reserved for the writing of the dissertation.

The M.A. and Ph.D. programs concentrate on German literature, civilization, and philosophical traditions, with an option to include Germanic linguistics and courses outside the department. The doctoral dissertation must be an original contribution to scholarship and must demonstrate mastery of the pertinent methods of investigation.

The Department of Germanics also participates in the joint-doctoral program in literature and critical theory. Study in this program leads to a Ph.D. in Germanics and Critical Theory. For details see the program description under Comparative Literature.

**Special Requirements**

Aspirants for advanced degrees in German must have the equivalent of an undergraduate major in German. A reading knowledge of one foreign language (usually German) is a prerequisite for the M.A. degree. Reading knowledge of a second language is required before the student is admitted to the Ph.D. General Examination. The languages chosen are subject to approval by the department.

**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. The teaching assistants are supervised by experienced faculty members.

**Faculty**

**Chair**
Sabine Wilke

**Professors**

Ammerlahn, Hellmut H. * 1968; PhD, 1965, University of Texas (Austin); classicism and comparative literature.

Barrack, Charles M. * 1968; PhD, 1969, University of Washington; Germanic linguistics.


Brown, Jane K. * 1988; PhD, 1971, Yale University; seventeenth- and eighteenth century, comparative literature.

Brown, Marshall J. * 1988, (Adjunct); PhD, 1972, Yale University; eighteenth- and nineteenth-century literature, literary theory, music and literature.

Gray, Richard T. * 1991; PhD, 1981, University of Virginia; eighteenth, nineteenth and early twentieth-century literature, literary sociology, critical theory.

Hertling, Gunter H. * 1961, (Emeritus); PhD, 1963, University of California (Berkeley); eighteenth- and nineteenth-century literature.

Hruby, Antonin F. * 1961, (Emeritus); PhD, 1946, Charles University (Czechoslovakia); medieval literature.

Rey, William H. 1981, (Emeritus); PhD, 1937, University of Frankfurt (Germany); nineteenth and twentieth century German literature.

Voyles, Joseph B. * 1965; PhD, 1965, Indiana University; Germanics and linguistics.

Wilde, Sabine * 1988; PhD, 1986, University of Mainz (Germany); critical theory, contemporary theater and film, literature and philosophy.

**Associate Professors**

Banslieben, Manfred * 1988; PhD, 1979, University of Vienna (Austria); German language and methodological history, culture studies.

McLean, Sammy * 1967, (Emeritus); PhD, 1963, University of Michigan; Western drama, twentieth-century poetry, psychoanalysis and literature, literary translation.

Prutti, Brigitte * 1991; DPhil, 1988, University of Graz (Austria); eighteenth-century literature, eighteenth-century Austrian literature, theory and history of drama.

Rabura, Horst M. * 1961, (Emeritus); MA, 1966, University of Washington; German language and methodology.

**Assistant Professors**

Ames, Eric C. 2000; PhD, 2000, University of California (Berkeley); nineteenth- and twentieth-century German literature; cultural studies; film.

Ostmeier, Dorothee * 1993, (Affiliate); PhD, 1993, Johns Hopkins University; German literature, philosophy, cultural history; Middle ages to present, emphasis on 20th century.

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/

**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: APr.

**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: APr.

**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 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 444 Undergraduate Thesis in Germanics (5) VLPA** Supervised research leading to the writing of a research thesis.

**GERMAN 445 Undergraduate Honors Thesis in Germanics (5) VLPA** Supervised research for honors students leading to the writing of an honors 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: A.Wsp.

**GERMAN 451 Linguistic Analysis of German (5) VLPA** Recommended: GERMAN 203 Offered: A.

**GERMAN 452 History of the German Language (5) VLPA** From early Germanic to the present. Recommended: GERMAN 203 Offered: W.

**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 interpretation and to their practical application. 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)

Courses for Graduates Only

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 503 Contemporary German Literature (5, max. 15) Seminar analyzing theesthetic 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 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 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 Hölderlin, the late Goethe, and from prevalent trends in nineteenth-century poetry, such as romanticism, "Young Germany," poetical 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, Kopstock, Herder, Lenz, Goethe, Schiller, Jean Paul.

GERMAN 534 Storm and Stress (5, max. 15) Extensive investigation of poietological 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 Trahl, Benn, the Expressionists and the Dadaists, Brecht, and Enzensberger, to such contemporaries as Eich, Heissenburg, 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 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 575 Teaching of German Literature and Civilization (3) 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 584 Seminar 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 590 Philosophical Issues in German Culture (5, max. 15) Seminar on rotating special topics dealing with the impact of particular thinkers, movements, or philosophical problems in German culture.

GERMAN 591 Studies in German Intellectual History (5, max. 15) Seminar on rotating special topics dealing with interactions of history, literature, and culture in the German tradition.

GERMAN 592 Cultural Studies (5, max. 15) Seminar on rotating special topics dealing with periods, themes, or particular problems in German life and culture.

GERMAN 600 Independent Study or Research (*)

GERMAN 700 Master's Thesis (*)

GERMAN 800 Doctoral Dissertation (*)

History

315 Smith

General Catalog Web page: www.washington.edu/students/gencat/academic/history.html

Department Web page: depts.washington.edu/cillo/

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.

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 four or five full-time academic quarters or their equivalent. The Ph.D. program requires at least three years of full-time work beyond the M.A. degree. Graduate training at both levels includes (1) course work and independent study leading to examinations in special historical fields, and (2) sustained investigation and interpretation of historical problems in seminars involving the writing of essays. A dissertation must be prepared for the Ph.D.

Special Requirements

Admission to the graduate program requires a sound undergraduate major in history or in one of the basic disciplines related to history completed within a college of liberal arts and sciences. The department also requires evidence of the applicant’s ability to write cogently and lucidly and to interpret historical data.

Financial Aid

Beginning graduate students may qualify for a limited number of fellowships, readerships, and work-study assistantships. 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, expect reappointment for a total of three years, provided adequate funds are available.

Faculty

Chair
Robert C. Stacey

Professors
Alden, David * 1959; MA, 1952, PhD, 1959, University of California (Berkeley); Latin American history, comparative colonial history.

Bacharach, Jeri L. * 1967; MA, 1962, Harvard University; PhD, 1967, University of Michigan; history of the Near East.

Barlow, Tani E. * 1994; (Adjunct); MA, 1979, PhD, 1985, University of California (Davis); modern Chinese history, feminist studies, East Asia/Asian American studies.

Behlmer, George K. * 1979; MA, 1972, PhD, 1977, Stanford University; modern English history.

Benson, Keith R. * 1981; (Adjunct); MA, 1973, PhD, 1979, Oregon State University; history of modern American biology, marine biology, and evolutionary biology.


Bridgman, Jon M. * 1961; (Emeritus); PhD, 1960, Stanford University; modern European history (especially military).

Butow, Robert J. C. * 1960; (Emeritus); PhD, 1953, Stanford University; East Asian diplomatic history.

Conlon, Frank F. * 1968; (Emeritus); PhD, 1969, University of Minnesota; history of India.

Ebrey, Patricia B. * 1997; PhD, 1975, Columbia University; the social and cultural history of China, especially the Song Dynasty (960-1279).

Ellison, Herbert J. * 1968; PhD, 1965, University of London (UK); modern Russian history.

Ferrill, Arther L. * 1964; (Emeritus); PhD, 1964, University of Illinois; ancient history.

Findlay, John M. * 1987; PhD, 1982, University of California (Berkeley); history of the American West.

Fowler, Wilton R. * 1969; PhD, 1966, Yale University; American history (especially diplomatic).

Gil, Carlos * 1974; PhD, 1975, University of California (Los Angeles); Latin America and history of the Chicano people.

Glenn, Susan A. * 1993; PhD, 1983, University of California (Berkeley); twentieth-century U.S. social history including women's history, immigration, labor, popular culture.

Johnson, Richard R. * 1972; PhD, 1972, University of California (Berkeley); United States colonial history.

Jonas, Raymond A. * 1985; PhD, 1985, University of California (Berkeley); modern France.

Kirkendall, Richard S. * 1988; (Emeritus); PhD, 1958, University of Wisconsin; recent United States history.

Lebsock, Suzanne D. * 1995; MA, 1973, PhD, 1977, University of Virginia; history of women, American cultural history, history of the South.


McCormick, Richard L. * 1995; PhD, 1976, Yale University; United States political history.

Palais, James B. * 1968; (Emeritus); PhD, 1968, Harvard University; modern Korean history.

Pease, Otis A. * 1966; (Emeritus); PhD, 1954, Yale University; United States in the twentieth century.

Pressly, Thomas J. * 1949; (Emeritus); PhD, 1949, Harvard University; history.

Pyle, Kenneth B. * 1965; PhD, 1965, Johns Hopkins University; modern Japanese history.

Rorabaugh, William J. * 1976; PhD, 1976, University of California (Berkeley); United States social history.

Sears, Laurie J. * 1989; PhD, 1986, University of Wisconsin; Southeast Asian social and cultural history.

Stacey, Robert C. * 1988; PhD, 1983, Yale University; medieval England, medieval Judaism, political and legal history.

Sullivan, Woodruff T. II * 1973; (Adjunct); PhD, 1971, University of Maryland; radio astronomy, galactic and extragalactic structure, history of astronomy.

Taylor, Quintard * 1995; MA, 1971, PhD, 1977, University of Minnesota; African American history with a focus on blacks in the West.

Thomas, Carol G. * 1964; PhD, 1965, Northwestern University; ancient history.

Toews, John E. * 1979; PhD, 1973, Harvard University; modern European intellectual history.

Ullman, Joan Connelly * 1966; (Emeritus); PhD, 1963, Bryn Mawr College; modern Spain.

Walter, John C. * 1989; (Adjunct); PhD, 1971, University of Maine; African American history; American women's history; the New Deal.

White, Richard * 1990; (Affiliate); PhD, 1975, University of Washington; American West, American Indian, environmental history.

Williams, Michael A. * 1976; (Adjunct); PhD, 1977, Harvard University; early Christianity and religions of antiquity.

Wineburg, Samuel S. * 1989; (Adjunct); PhD, 1990, Stanford University; educational psychology, cognitive psychology of school subjects, historical cognition.

Associate Professors
Dong, Yue 1996; (Adjunct); MA, 1991, University of Oregon, PhD, 1996, University of California (San Diego); modern Chinese history, urban history, gender studies.

Fialak, James R. * 1989; PhD, 1989, Indiana University; modern East European history.

Gamboa, Erasmo * 1976; (Adjunct); MA, 1973, PhD, 1984, University of Washington; history, Chicano experience, Pacific Northwest.

Gowing, Alan M. * 1988; (Adjunct); PhD, 1988, Bryn Mawr College; Latin and Greek historiography, Latin literature of the Empire.

Gregory, James N. * 1993; PhD, 1983, University of California (Berkeley); U.S. social and political history since 1865, labor, the West.

Guy, R. Kent * 1980; PhD, 1981, Harvard University; modern Chinese history.

Harmon, Alexandra J. * 1991; (Adjunct); PhD, 1995, University of Washington; history of U.S. race and ethnic relations, especially involving American Indians.

Hevly, Bruce W. * 1989; PhD, 1987, Johns Hopkins University; history of technology and history of modern physics.

Leiren, Terje I. * 1977; (Adjunct); PhD, 1978, North Texas State University; Scandinavian history, nationalism, immigration, ethnicity.


O’Neill, Mary R. * 1983; PhD, 1982, Stanford University; Renaissance/Reformation, early modern Europe, social history, Italy before 1700.


Salas, Elizabeth 1987; (Adjunct); MA, 1977, California State University, Los Angeles; PhD, 1987, University of California (Los Angeles); New Mexican history and politics, Chicana, Mexicana and Chicano history, minorities in the military.

Stacey, Robin C. * 1988; PhD, 1986, Yale University; early and high medieval history, tribal law, Celtic/Anklo-Saxon literature, heresy.

Waugh, Daniel Clarke * 1972; PhD, 1972, Harvard University; medieval Russian history.

Yee, Shirley J. * 1988; (Adjunct); PhD, 1987, Ohio State University; U.S. women’s history, African-American history, nineteenth-century U.S. social history.

Young, Glinsey J. * 1992; PhD, 1989, University of California (Berkeley); late Imperial and early Soviet Russia.

Assistant Professors
Camp, Stephanie M. H. 1998; PhD, 1998, University of Pennsylvania; African American history.

Giebel, Christoph * 1998; PhD, 1996, Cornell University; Viet Nam; 20th century history, communism, labor, post-independence historiography.

Nash, Linda L. 1993; MS, 1989, University of California (Berkeley); environmental, American west.

Noegel, Scott B. * 1995; (Adjunct); PhD, 1994, Cornell University; Ancient Near Eastern languages, literatures, cultures and history.

Schmidt, Benjamin * 1996; MA, 1988, PhD, 1994, Harvard University; early modern European history, especially the Netherlands; cultural history; European expansion.

Singh, Nikhil Pal * 1998; PhD, 1995, Yale University; 20th-century U.S. history and theory with a focus on ethnicity, race and nationalism.

Stein, Sarah A. * 1999; PhD, 1999, Stanford University; modern Jewish history, Russian Jewish history, Ottoman Jewish history, diaspora studies.

Thomas, Lynn M. * 1997; MA, 1989, Johns Hopkins University; modern Jewish history.

Walker, Joel T. 1997; PhD, 1998, Princeton University; late antiquity, Byzantine, early Middle Ages.
Senior Lecturer
Wright, Mary C. 1997; PhD, 1996, Rutgers University; history of American Indians, women, American West.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs/.

History
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 to 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 461 History of the Middle East: 622-1300 (5) I&S Political and economic analysis of the period 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 Napoleon 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 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 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 (5, max. 10) I&S Preparation of the senior thesis for the History and Science emphasis.

HIST 494 Colloquium in Historiography (5) 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 (3-5, 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)
Courses for Graduates Only
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 (3) 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 511 History of Science (3-6, max. 6)
HIST 512- Seminar in the History of Science (3-6, max. 6)
HIST 513- Seminar in the History of Science (3-6, max. 6)

HIST 515 Field Course in the History of Technology (3) 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 (3) Introduces students to the historiography of modern European/Amberican colonialism, focusing on Africa, Asia, and/or the Americas. Addresses methodological and conceptual issues by examining relationships 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 (3) Methodological and conceptual issues in African historiography, focusing on 1500 to the present.

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 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 (3, max. 9) 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 401 Early Greece (5) I&S Bronze and Dark Age Greece: realities of the heroic age of ancient Greece.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Credits</th>
<th>Prerequisite</th>
<th>Notes</th>
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<tr>
<td>HSTAM 402</td>
<td>Classical Greece (5) I&amp;S</td>
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<td>HSTAM 403</td>
<td>Alexander the Great and the Hellenistic Age (5) I&amp;S</td>
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<td>HSTAM 411</td>
<td>The Roman Republic (5) I&amp;S</td>
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<td>HSTAM 412</td>
<td>The Roman Empire (5) I&amp;S</td>
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<td>HSTAM 418</td>
<td>The World of Late Antiquity (5) I&amp;S</td>
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<td>HSTAM 421</td>
<td>The Byzantine Empire (5) I&amp;S</td>
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<tr>
<td>HSTAM 433</td>
<td>Kiev and Moscovite Russia: 850-1700 (5) I&amp;S Development of Russia from earliest times to the reign of Peter the Great. Offered: jointly with SISRE 443.</td>
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<td>HSTAM 490</td>
<td>Topics in Ancient/Medieval History (5, max. 10) I&amp;S</td>
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<td></td>
<td>Exams special topics in ancient/medieval history.</td>
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<td>Courses for Graduates Only</td>
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<td>HSTAM 501</td>
<td>Greek History Field Course (3-6, max. 6) Exams various topics and themes in Greek history. Content varies.</td>
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<tr>
<td>HSTAM 511</td>
<td>Roman History Field Course (3-6, max. 6) Exams various topics and themes in Roman history. Content varies.</td>
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<td>HSTAM 512</td>
<td>Seminar in Ancient History (3-6, max. 6) Detailed study of special topics in ancient history.</td>
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<td>HSTAM 518</td>
<td>Topics in Late Antiquity (3-6, max. 18) Exams various topics in the transformation of the ancient world from the third-century crisis of the Roman Empire to the rise of Islamic civilization. Examines the manifold political, cultural, and social changes that transformed Europe, the Mediterranean, and the Near East between the third and the eighth centuries CE.</td>
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<td>HSTAM 530</td>
<td>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.</td>
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<td>HSTAM 531</td>
<td>Medieval European History (3-6, max. 6)</td>
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<td>HSTAM 532</td>
<td>Medieval European Seminar (3-6, max. 6) Prerequisite: reading knowledge of Latin.</td>
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<td>HSTAM 533</td>
<td>Medieval European Seminar (3-6, max. 6) Prerequisite: reading knowledge of Latin.</td>
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<td>HSTAM 534</td>
<td>Medieval European Seminar (3-6, max. 6) Prerequisite: reading knowledge of Latin.</td>
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<td>HSTAM 535</td>
<td>Later Medieval Europe (3-6, max. 6) Field course. Surveys European history from ca. 1250 to 1500, with particular attention to historiography.</td>
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<td>HSTAM 536</td>
<td>Topics in Early Medieval History (3-6, max. 6) Graduate level study of specific topics in early medieval history. Topics vary from quarter to quarter; for information, please see instructor.</td>
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<td>HSTAM 590</td>
<td>Topics in Ancient and Medieval History (3, max. 9) 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.</td>
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<td>HSTAM 441</td>
<td>Economic and Social History of Japan to 1900 (5) I&amp;S</td>
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<td>HSTAM 442</td>
<td>Economic and Social History of Japan to 1900 (5) I&amp;S</td>
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<td>HSTAM 443</td>
<td>Chinese History from Earliest Times to 221 BC (5) I&amp;S</td>
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<td>HSTAM 444</td>
<td>Economic and Social History of Japan to 1900 (5) I&amp;S</td>
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<td>HSTAM 445</td>
<td>Chinese History: Earliest Times to 221 BC (5) I&amp;S Preperial China.</td>
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<td>HSTAM 451</td>
<td>Chinese History: Earliest Times to 1276 (6) I&amp;S Traces the development of Chinese civilization from earliest times through the Sino-Japanese war. Focus on the evolution of the late imperial Chinese state and the “early modern” era in China.</td>
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<td>HSTAM 454</td>
<td>History of Modern China (5) I&amp;S Social, political, cultural, political, and economic history.</td>
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<tr>
<td>HSTAM 455</td>
<td>History of Modern China (5) I&amp;S Social, political, cultural, political, and economic history.</td>
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<td>HSTAM 457</td>
<td>Women in China to 1800 (5) I&amp;S Gender in Chinese culture, women’s situations in the patrilineal family system, and the role of 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.</td>
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<td>HSTAM 459</td>
<td>Gender Histories of Modern China, 18th to 20th Centuries (5) I&amp;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.</td>
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<td>HSTAM 460</td>
<td>Cities in China: Past and Present (5) I&amp;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. Offered: jointly with SISEA 460.</td>
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<td>HSTAM 462</td>
<td>Southeast Asian History to 1800 (5) I&amp;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.</td>
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<td>HSTAM 464</td>
<td>Viet Nam Wars (5) I&amp;S Giebel Recent Vietnamese history and struggles for independence and national unification of the Vietnamese people. Offered: jointly with SISEA 460.</td>
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<td>HSTAM 466</td>
<td>Islam, Mysticism, Politics, and Performance in Indonesian Culture (5) VLPA/I&amp;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 SISEA 466.</td>
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<td>HSTAM 467</td>
<td>History of Traditional Korea: Earliest Times to the Nineteenth Century (5) I&amp;S Korean history from earliest times to the modern period.</td>
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<td>HSTAM 481</td>
<td>History of Modern Korea: 1860 to the Present (5) I&amp;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.</td>
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<td>HSTAM 490</td>
<td>Topics in Asian History (5, max. 10) I&amp;S Courses for Graduates Only HSTAS 501 Indian History (3-6, max. 6) Prerequisite: permission of instructor.</td>
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HSTAS 521 Modern Japanese History (3-6, max. 6) Field course. Prerequisite: HSTAS 422, HSTAS 423, or permission of instructor.

HSTAS 530 Field Course in Southeast Asian History (3) 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 (3) Selected topics in Southeast Asian history and historiography. Preparation for theses and doctoral dissertations on Southeast Asian History.

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 colonization, post-colonialism, and statist-oriented citizenship; intra-Asian sub-imperialism 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 gender and the regional flows of ideas, labor, capital, and jurisprudence. Offered: jointly with WOMEN 546; AWSpS.

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 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 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 Chinese history. Prerequisite: reading knowledge of classical Chinese. Recommended: HSTAS 452, HSTAS 550, or HSTAS 551, or equivalent.

HSTAS 560 Field Course in Chinese History: 1276-1895 (3-6, max. 6) 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. 6) 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 -571 Field Course in Modern Chinese History (3-6, max. 6) 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.

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 581 Modern Korean History (3-6, max. 6) Field course. Prerequisite: permission of instructor.

HSTAS 582 Seminar in Korean History (3-6, max. 6) Selected topics in Korean history and historiography.

HSTAS 583 Seminar in Korean History (3-6, max. 6) Selected topics in Korean history and historiography.

HSTAS 584 Seminar in Korean History (3-6, max. 6) Selected topics in Korean history and historiography.

HSTAS 590 Topics in Asian History (3, max. 9) Seminar on selected topics in Asian history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

History of the Americas

HSTAA 401 American Revolution and Confederation (5) I&S Causes of separation from Britain; imperial control and the development of trans-Allegheny society; the American 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 (3) 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 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 with special attention to social 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 way 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-Mississippian and 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 by western Europeans with emphasis on their economic, social, and Native history.

HSTAA 417 Indians in Western Washington History (3) I&S Harman Relations of Indians and non-Indians in the Puget Sound region, 1790s to the present, with emphasis on evolving ideas about Indian identity. Offered: jointly with AIS 425.

HSTAA 421 American Environmental History (5) I&S American attitudes toward the natural environment. Impact of settlement on the major natural regions of the United States. Evolution of the conservation movement, including development of the national park system and national forest system and emergence of the ecological perspective.

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 436 American Jewish History Since 1885 (5) I&S Jewish community, national identity, 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 436.

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 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 lib-
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 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 486 History of Mexico: Colonial Origins to 1822 (5) I&S Political, social, and economic history of Mexico from its discovery by the Spanish to its independence from Spain.

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.

Courses for Graduates Only

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 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 descendents.

HSTAA 521 American History: Writings and Interpretations, 1770-1870 (4-6)

HSTAA 522 American History: Writings and Interpretations Since 1870 (4-6)

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 532- Seminar in American History: Recent Period (3-6, max. 12)

HSTAA -533- 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 period to the present, with particular emphasis on cities of the West.

HSTAA 549 Culture, Politics, and Power in Nineteenth-Century Black America (5) Camp Canonical issues, problems, and topics in nineteenth-century black social history. Traces major developments during the period: engages historicographical 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 554 American History: Intellectual (3-6, max. 6)

HSTAA -563 Seminar in American Diplomatic History (-3-6, max. 6)

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 582 Latin American History: National Period (3-6, max. 6)

HSTAA 590 Topics in American History (3, max. 9) 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 401 The Italian Renaissance: (5) I&S Conditions of Renaissance culture: Italian republics and despotism; humanism, the classical ideal of the arts; Machiavelli and the foundations of modern political thought; the end of an era.

HSTEU 402 The Reformation (5) I&S Origins of the disunity of Europe in the crisis of the sixteenth century with emphasis on the relations between religion and politics.

HSTEU 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.


HSTEU 406 European Intellectual History: Nineteenth Century (5) I&S/VLPA 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 historical discourse, and Christian apologetics, utilitarianism in decline, liberalism as philosophy, the early Marx.

HSTEU 407 European Intellectual History: Twentieth Century (5) I&S/VLPA 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: 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 Six Years’ War: 1939-45 (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 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 451 East-Central Europe Since 1342 (5) I&S Focus on the lands of today’s Poland, Czechoslovakia, Hungary, and Germany from the time they were great powers to the present. Traces the major changes in the fortunes of these lands in both local and international settings.

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 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 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 convos 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 490 Topics in European History (5, max. 10) I&S Examine special topics in European history.

Courses for Graduates Only

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 (3-) 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 (3-) 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 (3-) 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 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 531 Modern European History: Germany (3-6, max. 6)

HSTEU 544 Modern Russian History (3-6, max. 6)

HSTEU 548 Field Course in Soviet History (3-6, max. 6) Specialized course for graduate study 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 571 English History: Tudor and Stuart (3-6, max. 6)

HSTEU 572 English History (3-6, max. 6)

HSTEU 590 Topics in European History (3, max. 9) Seminar on selected topics in European history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

Humanities

(Simpson Center for the Humanities)

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsclat.

HUM 498 Special Topics in the Humanities (1-5, max. 15) I&S/VLPA Examination of selected topics in the humanities and the study of the arts. Taught by U.W. faculty and visiting scholars and artists.

Courses for Graduates Only

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 523 Seminar in Hypertext and Textual Studies (5) Several views of hypertext conceptually exploring 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. 19) Exploration of current research in the Humanities and the study of the arts. Offered by specially select- ed U.W. faculty and visiting scholars in the arts and humanities.

International Studies

401 Thomson

General Catalog Web page: www.washington.edu/students/gencat/academic/internat_studies.html

Department Web page: 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.

Graduate Program

Graduate Program Information

111 Thomson, Box 353650
206-543-6001
jsisinfo@u.washington.edu

The Jackson School offers six area-studies programs that lead to a Master of Arts in International Studies degree. These include China Studies; Japan Studies; Korea Studies; Middle East Studies; Russian, East European, and Central Asian Studies; and South Asian Studies. Specific requirements vary from one program to another, but all stress interdisciplinary study within the context of the historical cultures, contemporary situations, and languages of the world areas. In addition, the Jackson School offers a program in Comparative Religion for the Master of Arts in International Studies.

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 complet- ed in two years.
Financial Aid: Financial support is available 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 readerships.

Research Facilities (East Asia): Research and training facilities include the East Asia Library, with a comprehensive collection of manuscripts, books, and documents 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, supported 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
David M. Bachman, 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 521-522 (5 credits each) plus 26 credits in discipline study related to China. Students must demonstrate facility in the Chinese language through the third year; two seminars in a chosen discipline, and a combination of advanced language training 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, Italian, Dutch, Spanish); certification of basic competency in the history of world religions; RELIG 501-502; 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
Daniel Chirot, Chair

The general program in International Studies provides students with broad knowledge and skills in analyzing international affairs. Designed for students entering a variety of 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. The program usually entails concurrent enrollment in a graduate professional-degree program and 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 training through the third year or any other modern foreign language through the second year; SIS 500, 501, 502, 511, 512, and 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
Marie C. Anchordoguy, Chair

The graduate program in Japan Studies gives students in-depth knowledge of many facets of Japan, including its history, political economy, 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) for students with professional work in an academic discipline involving Japan for students who have had little or no training on Japan or in the language.

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) and SISEA 556 (5); 26 credits in discipline study of Japan to include at least one history course and one social science course; 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 (through the second year of instruction if the student admission with no previous language training); HSTAS 481-482, 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
Ellis Goldberg, Chair

The Middle East program is designed for students who wish to study the region within an interdisciplinary framework, focusing especially on the social, political, economic, and legal systems of the Middle East and/or Islamic Central Asia. To provide a thorough grounding in this region, students take courses in the social sciences, humanities, and a Middle Eastern or Central Asian language.

Admission Requirements: See above under Graduate Program. Although knowledge of a Middle Eastern or Central Asian language is not a prerequisite for admission, applicants are generally expected to demonstrate facility in at least one history course and one social science discipline; 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 in 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 and 502 (3 credits each); 30 credits in disciplines other than language, with 15-20 credits in a discipline of concentration and 10-15 credits in at least two additional disciplines; a thesis (9 credits of SISRE 700); a written examination in the discipline of concentration 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

Anil B. Deolalikar, Chair

The South Asian Studies program has been 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, Afghanistan, 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; SISRE 510 and 511 (5 credits each); 26 credits in discipline course work other than language, from at least two different departments; two seminar papers; 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.

Faculty

Director
Armand Yang

Professors
Bacharach, Jere L. * 1967; MA, 1962, Harvard University, PhD, 1967, University of Michigan; history of the Near East.
Bachman, David M. * 1991; PhD, 1984, Stanford University; Chinese politics and foreign policy and China’s political economy (1949-present); U.S.-China relations.
Brass, Paul R. * 1965, (Emeritus); PhD, 1964, University of Chicago; comparative government, international relations.
Butow, Robert J. C. * 1960, (Emeritus); PhD, 1953, Stanford University; East Asian diplomatic history.
Chiro, Daniel * 1974; PhD, 1973, Columbia University; comparative ethnic conflict, social change, post-communist societies.
Ebrey, Patricia B. * 1997; PhD, 1975, Columbia University; the social and cultural history of China, especially the Song Dynasty (960-1279).
Ellison, Herbert J. * 1968; PhD, 1965, University of London (UK); modern Russian history.
Hamilton, Gary G. * 1993; PhD, 1975, University of Washington; economic sociology, historical comparative, organizational studies, East Asia.
Hanley, Susan B. * 1970; PhD, 1971, Yale University; premodern Japan.
Hellmann, Donald C. * 1967; PhD, 1964, University of California (Berkeley); Japanese politics and international relations.
Jaffe, Martin S. * 1987; PhD, 1980, Brown University; Rabbinic religion and literature in late antiquity.
Kasaba, Resat * 1985; PhD, 1985, State University of New York (Binghamton); historical sociology, world systems, social change in the Middle East.
Keyses, Charles F. * 1965; PhD, 1965, Cornell University; interpretive anthropology, religion and political-economic change, ethnic group relations, sociology.
Legters, Lyman H. * 1966, (Emeritus); PhD, 1958, Free University of Berlin (Germany); Russian and East European studies.
Migdal, Joel S. * 1980; MA, 1968, PhD, 1972, Harvard University; state and society in the Third World; Middle East politics.
Palais, James B. * 1968, (Emeritus); PhD, 1968, Harvard University; modern Korean history.
Poznanski, Kazimierz * 1987; PhD, 1974, University of Warsaw (Poland); international trade, economics of technology, comparative economic systems.
Pyle, Kenneth B. * 1965; PhD, 1965, Johns Hopkins University; modern Japanese history.
Townsend, James R. * 1968, (Emeritus); PhD, 1965, University of California (Berkeley); comparative government (China), politics of development.
Webb, Eugene * 1966, (Emeritus); PhD, 1965, Columbia University; modern English, French, and German literature, comparative religion.
Senior Lecturer
Clowes, James D. 1988; PhD, 1996, University of Washington; modern European intellectual history, early German romanticism, pedagogy.

Lecturer
Wheeler, Deborah 1997; PhD, 1993, University of Chicago; contemporary Islamic societies, technology in U.S. foreign policy and contemporary Middle East.

Course Descriptions
See page 29 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

International Studies
SIS 401 International Political Economy (5) &S Ingebritsen, Poznanski 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. ECON 201 which may be taken concurrently.

SIS 406 Political Islam and Islamic Fundamentalism (5) &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 comparisons with previous resurgences. Offered: jointly with POL S 432.

SIS 410 Introduction to Global Internet Political Economy (5) &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) & Provides students an understanding of policies that shape national communication processes and systems. Uses comparative analysis to identify both similarities and differences among mass media 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) &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) &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) &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) &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) &S Caporaso, Modelski Nation-state system and its alternatives; world distribution of power and influence; domestic institutions and national power and authority; historical world societies and their politics. Offered: jointly with POL S 426.

SIS 430 International Population (5) &S Lavely 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, demographic change, and resource constraints. Exploration and manipulation of international demographic data.

SIS 432 Population and Modernization (3) &S Hirschman, Lavely Examines role of demographic factors in process of social modernization and economic growth. Approach is historical, focusing on populations of developed countries since 1700. Analytic, stressing attempts made by different disciplines to model demographic relationships, with attention to less developed regions. Offered: jointly with SOC 432.

SIS 436 Ethnic Politics and Nationalism in Multi-Ethnic Societies (5) & Provides a broad theoret- ical and methodological framework 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 ethnic studies in other departments is desirable. Offered: jointly with POL S 436.

SIS 440 History of Communism (5) &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) & 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 449 Social Transformation of Modern East Asia (5) &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 455 Industry and the State (5) &S 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) &S Rachman, Kabasa Relationships among political, social, and economic changes in Asia, Africa, and Latin America. Problems of eco-
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 Affair (3) Chirot 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.

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 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 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) Sparker 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 (*)

**African Studies**

SISA 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.

SISA 499 Special Topics (1-5, max. 15) I&S

**Comparative Religion**

RELG 400 The Jewish Mystical Tradition (5) I&S Jaffe The thought of Isaac Luria and his 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.

RELG 405 Scripture in Judaism (5) I&S Jaffe 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.

RELG 410 Law in Judaic Experience (5) I&S Jaffe 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.

RELG 415 Modern Jewish Thought (5) I&S Jaffe 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.

RELG 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.

RELG 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 of Nazianzus, Gregory of Nyssa, and Augustine. Recommended: HIST 307, RELIG 320, or RELIG 324.

RELG 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.

RELG 428 Modern Christian Theology (5) I&S Modern Protestant and Catholic thought since the sixteenth century: Kierkegaard, Barth, Bultmann, Rahner, Lonergan, and other major figures. Recommended: RELIG 301.

RELG 430 Scripture in Islam (5) I&S/LVPA Wheeler 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.

RELG 432 Ritual and Law in Islam (5) I&S/LVPA Wheeler 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; W.

RELG 433 Life of Prophet Muhammad (5) I&S/LVPA Wheeler Examines historical and religious traditions associated with the life of the Prophet
RELIG 434 Human Rights and Islam (3) I&S Souaia Focuses primarily on the historical and philosophical background behind the development of the principles and norms of “human rights” in Western thought and in the Islamic legal and religious traditions, from the seventh century to modern day. Analyzes the role of religious as well as political, social, and economic institutions in formulating the notions of human rights. Offered: jointly with NEAR E 433.


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 452 Topics in the Buddhism of Tibet (3) I&S Topics in the development of Buddhism of Tibet. Includes the relationship between reason 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 456 Women in Ancient Judaism (3) I&S/VLPA Noege! Explores those texts in early Jewish literature in which women play prominent roles and those in which women are surprisingly absent. Discusses the literary portrayal of women for what they tell us about the people who wrote the texts. No knowledge of Hebrew is required. Offered: jointly with NEAR E 456.

RELIG 457 The History of Biblical Interpretation (3) I&S/VLPA Noege! 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 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 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 minors in the School of International Studies.

Courses for Graduates Only

RELIG 501 Approaches to the Study of Religion (5) Major approaches employed by modern scholar-ship 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 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 590 Special Topics (2-5, max. 15) Offered occasionally by visitors or resident faculty. Course content varies.

RELIG 600 Independent Study or Research (*)

East Asian Studies

SISEA 423 History of Modern Japan (5) I&S/VLPA Williams Social, economic, and cultural developments 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, Lively 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 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 re-building; 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 Hanley Lecture-sessions on Japanese economic and social history focus on 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 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 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 Harrell Religion in Chinese society, doctrines, practices, and social consequences of the ecletic 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, RELIG 370, or SISEA 443. Offered: jointly with ANTH 447.


SISEA 449 Government and Politics of China (5) I&S Whiting Post-1949 government and politics, with emphasis on problems of political change in modern China. Offered: jointly with POL S 442.

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 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
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 468 China’s Economic Reforms: Integration Into World Economy (5) I&S
Wong 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 470 Minority Peoples of China (5) I&S
Harré Interaction between China and the peoples of its periphery, including Inner Asia, Tibet, Northeast 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 475 Japanese Society (5) I&S

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 other social sciences. Assignments chosen from works in economics, history, political science, and other social sciences. Offered: jointly with I&S 468.

SISEA 480 New Orders in East Asia (5) I&S
Pyle Introductory research seminar dealing with the historical and ideological aspects of the formation of new order in contemporary Asia. Topics include international relations, regionalism, and the role of China, Japan, and other countries in the region. Offered: jointly with I&S 460.

SISEA 490 Special Topics (1-5, max. 15) I&S
Course content varies.

SISEA 494 Economy of Japan (5) I&S
Yamamura 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)
Courses for Graduates Only

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 530 Seminar on China (3, max. 6) Problems of Chinese history. Prerequisite: permission of instructor.

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 Writing 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) 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 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 Law in East Asia: Japan (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) Hanley Analyses of landholding systems, the role 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 543 Law in East Asia: China (3) Clarke Introduction to the basic institutions and processes of the Chinese legal system. Development and role of law in both the traditional and contemporary periods. Offered: jointly with LAW B 541.

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 -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) semana discussing articles in Japanese in economics, history, political science, and other social sciences. Assignments chosen 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 575 Seminar on Japanese Society (5) International 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 (5) Anchordoguy Analysis of major issues such as the Japanese state’s role in industrial development, Japan’s trade and investment in Asia, US-Japan trade and security relations, and Japan’s model of capitalism.

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, and technological developments, prospects for the future.

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) Sorensen Advanced instruction in problems and methods of research in Korean history. Foreign language not required. Prerequisite: permission of instructor.

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 (*)

European Studies
EURO 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 contem-
porary economic, social, political, and cultural milieu in which they operate. Offered: jointly with COM 425.


EURO 481 August Strindberg and European Cultural History (5) I&S/SVLP A examines the work of Swedish dramatist, novelist, and painter August Strindberg, in the context of European literary movements and history. Offered: jointly with SCAND 481.

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 490. Offered: Sp.

EURO 499 Undergraduate Research (1-5, max. 5)

Jewish Studies

SISJE 436 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 436.

SISJE 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 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 Israelis, 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 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 sociology 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-Prepresent (5) I&S Stein Examines the history and culture of Sephardic Jews 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 eighteenth century 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 498 Labor and Popular Movements in Latin America (5) I&S Bergaud Interdisciplinary approach to origins and trajectory of labor movement from late eighteenth 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.

SISJE 498 Cultural Studies of Latin America (5) I&S/SVLP A Steele Identity, representation, and transculturation in Latin American popular culture. Topics vary but may include, cinema, folk art, and historical, ethnographic, and travel writing. Prerequisite: SPAN 323; SPAN 322; one additional 300-level course above SPAN 303. Offered: jointly with SPAN 485.

SISJE 498 Photography and Cultural Studies in Latin America (5) I&S/SVLP A 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. Offered: jointly with SPAN 486.

SISLA 489 The Mexico-U.S. Border in Literature and Film (5) I&S/SPAN 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: SPAN 303; 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)

Middle Eastern Studies

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 434 Human Rights and Islam (3) I&S Souaaia Focuses primarily on the historical and philosophical background behind the development of the principles and norms of “human rights” in Western thought and in the Islamic legal and religious traditions, from the seventh century to modern day. Analyzes the role of religion as well as political, social, and economic institutions in formulating the notions of human rights. Offered: jointly with NEAR E 434/RELG 434.

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)

Courses for Graduates Only

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.

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.

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 590 Special Topics (3-5, max. 10) Content varies.

SISME 600 Independent Study or Research (*)

Russian, East European, and Central Asian Studies

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 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 Waugh Development of Russia from earliest times to the reign of Peter the Great. Offered: jointly with HSTEM 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 448 Twentieth-Century Russia (5) I&S Ellison, Young Russia and the USSR from Nicholas II to the present. Offered: jointly with HSTEU 445.

SISRE 455 Marine Business Environment in Russia and Eastern Europe (5) I&S Kaczyński 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 490 Special Topics (1-5, max. 15) I&S Topics vary.

Courses for Graduates Only

SISRE 501 Bibliography and Research Methods (3) 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. Credit/no credit only.

SISRE 502 Thesis Seminar (3) Required of all second-year MAIS students. Credit/no credit only.

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 Russian Ocean Policy (3) Kaczyński Russian ocean policy following perestroika and disintegration of Soviet empire. Discusses Russian navy, fishery industry, merchant marine, ocean research fleet, in light of international agreements, and joint ventures and new political, economic, and social environments. Prerequisite: knowledge of Soviet/Russian socio-economic problems or permission of instructor. Offered: jointly with SMA 555.

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 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 Bilaniuk 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 490 Special Topics (1-5, max. 15) I&S Topics vary.

SISSA 498 Undergraduate Colloquium on South Asia (5) I&S Bilaniuk Introductions to the various social science disciplines in the study of South Asian history and culture.

SISSA 499 Undergraduate Research (1-5, max. 15)

Courses for Graduates Only

SISSA 510 Introduction to Interdisciplinary Study of South Asia (5) Examines work done in the various disciplines focusing on South Asia.

SISSA 511 Seminar on South Asia (5) I&S Bilaniuk 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 or permission of graduate program coordinator.

SISSA 590 Special Topics (2-5, max. 10) Seminar. Course content varies. Offered occasionally by visitors or resident faculty.

SISSA 600 Independent Study or Research (*)

Southeast Asian Studies

SISSSE 445 Literature and Society in Southeast Asia (5, max. 10) I&S Bilaniuk 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.

SISSSE 465 The Viet Nam Wars (5) I&S Giebel Recent Vietnamese history and struggles for independence and national unification vis-à-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.

SISSSE 466 Islam, Mysticism, Politics, and Performance in Indonesian Culture (5) I&S Bilaniuk 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 466.

SISSSE 469 Topics in Southeast Asian History (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. Offered: jointly with HSTAS 469.

SISSSE 490 Special Topics in Southeast Asian Studies (1-5, max. 15) I&S Content varies.

SISSSE 499 Undergraduate Research (1-5, max. 15)

Japan Studies

See International Studies.

Jewish Studies

See International Studies.

Korea Studies

See International Studies.

Latin American Studies

See International Studies.

Law, Societies, and Justice

See Political Science.
Linguistics
A210 Padelford

General Catalog Web page: www.washington.edu/students/gencat/academic/linguistics.html

Department Web page: depts.washington.edu/lingweb/

Linguistics is the scientific study of language, which is one of the most characteristic human attributes. Courses provide training in the method and theory of language analysis and description, as well as studies of language change and language in society. The Romance Linguistics program allows the student to specialize in the analysis and history of one or more Romance languages.

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, and in theoretical aspects of second-language acquisition. Some course work is also available in various cooperating departments. Among those fields represented outside the department are psycholinguistics, philosophy of language, speech synthesis, and the structure and history of a number of individual languages and language families.

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. 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. Two courses each in syntax and phonetics/phonology.
2. One course in semantics.
3. Three courses not in categories (1) and (2) above.
4. Three courses at the 400 or 500 level. At least two of these must be 500-level courses for which papers or projects are required. (LING 504, 505, 506, 507, 508, and 509 do not qualify for this requirement. Also note the University requirement for 9 credits at the 500 to 600 level.)
5. No course fulfilling any of the above requirements can be taken for the 2-credit (no paper) option.
6. Demonstrated ability to read the linguistic literature in a language other than English. This can be satisfied at any time during the program by arrangement with the Graduate Program Coordinator.
7. 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.
8. Formation of a supervisory committee after the second quarter.
9. 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.
10. All requirements must be completed within the equivalent of seven 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 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 an M.A. degree plus the following:
1. 35 additional credits of course work. At least 18 credits at the 500 level and above 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. One year (three quarters) of full-time registration is required by the Graduate School.
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. (LING 504, 505, 506, 507, 508, and 509 do not qualify for this requirement.) There is also a major, minor, and breadth 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); Breadth—eight courses in other areas of the field. The student's supervisory committee will be the final judge of what courses might qualify to meet these requirements. However, it is worth nothing 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. An exotic 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.
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:
   i. Two generals papers in different areas. At least one of the papers must be in some area of grammatical theory and one must be in the projected dissertation area. (One of the two papers, of course, can fulfill both the grammatical theory and the dissertation area requirements.) At least one of the student's Ph.D. committee members must have expertise in each of the chosen areas.
   ii. 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.
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.

Faculty
Chair
Julia R. Herschensohn

Professors
Augerot, James E. * 1960, (Adjunct); MA, 1959, New Mexico Highlands University; PhD, 1968, University of Washington; Slavic linguistics, Romanian, Bulgarian.
Barrack, Charles M. * 1968, (Adjunct); PhD, 1969, University of Washington; Germanic linguistics.
Braine, Michael K. * 1970; PhD, 1970, Massachusetts Institute of Technology; syntax, phonology, structure of Arabic and English, cross-linguistic comparisons, poetic.
Contreras, Heles * 1965, (Emeritus); PhD, 1961, Indiana University; Spanish linguistics, syntax and English semantics.
Herschensohn, Julia R. 1985; PhD, 1976, University of Washington; Romance linguistics, syntactic theory, French syntax, second language acquisition.
Hunn, Eugene S. * 1972, (Adjunct); PhD, 1973, University of California (Berkeley); cognitive anthropology, ethnobiology, cultural ecology and evolution, North American Indians.
Kaisse, Ellen * 1976; PhD, 1977, Harvard University; phonology, historical linguistics, ancient and modern Greek/Spanish, syntax-phonology interface.
Klausenburger, Jurgen 1969, PhD, 1969, University of Michigan; Romance linguistics, morphology, diachronic linguistics.
Kuhl, Patricia K. * 1976, (Adjunct); MA, 1971, PhD, 1973, University of Minnesota; speech perception.
Micklesen, Lew R. * 1966, (Emeritus); PhD, 1951, Harvard University; Slavic linguistics.
Newmeyer, Frederick J. * 1969, PhD, 1969, University of Illinois; theoretical and English syntax, history of linguistics.
Ostendorf, Mari 1999, (Adjunct); MS, 1981, PhD, 1985, Stanford University; speech synthesis and understanding; spoken document retrieval; statistical pattern recognition.

Silverstein, Sandra V. * 1982, (Adjunct); PhD, 1982, University of Michigan; applied/critical linguistics. TESOL, ethnicity and gender.

Steele-Gammon, Carol * 1983, (Adjunct); PhD, 1974, Stanford University; developmental phonology and phonetics.

Tarlinskaya, Marina * 1984; PhD, 1967, DPhil, 1976, Moscow Institute of Foreign Languages; theory of translation, theory of versification, second language acquisition, semantics.

Tollefson, James W. * 1984, (Adjunct); PhD, 1978, Stanford University; English as a second language, language planning.

Voyles, Joseph B. * 1965, (Adjunct); PhD, 1965, Indiana University; Germanics and linguistics.

Yue-Hashimoto, Anne O. * 1980, (Adjunct); PhD, 1966, Ohio State University; Chinese linguistics, grammar (historical and modern), dialectology, historical reconstruction.

Associate Professors

Corina, David P. * 1993, (Adjunct); PhD, 1991, University of California (San Diego); cognitive neuropsychology, psycholinguistics, computational modeling.

Dziewiek, Katarzyna A. * 1993; (Adjunct); MA, 1984, University of Illinois, MA, 1985, University of Lodz (Poland), PhD, 1991, University of California (San Diego); linguistics, syntax and typology.

Etzioni, Oren 1991, (Adjunct); MSc, 1988, PhD, 1990, Carnegie Mellon University; artificial intelligence and information retrieval, natural language interfaces, software agents.

Hargus, Sharon Louise * 1985; PhD, 1985, University of California (Los Angeles); phonology, morphology, northwestern Native American languages, lexicography, phonetics.

Kautz, Henry 2000, (Adjunct); MS, 1982, University of Toronto (Canada), PhD, 1988, University of Rochester; artificial intelligence, knowledge representation, decision-theoretic control of reasoning.

Ogihara, Toshiyuki * 1991; PhD, 1989, University of Toronto (Canada), MA, 1988, University of Lodz (Poland); PhD, 1991, University of California (San Diego); linguistics, syntax and typology.

Linguistics

LING 400 Survey of Linguistic Method and Theory (4) I&S/VLPA, QSR Major linguistic theories in phonology, syntax and semantics; linguistic analysis and argumentation. Intended for students who plan to pursue further linguistic or language-related study. Students who have taken LING 200 or 201 should not take LING 400, although credit is allowed for both if 400 is taken after 200 or 201.


LING 403 Structure of American Sign Language (5) VLPA Hargus Introduction to the phonological, morphological, and syntactic structure of American Sign Language. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 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 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 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 Language Politics and Cultural Identity (3) I&S/VLPA Bilaniuk Theories and case studies of the power of language as an artifact of power. 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 434 Sociolinguistics II (3) I&S/VLPA Wassink Examinations of methods linguists use in socially oriented studies of language variation and change. Students learn to target and design interviews appropriate for eliciting specific kinds of linguistic data. Discussion of issues related to recording, ethics, and analysis of large bodies of data. Prerequisite: LING 432. Offered: jointly with ANTH 433.

LING 441 Linguistics and Poetic Language (3) VLPA Introduction to the relationship between linguistic structures, linguistic universals, and the poetical 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 (4) 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: either LING 200, LING 201, ANTH/LING 203, or LING 400.

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 Descriptive Aspects of English: Phonology and Morphology (3) VLPA Hargus, Kaise Descriptively oriented analysis of English phonology and morphology; dialect differences. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

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: either PSYCH 101 or PSYCH 102. Offered: jointly with PSYCH 447.

LING 449 Second-Language Learning (3) VLPA Herschensohn, Tarlinskaya 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 theo-
ry. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 451 Phonology I (4) 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 (4) 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 Phonology III (4) I&S/NW/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 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: 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 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 and other aspects of identity such as sexuality, class, and age. Prerequisite: LING 200; either LING 201, LING 203, or ANTH 203. Offered: jointly with ANTH 450/ WOMEN 450.

LING 461 Syntax I (4) I&S/VLPA Brame, Contrares, Kim, Newmeyer, Zagona Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 462 Syntax II (4) I&S/VLPA Brame, Contrares, Kim, Newmeyer, Zagona Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: LING 462.

LING 463 Syntax III (4) I&S/VLPA Brame, Contrares, Kim, Newmeyer Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: LING 462.

LING 472 Introduction to Computational Linguistics (3) NW/VLPA Hoard Introduction to computer applications of linguistic theory, including syntactic processing, semantic and pragmatic interpretation, and natural language generation. Prerequisite: LING 461. Offered: jointly with CSE 472.


LING 479 Semantics II (3) I&S/NW/VLPA Ogihara Formal characterization of linguistic meaning. Emphasis on nature and purpose of formal seman-
FRLING 402 The Phonological Structure of Spanish (5) VLPA Strozer, Zagorna Principles of word formation, including derivational and inflectional morphology; field of 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 400.

SPLING 401 The Morphological Structure of Spanish (5) VLPA Strozer, Zagorna Principles of word formation, including derivational and 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, Zagorna Phonological components 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 Zagorna 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 407 Dialects of World Spanish (5) VLPA Consideration of variations of modern Spanish. Prerequisites: current Spanish; one additional course in Spanish or Latin America. Prerequisite: SPAN 303; SPAN 323; either SPAN 301 or SPAN 400. Offered: jointly with SPAN 407.

SPLING 409 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 409.

Mathematics

C138 Padelford

General Catalog Web page: www.washington.edu/students/gencat/academic/mathematics.html

Department Web page: 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 very effective tool for describing the natural world. Indeed, mathematics has come to serve as the foundation of modern science, through its language and theorems. Some mathematical theorems 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 intertwined into a complex fabric.
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.

**Without Thesis**—A total of twelve numerically graded one-quarter courses from MATH 402, 403, 404, 424, 425, 426, 427, 428, 429, 441, 442, 443, any 500-level mathematics course; AMATH 507; 584, 585, 586. Courses to include at least two quarters from each of these designated core graduate courses, and in addition one three-quarter course in 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.

**Numerical Analysis/Optimization Option**—A total of twelve one-quarter courses, at least six of which are at the 500 level, chosen from MATH 424, 425, 426, 427, 428, 429, 438, 439, 441, 442, 443, 461, 462, 491, 492, any 500-level mathematics course; AMATH 507; 584, 585, 586. Courses to include four from AMATH 584-586 and MATH 594-596 (numerical analysis option) or four from AMATH 507 and MATH 508. 514-517 (optimization option). 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 course work in real analysis and abstract algebra.

**Graduation Requirements:** Completion of Graduate School requirements to include satisfactory performance in six three-quarter sequences numbered 500 or above, including three sequences from the department's list of core graduate courses; passing of three preliminary exams; demonstration of proficiency in at least 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 student's examining committee, or the General Examination for the Ph.D. degree.

**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.

**Faculty**

**Chair**

Ronald S. Irving

**Professors**

Arsove, Maynard G. * 1951, (Emeritus); MS, 1948, PhD, 1950, Brown University; probability theory, complex function theory, theory of bases.

Blumenholtz, Robert M. * 1956, (Emeritus); PhD, 1956, Cornell University; probability.

Borgs, Christian 1999, (Affiliate); PhD, 1987, University of Munich (Germany); field theory and statistical mechanics.

Brownell, Francis H. II * 1950, (Emeritus); PhD, 1949, Yale University; differential equations, applied mathematics.

Bube, Kenneth P. * 1986; PhD, 1978, Stanford University; numerical analysis, partial differential equations.

Burdzy, Krzysztof * 1988; PhD, 1984, University of California (Berkeley); probability theory.

Burke, James V. * 1985; PhD, 1983, University of Illinois; optimization, nonsmooth analysis.

Chayes, Jennifer T. 1997, (Affiliate); PhD, 1983, Princeton University; theoretical condensed-matter physics.

Collingwood, David * 1987; PhD, 1983, University of Utah; computational biology, Lie theory.

Curiel, Caspar R. * 1964, (Emeritus); DSc, 1960, Eidgenosse Technische Hochschule (Switzerland); algebraic topology, algebra.

Curis, Edward B. * 1970; PhD, 1962, Harvard University; graph theory, networks.

Dubisch, Roy 1961, (Emeritus); PhD, 1943, University of Chicago; teacher training, elementary and secondary curriculum.

Duchamp, Thomas E. * 1979; PhD, 1976, University of Illinois; differential geometry.

Erickson, Kent B. * 1973; PhD, 1970, University of Wisconsin; probability theory.

Folland, Gerald Budge * 1973; PhD, 1971, Princeton University; harmonic analysis and differential equations.

Friedman, Michael H. 1999, (Affiliate); PhD, 1973, Princeton University; topology.

Gangolli, Ramesh A. * 1962, (Emeritus); PhD, 1961, Massachusetts Institute of Technology; probability theory, harmonic analysis on Lie groups.

Goldstein, Allen A. * 1964, (Emeritus); PhD, 1954, Georgetown University; approximation theory, nonlinear programming, control theory, calculus of variations.

Goodarzi, Kenneth R. * 1998, (Affiliate); MS, 1969, PhD, 1971, University of Washington; noncommutative algebra (noetherian rings, quantum groups, regular rings, C*-algebras).


Greenbaum, Anne * 1997; PhD, 1981, University of California (Berkeley); applied analysis and computational mathematics.

Greenberg, Ralph * 1978; PhD, 1971, Princeton University; number theory.

Grunbaum, Branko * 1966, (Emeritus); PhD, 1957, Hebrew University (Israel); geometry.

Irving, Ronald S. * 1980; PhD, 1977, Massachusetts Institute of Technology; algebra.

Jans, James P. * 1957, (Emeritus); PhD, 1955, University of Michigan; ring structure and homological algebra.

Kee, Victor * 1953, (Emeritus); PhD, 1949, University of Virginia; convex sets, functional analysis, analysis of algorithms, optimization, combinatorics.

Kobzitz, Neal I. * 1979; PhD, 1974, Princeton University; number theory and cryptography.

Lee, John M. * 1986; PhD, 1982, Massachusetts Institute of Technology; differential geometry and partial differential equations.

Lind, Douglas A. * 1975; PhD, 1973, Stanford University; ergodic theory.

Lovasz, Laszlo * 1999, (Affiliate); PhD, 1977, Hungarian Academy of Sciences; discrete mathematics.

Marshall, Donald E. * 1976; PhD, 1976, University of California (Los Angeles); complex analysis.

McGovern, William M. * 1990; PhD, 1987, Massachusetts Institute of Technology; representation theory.

Michael, Ernest A. * 1953, (Emeritus); PhD, 1951, University of Chicago; topology.


Morrow, James Allen * 1969; PhD, 1967, Stanford University; complex singularities, inverse problems.

Namikawa, Masao * 1963, (Emeritus); PhD, 1956, University of California (Berkeley); functional analysis.

Nijenhuis, Albert * 1988, (Affiliate); PhD, 1952, University of Amsterdam (Netherlands); geometry, combinatorics, computational complexity.

Nunke, Ronald * 1958, (Emeritus); PhD, 1955, University of Chicago; category theory, Abelian groups.

Osborne, M. Scott * 1975; PhD, 1972, Yale University; representation theory.

Phelps, Robert R. * 1962, (Emeritus); PhD, 1958, University of Washington; convexity, functional analysis, geometry of Banach spaces, optimization.

Ragozin, David * 1969; PhD, 1967, Harvard University; approximation theory.

Rockafellar, R. T. * 1966; PhD, 1963, Harvard University; variational analysis and optimization.

Schramm, Oded 1999, (Affiliate); PhD, 1990, Princeton University; complex analysis.

Segal, Jack * 1960, (Emeritus); PhD, 1960, University of Georgia; topology, shape theory.

Shorack, Galen * 1965, (Adjunct); PhD, 1965, Stanford University; empirical and quantile processes, limit theorems, L-statistics, bootstrapping, reliability.


Smith, S. Paul * 1986; PhD, 1981, University of Leeds (UK); algebra.

Solomyak, Boris * 1992; PhD, 1986, Leningrad University (Russia); ergodic theory, symbolic dynamics, spectral theory.

Stout, Edgar L. * 1969; PhD, 1964, University of Wisconsin; complex analysis.

Sullivan, John B. * 1973; PhD, 1971, Cornell University; representations of classical groups.

Sylvester, John * 1987; PhD, 1980, New York University; partial differential equations.

Tseng, Paul Yun * 1990; PhD, 1986, Massachusetts Institute of Technology; optimization.

Tuncel, Selim * 1986; PhD, 1982, University of Warwick (UK); ergodic theory, symbolic dynamics.

Uhlmann, Gunther A. * 1984; PhD, 1976, Massachusetts Institute of Technology; partial differential equations.
Warner, Garth * 1966; PhD, 1966, University of Michigan; algebraic topology.

Westwater, Michael J. * 1970; PhD, 1967, Cambridge University (UK); mathematical physics.

Zhang, Jian James * 1994; MS, 1985, Fudan University (China); PhD, 1991, Massachusetts Institute of Technology; algebra, ring theory.

**Associate Professors**

Arms, Judith M. * 1980; MA, 1974, PhD, 1977, University of California (Berkeley); geometric analysis of Hamiltonian systems with symmetry.

Bungart, Lutz * 1966, (Emeritus); PhD, 1962, Princeton University; several complex variables.

Chen, Zhen-Qing * 1998; PhD, 1992, Washington University; probability theory and stochastic analysis.

Dekker, David B. 1948, (Emeritus); PhD, 1948, University of California (Berkeley); algebraic geometry, complex geometry, combinatorics.

**Assistant Professors**

Averbeck, Patrick J. 1998; MS, 1993, PhD, 2000, Oregon State University; mathematics education.

Bungart, Lutz * 1966, (Emeritus); PhD, 1962, Princeton University; several complex variables.

Chen, Zhen-Qing * 1998; PhD, 1992, Washington University; probability theory and stochastic analysis.

Dekker, David B. 1948, (Emeritus); PhD, 1948, University of California (Berkeley); algebraic geometry, complex geometry, combinatorics.

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsclat.

**MATH 400 Mathematical Communication for Undergraduates (2)** NW Techniques of effective writing and oral presentations in the mathematical sciences. Offered: jointly with AMATH 400/STAT 400. Prerequisite: at least 15 credits in MATH, STAT, AMATH, or CSE at the 300 or 400 level, including MATH 307 or AMATH 351 and MATH 308 or AMATH 352.

**MATH 402 Introduction to Modern Algebra (3)** NW Algebraic systems; elementary theory of groups, rings, and fields; polynomials; topics in linear algebra; reductions of forms. Prerequisite: either 2.0 in MATH 326 or 2.0 in MATH 327. Offered: S.

**MATH 403 Introduction to Modern Algebra (3)** NW Algebraic systems; elementary theory of groups, rings, and fields; polynomials; topics in linear algebra; reductions of forms. Prerequisite: either 2.0 in MATH 326 or 2.0 in MATH 327. Offered: S.

**MATH 404 Introduction to Modern Algebra (3)** NW Algebraic systems; elementary theory of groups, rings, and fields; polynomials; topics in linear algebra; reductions of forms. Prerequisite: either 2.0 in MATH 326 or 2.0 in MATH 327. Offered: S.

**MATH 405 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: either 2.0 in MATH 302 or 2.0 in MATH 327. 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 308 or 2.0 in MATH 327. Offered: W.

**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. Prerequisite: either 2.0 in MATH 205 or 2.0 in MATH 308, 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. Prerequisite: either 2.0 in MATH 205 or 2.0 in MATH 402. Offered: W.

**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: either 2.0 in MATH 402 or 2.0 in MATH 411, either of which may be taken concurrently. Offered: S.

**MATH 421 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.

**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.

**MATH 424 Fundamental Concepts of Analysis (3)** NW Sets, real numbers, topology of metric spaces, normed linear spaces, multivariable calculus from an advanced viewpoint. Introduction to Lebesgue measure and integration. Prerequisite: either 2.0 in MATH 326 or 2.0 in MATH 335. Offered: A.

**MATH 425 Fundamental Concepts of Analysis (3)** NW Sets, real numbers, topology of metric spaces, normed linear spaces, multivariable calculus from an advanced viewpoint. Introduction to Lebesgue measure and integration. Prerequisite: either 2.0 in MATH 326 or 2.0 in MATH 335, or 2.0 in MATH 424. Offered: W.
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 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. Continuous-time dynamical 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) Prerequisite: MATH 242 or MATH 270. First quarter of a three-quarter sequence covering classical and modern theory, stochastic processes, random variables, distributions, expectation, limit theorems. Prerequisite: MATH 324. Offered: jointly with AMATH 518.


MATH 524 Real Analysis (5) First quarter of a three-quarter sequence covering measure theory, integration, point set topology, Banach spaces, LP spaces, applications to the theory of functions of one and several real variables. Additional topics to be chosen by instructor. Prerequisite: MATH 242 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 LP 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 (3) 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) Continuation of MATH 547. Prerequisite: MATH 547.

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 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 Poincare duality; axiomatic approach. Prerequisite: MATH 506 and MATH 544, or equivalent.

MATH 565 Algebraic Topology (3) Continuation of MATH 564. Prerequisite: MATH 564.

MATH 566 Algebraic Topology (3) Continuation of MATH 565. Prerequisite: MATH 565.

MATH 570 Seminar in Topology (2-5, max. 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 Algebra (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 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: MATH 584, MATH 585, MATH 586, or equivalent. Offered: jointly with MATH 595.

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 (*)

Middle Eastern Studies
See International Studies.

Music
102 Music

General Catalog Web page: www.washington.edu/students/gencat/academic/music.html

Department Web page: 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 provides opportunities for all students at the University of Washington to explore the role of music in the cultural nature of the world, past, present, and future. The School of Music teaches students to think creatively and critically, and to engage in discussions and debates with understanding and respect. The School's intention is to instill the standards and ideals of excellence in both the artistic and scholarly endeavors of its students. The opportunities offered and skills developed within the School of Music form the foundation of a lifetime of cultural expression and understanding.

Graduate Program
Graduate Program Coordinator
116 Music, Box 353450
206-543-2726
musicadv@uwashington.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.

Special Requirements
Performance degrees require an audition (see below)

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, and Baroque Ensemble, as well as non-Western ensembles with visiting artists from around the globe.

Master of Music, Doctor of Musical Arts
The programs with more creative emphasis lead to the degrees of Master of Music and Doctor of Musical Arts. Areas of specialization: performance (brass, harp, harpsichord, piano, organ, percussion, string, voice, woodwinds), instrumental conducting, choral conducting, composition, and opera production. The Graduate Record Examination is not required for application to these graduate programs. All graduate students must maintain a GPA of at least 3.00, and a minimum grade of 2.7 in courses used to fulfill School of Music graduation requirements.

Master of Music
Admission Requirements: Audition required for entrance to performance except for composition. Details of requirements for each of the areas of specialization are available from the School of Music Office of Graduate and Undergraduate Advising and on the School's Web site (above).

Graduation Requirements: Please see the School's Web site for individual degree program plans.

Doctor of Musical Arts
Admission Requirements: Audition required for performance. (See the School's Web site for suggested audition repertoire and audition dates.). See the School's Web site or visit the advising office for specific application and admission requirements.

Graduation Requirements: 90 credits of graduate coursework (60 must be taken at the UW), and demonstration of proficiency in one or two languages must be completed before taking the General Examination. Please see individual program plans on...
the School's Web site for complete graduation requirements.

**Master of Arts, Doctor of Philosophy**

The research-oriented programs lead to the degrees of Master of Arts and Doctor of Philosophy. Areas of specialization are music theory, music history, ethnomusicology, and music education. The Graduate Record Examination is required for application to these graduate programs with the exception of ethnomusicology. Check individual program requirements on the School's Web site. All graduate students must maintain a GPA of at least 3.00, and a minimum grade of 2.7 in courses used to fulfill School of Music graduation requirements.

**Master of Arts**

**Admission Requirements:** Requirements vary for the different areas of specialization. Details of requirements for each of the areas of specialization are available from the School of Music Advising Office and on its Web site.

**Graduation Requirements:** Degree requirements vary by program. Please see individual program plans on the School's Web site.

**Doctor of Philosophy**

**Admission Requirements:** Requirements vary for the different areas of specialization. Details of requirements for each of the areas of specialization are available from the School of Music Advising Office and on the School's Web site.

**Graduation Requirements:** 90 credits of approved academic coursework, completion of the foreign language requirement as specified for the degree, General Examination and defense of the dissertation. Please refer to the program plans on the School's Web site for specific degree requirements.

**Faculty**

**Chair**

Robin L. McCabe

**Professors**

Beale, James M. * 1948, (Emeritus); MMus, 1947, Yale University; theory/composition.


Campbell, Patricia S. * 1989; MM, 1975, University of Akron, Ph.D, 1981, Kent State University; music and child development, multicultural music education, comparative music education.

Carlsen, James C. * 1967, (Emeritus); MA, 1958, Washington University, PhD, 1962, Northwestern University; systematic musicology, psychomusicology, research methodology, theories of music instruction.

Chaloupka, Vladimir * 1981, (Adjunct); PhD, 1975, University of Geneva (Switzerland); experimental elementary-particle physics.

Curtis-Verna, Mary * 1969, (Emeritus); BA, 1943, Hollins College (Virginia); voice.

Dahstrom, Robert A. * 1971, (Adjunct); MA, 1967, University of Illinois; design.

Dempster, Stuart R. * 1968, (Emeritus); MA, 1967, San Francisco State; trombone, contemporary music.

Eros, Peter S. * 1989; Diploma, 1956, Franz Liszt Academy, orchestra and opera.


Hokanson, Randolph H. * 1949, (Emeritus); studied with Dame Myra Hess, Howard Ferguson (London); piano.

Jacobs, Sue-Ellen * 1974, (Adjunct); PhD, 1970, University of Colorado (Boulder); women studies, socio-cultural and applied anthropology, anthropological studies of women.


Kappy, David L. * 1979; MM, 1971, University of Wisconsin; French horn performance, chamber music, and theory.


Kechley, Gerald * 1955, (Emeritus); MA, 1950, University of Washington; theory/composition.

Kind, Silvia E. 1969, (Emeritus); Konzert-Reife-Prüfung, 1934, Hochschule für Musik (Germany); harpsichord.

Lundquist, Barbara R. * 1973, (Emeritus); MS, 1959, Montana State University, DMA, 1973, University of Washington; music education, sociomusicology, ethnomusicology in schools.


McColl, William D. * 1968; Diploma, 1955, State Academy of Music (Austria); clarinet.

Moore, John T. 1948, (Emeritus); MM, 1941, University of Illinois; piano.

Patrick, Julian * 1990; BA, 1950, Cincinnati Conservatory; music, opera, song literature, musical theater, legitimate theater, teaching voice.

Patterson, Ronald G. 1999; developing classical music interactive DVDs for education and entertainment purposes.

Rahn, John * 1975; MFA, 1972, PhD, 1974, Princeton University; theory/composition.

Saks, Toby * 1976; MS, 1966, Juilliard School; performance and teaching of violincello and chamber music.

Salzman, Timothy O. * 1987; MM, 1979, Northern Illinois University; wind ensemble conducting, pedagogy and repertoire.

Skowronek, Felix E. * 1968; BMus, 1956, Curtis Institute of Music; flute.

Smith, William O. * 1966, (Emeritus); MA, 1952, University of California (Berkeley); theory/composition.

Sokol, Vilem 1961, (Emeritus); BMus, 1938, MMus, 1946, Oberlin College; violin, viola, conducting.

Starr, Lawrence * 1977; PhD, 1973, University of California (Berkeley); music history and literature.

Staryk, Steven S. * 1987, (Emeritus); studied at the Royal Conservatory of Music (Toronto); violin.

Storch, Laila * 1968, (Emeritus); BA, 1964, Wilkes College; oboe.


Tufts, Paul Dewitt 1961, (Emeritus); MA, 1951, University of Washington; theory/composition.

Winn, William David * 1985, (Adjunct); PhD, 1972, Indiana University; educational technology, instructional theory, instructional design, visual information processing.

Zsigmondy-Liedmann, Danes 1973, (Emeritus); BA, 1940, Gymnasium, Budapest (Hungary); violin.

**Associate Professors**


Boers, Geoffrey Paul * 1996; MA, 1985, Portland State University, DMA, 1987, University of Arizona; choral music; literature, history, conducting, and rehearsal techniques; vocal pedagogy.


Durand, Joel-Francois * 1991; MM, 1984, Musikhochschule, Freiburg (Germany), PhD, 1988, State University of New York (Stony Brook); music composition.

Ellingson, Terry J. * 1983; PhD, 1979, University of Wisconsin, MA, 1979, University of Chicago; ethnomusicology, anthropology, religion, Tibet, Nepal, Buddhism.

Geissmar, Else J. 1977, (Emeritus); MM, 1944, University of Michigan; piano.

Jussila, Clyde F. 1971, (Emeritus); MS, 1951, Kansas State University; music education.


Rosinbun, Ralph 1983, (Emeritus); MA, 1948, University of Washington; opera production.

Schuyler, Philip D. * 1999; MA, 1974, PhD, 1979, University of Washington; Near Eastern musics and cultures; contemporary music and art in the United States.

Seales, Marc A. 1987; BA, 1978, Western Washington University; jazz studies, keyboard.

Sheppard, Craig * 1993; Diploma, 1968, The Curtis Institute, Philadelphia, MSc, 1971, Juilliard School; piano and piano literature.

Taricani, Jo Ann * 1980; PhD, 1986, University of Pennsylvania; music history and literature.

**Assistant Professors**


Dudley, Shannon K. * 1996; MA, 1988, PhD, 1996, University of California (Berkeley); steelband music in Trinidad; Carribbean music; colonialism, nationalism, ethnicity.
Henderson, Rebecca A. * 1996, (Affiliate); MM, 1985, Eastman School of Music; oboe performance and literature.

Immel, Don T. * 1999; MM, 1996, Rice University; artistic advancement of trombone performance, teaching and literature.

Kopp, David 1997; MA, 1980, State University of New York (Stony Brook), PhD, 1995, Brandeis University; systems of harmony in tonal and post-tonal music.

McDavid, Brad 1994; MM, 1990, Arizona State University, PhD, 1999, Ohio State University; conducting, athletic band and concert band, music education.

Morrison, Steven J. * 1997; MM, 1988, University of Wisconsin, PhD, 1995, Louisiana State University; factors in the development of music listening and performance behaviors.

Sievert, Vern 2001; MM, 1993, University of North Texas; jazz studies, jazz ensembles, trumpet (jazz and orchestral).

Zahn, Claudia 1998; BFA, 1976, Carnegie Mellon University; teaching acting and directing to singers and young directors.

Lecturer

Novacek, Steven A. 1984; BMus, 1975, California State University, Northridge; guitar.

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsclat/.

**Music**

**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 Computer Music Seminar 1 (3) VLPA** Karpen Use of computers in musical composition, software digital sound synthesis, score generation, theoretical investigations. Prerequisite: either MUSIC 212, MUSIC 302, MUSIC 456, or PHYS 207.

**MUSIC 402 Computer Music Seminar 2 (3) VLPA** Karpen Use of computers in musical composition, digital sound synthesis, digital signal processing. Hardware used includes NeXt computers, digital recorders. Software used includes Csound, Common LISP, UNIX. Prerequisite: MUSIC 401.

**MUSIC 403 Computer Music Seminar 3 (3) VLPA** Karpen Advanced use of computers for musical composition, digital sound synthesis, digital signal processing. Advanced synthesis techniques such as LPC for speech and vocal synthesis, phase vocoders, reverberation, and spatial location. Hardware used includes NeXt computers and peripherals. Software includes Csound, Common LISP, C, and UNIX. Prerequisite: MUSIC 402.

**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, instrumental ensembles, 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, and MUHST 210, or MUSIC 405. Offered: W.

**MUSIC 407 Liturgics and Hymnology: Practical Applications III (2) VLPA** Butler History of Psalm singing, liturgical, and contemporary liturgies, 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 instrument ensembles), youth choir organization. Prerequisite: either MUSIC 303, MUSIC 306, and MUHST 210, or MUSIC 406. Offered: Sp.

**MUSIC 410 ElectroAcoustic Music: History and Analysis (3) VLPA** Thome Examines the music of major electro-acoustic composers. Emphasis on the relationship between technological resources and compositional advancements. 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 hymnody, 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, simple improvisation in 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 praeludias 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: Sp.

**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 517.

**MUSIC 428 Music of North India (3) I&S/VLPA** Classical music of North India, the Hindustani tradition with emphasis on the Dhrupad and Khayal styles. Recommended: ethnomusicology or South Asian studies background.

**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 445 Selected Topics in Ethnomusicology (3, max. 9) I&S/VLPA** Deals with areas not covered by other courses in ethnomusicology. Content varies with different instructors.

**MUSIC 449 Advanced Piano Repertoire (2, max. 6) VLPA** McCabe, Michaelian, Sheppard For piano major examine an in-depth survey of major areas of the piano repertoire. Prerequisite: MUSIC 328. Offered: AWSp.

**MUSIC 451 Summer Jazz Institute (1) VLPA** Brockman, Collier, Seales Intensive one-week institute designed for the serious jazz student as well as for music educators. Six hours of daily instruction in jazz theory, ear-training, improvisation, arranging, as well as emphasis on rehearsal and performance techniques through sectional workshops and small group "jam sessions."

**MUSIC 454 Organ Pedagogy (3) VLPA** Terry Pedagogical approaches to organ techniques and performance practice, provides opportunity for practical application by means of student teaching.

**MUSIC 458 Organ Repertoire: Middle Ages through Baroque (3) VLPA** Terry Analysis and performance practices of organ literature, Middle Ages through the Baroque period. Development of the organ as a 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) VLPA** Terry Analysis and performance practices of organ literature, classical period through the twentieth century. Development of the organ as a musical instrument. Prerequisite: either MUHST 408, MUHST 409, MUHST 410, MUHST 411, MUHST 412, MUHST 413, MUHST 414, MUHST 415, MUHST 417, MUHST 418, MUHST 419, MUHST 423, MUHST 424, or MUHST 425.

**MUSIC 460 Advanced Vocal Repertoire: Pre-Nineteenth-Century Art Songs (2, max. 6) VLPA** Brockman Professional preparation of pre-nineteenth-century songs with a view to total artistic-musical realization in performance. Appropriate style, character, balance, phrasing, diction, and projection for vocalists and pianists. Prerequisite: MUSIC 328.

**MUSIC 461 Advanced Vocal Repertoire: Nineteenth-Century Art Songs (2, max. 6) VLPA** Brockman Professional preparation of works from the literature of nineteenth-century German liedere, with a view to total artistic-musical realization in performance. Appropriate style, character, balance, phrasing, diction, and projection for vocalists and pianists. Prerequisite: MUSIC 460.

**MUSIC 462 Advanced Vocal Repertoire: Twentieth-Century Art Songs (2, max. 6) VLPA** Preparation of works from the twentieth-century repertoire of
French, German, Italian, Spanish, and English songs, with a view to total artistic-musical realization in performance. Appropriate style, character, balance, phrasing, diction, and projection for vocalists and pianists. Prerequisite: MUSIC 461.

MUSIC 464 Jazz Laboratory (1, max. 9) VLPA 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) VLPA Workshop designed specifically for the singing actor, focusing on character analysis, movement, and audition department skills.

MUSIC 467 Advanced Jazz Improvisation I (1) VLPA Collier, Seales Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 369.

MUSIC 468 Advanced Jazz Improvisation II (1) VLPA Collier, Seales Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 467.

MUSIC 469 Advanced Jazz Improvisation III (1) VLPA Collier, Seales Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 468.

MUSIC 470 Analysis of Tonal Music: Introduction to Schenker (3) VLPA Bernard, 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 MUSIC 303 and MUHST 212 or MUSIC 312 and MUHST 215.

MUSIC 471 Introduction to Atonal Theory and Analysis (3) VLPA Bernard, Rahn Theory of atonal music, including the "classical" twelve-tone repertoire. Analysis of works by Schoenberg, Berg, Webern, and others. Prerequisite: either MUSIC 303 and MUHST 212 or MUSIC 312 and MUHST 215.

MUSIC 472 Analysis of Twentieth Century Music, 1900-1950 (3, max. 6) VLPA Bernard, Durand, Karpen, Kopp, 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 MUSIC 303 and MUHST 212 or MUSIC 312 and MUHST 215.

MUSIC 473 Keyboard Harmony and Transposition (3) VLPA Perry Keyboard harmonization from the baroque period to present; transposition of vocal and instrumental pieces to different pitch levels. Prerequisite: either MUSIC 303 and MUHST 212 or MUSIC 312 and MUHST 215. Offered: alternate years.

MUSIC 474 Keyboard Harmony and Transposition (3) VLPA Perry 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) VLPA Perry Various styles of continuous 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) VLPA Opera repertoire, 1600 to the Bel Canto era (Bellini, Rossini, Donizetti): style, traditions, embellishments in Italian, French, and German arias. Prerequisite: MUSIC 328.

MUSIC 477 Advanced Vocal Repertoire: Nineteenth Century (2) VLPA Opera repertoire, the post Bel Canto era through Verdi, Puccini and verismo, and significant German, French, and Slavic repertoire. Prerequisite: MUSIC 476.

MUSIC 478 Advanced Vocal Repertoire: Twentieth Century (2) VLPA Opera repertoire, twentieth-century opera literature (Barber, Menotti, Bartok, Dvorak); understanding of style, character and overall artistic and musical needs of the present. Prerequisite: MUSIC 477.

MUSIC 479 Senior Recital (1) VLPA

MUSIC 480 The Anthropology of Music (3) 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 semi- nal 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 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, Kopp, 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 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 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)

Courses for Graduates Only

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, max. 18) Deals with advanced theoretical and methodological problems in ethnomusicology, and with the relationship of ethnomusicology to allied disciplines. Prerequisite: graduate student standing in ethnomusicology or permission of instructor.

MUSIC 520 Music in Higher Education (3) Morrison Philosophical and practical issues surrounding music within the context of higher education; topics include mission and structure of music programs, development of teaching expertise, teacher/student evaluation, academic freedom, and job opportunities. Appropriate for all graduate music students and does not require background in teaching or education.

MUSIC 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 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 Music Perception and Cognition (3, max. 9) Examines the systematic research literature on the cognitive operations involved in musical performance, composition, and listening. Topics include: the mental representation of musical concepts, communication of expressiveness in music, memory for music, processing of tonal and nontonal music, computer models of music cognition; melodic and rhythmic development; composition and improvisation.

MUSIC 551 Practicum in Music Instruction (3, max. 9) Practical application and validation of results of investigation in curriculum, music teaching and
Prerequisite: teaching experience or permission of instructor.

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, Kopp, 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: AWSpS.

MUSIC 573 Seminar in Tonal Analysis (3, max. 9) Modern theoretical and analytical methods appropriate to study of western music of the eighteenth and nineteenth centuries, conceived independently of or in response to the work of Heinrich Schenker. Prerequisite: MUSIC 470 or permission of instructor.

MUSIC 574 Analysis of Twentieth-Century Music: 1950—Present (3) Bernard, Durand, Karpen, Kopp, Rahn, Thome Analytical examination of major works of second half of twentieth century. Prerequisite: MUSIC 471 and MUSIC 472 or permission of instructor.

MUSIC 575 Seminar in Theory (3, max. 18) Bernard, Kopp, Rahn Development and discussion of current student and faculty research in compositional/analytical theory and metaphysics.

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, Kopp, 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 (3, max. 27) Kaplan

MUSIC 590 Doctoral Recital (2-6, max. 18) Public performance for students in the Doctor of Musical Arts degree program. Prerequisite: permission of instructor.

MUSIC 591 Graduate Composition (*, max. 30) Bernard, Durand, Karpen, Rahn, Thome

MUSIC 599 Advanced Selected Topics (1-3, max. 27) Selected readings on current issues and problems in music. Prerequisite: permission of supervising music faculty member.

MUSIC 600 Independent Study or Research (*)

MUSIC 700 Master's Thesis (*)

MUSIC 800 Doctoral Dissertation (*)

Music Applied

MUSAP 420 Private Instruction: Voice (2-3, max. 27) VLPA Harper, Patrick Intended for undergraduate majors.

MUSAP 421 Private Instruction: Piano (2-3, max. 27) VLPA McCabe, Michaelian, Seales, Sheppard Intended for undergraduate majors.

MUSAP 422 Private Instruction: Organ (2-3, max. 27) VLPA Terry Intended for undergraduate majors.

MUSAP 423 Private Instruction: Harpsichord (2-3, max. 27) VLPA Terry Intended for undergraduate majors.

MUSAP 424 Private Instruction: Violin-Viola (2-3, max. 27) VLPA Callus, Patterson Intended for undergraduate majors.

MUSAP 425 Private Instruction: Violoncello (2-3, max. 27) VLPA Saks Intended for undergraduate majors.

MUSAP 426 Private Instruction: Double Bass (2-3, max. 27) VLPA Lieberman Intended for undergraduate majors.

MUSAP 427 Private Instruction: Flute (2-3, max. 27) VLPA Skowronenk Intended for undergraduate majors.

MUSAP 428 Private Instruction: Oboe (2-3, max. 27) VLPA Terry Intended for undergraduate majors.

MUSAP 429 Private Instruction: Clarinet (2-3, max. 27) VLPA McColl Intended for undergraduate majors.

MUSAP 430 Private Instruction: Bassoon (2-3, max. 27) VLPA Grossman Intended for undergraduate majors.

MUSAP 431 Private Instruction: Saxophone (2-3, max. 27) VLPA Brockman Intended for undergraduate majors.

MUSAP 432 Private Instruction: Horn (2-3, max. 27) VLPA Kappy Intended for undergraduate majors.

MUSAP 433 Private Instruction: Trumpet (2-3, max. 27) VLPA Terry Intended for undergraduate majors.

MUSAP 434 Private Instruction: Trombone (2-3, max. 27) VLPA Immel Intended for undergraduate majors.

MUSAP 435 Private Instruction: Tuba (2-3, max. 27) VLPA Phillips Intended for undergraduate majors.

MUSAP 436 Private Instruction: Harp (2-3, max. 27) VLPA Vokolek Intended for undergraduate majors.

MUSAP 437 Private Instruction: Percussion (2-3, max. 27) VLPA Collier, Crusoe Intended for undergraduate majors.

MUSAP 438 Private Instruction: Guitar (2-3, max. 27) VLPA Novacek Intended for undergraduate majors.

MUSAP 439 Private Instruction: Viola da Gamba (2-3, max. 27) VLPA Tindemans Intended for undergraduate majors.

MUSAP 440 Timpani (2-3, max. 27) VLPA Crusoe Intended for undergraduate majors.

MUSAP 441 Mallet Percussion (2-3, max. 27) VLPA Collier Intended for undergraduate majors.

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.

Courses for Graduates Only

MUSAP 450 Private Instruction: Voice (2-3, max. 45) Harper, Patrick Intended for graduate non-majors.

MUSAP 500 Private Instruction: Piano (2-3, max. 45) McCabe, Michaelian, Seales, Sheppard Intended for graduate non-majors.

MUSAP 501 Private Instruction: Organ (2-3, max. 45) Terry Intended for graduate non-majors.

MUSAP 502 Private Instruction: Harpsichord (2-3, max. 45) Terry Intended for graduate non-majors.

MUSAP 503 Private Instruction: Violin-Viola (2-3, max. 45) Intended for graduate non-majors.

MUSAP 504 Private Instruction: Violoncello (2-3, max. 45) Intended for graduate non-majors.

MUSAP 505 Private Instruction: Voice (2-3, max. 45) Saks Intended for graduate non-majors.

MUSAP 506 Private Instruction: Double Bass (2-3, max. 45) Lieberman Intended for graduate non-majors.

MUSAP 507 Private Instruction: Flute (2-3, max. 45) Skowronenk Intended for graduate non-majors.

MUSAP 508 Private Instruction: Oboe (2-3, max. 45) Intended for graduate non-majors.

MUSAP 509 Private Instruction: Clarinet (2-3, max. 45) McColl Intended for graduate non-majors.

MUSAP 510 Private Instruction: Bassoon (2-3, max. 45) Grossman Intended for graduate non-majors.

MUSAP 511 Private Instruction: Saxophone (2-3, max. 45) Brockman Intended for graduate non-majors.

MUSAP 512 Private Instruction: Horn (2-3, max. 45) Kappy Intended for graduate non-majors.

MUSAP 513 Private Instruction: Trumpet (2-3, max. 45) Intended for graduate non-majors.

MUSAP 514 Private Instruction: Trombone (2-3, max. 45) Immel Intended for graduate non-majors.

MUSAP 515 Private Instruction: Tuba (2-3, max. 45) Phillips Intended for graduate non-majors.

MUSAP 516 Private Instruction: Harp (2-3, max. 45) Vokolek Intended for graduate non-majors.

MUSAP 517 Private Instruction: Percussion (2-3, max. 45) Collier, Crusoe Intended for graduate non-majors.

MUSAP 518 Private Instruction: Guitar (2-3, max. 45) Novacek Intended for graduate non-majors.

MUSAP 519 Private Instruction: Viola da Gamba (2-3, max. 45) Tindemans

MUSAP 520 Private Instruction: Voice (3, max. 18) Harper, Patrick Intended for graduate majors.

MUSAP 521 Private Instruction: Piano (3, max. 18) McCabe, Michaelian, Seales, Sheppard Intended for graduate majors.

MUSAP 522 Private Instruction: Organ (3, max. 18) Terry Intended for graduate majors.

MUSAP 523 Private Instruction: Harpsichord (3, max. 18) Terry Intended for graduate majors.

MUSAP 524 Private Instruction: Violin-Viola (3, max. 18) Callus, Patterson Intended for graduate majors.

MUSAP 525 Private Instruction: Violoncello (3, max. 18) Saks Intended for graduate majors.
MUSAP 526 Private Instruction: Double Bass (3, max. 18) Lieberman Intended for graduate majors.

MUSAP 527 Private Instruction: Flute (3, max. 18) Skowronek Intended for graduate majors.

MUSAP 528 Private Instruction: Oboe (3, max. 18) Intended for graduate majors.

MUSAP 529 Private Instruction: Clarinet (3, max. 18) McColl Intended for graduate majors.

MUSAP 530 Private Instruction: Bassoon (3, max. 18) Grossman Intended for graduate majors.

MUSAP 531 Private Instruction: Saxophone (3, max. 18) Brockman Intended for graduate majors.

MUSAP 532 Private Instruction: Horn (3, max. 18) Kappy Intended for graduate majors.

MUSAP 533 Private Instruction: Trumpet (3, max. 18) Intended for graduate majors.

MUSAP 534 Private Instruction: Trombone (3, max. 18) Immel Intended for graduate majors.

MUSAP 535 Private Instruction: Tuba (3, max. 18) Phillips Intended for graduate majors.

MUSAP 536 Private Instruction: Harp (3, max. 18) Vokolek Intended for graduate majors.

MUSAP 537 Private Instruction: Percussion (3, max. 18) Collier, Crusoe Intended for graduate majors.

MUSAP 540 Timpani (3, max. 18) Crusoe Intended for graduate majors.

MUSAP 541 Mallet Percussion (3, max. 18) Collier Intended for graduate majors.

MUSAP 542 Private Instruction: Viola da Gamba (3, max. 18) Tindemans Intended for graduate majors.

MUSAP 570 Private Instruction: Voice (3, max. 27) Harper, Patrick Intended for graduate majors.

MUSAP 571 Private Instruction: Piano (3, max. 27) McCabe, Michaelian, Sheppard Intended for graduate majors.

MUSAP 572 Private Instruction: Organ (3, max. 27) Terry Intended for graduate majors.

MUSAP 573 Private Instruction: Harpsichord (3, max. 27) Terry Intended for graduate majors.

MUSAP 574 Private Instruction: Violin-Viola (3, max. 27) Callus, Patterson Intended for graduate majors.

MUSAP 575 Private Instruction: Violoncello (3, max. 27) Saks Intended for graduate majors.

MUSAP 576 Private Instruction: Double Bass (3, max. 27) Lieberman Intended for graduate majors.

MUSAP 577 Private Instruction: Flute (3, max. 27) Skowronek Intended for graduate majors.

MUSAP 578 Private Instruction: Oboe (3, max. 27) Intended for graduate majors.

MUSAP 579 Private Instruction: Clarinet (3, max. 27) McColl Intended for graduate majors.

MUSAP 580 Private Instruction: Bassoon (3, max. 27) Grossman Intended for graduate majors.

MUSAP 581 Private Instruction: Saxophone (3, max. 27) Brockman Intended for graduate majors.

MUSAP 582 Private Instruction: Horn (3, max. 27) Kappy Intended for graduate majors.

MUSAP 583 Private Instruction: Trumpet (3, max. 27) Intended for graduate majors.

MUSAP 584 Private Instruction: Trombone (3, max. 27) Immel Intended for graduate majors.

MUSAP 585 Private Instruction: Tuba (3, max. 27) Phillips Intended for graduate majors.

MUSAP 586 Private Instruction: Harp (3, max. 27) Vokolek Intended for graduate majors.

MUSAP 587 Private Instruction: Percussion (3, max. 27) Collier, Crusoe Intended for graduate majors.

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.

MUSAP 590 Timpani (3, max. 27) Crusoe Intended for graduate majors.

MUSAP 591 Mallet Percussion (3, max. 27) Collier Intended for graduate majors.

MUSAP 592 Private Instruction: Viola da Gamba (3, max. 27) Tindemans Intended for graduate majors.

**Music Education**

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 McColl, Michaelian, Rosenblatt Cooperative development of marching design 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 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, Demorest, Morrison Provides future teachers with strategies and techniques involved in incorporating music cultures of United States and related world music repertoires in K-12 classroom instruction. Prerequisite: MUSED 340.

MUSED 465 Classroom Management and Evaluation in Music Education (3) VLPA Campbell Provides future teachers with strategies and techniques for classroom management, motivation, assessment, and evaluation for applications to K-12 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.

**Courses for Graduates Only**

MUSED 501 Introduction to Research in Music Education (3) VLPA 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) VLPA Campbell, Demorest, Morrison Seminar in research design and method 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) VLPA 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) VLPA 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 524 Seminar in Music Education (3) VLPA 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) VLPA 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.
OFFERED: A.

issues relevant to music instruction and learning.

Examines research and research-based education (1-3, max. 6) MUSED 560 Contemporary Issues in Music education programs. Offered: AWSpS.

students, teachers, and undergraduate students in curricular content and instruction. Curricular content and cultural context examined in relation to teaching K-12 curriculum and instruction. Curricular content and curricular contexts examined in relation to teaching K-12 students, teachers, and undergraduate students in music education programs. Offered: AWSpS.

MUSEM 501. Seminar focusing on review of literature on features of English music studied, including medieval polyphony, Tudor music, Elizabethan music, and seventeenth-century music through Purcell. Prerequisite: one 300-level MUHST course.

MUSEM 504 Percussion Ensemble (1, max. 9) Collier

MUSEM 505 Brass Ensemble (1, max. 9) Kappy

MUSEM 506 Woodwind Ensemble (1, max. 9) Skowronek

MUSEM 507 University Oratorio Chorus (1, max. 9) Kaplan Credit/no credit only.

MUSEM 525 Accompanying (2, max. 18)

MUSEM 540 Vocal Jazz Ensemble (1, max. 9) Credit/no credit only.

MUSEM 545 Jazz Workshop (1, max. 9) Collier, Seales

MUSEM 546 Studio Jazz Ensemble (1, max. 9)

MUSEN 500 University Symphony Orchestra (1, max. 9)

MUSEN 501 Wind Ensemble (1, max. 9)

MUSEN 502 Symphonic Band (1, max. 6)

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) Skowronek

MUSEN 507 University Oratorio Chorus (1, max. 9) Kaplan Credit/no credit only.

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, Seales

MUSEN 546 Studio Jazz Ensemble (1, max. 9)

MUSEN 547 Opera Chorus (1, max. 9) Kaplan

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) Vokolek

MUSEN 569 Baroque Chamber Ensemble (1) Terry, Tindemans

MUSEN 575 Opera Workshop (1, max. 9) Zahn

Preparation of music theatre repertoire. Intended for the mature voice student.

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) Tindemans

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 400 Medieval Music: To 1400 (3) VLPA Taricani Critical readings on issues in medieval music. Works to be studied include repertory from chant, motets, and sacred and secular music of the Middle Ages. Prerequisite: one 300-level MUHST course.

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. Prerequisite: one 300-level MUHST course.

MUHST 404 Baroque Keyboard Music (3) VLPA Forms and styles: Frescobaldi through J.S. Bach and C.P.E. Bach. Prerequisite: one 300-level MUHST course.

MUHST 405 Orchestral Music: 1620-1760 (3) VLPA Corelli through the Mannheim School. Prerequisite: one 300-level MUHST course.

MUHST 406 Baroque Choral Music (3) VLPA Bozarth Monteverdi through Handel. Prerequisite: one 300-level MUHST course.

MUHST 407 Baroque Opera (3) VLPA Monteverdi through Handel. Prerequisite: one 300-level MUHST course.

MUHST 408 Keyboard Music: 1760-1830 (3) VLPA Bozarth Haydn through Schubert. Prerequisite: one 300-level MUHST course.

MUHST 409 Chamber Music: 1760-1830 (3) VLPA Haydn through Schubert. Prerequisite: one 300-level MUHST course.

MUHST 410 Orchestral Music: 1760-1830 (3) VLPA Haydn through early Berlioz. Prerequisite: one 300-level MUHST course.

MUHST 411 Art Song, 1760-1830 (3) VLPA The art song in European culture during the Classical and early Romantic periods. Prerequisite: one 300-level MUHST course.

MUHST 412 Choral Music: 1750-1830 (3) VLPA Large works for chorus and orchestra, Haydn through Beethoven. Prerequisite: one 300-level MUHST course.

MUHST 413 Opera: 1750-1830 (3) VLPA Gluck through Bellini. Prerequisite: one 300-level MUHST course.

MUHST 414 Keyboard Music: 1830-1915 (3) VLPA Bozarth Schumann through Debussy. Prerequisite: one 300-level MUHST course.

MUHST 415 Chamber Music: 1830-1915 (3) VLPA Schumann through Ravel. Prerequisite: one 300-level MUHST course.

MUHST 416 Orchestral Music: 1830-1915 (3) VLPA Schumann and Mendelssohn through early Schoenberg and Stravinsky. Prerequisite: one 300-level MUHST course.

MUHST 417 Art Song: 1830-1915 (3) VLPA Bozarth The lied and art song. Prerequisite: one 300-level MUHST course.

MUHST 418 Choral Music: 1830-1915 (3) VLPA Bozarth Selected choral masterpieces. Mendelssohn through early Schoenberg. Prerequisite: one 300-level MUHST course.

MUHST 419 Opera: 1830-1915 (3) VLPA German, French, and Italian operatic traditions. Prerequisite: one 300-level MUHST course.

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: one 300-level MUHST course.

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: one 300-level MUHST course.

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: one 300-level MUHST course.

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: one 300-level MUHST course.

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: one 300-level MUHST course.

MUHST 429 Music, Literature, and the Arts (3) VLPA Starr 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: one 300-level MUHST course.

MUHST 497 Special Topics in Music History (1-3, max. 6) VLPA Topics vary each quarter. Prerequisite: one 300-level MUHST course.
Courses for Graduates Only

MUHST 500 Seminar in Methods of Music Research (3) Tanicari 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) Tanicari Musical styles, genres, and forms of the Middle Ages and Renaissance. Focuses upon musicalological 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) Tanicari Prerequisite: MUHST 500.

MUHST 505 Seminar in Renaissance Music (3, max. 6) Tanicari 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 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) Tanicari 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

229B Denny

General Catalog Web page: www.washington.edu/students/gencat/academic/near_eastern.html

Department Web page: depts.washington.edu/nelc/

The Department of Near Eastern Languages and Civilization focuses on the languages and civilizations of the Near with an emphasis on the ancient and medieval roots of these civilizations as well as more-recent cultural developments. Each of the languages offered by the department 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.

Graduate Program

Graduate Program Coordinator M29A Denny, Box 353120 206-685-3800 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; a sample of written work; three letters of recommendation, of which at least two must attest to scholarly ability; GRE scores. 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.

Graduation Requirements: Departmental requirements, in addition to those required by the Graduate School for the Master of Arts degree, include a 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; a seminar paper representing the student’s best work; a written examination consisting of four parts: (1) on the general culture of the Near East, (2) on the student’s field of specialization, (3) on the student’s language of concentration, (4) on a second Near Eastern language related to the language concentration. Fulfillment of these requirements normally entails the completion of at least two years of study.

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 will 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 University of Washington and the Department of Near Eastern Languages and Civilization maintain exchange agreements for graduate students and faculty with the following universities and institutions: American University in Cairo, Egypt; Hebrew University of Jerusalem-Israel; Tashkent University-Uzbekistan. In addition the department has direct exchange agreements with Xinjiang University, Urumchi, People’s Republic of China, and several universities in Kyrgyzstan and Kazakhstan. It also maintains exchanges and cooperation with the Oriental Institute at the Tajik Academy of Sciences, Dushanbe; and participates in an agreement of scholarly exchanges and cooperation with the Uzbek Writers’ Union, the Uzbek Academy of Sciences, and the Kazakh Academy of Sciences.

Faculty

Chair

Michael A. Williams

Professors


Bacharach, Jere L. *1967, (Adjunct); MA, 1962, Harvard University, PhD, 1967, University of Michigan; history of the Near East.

Cirtautas, Ilse D. *1968; PhD, 1958, University of Hamburg (Germany); Turkic languages and literatures.

Heer, Nicholas L. *1965, (Emeritus); PhD, 1955, Princeton University; Arabic language and literature, Islamic theology and philosophy.

Jaffee, Martin S. *1987, (Adjunct); PhD, 1980, Brown University; Rabbinic religion and literature in late antiquity.

Karimi-Hakkak, Ahmad *1985; PhD, 1979, Rutgers University; Persian language and literature, Iranian culture and civilization.

Mackay, Pierre A. *1966, (Emeritus); PhD, 1964, University of California (Berkeley); Greek literature, post classical and Byzantine Greek literature, numismatics.

Sokoloff, Naomi B. *1985; PhD, 1980, Princeton University; Hebrew language and literature.

Williams, Michael A. *1976; PhD, 1977, Harvard University; early Christianity and religions of antiquity.
Ziadeh, Farhat J. * 1966, (Emeritus); LLB, 1940, University of London (UK); Arabic language and literature, Islamic law, Islamic institutions.

Associate Professors
DeYoung, Terri L. * 1991; PhD, 1988, University of California (Berkeley); Arabic language and literature.
Noegel, Scott B. * 1995; PhD, 1994, Cornell University; Ancient Near Eastern languages, literatures, cultures and history.
Wheeler, Brannon M. * 1996; PhD, 1993, University of Chicago; Islamic studies, comparative religion, late antiquity, Jewish studies and legal studies.

Assistant Professors
Kuru, Selim Sirri 1999; PhD, 2000, Harvard University; Ottoman, Turkish, language, literature.
Walker, Joel T. 1997, (Adjunct); PhD, 1998, Princeton University; late antiquity, Byzantine, early Middle Ages.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.
For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

Near Eastern Languages and Civilization
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.
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. Recommended: NEAR E 210.
NEAR E 421 Islamic Mystical Literature in English (3) VLPA Readings from the works of principal Sufi writers and poets.
NEAR E 423 Persian Literature in Translation (3) VLPA Karimi-Hakkak 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 432 Ritual and Law in Islam (5) I&S/VLPA B. Wheeler Comparative study of Islamic ritual practices and related development of jurisprudence and law, including sacrifice, political and social legal theory, pilgrimage, regulation of the body, and the diversity of contemporary practices. In English. Offered: jointly with RELIG 432; W.
NEAR E 433 Life of Prophet Muhammad (5) I&S/VLPA B. Wheeler 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 434 Human Rights and Islam (3) I&S Souaiaia Focuses primarily on the historical and philosophical background behind the development of the principles and norms of “human rights” in Western thought and in the Islamic legal and religious traditions, from the seventh century to modern day. Analyzes the role of religious as well as political, social, and economic institutions in formulating the notions of human rights. Offered: jointly with RELIG 434; ISIS/MISE 434.
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.
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 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 SJISJE 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 SJISJE 453.
NEAR E 454 Israel: The First Six Centuries BCE (3) I&S/VLPA Noegel Traces the Israelites, from the Babylonian destruction of the Jerusalemic 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 SJISJE 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 archaelogical 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 456 Women in Ancient Judaism (3) I&S/VLPA Noegel Explores those texts in early Jewish literature in which women play prominent roles and those in which women are surprisingly absent. Discusses the literary portrayal of women for what they tell us about the people who wrote the texts. No knowledge of Hebrew is required. Offered: jointly with RELIG 456.
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, D. Wheeler 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 SJISJE 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 499 Undergraduate Research (1-6, max. 18)
Courses for Graduates Only
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 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 (*)
Akkadian
AKKAD 401Elementary Akkadian (3) Introduction to the Akkadian language (Assyrian and Babylonian). Readings in original Akkadian cuneiform from historical, legal, and literary texts.
AKKAD 402Elementary Akkadian (3) Introduction to the Akkadian language (Assyrian and Babylonian). Readings in original Akkadian cuneiform from historical, legal, and literary texts.
AKKAD 403Elementary Akkadian (3) Introduction to the Akkadian language (Assyrian and Babylonian).
Arabic

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.) 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.) Prerequisite: ARAB 411.

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 431 Advanced Arabic (3) 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 423.

ARAB 432 Advanced Arabic (3) 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 (3) 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 432.

ARAB 452 Maqamat: Hamadhanic, Hariri (3) VLPA MacKay Reading of several maqamat (essays in rhyed prose) of al-Hamadhanic and al-Hariri. Examination of the maqamat genre as a whole. Prerequisite: ARAB 432.

ARAB 453 Historical Texts (3) I&S/VLPA B. Wheeler Readings in Arab historians with particular reference to scholars such as Thabit ibn al-Jawzi, Ibn al-Athir. Prerequisite: ARAB 432.

ARAB 454 Qur’an and Its Interpretation (3) VLPA B. Wheeler Reading of selected passages from the Qur’an in relation to their interpretation in classical commentaries (tafsir) and in legal texts (ahkam al-Qur’an). Focus on the various types of classical scholaraship applied to the text of the Qur’an (ulum al-Qur’an). Prerequisite: ARAB 432.

ARAB 455 Ritual and Legal Texts (3) VLPA B. Wheeler Introduction to concepts and terminology of Arabic grammar and lexicography through readings from scholars such as Sibawayh, Ibn Aqil, and Ibn Manzur. Prerequisite: ARAB 432.

ARAB 456 Islamic Political Theorists (3) I&S/VLPA Readings from the main political theorists: al-Baghdaudi, al-Mawardi, and Ibn Khaldun. Prerequisite: ARAB 432.

ARAB 457 Grammatical and Lexical Texts (3) VLPA B. Wheeler Introduction to terms and concepts of Arabic grammar and lexicography through readings from scholars such as Sibawayh, Ibn Aqil, and Ibn Manzur. Prerequisite: ARAB 432.

ARAB 458 Modern Poetry (3) VLPA DeYoung Neoclassical poetry of the nineteenth and twentieth centuries, and the development of modern verse. Prerequisite: ARAB 432.

ARAB 459 Islamic Philosophical Literature (3) I&S/VLPA Reading of selected texts by representa- tive Islamic philosophers. Prerequisite: ARAB 432.

ARAB 461 Modern Prose (3) VLPA DeYoung Modern essays, fiction, and ideological writings. Prerequisite: ARAB 432.

ARAB 462 Sirah and Maghazi Texts (3) I&S/VLPA B. Wheeler Reading and discussion of selected histor- ical 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 432.

ARAB 470 Stories of the Prophets (3) I&S/VLPA B. Wheeler 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 472 Quran and Bible Masorah (3) VLPA B. Wheeler Introduces and discusses selected readings in textual apparatuses for the Quran and Bible. Attention to marginalia in Rabbinic texts, and Islamic scholars such as al-Zarkashi and as-Suyuti. Prerequisite: either ARAB 432, HEBR 427, or HEBR 432. Offered: jointly with HEBR 472.

ARAB 481 South Arabian Epigraphic (3) VLPA Introduction to epigraphic languages used in Southern Arabia from first half of first millennium BCE to mid-fifth century CE. Overview of script, basic grammar, and vocabulary with readings from selected Minaic, Sabaic, Qatabanic, and Hadramitic inscriptions. No previous study of Arabic required.

ARAB 482 North Arabic Inscriptions (3) VLPA Introduction to Arabic Languages of pre-Islamic Northern Arabia from 6th century B.C.E. to 5th cen- tury C.E. Overview of scripts, grammar and vocabu- lary, and basic readings from the Nag Hammadi texts. Prerequisite: either ARAB 423, HEBR 423, or HEBR 426.

ARAB 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergradu- lates. 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) Courses for Graduates Only

ARAB 596 Special Studies in Arabic (3-5, max. 15) Topics vary. Offered occasionally by visiting or resi- dent faculty.

ARAB 600 Independent Study or Research (*)

Aramaic

ARAMIC 401 Biblical Aramaic (5) VLPA Noegel Fundamentals of Aramaic grammar and the differ- ences 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 422 Targumic Aramaic (5) VLPA Noegel The Targum (ancient Aramaic translation) of the Hebrew Bible forms an important basis for biblical interpretation. Emphasis on comprehension and interpretive strategies. Recommended: knowledge of Hebrew and/or Aramaic. Prerequisite: HEBR 333 or HEBR 426.

ARAMIC 423 Readings in Syriac (3) VLPA Walker, Wheeler Readings from selected passages in Biblical and Christian literature with emphasis on pas- sages that distinguish Aramaic from Hebrew. Prerequisite: either ARAB 432 or HEBR 426. Offered: Sp.

ARAMIC 451 Aramaic Epigraphy (3, max. 6) VLPA Noegel, Walker, B. Wheeler Examination of selected Aramaic inscriptions with particular focus on differ- ent languages and periods including ancient and imperial Aramaic, and late antique Aramaic epigraph- phy, such as Nabataean, Palmyrene, and Hatran.

Egyptian

EGYPT 410 Hieroglyphic Egyptian (5) VLPA Noegel Provides an introduction to hieroglyphic Egyptian as written during the Middle Kingdom (c. 2040-1782 BCE). Focuses on reading and writing hieroglyphics, including reading a complete Egyptian text. No knowledge of Egyptian or any other Near Eastern language is required.

EGYPT 411 Introduction to Coptic (3) 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 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 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 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 331 or 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 translation and commentaries. Emphasis on close readings, the grammatical insights of textual criticism, and the interpretive strategies and agendas of the English translations. Prerequisite: HEBR 332 or HEBR 415.

HEBR 427 Biblical Hebrew Poetry (5) VLPA Noegel Explores select poetic sections of the Hebrew Bible (Old Testament) in conjunction with English translation and commentaries. Emphasis on close readings, the grammatical insights of textual criticism, and the interpretive strategies and agendas of the English translations. Prerequisite: HEBR 332 or HEBR 415.

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, Israeliite ostraca, Siloam engraving, Gezer calendar, Deir Alla (Gilead) inscriptions, the Asherah texts, Ammonite fragments, and Phoenician monuments. Prerequisite: HEBR 333 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 Shafrir, Aharon Megged, and others. Prerequisite: HEBR 423.

HEBR 470 Stories of the Prophets (3) &/VLPA B. Wheeler 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 472 Quran and Bible Masorah (3) VLPA Wheeler Introduces and discusses selected readings of the ancient manuscripts of the Quran and Bible. Attention to marginalia in Rabbinic texts, and Islamic scholars such as al-Zarkashi and as-Suyuti. Prerequisite: either ARAB 437, HEBR 427, or HEBR 432. Offered: jointly with ARAB 472.

HEBR 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: HEBR 423.

HEBR 499 Undergraduate Research (1-6, max. 18) Courses for Graduates Only

HEBR 600 Independent Study or Research (*)

**Persian**

PRSAN 401 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 Karimi-Hakkak Enables students with a degree of proficiency in spoken Persian to read and write, to translate rudimentary texts, and to conceptually utilize the formal style of composition. Reading, writing, and comprehension, particularly of handwritten manuscripts of the scriptural 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.

PRSAN 414 Elementary 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 415 Introduction to Persian Literature (3) VLPA Karimi-Hakkak Selections of 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 421.

PRSAN 416 Elementary 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 417 Intermediate Persian (5) 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 421.

PRSAN 418 Intermediate Persian (5) VLPA 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 419 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 421.

PRSAN 421 Intermediate Persian (3) 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 422 Intermediate Persian (5) VLPA Reading of simple texts with emphasis on reading and writing, conversation skills, grammar, and syntax. Buildings a vocabulary of standard Persian in preparation for advanced reading and comprehension of literary texts. Prerequisite: PRSAN 421.

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 421.

PRSAN 451 Introduction to Persian Literature (3) VLPA Karimi-Hakkak Selections of 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 Karimi-Hakkak Development of poetry and prose after Iran felt and absorbed the impact of Western cultures. Periods and genres. Works of such authors as Jalalzadeh, Hedayat, Dehkoda, Al-e Ahmad, Nima, Sepehri, and Forough. Prerequisite: PRSAN 423.

PRSAN 453 Classical Persian Literature: A Survey (3) VLPA Karimi-Hakkak History of Persian literature from Firdawsi to Nizami, Firdawsi, Hafez. Student epic 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 454 The Epic Tradition in Iran (3) VLPA Karimi-Hakkak Focuses on the Shahnameh of Firdawsi. Hafez. Student epic 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 455 The Persian Ghazal (3) VLPA Karimi-Hakkak 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 Karimi-Hakkak 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.

TKISH 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: PRSAN 423.

TKISH 499 Undergraduate Research (1-6, max. 18) Courses for Graduates Only

PRSAN 600 Independent Study or Research (*)

Turkic
TKIC 401 Intensive Elementary Uzbek (15) Intensive study of grammar, with oral and written drill and reading of selected texts in Uzbek. Covers first-year Uzbek. Cannot be taken for credit if 411, 412, 413 taken. Offered: S.

TKIC 403 Intensive Elementary Kirghiz (15) Intensive study of grammar and pronunciation in the Kirghiz language. Prerequisite: TKIC 401 or TKIC 413. 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 406 Intensive Advanced Uzbek (15) VLPA Advanced-level instruction in speaking, writing, reading, and listening skills. Students work independently on translation projects. Emphasis on extensive writing practices in Uzbek and student participation in an Uzbek email conversation circle. Prerequisite: TKIC 423. Offered: S.

TKIC 411 Elementary Uzbek (5) Citrautas Introduction to the modern written and spoken language. Cannot be taken for credit if 401 taken.

TKIC 412 Elementary Uzbek (5) Citrautas Introduction to the modern written and spoken language. Cannot be taken for credit if 401 taken.

TKIC 413 Elementary Uzbek (5) Citrautas Introduction to the modern written and spoken language. Cannot be taken for credit if 401 taken.

TKIC 421 Intermediate Uzbek (3) VLPA Citrautas Continuation of elementary Uzbek. Oral work, grammar, and readings in Uzbek literature. Prerequisite: either TKIC 401 or TKIC 413.

TKIC 422 Intermediate Uzbek (3) VLPA Citrautas Continuation of elementary Uzbek. Oral work, grammar, and readings in Uzbek literature. Prerequisite: TKIC 421.

TKIC 423 Intermediate Uzbek (3) VLPA Citrautas Continuation of elementary Uzbek. Oral work, grammar, and readings in Uzbek literature. Prerequisite: TKIC 422.

TKIC 455 Introduction to Uzbek Literature (3) VLPA Citrautas Readings from selected Uzbek writers. Content varies.

TKIC 456 Introduction to Uzbek Literature (3) VLPA Citrautas 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 499 Undergraduate Research (3-5, max. 15) For Turkic language and literature majors.

Courses for Graduates Only

TKIC 542 Comparative and Historical Grammar of Turkic Languages (3) Citrautas Classification of the Turkic languages, alphabets used, phonology, morphology, and syntax; lexical composition; structure changing developments. Prerequisite: TKIC 404.

TKIC 546 Old Turkic (3) Citrautas 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) Citrautas Introduction to script systems; phonology, morphology, and syntax of the Middle Turkic languages; reading and translation of texts in Karakhanid, Khorazmian Turkic, Kipchak, and Chagatai. Prerequisite: background in a Turkish language or permission of instructor.

TKIC 562 Middle Turkic (3) Citrautas Introduction to the phonology, morphology, and syntax of the Middle Turkic languages; reading and translation of texts in 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: TKIC 404.

TKIC 563 Seminar on Turkic Literature (5) Citrautas Topics in oral and written literature. Prerequisite: permission of instructor.

TKIC 600 Independent Study or Research (*)

Turkish
TKISH 401 Intensive Elementary Modern Turkish (15) Intensive study of grammar, with oral and written drill and reading of simple texts. (Cannot be taken for credit if TKISH 411, 412, 413 taken.) Offered: S.

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.)

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 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 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.

TKISH 499 Undergraduate Research (1-6, max. 18) Courses for Graduates Only

TKISH 600 Independent Study or Research (*)

Neurobiology

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog, or visit the online course catalog at www.washington.edu/students/crscat/.

NBI 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: NBI 302. Offered: A.

NBI 402 Neuroapthophysiology (3) NW Crill Introduces students to the basic physiological mechanisms of information processing in the mammalian brain by having students study a series of human neurological diseases that result from a specific disruption of these mechanisms. Prerequisite: NBI 401. Offered: W.

NBI 403 Systems and Behavioral Neurobiology (3) NW Perkel, von der Emde 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: NBI 401. Offered: W.

NBI 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: NBI 401. Offered: Sp.

NBI 440 Topics in Current Neurobiology Research (2, max. 6) NW Credit/no credit only. Prerequisite: NBI 302.

NBI 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: BIOL 202.
Philosophy
345 Savery

General Catalog Web page:
www.washington.edu/students/gencat/academic/philosophy.html

Department Web page:
deptrs.washington.edu/phil/web/

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.

Graduate Program
Graduate Program Coordinator
345 Savery, Box 353350
206-543-5855
philinfo@u.washington.edu

Master of Arts, Doctor of Philosophy

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 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 course work 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.

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.

Financial Aid
The department has some teaching assistantships available to incoming students and the Graduate School offers some non-teaching assistantships.

Phi-

Assistant Professors

Smith, Angela * 1999; PhD, 1999, Harvard University; moral and political philosophy.
Taylor, Paul C. 1998; PhD, 1997, Rutgers University; social and political philosophy, American pragmatism, aesthetics, race theory.
Weller, Cass * 1990; PhD, 1983, University of Pittsburgh; ancient Greek philosophy, epistemology, Hume.
Woody, Andrea I. * 1997; PhD, 1996, University of Pittsburgh; philosophy of science, history of science, philosophy of feminism.

Senior Lecturer


Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsctat/.

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 405 Philosophical Topics in Feminism (5) I&S Roberts, 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 410 Social Philosophy (5) I&S Clatterbaugh, Coburn, Talbott, Taylor 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 Indian Philosophy (5) I&S Historical survey of the major systems and the traditional problems of philosophy in India. Readings in Buddhism, Nyaya, Samkhya, and Vedanta.

PHIL 414 Philosophy of Law (3) I&S BonJour, Moore Nature and function of law. Relation of law to morality. Legal rights, judicial reasoning.

PHIL 418 Indian Buddhist Philosophy (3) I&S Topics from Buddhist thought, both Sravakayanist and Mahayananist, touching on the following areas: epistemology, theory of liberation, metaphysics and the theory of the absolute, cosmology, and ethics. Readings in translation. At least one course in Indian philosophy or Hinduism or Buddhism recommended.

PHIL 422 Studies in Continental Rationalism (3, max. 9) I&S Clatterbaugh, Coburn, Marks 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

Faculty

Chair
Kenneth C. Clatterbaugh

Professors

Bolet, John F. * 1960, (Emeritus); PhD, 1960, Harvard University; medieval philosophy.
Bonjour, Laurence A. * 1977, PhD, 1969, Princeton University; epistemology, Kant, British empiricism.
Clatterbaugh, Kenneth C. * 1966; PhD, 1966, Indiana University; modern philosophy, social and political philosophy, gender studies.
Coburn, Robert C. * 1971; PhD, 1958, Harvard University; metaphysics, philosophy of religion, recent philosophy.
Cohen, S. Marc * 1973; PhD, 1967, Cornell University; ancient philosophy, metaphysics, philosophy of language, philosophy of mind.
Dietrichson, Paul * 1961, (Emeritus); PhD, 1955, Yale University; philosophy of religion, ethics, metaphysics.
Keyt, David * 1957; PhD, 1955, Cornell University; ancient and contemporary philosophy, logic.
Lange, Marc B. * 1997; PhD, 1990, University of Pittsburgh; philosophy of science, epistemology, metaphysics.
Marks, Charles * 1975; PhD, 1972, Cornell University; philosophy of mind, modern philosophy.
Pottor, Karl H. * 1970, (Emeritus); PhD, 1965, Harvard University; South Asia, Indian philosophy, epistemology.
Richman, Robert J. * 1961, (Emeritus); PhD, 1953, Harvard University; ethics, political philosophy.
Staten, Henry J. * 1998, (Adjunct); PhD, 1978, University of Texas (Austin); 19th- and 20th-century British literature, history of literary criticism, contemporary theory.

Associate Professors

Mishalani, James K. * 1963, (Emeritus); PhD, 1961, Brown University; ethics, philosophical anthropology, contemporary continental philosophy.
Moore, Ronald M. * 1979; PhD, 1971, Columbia University; philosophy of law, aesthetics.
Roberts, Jean Valerie * 1991; PhD, 1982, University of Pittsburgh; ancient Greek philosophy, ethics, philosophy of feminism.
Talbott, William J. * 1989; PhD, 1976, Harvard University; epistemology, ethics, social and political philosophy, rational choice theory.
Townsend, Michael E. * 1992, (Adjunct); MA, 1978, PhD, 1982, University of Michigan, JD, 1989, Yale University; law and science; intellectual property; use of quantitative methods.
include F. H. Bradley, J. McTaggart, Royce, and Green.

PHIL 426 Twentieth-Century Philosophy (5) I&S
Baker, Lange, Weiller A study of development of con-
temporary analytic philosophy, the revolt against ide-
alism, and the linguistic turn in philosophy.

PHIL 430 Hellenistic Philosophy (3) I&S
Roberts Survey of the Epicurean, Stoic, and Skeptic philoso-
phy of the Hellenistic period. Emphasis may vary.

PHIL 431 Philosophy of Plato (3, max. 6) I&S
Cohen, Keyt, Roberts, Weiller Study of selected middle-
die and late dialogues.

PHIL 433 Philosophy of Aristotle (3, max. 6) I&S
Cohen, Keyt, Roberts, Weiller Study of several major Aristotelian treatises.

PHIL 436 British Empiricism (3) I&S
BonJour Examination of the metaphysical and epistemologi-
cal 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
Marks, Weiller Study Hume's analyses of knowledge, the passions, and morals.

PHIL 438 Philosophy of Kant (5) I&S
BonJour, Weiller Systematic study of The Critique of Pure Reason.

PHIL 439 The Later Philosophy of Wittgenstein (3)
I&S Coburn Detailed study of topics in the later phi-
losophy of Wittgenstein, with particular attention to the Philosophical Investigations.

PHIL 440 Ethics (5) I&S
Coburn, Roberts, Smith, Talbott Critical examination of the concepts and judg-
ments of value, including an analytical treatment of the notions of good and bad, right and wrong, and obligation. Emphasis varies from quarter to quarter.

PHIL 445 Philosophy of Art (5) I&S/VLPA
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 Moore Taylor Historical development of aesthetics, emphasizing such major figures as Plato, Aristotle, Hume, Kant, Hegel, and Goodman.

PHIL 450 Epistemology (5) I&S
Baker, BonJour, Lange, 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, Coburn 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 458 Phenomenology (5) I&S
The contributions of phenomenology to selected topics in the theory of meaning, philosophy of mind, ontology, and episte-
mology.

PHIL 459 Philosophy of Medicine (5) I&S
Jecker Familiarizes students with central issues in the phil-
osophy of medicine. Focuses on the nature of med-
ical 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

PHIL 460 Philosophy of Science (5) I&S/NW
Lange, 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 463 Philosophy of Mind (3) I&S
BonJour, Marks 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
Marks Philosophical problems connected with research in psychology, artificial intelligence, and other cognitive sciences. Topics vary. Readings from both philosophical and scientif-
ic literature. Accessible to nonphilosophers with suit-
able interests and backgrounds.

PHIL 466 Philosophy of the Social Sciences (5)
I&S Talbott Examination of fundamental issues in the foundations, methodology, and interpretation of the social sciences. Topics include value orientation and objectivity; methodological individualism, functional-
ism, reductionism, and the status of idealized mod-
els, including models involving idealized concep-
tions of individual rationality. Emphasis varies from quarter to quarter.

PHIL 467 Philosophy of Religion (5) I&S
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 experi-
ence and revelation; the attributes of God; miracles; immortality; and the relation between religion and morality. Readings from historical and contemporary authors.

PHIL 469 Existentialist Philosophy (3) I&S
Examination of major ideas of selected existentialist philosophers.

PHIL 470 Intermediate Logic (5) I&S/NW, QSR
Keyt An introduction to the concepts and methods of metatheory and their application to the sentential cal-
culus.

PHIL 471 Advanced Logic (5) I&S/NW
Keyt Study of the first-order predicate calculus with identity and function symbols. Consistency, soundness, com-
pleteness, compactness. Skolem-Löwenheim theo-
rem. Formalized theories.

PHIL 472 Axiomatic Set Theory (5) I&S/NW
Keyt 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 Gödel's incompleteness theorems on these accounts.

PHIL 474 Modal Logic (5) I&S/NW
Notions of neces-

PHIL 481 Philosophy of Biology (5) I&S/NW
Lange Study of several current topics in philosophy of biol-
ogy, which may include the logical structure of evo-
lutionary theory, fitness, taxonomy, the concept of a

PHIL 482 Philosophy of Physical Science (5, max. 10) I&S/NW
Lange, Woody Study of fundamental 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 anistropy 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
Lange Introduction to current accounts of evidence and observation, the confirmation of scientific theo-

PHIL 484 Reading in Philosophy (1-5, max. 15) I&S
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 experi-
ences vary but could include an off-campus practicum, being trained as study group leader or tutor. Offered: AWSp.

Courses for Graduates Only

PHIL 500 Proseminar in Philosophy (5) Introduces incoming graduate students to topics representative of the field and the faculty's interest. Each class ses-
sion is devoted to a separate topic taught by a differ-
ent member of the faculty. In addition to reading and short written assignments. Students prepare a term paper on a topic presented. Offered: A.

PHIL 501 Foresight in Science and Technology: Choices and Consequences (3) Examination of the foresight (or lack of it) with which we practice sci-
ence and technology. Contrasts potential risks of various choices with potential benefits. Credit/no credit only. Offered: jointly with ENVIR 535/PHYS 535/ZOOL 523.

PHIL 503 Seminar in Teaching Philosophy (1, max. 10) Baker First quarter: seminar on topics of impor-
tance to a graduate student teaching two quiz sec-
tions 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)
Moore

PHIL 520 Seminar in Ancient Philosophy (5, max. 20)
Cohen, Keyt, Roberts, Weiller

PHIL 522 Seminar in Modern Philosophy (5, max. 20)
Clatterbaugh

PHIL 526 Seminar in Recent Philosophy (5, max. 20)
Keyt, Lange

PHIL 538 Philosophy of Human Rights (5, max. 20)
Talbott

PHIL 540 Seminar in Ethics (5, max. 20)
Coburn, Roberts, Smith, Talbott
Experimental work in atomic physics is concentrated on the measurement of fundamental physical properties through laser, ion trap, and radio-frequency 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 U.S. 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 experimental groups are heavily engaged in experiments at the European Center for Nuclear Research in Geneva, Kamiokande in Japan, and the 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 U.S., 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).

Graduation Requirements: Department requirements include standard Graduate School requirements. In addition, 3 credits must be in PHYS 600 and at least 12 other credits in physics graduate courses. A final examination is required. 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, advanced calculus, 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: Department requirements include standard Graduate School requirements. In addition, 3 credits must be in PHYS 600 and at least 12 other credits in physics graduate courses. A final 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 sequences of basic graduate courses: PHYS 505, 506, 511, 513, 514, 515, 517, 518, 519, 520, and 524; and in specialized courses appropriate to each student's interests. 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 Final 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 501-503, 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.

Faculty

Chair
David G. Boulware

Professors
Adelberger, Eric G. * 1972; PhD, 1967, California Institute of Technology; experimental gravitational physics; experimental nuclear physics.
Alberg, Mary Ann 1983, (Affiliate); PhD, 1974, University of Washington; theoretical nuclear physics.
Baker, Marcia * 1980, (Adjunct); MS, 1980, Stanford University; PhD, 1971, University of Washington; cloud physics, atmospheric geophysics.
Baker, Marshall * 1962; PhD, 1958, Harvard University; field theory, theoretical elementary-particle physics.
Bardeen, James M. * 1976; PhD, 1965, California Institute of Technology; general relativity, theoretical astrophysics, cosmology.
Bertsch, George F. * 1992; PhD, 1965, Princeton University; theoretical physics, nuclear and atomic cluster physics.

Bichsel, Hans 1992, (Affiliate); PhD, 1951, University of Basel (Switzerland); experimental nuclear physics.

Bodansky, David. * 1954, (Emeritus); PhD, 1950, Harvard University; experimental nuclear physics.

Bouwane, David G. * 1965; PhD, 1962, Harvard University; field theory, theoretical elementary-particle physics, general relativity.


Boynton, Paul E. * 1970; PhD, 1967, Princeton University; high-energy astrophysics, astronomy.

Brown, Frederick C. * 1987, (Emeritus); PhD, 1950, Harvard University; use of synchrotron radiation in experimental solid state physics.

Brown, Lowell S. * 1968, (Emeritus); PhD, 1961, Harvard University; field theory, theoretical elementary-particle physics.

Buck, Warren W. 1999, (Adjunct); MA, 1970, PhD, 1976, College of William And Mary; physics and nuclear energy.

Burnett, Thompson H. * 1979; PhD, 1968, University of California (San Diego); experimental elementary-particle physics.

Cahn, John Werner 1984, (Affiliate); PhD, 1953, University of California (Berkeley); theoretical condensed-matter physics.

Campbell, Charles T. * 1989, (Adjunct); PhD, 1979, University of Texas (Austin); physical chemistry of solid surfaces, chemisorption, catalysis, and surface analysis.

Chaloupka, Vladimir * 1981; PhD, 1975, University of Geneva (Switzerland); experimental elementary-particle physics.

Chayes, Jennifer T. 1997, (Affiliate); PhD, 1983, Princeton University; theoretical condensed-matter physics.

Chopelas, Anastasia * 2002, (Research); PhD, 1981, University of California (Los Angeles); experimental condensed-matter physics.

Clark, Kenneth C. * 1948, (Emeritus); PhD, 1947, Harvard University; optical spectroscopy, upper atmosphere.

Cleveland, Bruce 2001, (Affiliate); PhD, 1970, Johns Hopkins University; experimental nuclear physics.

Cook, Victor * 1963, (Emeritus); PhD, 1962, University of California (Berkeley); experimental high-energy physics.

Cramer, John G. * 1964; PhD, 1961, Rice University; theoretical condensed-matter physics.

Dash, J. Gregory. * 1961, (Emeritus); PhD, 1951, Columbia University; cryogenics, surface physics, thermal physics, ice physics.

Dehmelt, Hans G. * 1955; PhD, 1950, University of Gottingen (Germany); single particle radio-frequency and laser spectroscopy of trapped electrons, positrons and ions.

Den Nijs, Marcel P. * 1981; PhD, 1979, Katholieke University (Netherlands); theoretical condensed-matter physics.

Doe, Peter J. * 1994; MSc, 1974, PhD, 1977, University of Durham (UK); electro-weak interactions and solar neutrino physics.

Dubnya, Gary P. * 1981, (Adjunct); PhD, 1981, University of California (Berkeley); two-dimensional and multiple quantum studies in nuclear magnetic resonance.

Efimov, Vitaly 1990, (Affiliate); PhD, 1966, Physico-Technical Institute (Russia); theoretical nuclear physics.

Ellis, Stephen D. * 1975; PhD, 1971, California Institute of Technology; theoretical elementary-particle physics.

Engel, Thomas A. * 1980, (Adjunct); PhD, 1969, University of Chicago; surface chemistry and catalysis.

Fain, Samuel C. * 1970; PhD, 1969, University of Illinois; experimental condensed-matter physics, surface physics.

Farwell, George W. * 1948, (Emeritus); PhD, 1948, University of Chicago; experimental nuclear physics.

Fortson, E. Norval * 1963; PhD, 1964, Harvard University; radio-frequency spectroscopy, experimental atomic physics.

Gerhart, James B. * 1956, (Emeritus); PhD, 1954, Princeton University; experimental nuclear physics, physics education.

Halpern, Isaac * 1953, (Emeritus); PhD, 1948, Massachusetts Institute of Technology; experimental nuclear physics.

Haxton, Wick C. * 1984; PhD, 1976, Stanford University; theoretical physics, nuclear physics.

Heckel, Blayne * 1983; PhD, 1981, Harvard University, experimental neutron and atomic physics.

Henley, Ernest M. * 1954, (Emeritus), PhD, 1952, University of California (Berkeley); theoretical nuclear physics, theoretical elementary-particle physics.

Hogan, Craig J. * 1990; PhD, 1980, Cambridge University (UK); astrophysical cosmology, especially the origin of astronomical structures in the expanding universe.

Holzworth, Robert A. * 1982, (Adjunct); MA, 1974, PhD, 1977, University of California (Berkeley); experimental space plasma physics, atmospheric/magnetospheric electric fields, thunderstorms.

Ingalls, Robert L. *, (Emeritus); PhD, 1962, Carnegie Mellon University; experimental condensed-matter physics.

Jarboe, Thomas R. * 1989, (Adjunct); PhD, 1974, University of California (Berkeley); plasma physics and controlled fusion, magnetic reconnection and relaxation.

Jonsson, Hannes * 1988, (Adjunct); PhD, 1985, University of California (San Diego); computer simulations and scattering calculation in materials and surface science.

Kaplan, David B. * 1994; PhD, 1985, Harvard University; theoretical nuclear and elementary-particle physics.

Lake, George Russell * 1985, (Adjunct); PhD, 1980, Princeton University; stellar dynamics, galaxy structure and formation, cosmology, computational astrophysics.

Lord, Jere J. * 1952, (Emeritus); PhD, 1950, University of Chicago; cosmic rays, experimental elementary-particle physics.

Lubatti, Henry J. * 1969; PhD, 1966, University of California (Berkeley); experimental elementary-particle physics.

McDermott, Lillian C. * 1971; PhD, 1959, Columbia University; physics education.

McDermott, Mark N. * 1962; PhD, 1959, Columbia University; radio-frequency spectroscopy.

Miller, Gerald A. * 1975; PhD, 1972, Massachusetts Institute of Technology; theoretical nuclear physics.

Mockett, Paul M. * 1972; PhD, 1965, Massachusetts Institute of Technology; experimental elementary-particle physics.

Nagourney, Warren * 1977; PhD, 1972, Columbia University; experimental atomic physics, high resolution laser spectroscopy of atoms.


Olmscheid, Marjorie A. * 1991; PhD, 1985, University of California (Berkeley); experimental condensed-matter physics, surface and interface physics.

Puff, Robert D. * 1962, (Emeritus); PhD, 1960, Harvard University; many-body theory, statistical physics.

Rehr, John J. * 1974; PhD, 1972, Cornell University; theoretical condensed-matter physics.

Reinhardt, William P. * 1991, (Adjunct); PhD, 1968, Harvard University; theoretical and computational chemistry with applications in thermodynamics and atomic physics.

Riedel, Eberhard K. * 1975, (Affiliate); PhD, 1966, Technical University of Munich (Germany); theoretical condensed-matter physics.

Robertson, R. G. Hamish * 1994; MA, 1965, Oxford University (UK); PhD, 1971, McMaster University (Canada); experimental nuclear physics.

Rothberg, Joseph E. * 1969; PhD, 1963, Columbia University; experimental high-energy physics.

Schick, Michael * 1969; PhD, 1967, Stanford University; theoretical condensed-matter physics.

Sharpe, Stephen R. * 1986; PhD, 1983, University of California (Berkeley); theoretical particle physics: lattice gauge theory and strong interaction phenomenology.

Snover, Kurt Albert * 1972; PhD, 1969, Stanford University; experimental nuclear physics.

Sorensen, Larry B. * 1983; PhD, 1980, University of Illinois; experimental condensed-matter physics.

Spivak, Boris * 1991; PhD, 1970, Leningrad Polytechnic Institute (Russia); theoretical condensed-matter physics.

Stern, Edward A. * 1965, (Emeritus); PhD, 1955, California Institute of Technology; experimental condensed-matter physics.

Strom, Derek * 1979; PhD, 1970, University of Washington; nuclear physics, especially medium energy, accelerator physics.

Stubbs, Christopher * 1981; PhD, 1988, MSc, 1988, University of Washington; observational cosmology and gravitation.

Thouless, David * 1980; PhD, 1958, Cornell University; theoretical condensed-matter physics.

Trainor, Thomas A. * 1973; PhD, 1973, University of North Carolina; experimental nuclear physics.
Van Dyck, Robert S., Jr. * 1971; PhD, 1971, University of California (Berkeley); experimental atomic physics.

Vilches, Oscar E. * 1968; PhD, 1966, National University of Cuyo (Argentina); low-temperature condensed-matter physics.

Wilets, Lawrence * 1958, (Emeritus); PhD, 1952, Princeton University; theoretical nuclear and atomic physics.


Wilkes, Richard Jeffrey * 1974; PhD, 1974, University of Wisconsin; experimental cosmic ray and elementary particle physics.

Williams, Robert W. * 1959, (Emeritus); PhD, 1948, Massachusetts Institute of Technology; experimental high-energy physics, cosmic rays.

Winglee, Robert M. * 1991, (Adjunct); PhD, 1984, University of Sydney (Australia); space plasma physics, numerical simulation of space plasmas.

Yaffe, Laurence G. * 1988; PhD, 1980, Princeton University; quantum field theory, elementary particle physics.

Associate Professors

Ao, Ping 1990, (Affiliate); PhD, 1990, University of Illinois; theoretical condensed-matter physics.

Baker, David * 1993, (Adjunct); PhD, 1989, University of California (Berkeley); protein folding, genomics.

Bulgac, Aurel * 1993; PhD, 1977, Leningrad Nuclear Physics Institute (Russia); many body theory, molecular dynamics, classical and quantum chaos.

Elliot, Steven R. * 1995; PhD, 1987, University of California (Irvine); particle and nuclear physics.

Gundlach, Jens 1984; PhD, 1990, University of Washington; experimental nuclear physics.

Quinn, Thomas R. * 1993, (Adjunct); PhD, 1986, Princeton University; Solar System dynamics and galaxy formation.

Savage, Martin J. * 1996; MSc, 1985, University of Auckland (New Zealand), PhD, 1990, California Institute of Technology; nuclear and particle physics.

Shaffer, Peter S. * 1985; PhD, 1993, University of Washington; research on the learning and teaching of physics.

Vogel, Viola * 1990; (Adjunct); Doct, 1987, Johann Wolfgang Goethe University (Germany); molecular assemblies and Langmuir-Blodgett films, liquid interfaces, non-linear optics, microscopy.


Zhao, Tianchi * 1986; PhD, 1987, Columbia University; experimental high energy physics instrumentation and detectors.

Assistant Professors

Ankudinov, Alexei 1992, (Research); PhD, 1996, University of Washington; theoretical condensed-matter physics.

Cobden, David H. * 2001; PhD, 1991, University of Cambridge (UK); experimental condensed-matter physics.

Heron, Paula * 1995; MS, 1992, University of Ottawa (Canada), PhD, 1995, Western Ontario University (Canada); research on the learning and teaching of physics.

Junghans, Arnd * 1999, (Research); PhD, 1998, Technical University of Darmstadt (Germany); experimental nuclear physics.

Kaplan, Lev 1999, (Research); MA, 1993, PhD, 1996, Harvard University; theoretical nuclear physics.

Keller, Sarah L. 2000, (Adjunct); PhD, 1995, Princeton University; biophysics; physical chemistry; soft condensed matter; surfactants; lipids; self-assembly.

Kovtchev, Yuri 2000, (Research); PhD, 1998, Columbia University; theoretical physics: high energy QCD, nuclear and particle physics.


van Kolck, Ubirajara 1995, (Affiliate); PhD, 1993, University of Texas (Austin); theoretical nuclear physics.

Vokos, Stamatis P. * 1992, MA, 1985, PhD, 1990, University of California (Berkeley); research on the learning and teaching of physics (physics education research).

Watts, Gordon T. * 1999; PhD, 1995, University of Rochester; accelerator-based elementary particle physics.

Senior Lecturer

Pedigo, Robert D. 2001; PhD, 1977, University of Texas (Austin); physics education.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/. Accessed: W

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. 10) NW A “hands-on” inquiry-oriented approach designed to train in-service teachers in the use of the physical science content for any of several science programs selected by a school or school district. Credit/no credit only.

PHYS 411 Physics by Inquiry for Lead Teachers (1-4, max. 4) NW Extends the content covered in previous courses and helps prepare lead teachers to train colleagues to use any of several science programs selected by schools or districts. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS 407, PHYS 408, and 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. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS 407, PHYS 408, and PHYS 409. Offered: W.

PHYS 413 Physics by Inquiry for Lead Teachers (1-4, max. 4) NW Extends the content covered in previous courses and helps prepare lead teachers to train colleagues to use any of several science programs selected by schools or districts. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS 407, PHYS 408, and PHYS 409. Offered: Sp.

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: PHYS 323; PHYS 325. Offered: A.

PHYS 424 Mathematical Physics (3) NW Advanced classical mechanics. Prerequisite: PHYS 323; PHYS 325. Offered: A.

PHYS 425 Mathematical Physics (3) NW Mathematical techniques of particular use in physics, including partial differential equations. Prerequisite: PHYS 323; PHYS 325. Offered: W.

PHYS 426 Mathematical Physics (3) NW Mathematical techniques of particular use in physics, including partial differential equations. Prerequisite: PHYS 425. Offered: Sp.

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 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. Prerequisite: PHYS 422. 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 335. Offered: A.

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 (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 455.

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 (1-3, 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 (1-3, 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 (1-3, 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.

Courses for Graduates Only

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 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, electric and magnetic media, wave guides and cavity resonators. Offered: W.


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 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 523 Thermodynamics and Statistical Mechanics (4) Statistical mechanical basis of the fundamentals of statistical thermodynamics and conception of 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 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 accelerators. Prerequisite: PHYS 543 or equivalent.

PHYS 545 Contemplatory Optics (4) Coordinated lecture and laboratory treatment of topics in contemplatory optics. Subjects include Fourier optics, lens systems, interferometry, laser optics, holography, polarization, crystal optics, birefringence, laser and optical instruments, galaxy and large 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 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 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; astrophysical neutrinos. Offered: jointly with ASTR 513; 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. Offered: jointly with ASTR 513; W.

PHYS 557 High Energy Physics (3) First quarter of a three-quarter series. Emphasis on the experimental foundations of particle physics. Prerequisite: PHYS 519; recommended: PHYS 520, which may be taken concurrently. Offered: A.

PHYS 558 High Energy Physics (3) Second quarter of a three-quarter series. Phenomenology of the standard model of strong and electro-weak interactions, including an introduction to Feynman diagrams. Prerequisite: PHYS 519; recommended: PHYS 520 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) Emphasis varies in different years between relativistic quantum field theory and the many-body problem. Credit/no credit only. Prerequisite: PHYS 522.

PHYS 571 Quantum Field Theory (3) Emphasis varies in different years between relativistic quantum field theory and the many-body problem. 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 Atomic Physics and Coherent Spectroscopy (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 601 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

101 Gowen

General Catalog Web page: www.washington.edu/students/gencat/academic/political_sci.html

Department Web page: www.washington.polisci.edu

Students of political science examine the theory and practice of government and politics. They acquire knowledge of political institutions and processes and learn to think critically about public policies and their consequences. They learn how to evaluate individual, group, and mass behavior in political settings. Because of their understanding and interest in political systems, students who major in political science enter such career fields as government service, law, business, journalism, politics, public-policy analysis, and education.

The department is organized into four major fields of study: political theory, American government and politics, international relations, and comparative politics. Several subfields—public law, law and public policy, political communication, political culture, and political economy—cut across these main areas and provide focused specialization for both undergraduate and graduate students. The department has long been renowned in comparative and international politics, especially in the study of Asian political phenomena, in public law, and in American government and politics. The department has also augmented its faculty strength in public policy, political and feminist theory, and political economy.

Graduate Program

Graduate Program Coordinator 215 Smith, Box 353530 206-543-1988 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 long been outstanding in comparative and international politics, and has augment-
ed its faculty strength in American politics, Western European politics, political theory, international relations, political economy, public policy, public law, political communication, and methodology. Graduate students can pursue studies in other campus units, such as the School of Marine Affairs, the Graduate School of Public Affairs, the Henry M. Jackson School of International Studies, the School of Communications, and the School of Law.

**Master of Arts, Doctor of Philosophy**

Graduate work in political science is organized primarily as preparation for the Doctor of Philosophy degree. The degree program, when completed, confers the Master of Arts degree, so the Master of Arts program serves as the initial stage of the Ph.D. program.

The department admits for autumn quarter only, with an application deadline of January 15. Admission and financial-aid decisions are based on the applicant's academic transcript, Graduate Record Examination general test scores (no subject test is required), three letters of reference, a statement of purpose, and a writing sample. Foreign students are required to submit TOEFL scores.

**Master of Arts**

A bachelor's degree is required for admission to the graduate program. To earn the M.A. degree, students must complete a three course political methodology sequence, satisfy course requirements in two fields, and submit and orally defend an essay of distinction. One of the fields must be chosen from four general fields: political theory, international relations, comparative politics, and American politics. The second field may be a second general field or one of the following specialized fields: area study, public law, political communication, public policy process, political methodology, or political economy. Completion of the M.A. degree generally requires two years of full-time study.

**Doctor of Philosophy**

Most students are expected to have completed an M.A. degree in political science in this department for the Ph.D. program. The doctoral student must prepare a total of three fields, including at least one general field (see general and specialized fields above) and no more than one constructed field. Students must also complete a three course political methodology sequence, satisfy course requirements in two fields, and submit and orally defend a dissertation prospectus. Once advanced to candidacy, students must write and orally defend their dissertation in order to graduate. The Ph.D. program requires a minimum of three years of full-time course work (including the satisfaction of M.A. requirements) followed by the completion of the dissertation project.

**Research Facilities**

The University library system, the largest research library in the Pacific Northwest, has a collection of five million volumes, with specialized collections for the Pacific Northwest, Near East, South Asia, and Slavic and East European areas. A political science reference librarian is available in the Suzzallo and Allen Libraries to assist graduate students and the specialized needs of the department. Specialized access to computing facilities and extensive data holdings is available through the Center for Social Science Computation and Research and the Political Science Computer Classroom. The University is 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.

**Faculty**

**Chair**

Stephen J. Majeski

**Professors**

Bachman, David M. * 1991, (Adjunct); PhD, 1984, Stanford University; Chinese politics and foreign policy and China's political economy (1949-present); U.S.-China relations.

Bennett, W. Lance * 1974; MPhil, 1973, PhD, 1974, Yale University; American politics, comparative politics, political communication, mass media, political culture.

Brass, Paul R. * 1965, (Emeritus); PhD, 1964, University of Chicago; comparative government, international relations.

Burstein, Paul * 1985, (Adjunct); PhD, 1974, Harvard University; political sociology, social movements, social stratification, public policy, law.

Caporaso, James A. * 1988; PhD, 1968, University of Pennsylvania; research methodologies, international political economy; comparative politics, European community.

Cassinelli, Charles W. * 1960, (Emeritus); PhD, 1953, Harvard University; comparative government (Latin America).

Dobel, J. Patrick * 1985, (Adjunct); PhD, 1976, Princeton University; political theory, ethics and public policy, organizational theory.

Gerberding, William P. * (Emeritus); PhD, 1959, University of Chicago; American government and politics.

Gore, William J. * 1966, (Emeritus); PhD, 1952, University of Southern California; public policy, public administration.

Hartsock, Nancy C.M. * 1984; PhD, 1972, University of Chicago; feminist theory, Marxism, contemporary political theory.

Heilmann, Donald C. * 1967; PhD, 1964, University of California (Berkeley); Japanese politics and international relations.

Jones, Bryan D. * 1996; PhD, 1970, University of Texas (Austin); decision-making and public policy processes in American government.

Keeler, John T. * 1980; PhD, 1978, Harvard University; comparative politics (Western Europe), international relations.

Kiser, Edgar Vance * 1988, (Adjunct); PhD, 1987, University of Arizona; political sociology, theory, historical sociology.

Lang, Gladys Engel * 1964, (Emeritus); PhD, 1954, University of Chicago; political effects of mass media, sociology of art, political movements and crowd behavior.

Lev, Daniel S. * 1970, (Emeritus); PhD, 1964, Cornell University; comparative politics (Southeast Asia).

Levi, Margaret * 1974; PhD, 1974, Harvard University; comparative politics, political economy, labor politics.

Majeski, Stephen J. * 1984; PhD, 1981, Indiana University; international relations, foreign policy, peace and conflict resolution.

Matthews, Donald Rowe * 1976, (Emeritus); PhD, 1953, Princeton University; American government and politics, comparative politics (Norway, U.K.).

May, Peter J. * 1979; PhD, 1979, University of California (Berkeley); policy processes; policy design and implementation; environmental regulation.

McCann, Michael W. * 1982; MA, 1976, PhD, 1983, University of California (Berkeley); American government and politics, public law, political theory.

McCrone, Donald J. * 1979, (Emeritus); PhD, 1966, University of North Carolina; American politics, political economy, methodology.

Migdal, Joel S. * 1980, (Adjunct); MA, 1968, PhD, 1972, Harvard University; state and society in the Third World; Middle East politics.

Modelski, George * 1967, (Emeritus); PhD, 1954, University of London (UK); international relations, international political economy.

Olson, David J. * 1974; PhD, 1971, University of Wisconsin; American government and politics (urban, state, and labor relations).

Rashetat, John S., Jr. * 1957, (Emeritus); PhD, 1950, Harvard University; comparative government (Soviet Union), international relations.

Scheingold, Stuart A. * 1969, (Emeritus); PhD, 1963, University of California (Berkeley); American politics (public law).

Taylor, Michael John * 1965; PhD, 1976, University of Essex (UK); political theory, political economy.

Townsend, James R. * 1968, (Emeritus); PhD, 1965, University of California (Berkeley); comparative government (China), politics of development.

Ward, Michael D. * 1997; PhD, 1977, Northwestern University; international relations, political economy, political geography, statistical models.

**Associate Professors**

Di Stefano, Christine * 1985; PhD, 1984, University of Massachusetts; political theory (modern and contemporary), feminist theory, political culture.

Domke, David S. * 1998, (Adjunct); PhD, 1996, University of Minnesota; communication effects; political cognition; political elites and public opinion; race, gender, media.

Gastil, John W. * 1997, (Adjunct); PhD, 1994, University of Wisconsin; deliberation and democracy, group decision making, political discourse, political philosophy, civic.

Gill, Anthony J. * 1994; MA, 1989, PhD, 1994, University of California (Los Angeles); comparative politics, Latin America, political economy, methodology.

Goldberg, Ellis * 1985; PhD, 1983, University of California (Berkeley); political economy of the Middle East, comparative politics.

Gottfried, Alex * 1951, (Emeritus); MA, 1948, PhD, 1952, University of Chicago; American government and politics.

Hanson, Stephen E. * 1990; MA, 1986, PhD, 1991, University of California (Berkeley); Soviet, post-Soviet and comparative politics.
Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate catalog or visit the online course catalog at www.washington.edu/students/crs/cat.

Political Science

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; 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. Focuses 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 407 International Conflict (5) I&S
Many forms of international conflict, including global wars, local wars, antigerm warfare, military interventions, and international crises. Several political, social, and anthropological explanations for conflicts and examination of alternative world futures.

POL S 409 Undergraduate Seminar in Political Economy (5, max. 10) I&S
Seminar in political economy with focus on Marxist 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; either POL S 308, POL S 309, POL S 310, or POL S 318.

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 ideologies and social movements.

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 WLS 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 200. Offered: jointly with ECON 452.

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 relations, 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 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...

POL S 429 National and International Security (5) I&S Examines what constitutes U.S. national interests; causes of war and means of deterring war; discusses role nuclear weapons play in international security; how to deter use of chemical and biological weapons; desirability of non-lethal weapons; and role for economic sanctions, intelligence, and ethics.

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 area; 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 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 SIS 434.


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 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 growth 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 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 Community (5) I&S Examines the origins, structures, and political dynamics of the European Community. Attention given to theories of integration, to relations between the European Community and member states, and to the role of the European Community 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 2005-06 focuses on problems of political change, 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 466.

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 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 role of the 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 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 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 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 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 interpretations of concepts such as democracy and the general will. Recommended: POL S 101 or POL S 202; POL S 481.

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 491 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 492 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.

POL S 493 Qualitative Research Methods (5) I&S Introduction to qualitative methods in political science, emphasizing practical experience with techniques; readings and answer 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 494 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 491; POL S 492. Offered: jointly with CS&SS 494.

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.

Courses for Graduates Only

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 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) Contemporary issues in feminist theory as they affect studies of women, politics, and society.

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, Marxist, 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 distinguished 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 economy, 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 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 the formulation and administra-
tions. Prerequisite: POL S 423 or permission of instructor.

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 continuing debates on contempo-
rent. Modern theories of war, conflict, cooperation, and international institutions also explored. Prerequisite: POL S 521.

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, its antecedents, domestic and interna-
tional 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 537 Approaches to East European Politics (3-5) Selected concepts and methodologies useful for the analysis of politics and social structure in the countries of eastern 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; government and nongovernmental instrumentation of change; and problems of international relations and regional conflict and integration.

POL S 539 International Relations of Northeast Asia (3) 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 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 societies 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,” Mitterrand’s socialist experiment in France, and the Thatcher government in Britain.

POL S 548 Comparative Political Parties (3) 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 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) Survey of contemporary and some historical political communication research, emphasizing quantitative aspects. May include discussions and demonstrations of experimental, survey, aggregate, and content analysis methods. Designed to foster substantial self-critique of political communication literature, familiarity with research techniques, and cre-
POL S 553 Public Opinion (5) Selected problems in opinion formation, characteristics, and role of public opinion in policy-making process. Prerequisite: POL S 452.

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 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 424-425-426 or equivalent; recommended: CS&S 505-506 or equivalent. Offered: jointly with CS&S 560/STAT 560.

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 society’s basic values, articulating minimum rules for harmonious social interaction.

POL S 563 Supreme Court in American Politics (5) Explores the tendency in the United States to turn to the Supreme Court to provide constitutional solutions for some of our biggest social, economic, and political problems. Focuses on the controversies concerning the legitimacy and capacity of the Supreme Court to intervene in American politics and public policy.

POL S 564 Law and the Politics of Social Change (5) Explores the many ways that law affects 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 566 Problems in Comparative Legal Institutions (3) Social science inquiry in comparative legal institutions. Worldwide scope, with attention to both theory of law in society and development and practice of legal institutions.

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 other constituencies and communities. Offered: jointly with PB AF 503.

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) 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 government decision making, agenda-building processes; and normative perspectives concerning role of governmental entities. Offered: jointly with PB AF 575.

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 582 The Political Economy of Social Change (5) Techniques of research on property rights and property right 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 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 589 Special Topics in Political Economy (3, max. 9) 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. Prerequisite: POL S 491 or permission of instructor.

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.D. essay of distinction.

POL S 600 Independent Study or Research (*)

POL S 800 Doctoral Dissertation (*)

Law, Societies, and Justice

LSJ 401 Field Experience in Society and Justice (5) Participant observation in some public or private agency relevant to the system of justice.

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 identity construction at individual and group levels. Examines how rights practices figure into the constellation of contested power relations within modern societies.

LSJ 428 Women’s Rights in an Integrated Europe (5) &S Examines the transformation in women’s rights policy within the European community from the late 1960s 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 440 Criminal Law and Procedure (4) &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 466 Feminist Legal Studies: Theory and Practice (5) &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 470 Evaluation Research in Criminal Justice (5) &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) &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 Misceandies 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 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. Addressed impediments resulting from inadequate conceptualizations, legal and operational difficulties in pursuing offenders, and effects of corruption and discretion in the justice system.

LSJ 490 Special Topics in Society and Justice (1-5, max. 15) I&S
Examination of various current topics or issues concerning the criminal justice system in our society.

LSJ 499 Readings in Society and Justice (1-5, max. 10)
Individual readings in society and justice.

Psychology
119A Guthrie
General Catalog Web page: www.washington.edu/students/gencat/academic/psychology.html
Department Web page: depts.washington.edu/psych/

Psychology involves the scientific study of behavior and its causes and the understanding of human behavior in a variety of settings. Psychology is studied either as a natural science, which stresses physical and biological causes of behavior, or as a social science, which stresses the effects of the social setting on human behavior. Major areas of emphasis are human cognition, animal behavior, physiological and sensory bases of behavior, personality and clinical psychology, developmental psychology, social psychology, and quantitative techniques.

Graduate Program Coordinator
219 Guthrie, Box 351525
206-543-4612
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 also exists in the subareas of community, law, sport, and quantitative psychology.

The program in clinical psychology is accredited by the American Psychological Association and provides scientific and professional training.

Admissions Qualifications
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.

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
Graduation Requirements: Completion of course work in major and out-of-area requirements, completion of required course work in statistics and general methodology, independent research, General Examination, dissertation, and Final Examination. Minimum 3.00 GPA overall must be maintained; a minimum grade of 3.0 is required for all courses used to satisfy requirements. First-year requirements: Demonstrate competence in statistics and experimental design; complete at least 3 credits of independent predoctoral research and report that research at the department's annual Research Festival.

Assistantships, Fellowships, or Traineeship Opportunities
Research and teaching assistantships are generally available. Traineeships and fellowships are also available.

Faculty
Chair
Michael D. Beecher

Professors
Barash, David P. * 1973; MA, 1968, PhD, 1970, University of Wisconsin; sociobiology, psychological aspects of the arms race and nuclear war, peace studies, animal behavior.

Barnard, Kathryn E. * 1972, (Adjunct); MSN, 1962, Boston University, PhD, 1972, University of Washington; ecological factors of child development.

Becker, Joseph * 1965, (Emeritus); PhD, 1958, Duke University; psychosocial aspects of depression.


Bernstein, Iline L. * 1974; MA, 1967, Columbia University, PhD, 1972, University of California (Los Angeles); neurobiology of taste aversion learning; developmental and genetic contributions to taste preference.

Booth, Cathryn L. * 1980, (Adjunct Research); PhD, 1974, Ohio State University; mother-infant interaction, observational methodology, child birth experiences and attachment.

Bowen, Deborah J. * 1986, (Adjunct); PhD, 1986, Uniformed Service University of the Health Sciences; health psychology.

Breznitz, Eliot A. * 1987; PhD, 1982, Cornell University; animal behavior, neuroethology, neuroendocrinology, animal communication.

Buck, Steven L. * 1979, PhD, 1976, University of California (San Diego); human visual psychophysics, color vision, animal learning.

Carr, John E. * 1963, (Emeritus); PhD, 1963, Syracuse University; phobic disorders, patient therapist matching and therapy outcome, cross-cultural psychopathology.


Cauce, Ana Maria * 1986; PhD, 1984, Yale University; at-risk children, adolescents, and families; normative development in ethnic minority youth.

Dale, Philip S. * 1968, (Affiliate); PhD, 1968, University of Michigan; language and cognitive development in normal and exceptional children.

Dawson, Geraldine * 1985; PhD, 1979, University of Washington; developmental disabilities, autism, and neuropsychology.

Diaz, Jaime * 1978; PhD, 1975, University of California (Los Angeles); psychological brain development, neuropsychology, developmental psychopharmacology, effects of drugs.

Doerr, Hans O. * 1967, (Emeritus); PhD, 1965, Florida State University; psychophysiology of central and autonomic nervous systems, neuropsychology.

Donovan, Dennis 1981, (Adjunct); MA, 1972, Western Washington University, PhD, 1980, University of Washington; cognitive-behavioral factors in substance abuse and addictive behaviors.

Fiedler, Fred E. * 1969, (Emeritus); PhD, 1949, University of Chicago; leadership and group effectiveness, social and organizational psychology.

Fuchs, Albert F. * 1969, (Adjunct); PhD, 1966, Johns Hopkins University; oculomotor physiology, vision.

Gottman, John M. * 1986; PhD, 1971, University of Wisconsin; children's emotional and social development, meta-emotion in families, marriages.

Greenberg, Mark T. * 1977, (Affiliate); PhD, 1978, University of Virginia; developmental psychopathology, prevention of mental disorders in childhood.

Greenwald, Anthony G. * 1986; PhD, 1963, Harvard University; social cognition, attitudes, self and self-esteem, methodology, unconscious cognition.

Guralnick, Michael J. 1986; MS, 1964, PhD, 1967, Lehigh University; developmental disabilities, peer relations, social and language development, evaluation systems.

Heiman, Julia R. * 1980, (Adjunct); PhD, 1975, State University of New York (Stony Brook); sexuality and sexual relationships, prevention and treatment of family abuse.

Hunt, Earl B. * 1966, (Emeritus); PhD, 1960, Yale University; individual differences in cognition, cognition in education and the work place.

Keating, John P. * 1972, (Affiliate); PhD, 1972, Ohio State University; social psychology, media effect on
attitude, psychology and religion, emergency behavior psychology.

Kiyak, H. Asuman * 1977, (Adjunct); MA, 1974, PhD, 1977, Wayne State University; geriatric dentistry, behavioral aspects of health care.

Kuhl, Patricia K. * 1976, (Adjunct); MA, 1971, PhD, 1973, University of Minnesota; speech perception.

Linehan, Marsha M. * 1977; PhD, 1971, Loyola University (Chicago); behavioral assessment and therapy, suicide and parasuicide, borderline personality disorders.

Lockard, Joan S. * 1971; PhD, 1963, University of Wisconsin; primate social behavior, animal behavior, sociobiology; human ethology, neurobehavior.

Loftus, Elizabeth F. * 1973; PhD, 1970, Stanford University; cognition, memory, eye-witness testimony, psychology and law.

Loftus, Geoffrey R. * 1972; PhD, 1971, Stanford University; perception, memory, cognitive processes and information processing.

Lunneborg, Clifford E. * 1962, (Emeritus); PhD, 1959, University of Washington; psychometrics, individual differences, multivariate analysis, statistical computing.

Mariatt, G. Alan * 1972; PhD, 1968, Indiana University; cognitive-behavior therapy and assessment, addictive behaviors, relapse prevention, harm reduction.

McCaul, Elizabeth 1979, (Adjunct); PhD, 1973, State University of New York (Buffalo); developmental psychopathology focused on affective disorders, behavioral genetics.

McMahon, Robert J. * 1987; PhD, 1979, University of Georgia; assessment, prevention, treatment of children with conduct disorders; developmental psychopathology.

Meltzoff, Andrew N. * 1977; PhD, 1976, University of Washington; perception, psycholinguistics, computational modeling.

Miyamoto, John M. * 1984; PhD, 1985, University of California (Los Angeles); neurophysiological and neuroanatomical basis of vision.

Smith, Ronald E. * 1969, PhD, 1968, Southern Illinois University; clinical, personalty, sport psychology.

Smoll, Frank L. * 1976; PhD, 1970, University of Wisconsin; developmental kinesiology, children’s sports, sport psychology, behavioral assessment of coaches.

Speltz, Matthew L. 1981, (Adjunct); MA, 1975, Western Washington University, PhD, 1980, University of Missouri; developmental psychotherapy, family therapy, pediatric behavioral medicine.

Spieker, Susan J. * 1983, (Adjunct Research); PhD, 1982, Cornell University; developmental psychology, infant security, mother-infant interaction.

Streissguth, Ann P. 1972, (Adjunct); MA, 1959, University of California (Berkeley), PhD, 1964, University of Washington; psychology and behavioral teratology.

Teller, David Y. * 1965; PhD, 1965, University of California (Berkeley); vision, psychophysics, development of vision.

Teri, Linda * 1984, (Adjunct); PhD, 1980, University of Vermont; controlled clinical trials of caregiving training for patients with Alzheimer’s.

Vitaliano, Peter P. * 1978, (Adjunct); PhD, 1975, Syracuse University; psychiatric methodology (epidemiology, design, psychometrics), behavioral medicine.

Vitiello, Michael V. * 1982, (Adjunct); PhD, 1980, University of Washington; sleep, sleep disorders, circadian rhythms, aging, behavioral medicine.

Weinstein, Philip * 1972, (Adjunct); PhD, 1971, University of Kentucky; dental behavioral science, treatment and prevention of fear and pain, clinical assessment.


Associate Professors

Baer, John S. * 1986; PhD, 1986, University of Oregon; clinical psychology, addictive behaviors, early intervention.

Bassok, Miriam * 1997; MA, 1978, PhD, 1984, Hebrew University (Israel); learning, problem solving, analogical reasoning.

Brown, Jonathon D. * 1989, PhD, 1986, University of California (Los Angeles); self-concept and social behavior; coping with failure and disappointment.

Burns, Edward M. * 1984, (Adjunct); PhD, 1977, University of Minnesota; psychoacoustics.

Corina, David P. * 1993; PhD, 1991, University of California (San Diego); cognitive neuropsychology, psycholinguistics, computational modeling.

Covey, Ellen * 1996; MS, 1976, University of Houston, PhD, 1980, Duke University; structure and function of the central auditory system.

Craft, Suzanne * 1994, (Adjunct); PhD, 1985, University of Texas (Austin); neuropsychology of attention and memory in development and aging.

Culbert, Sidney S. * 1951, (Emeritus); PhD, 1950, University of Washington; perception, psycholinguistics, intercultural communication.


Frey, Karin S. * 1983, (Adjunct Research); PhD, 1978, University of Washington; social-emotional development, adult-child and peer interaction, motivation, teacher development.

George, William H. * 1991; PhD, 1982, University of Washington; alcohol use and sexual behavior, addiction issues, sexual assault issues, racism issues.

Ginorio, Angela B. * 1981, (Adjunct); PhD, 1979, Fordham University; women and science, violence against women, sexual harassment, racial identity among Latinos/as.

Gonzalez, Richard D. * 1990, (Affiliate); PhD, 1990, Stanford University; judgment and decision making, measurement statistics, group dynamics, psychology and law.

Ha, James * 1991; PhD, 1989, Colorado State University; animal behavior, especially ethology, evolution, infant primate development, and statistics.

Kahn, Peter H., Jr. * 2000, (Research); PhD, 1988, University of California (Berkeley); social cognition and development; multicultural psychology, environmental psychology.

Katz, Lynn Fainsilber 1991, (Research); PhD, 1990, University of Illinois (Champaign-Urbana); antisocial children, social psychopathology, family interaction, parent-child interaction.

Kenney, Nancy J. * 1976; PhD, 1974, University of Virginia; neural and endocrine controls of food and fluid intake, physiological basis of motivation.

Kerr, F. Beth * 1974; PhD, 1974, University of Oregon; cognition, human motor control and learning, attention, human factors.

Kivlighan, Daniel R. * 1983, (Adjunct); PhD, 1983, University of Missouri; evaluating assessment, prevention, and treatment approaches for addictive behaviors.

Kohlenberg, Robert J. * 1968; PhD, 1968, University of California (Los Angeles); clinical behavior modification, learning, biofeedback, psychotherapy.

Kyes, Randall C. * 1994; PhD, 1989, University of Georgia; primate behavior and ecology, neural mechanisms of behavior.

Miyamoto, John M. * 1984; PhD, 1985, University of Michigan; mathematical psychology, preference and utility theory, cognitive theories.

Mizumori, Sheri J. * 2000; PhD, 1985, University of California (Berkeley); plasticity of neural and behavioral function during learning and memory.

Olavarria, Jaime F. * 1990; MD, 1974, State University of Chile, PhD, 1984, University of California (Berkeley); neurophysiologiogical and neuroanatomical basis of vision.

Osterhout, Lee E. * 1991; PhD, 1990, Tufts University; psycholinguistics, cognitive psycholinguistics.

Rose, Richard M. * 1966, (Emeritus); PhD, 1964, University of Pennsylvania; stochastic models, psychophysics, sleep.

Shoda, Yuichi * 1996; PhD, 1990, Columbia University; social and personality psychology; social cognition; computational modeling; health and coping.

Unis, Alan S. * 1987, (Adjunct); MD, 1976, University of Pittsburgh; researching the role of dopamine.

Assistant Professors

Beauchaine, Theodore P. 2000; PhD, 2000, State University of New York (Stony Brook); autonomic...
nervous system functioning and psychopathology, child development, statistics.

Canfield, James G. 2000, (Research); PhD, 1995, University of Utah; neuroethological approach to the study of brain-behavior relationships.

Carlson, Stephanie M. * 1998; PhD, 1997, University of Oregon; cognitive and social development in pre-school children.

Comtois, Katherine Ann 1991, (Adjunct); PhD, 1992, University of Maryland; services research, borderline personality disorder, women, dual diagnosis.

Larimer, Mary E. * 1995, (Adjunct); PhD, 1992, University of Washington; prevention of alcohol problems among college students.

Lengua, Liliana J. * 1996; PhD, 1994, Arizona State University; stress, temperament, coping, ecological models of the development of psychological symptomatology.

O'Donnell, Sean * 1996; PhD, 1993, University of Wisconsin; genotypic and endocrine effects on social organization and division of labor in insects.

Richards, Jane M. 2000; PhD, 2000, Stanford University; social/personality psychology, stress, emotion.

Rudd, Michael * 1998; PhD, 1987, University of California (Irvine); mathematical and computer modeling of mechanisms underlying visual perception.

Simoni, Jane M. 2001; PhD, 1990, University of California (Los Angeles); HIV/AIDS; influence of culture and social support on psychological well-being.

Von Der Emde, Gerhard 2000; PhD, 1997, University of Erlangen (Germany); neurobiology, behavioral science, sensory physiology, sensory-motor integration, electroreception.

Zoellner, Lori A. * 2000; PhD, 1997, University of California (Los Angeles); anxiety disorders: etiology, maintenance, and their treatment with particular interest in PTSD, OCD.

Senior Lecturers

Barrett, Kimberly * 1990; EdD, 1989, University of San Francisco; substance abuse and the family and the impact of racism on children.

Fagan, Corey N. * 1989; PhD, 1988, University of Massachusetts; clinical psychology, program evaluation research, individual and family therapy.

Little, Laura M. 1998; PhD, 1998, University of New Mexico; quantitative methodology.

McDermott, Lois J. 1984; PhD, 1979, University of Chicago; human sexuality and reproductive physiology.

Passer, Michael W. * 1977; MA, 1972, PhD, 1977, University of California (Los Angeles); social psychology, organizational psychology, teaching of psychology.

Lecturer

Joslyn, Susan L. 1995; PhD, 1995, University of Washington; cognition, autobiographical memory, multitasking, applied issues.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/cscat/.

**PSYCH 400 Learning (5) I&S/NW** Experimental research and basic theories primarily in animal learning. Prerequisite: either PSYCH 101 or PSYCH 102.

**PSYCH 401 Observing Interaction (4) I&S Gottman** Surveys the methods of systematic observational research for the study of interaction. Emphasis on summarizing quantitative data for analysis of pattern and sequence, and for theory development. Prerequisite: PSYCH 101; PSYCH 209.

**PSYCH 402 Infant Behavior and Development (3/5) I&S Motzoff** 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: either PSYCH 306 or PSYCH 414. Offered: A.

**PSYCH 403 Motivation (5) I&S/NW** Theory and research on reinforcement, punishment, frustration, preference, instinctual mechanisms, and other factors controlling animal behavior. Prerequisite: either PSYCH 101 or PSYCH 102.

**PSYCH 404 Psychobiology of Motivation (5) I&S/NW** Physiological mechanisms underlying thirst, satiety, appetite, hunger, reproduction, drug addiction, and fear. Evolutionary and learning processes that influence motivation. Prerequisite: either PSYCH 202 or PSYCH 222. Offered: Sp.

**PSYCH 406 Insect Behavior (4) NW O’Donnell** Explores complexity and diversity of behavior in insects and related invertebrates. Overview of important lineages of insects and major behavioral traits. Examines how insect biology both constrains behavior and provides evolutionary opportunities. Prerequisite: either PSYCH 200, PSYCH 300, or BIOL 180. Offered: Sp.

**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: either PSYCH 101 or PSYCH 102.

**PSYCH 408 Mechanisms of Animal Behavior (4) NW Beecher, Bronowitz, O’Donnell** 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 PSYCH 200, BIOL 102, BIOL 220, or BIOL 203. Offered: jointly with ZOOL 408; W.

**PSYCH 409 Sociobiology (5) NW Beecher, Rothwer** Behavioral bases of social behavior, emphasis 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, alternative reproductive strategies, and parent/offspring conflict. Prerequisite: either PSYCH 200, BIOL 220, or both BIOL 202 and BIOL 203. Offered: jointly with ZOOL 409.

**PSYCH 410 Child and Adolescent Behavior Disorders (5) I&S Barrett, Beauchaine, Katz, McMahon** 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: PSYCH 305; PSYCH 306. Offered: WS.

**PSYCH 412 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 PSYCH 200, PSYCH 300, or BIOL 180. Offered: W.

**PSYCH 414 Cognitive Development (5) I&S** Key theoretical and research approaches to cognitive development from infancy through adolescence. Sensorimotor development, language development, information, number concepts, logical reasoning, memory, cognition in adolescents, intelligence, and the role of biology, environment, and experience. Prerequisite: PSYCH 209, PSYCH 306.

**PSYCH 415 Personality Development of the Child (5) I&S Carlson** Socialization theory and research, infant attachment and social relationships, development of aggressive and altruistic behaviors, sex, gender, development, moral development, parent and adult influences. Applied issues in social development and policy. Prerequisite: PSYCH 306.

**PSYCH 416 Animal Communication (5) NW Beecher, Bronowitz, O’Donnell** Evolution and mechanisms of animal communication and related processes of perception, thinking, and social behavior. Prerequisite: either PSYCH 200, BIOL 102, or BIOL 203.

**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, or BIO A 201, or BIOL 202 and BIOL 203. Offered: WS.

**PSYCH 418 Primate Social Behavior (5) NW Lockard** Social behavior, ecology, and group structure of monkeys and apes from an evolutionary, sociobehavioral, and anthropological perspective. Prerequisite: either PSYCH 200, or BIO A 201, or BIOL 202 and BIOL 203. Offered: Sp.

**PSYCH 419 Behavioral Studies of Zoo Animals (5, max. 10) NW Lockard** Observational studies of behavior of zoo animals to expand basic knowledge of animal behavior, conservation of endangered species, and research methodology with emphasis on the role of zoo biology and research methodology with emphasis on the role of zoo biology and research methodology with emphasis on the role of zoo biology and research methodology with emphasis on the role of zoo biology.

**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. 431 recommended but not required to follow 421. Prerequisite: either PSYCH 101 or PSYCH 102. Offered: AS.

**PSYCH 422 Physiological Psychology (5) NW** Physiological mechanisms in behavior, including those basic to emotion, fatigue and sleep, learning, and memory. Prerequisite: either PSYCH 101 or PSYCH 102. Offered: Sp.

**PSYCH 424 Vision and Its Physiological Basis (5) NW Teller** Behavioral neurobiology of human vision: color vision, acuity and spatial vision, light and dark
adaption, visual development. Correlation of visual functioning with known optical, biochemical, physiological, and anatomical substrates. Prerequisite: either PSYCH 101, PSYCH 102, BIOL 202, or ZOOL 301. Offered: jointly with P BIO 424; W.

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: either PSYCH 222, PSYCH 322, PSYCH 333, PSYCH 421, PSYCH 422, or PSYCH 423. Offered: Sp.

PSYCH 427 Behavioral Endocrinology (5) NW Lattemann 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 Merr Current theory and research in human motor performance and skill acquisition. Prerequisite: PSYCH 209; either PSYCH 202 or PSYCH 222. Offered: W.

PSYCH 429 Brain Anatomy for the Behavioral Scientist (1) NW D’Alcántara Detailed review of the neuroanatomical features of the sheep brain with laboratory demonstrations. Prerequisite: PSYCH 421 which may be taken concurrently. Offered: A.

PSYCH 430 Development of Brain Connections (4) NW Ollavannio 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: either PSYCH 222, PSYCH 333, PSYCH 421, PSYCH 422, or PSYCH 423. Offered: Sp.

PSYCH 432 Visual Perception (4) I&S/NW Ruddc 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: either PSYCH 222, PSYCH 333, or PSYCH 355. Offered: W.

PSYCH 436 Developmental Aspects of Sport Competition (4) I&S Smoll Biopsychological 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: either PSYCH 101 or PSYCH 102. Offered: AS.

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: either PSYCH 101 or PSYCH 102. Offered: Sp.

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: PSYCH 101; PSYCH 102; 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: PSYCH 333.

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: PSYCH 205; either PSYCH 213 or PSYCH 217; PSYCH 305.

PSYCH 447 Psychology of Language II (4) I&S/PSYCH 421, Osterhout Psychological principles applied to linguistic development and organization; language in both its stimulus and response aspects. Prerequisite: either PSYCH 101 or PSYCH 102. 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. Offered: AWSP.

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 496 and 499. Offered: A.

PSYCH 451 Health Psychology (5) I&S/NW Overview of the psychological and behavioral factors in health and disease. Studies research on both psychological causes and treatments. Topics include stress, risky behaviors, patient-provider interactions, pain, behavioral/medical treatments, and lifestyle interventional targets. Prerequisite: either PSYCH 101 or PSYCH 102; PSYCH 209; either PSYCH 205, PSYCH 222, PSYCH 305, 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: PSYCH 345. Offered: W.

PSYCH 454 Personality and Social Influence (4) I&S Smith Survey of theories and research on 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 205 or PSYCH 345. Offered: A.


PSYCH 460 Cognitive Neuropsychology (4) NW Corina, 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 neuroscience, visual perception, linguistics, physiology, and neuroscience. Prerequisite: either PSYCH 222, 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: PSYCH 209; recommended: PSYCH 355. Offered: A.

PSYCH 465 Intelligence (5) I&S Hunt Analysis of differences in intelligence. Includes description/use of psychometric ("intelligent test") models, theoretical explanations of the test score relationship to 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 213 or PSYCH 217; PSYCH 355.

PSYCH 467 Eyewitness Testimony (3) I&S E. Loftus Perception, memory, and retrieval of real world events. The eyewitness in the legal system. Psychologists as expert witnesses regarding eyewitness accounts. Prerequisite: either PSYCH 101 or PSYCH 102; PSYCH 355. Offered: W.


PSYCH 470 Psychology and Music (5) I&S/PSYCH 421, Osterhout 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, composition and improvisation. Includes psychoacoustical and neuropsychological foundations, research methods, and some basic material in music theory. Prerequisite: either PSYCH 101 or PSYCH 102.

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: 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: either PSYCH 101 or PSYCH 102.

PSYCH 488 Stress and Coping (4) I&S/PSYCH 421 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: either PSYCH 205 or PSYCH 305. Offered: Sp.

PSYCH 489 Clinical Psychology (3) I&S George Basic issues, methods, and research: professional issues, psychological assessment, and approaches to psychotherapy and behavioral change. Prerequisite: either PSYCH 205 or PSYCH 305.

PSYCH 490 Stress Management (8) I&S/PSYCH 421 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: either PSYCH 101 or PSYCH 102. Offered: S.

PSYCH 494 Field Study in Animal Behavior (2-3, max. 9) Kjes 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. Prerequisite: PSYCH 200.

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. Offered: AWSpS.

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 full-time faculty. Offered: May be repeated for credit. Offered: AWSpS.

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. Offered: AWSpS.

Courses for Graduates Only

PSYCH 500 Laboratory in Statistical Computation I (2) Miyamoto Techniques of 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: concurrent enrollment in PSYCH 513 or permission of instructor. Offered: A.

PSYCH 501 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 500 and PSYCH 513, concurrent enrollment in PSYCH 514, or permission of instructor. Offered: W.

PSYCH 502 Mathematical Modeling for Psychology and the Neurosciences (3) Rudd Introduces a collection of mathematical models increasingly important to research in psychology and the neurosciences, 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 503 Developmental Psychology and the Human Relationship with Nature (4) Kahr 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 504 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. First quarter of a three-quarter proseminar required for graduate majors in developmental psychology. Offered: A.

PSYCH 505 Early Cognitive and Linguistic Development (4) Meltzoff Focus on the origins and early development of thought and language. Piagetian theory and modern-day revisions of it emphasized. In depth examination of historical and philosophical bases for current empirical research. Second quarter of a three-quarter proseminar, required for graduate majors in developmental psychology. Offered: W.

PSYCH 506 Personality and Social Development (4) Carlson Theories and empirical literature in personality and social development throughout infancy, childhood, and adolescence. Third quarter of a three-quarter proseminar required for graduate majors in developmental psychology. Offered: W.

PSYCH 508 Research Methods in Social Psychology (4, max. 8) Greenwald Examination of methodological, practical, and communication problems associated with research on human behavior. Topics: hypothesis testing, research design approval, measures and statistical analysis, ethics, research ethics, and computer use in research. Offered: W.

PSYCH 511 Personality (3) Shoda, R. Smith Review of personality research. Roles of cognitive, affective, motivational, and psychodynamic processes. Critical evaluation of the current personality research as it relates to concepts of personality, its antecedents, and influences over behavior. Attention to role of personality variables in social relationships. Offered: Spring.

PSYCH 513 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 500 or permission of instructor. Offered: A.

PSYCH 514 Linear Models and Data Analysis (4) Analysis of data in the behavioral sciences. Required of all students enrolled in PSYCH 500, PSYCH 513; concurrent registration in PSYCH 501, or permission of instructor. Offered: W.

PSYCH 515 Multivariate Statistics (4) Rude An introduction to statistical modeling; interactive data analyses; use of regression, ANOVA, logistic regression, and log-linear models in exploratory analysis. Prerequisite: PSYCH 514.

PSYCH 517 Advanced Research Methods (5) Beauchaine Surveys advanced clinical research methods not covered in the required statistics sequence. Examples include structural equation modeling, hierarchical linear modeling, growth curve modeling, and taxometric analyses. Hands-on experience gained through weekly assignments using each method. Prerequisite: PSYCH 514.

PSYCH 518 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 519 Statistical Methods in Longitudinal Research (3) Sackett Those aspects of statistics and experimental design unique to, or heavily used in, developmental research; behavioral observation methods; analysis of variance and nonparametric techniques; time series and survival analysis; and repeated measure techniques for studying change over time. Prerequisite: PSYCH 514 or equivalent.

PSYCH 521 Higher Order Cognition (3) Bassok Survey of research on higher-order cognition with an emphasis on the integration of current theories of knowledge representation. Topics include problem solving, inductive and deductive reasoning, hypothesis testing, causal inferences, similarity judgments, and categorization. Offered: Sp.

PSYCH 522 Cognitive Perception (3) Loftus Current topics in perception, psychophysics, senso-
PSYCH 541 Seminar in Cognitive Processes (2) E. Lotus, G. Lotus Prerequisite: permission of instructor.

PSYCH 542 Seminar in Animal Behavior (2) Barash, Beecher, Brenowitz, Lockard, O’Donnell Prerequisite: permission of instructor.

PSYCH 543 Seminar in Developmental Psychology (2) Carlson, Gottman, Meltzoff, Sackett Prerequisite: permission of instructor.

PSYCH 549 Seminar in Physiological Psychology (2) Bernstein, Diaz, Kenney, Teller Prerequisite: permission of instructor.

PSYCH 550 Seminar in Psycholinguistics (2) Osterhout Prerequisite: PSYCH 447 or PSYCH 457.

PSYCH 552 Seminar in Quantitative Techniques (2) Hunt, Luneberg An introduction to the use of mathematical modeling in psychology and the behavioral sciences. Topics vary.

PSYCH 553 Seminar in Social-Personality Research (2) J.D. Brown, Greenwald, Shoda Prerequisite: permission of instructor.

PSYCH 554 Seminar in Decision Processes (2) Miyamoto Prerequisite: permission of instructor.

PSYCH 559 Seminar in Current Research in Vision (1) Buck, Olavarria, Teller Prerequisite: permission of instructor.

PSYCH 560 Seminar (1, max. 30) Prerequisite: permission of instructor. Offered: AWSpS.

PSYCH 562 Evolutionary Psychology of Gender, Maturing and Reproduction (3) Barash, Beecher, O’Donnell Reviews 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 565 Quantifying Brain Structure (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 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, Dawson 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 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 580 Minority Mental Health (3) Barrett, George 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 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 levels of intervention 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 583 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 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 (2) 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 Advanced Clinical Practicum (4) Cauce, Dawson, George, Kohlenberg, Mariott, McMahon, Smith 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: A.

PSYCH 590 Practicum in Psychological Assessment (2) Demonstration and practice of selected psychological test procedures and interpretation skills. Concurrent registration in 535 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) 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 Colloquium and Clinic Practicum (1-6, max. 24) Fagar 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 595 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 major standing in clinical psychology or permission of instructor. Offered: W.

PSYCH 596 Psychology of Behavior Change (5) Kohlenberg Behavioral theory and behavioral approaches to treatment. Prerequisite: PSYCH 595 and permission of instructor. Offered: Sp.

PSYCH 597 Fieldwork in Clinical Psychology (1-5, max. 36) Baer, Cauce, Dawson, George, Kohlenberg, Linehan, Mariott, R. Smith Prerequisite: second-year graduate major standing and permission of departmental faculty.

PSYCH 598 Directed Reading in Psychology (1, 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 (1) Offered: A.

PSYCH 700 Master’s Thesis (1) Offered: A.

PSYCH 800 Doctoral Dissertation (1) Offered: A.
Romance Languages and Literature
C104 Padelford
The department consists of two divisions: French and Italian Studies and Spanish and Portuguese Studies. The divisions offer programs designed to develop competence in the reading, speaking, and writing of the languages and in the study of the literatures and cultures.

French and Italian Studies
C254 Padelford
General Catalog Web page: www.washington.edu/students/gencat/academic/romance.html
Division Web page: depts.washington.edu/frenital/

Graduate Program
Graduate Program Coordinator C259 Padelford, Box 354360 206-616-5366
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.

The Master of Arts degree consists of 45 credits of courses taken at the 400 and 500 levels (plus 10 credits for exam preparation). The M.A. Final Examinations are both written and oral and are administered in the last or sixth quarter of study.

The doctoral program in French requires a total of 77 credits beyond the 55 for the M.A. (including 27 dissertation credits). Doctoral students should devote at least two-thirds of their course work to the fields of specialization. Some training in the history of language is required. The General Examination is divided into three broad areas: century or literary movement, critical problem, and outside or constructed area. A dissertation is also required.

Information on specific requirements for the various degree programs is available upon request from the office of the graduate advising assistant, the graduate program coordinator, or on the division’s Web page (depts.washington.edu/frenital)/

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.

Faculty
Chair
John T. Keeler

Professors
Borch-Jacobsen, Mikkel * 1986; Doct, 1981, University of Strasbourg (France); French twentieth-century literature, theory and criticism, psychoanalysis.
Christofides, Constantine * 1966, (Emeritus); PhD, 1956, University of Michigan; medieval, seventeenth century; Romanesque.
Clausen, Meredith L. 1979, (Adjunct); MA, 1972, PhD, 1975, University of California (Berkeley); twentieth-century architecture.
Creore, A. Emerson 1979, (Emeritus); MA, 1936, University of Rochester, PhD, 1939, Johns Hopkins University.
Friedman, Lionel J. 1961, (Emeritus); PhD, 1950, Harvard University.
Handwerk, Gary J., * (Adjunct); PhD, 1984, Brown University; British, German, and French nineteenth- and twentieth-century narrative; 916.
Jonas, Raymond A. * 1985, (Adjunct); PhD, 1985, University of California (Berkeley); modern France.
Keeler, John T. * 1980; PhD, 1978, Harvard University; comparative politics (Western Europe), international relations.
Leiner, Jacqueline * 1963, (Emeritus); DResLE, 1969, University of Strasbourg (France); modern French literature.
Nostrand, Howard L. 1982, (Emeritus); MA, 1933, Harvard University, Doct, 1934, Universite de Paris VI (France); French culture and civilization.
Pace, Antonio 1980, (Emeritus); MA, 1937, Syracuse University; PhD, 1943, Princeton University; Italian language and literature.
Vance, Eugene * 1990; PhD, 1964, Cornell University; medieval literature, the history of criticism, and discourse analysis.

Associate Professors
Collins, Douglas P. * 1980; PhD, 1978, University of Missouri; twentieth-century French literature.
Dale, Robert C. * 1963, (Emeritus); PhD, 1963, University of Wisconsin; nineteenth-century French literature, cinema.
Delcourt, Denyse * 1990; PhD, 1987, University of Montreal (Canada); French middle ages, French Renaissance, French women writers and Quebecois literature.
Ellrich, Robert J. * 1964, (Emeritus); PhD, 1960, Harvard University; eighteenth-century French literature.
Friedrich, Pia * 1965, (Emeritus); PhD, 1946, University of Turin (Italy); pedagogy and twentieth-century Italian literature.
O’Neil, Mary R. * 1983, (Adjunct); PhD, 1982, Stanford University; Renaissance/Reformation, early modern Europe, social history, Italy before 1700.
Sbragia, Albert J. * 1989; PhD, 1988, University of California (Berkeley); modern and contemporary Italian literature and cinema.

Wortley, W. Victor * 1965, (Emeritus); PhD, 1964, University of Oregon; seventeenth-century French theatre and prose (nonfiction).

Assistant Professors
Collins, Jeffrey L. * 1994, (Adjunct); MA, 1989, Yale University, MA, 1992, Cambridge University (UK); PhD, 1994, Yale University; 17th-/18th-century European art and architecture; American material culture.
Jackson, Dianah Leigh * 1998; PhD, 1999, University of Minnesota; the body in Enlightenment culture and the epistolary novel.
Rubino, Nancy I. * 1997; PhD, 1996, Columbia University; 19th-century French literature; specializing in Modernism and Decadence.

Senior Lecturer
Yowell, Donna Lynne * 1988; PhD, 1987, University of California (Berkeley); medieval Italian literature, Dante, Occitan lyric.

Lecturers
Collins, Helene V. 1984; PhD, 1995, University of Washington; French pedagogy and curriculum development, French cinema studies.

Senior Lecturer
Yowell, Donna Lynne * 1988; PhD, 1987, University of California (Berkeley); medieval Italian literature, Dante, Occitan lyric.

Lecturers
Collins, Helene V. 1984; PhD, 1995, University of Washington; French pedagogy and curriculum development, French cinema studies.

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Yowell, Donna Lynne * 1988; PhD, 1987, University of California (Berkeley); medieval Italian literature, Dante, Occitan lyric.

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Yowell, Donna Lynne * 1988; PhD, 1987, University of California (Berkeley); medieval Italian literature, Dante, Occitan lyric.

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Senior Lecturer
Yowell, Donna Lynne * 1988; PhD, 1987, University of California (Berkeley); medieval Italian literature, Dante, Occitan lyric.

Senior Lecturer
Yowell, Donna Lynne * 1988; PhD, 1987, University of California (Berkeley); medieval Italian literature, Dante, Occitan lyric.
Courses for Graduates Only

**FRENCH 418** French Literature of the Early Twentieth Century (5) VLPA Twentieth-century literature, with emphasis on the period 1900-1939. Prerequisite: FRENCH 303; FRENCH 304; FRENCH 305; FRENCH 306.

**FRENCH 422** 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.

**FRENCH 435** Topics in Non-Fiction (5) VLPA Content varies. Prerequisite: FRENCH 303.

**FRENCH 441** Québécois Literature (5) VLPA Readings of novels, plays, and occasionally, poetry. Special attention paid to how Québécois 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; FRENCH 306. Offered: jointly with SISCA 441.

**FRENCH 445** Women Writers and Feminist Theory (5) VLPA Focus on French women writers from different periods and places. Gender issues addressed in critical fashion, considering the different historical and ideological contexts in which each of the works were produced. Prerequisite: FRENCH 303.

**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; FRENCH 304; FRENCH 305; FRENCH 306.

**FRENCH 455** One Author in French Literature (5, max. 15) VLPA In-depth focus on the works of one author in French Literature or Culture. Prerequisite: FRENCH 303.

**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. Recommended: background in French literature.

**FRENCH 461** Seventeenth-Century Drama (5) VLPA Prerequisite: FRENCH 303; FRENCH 304; FRENCH 305; FRENCH 306.

**FRENCH 465** Twentieth-Century Drama (5) VLPA Prerequisite: FRENCH 303; FRENCH 304; FRENCH 305; FRENCH 306.

**FRENCH 470** Cinema (5) VLPA Major films and figures of French cinema from the beginnings to the present. Prerequisite: FRENCH 303; FRENCH 304; FRENCH 305; FRENCH 306.

**FRENCH 486** Literature of the Enlightenment in English (5) VLPA

**FRENCH 488** Women in French Literature in English (5) VLPA Masterpieces of French literature are read in an attempt to understand French attitudes toward women. From the sixteenth century, with a concentration on the eighteenth century.

**FRENCH 490** Honors Seminar (2-5, max. 10) VLPA Special studies in French literature. Required of candidates for honors and distinction in French.

**FRENCH 499** Special Topics (1-5, max. 10) Topics to meet special needs. Prerequisite: FRENCH 303.

**Italian**

**ITAL 401** Medieval Italian Readings (5) Yowell Exploration of medieval Italian cultural history through a broad variety of literary and other textual traditions.

**ITAL 402** 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) Scalabrini Readings in Italian Sei/Septcento, covering the periods of Baroque and Enlightenment literature.

**ITAL 504** Modern Italian Readings I (5) Sbragia, Scalabrini Readings in Italian Ottocento, covering the period of Romanticism.

**ITAL 505** Modern Italian Readings II (5) Sbragia, Scalabrini Readings in Italian Novecento, covering the work of the major Italian twentieth-century authors.

**ITAL 514** Dante (5, max. 10)

**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 592 Literary Problems: Romanticism (5, max. 10)**

**ITAL 596 Literary Problems: Twentieth Century (5, max. 10)**

**ITAL 600** Independent Study or Research (*)
Spanish and Portuguese Studies
C104 Palgeldorf

Graduate Program Coordinator
C104 Palgeldorf, 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 theoretical, 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.

Information on specific requirements for the various degree programs is available upon request from the office of the division’s academic counselor or on the division’s Web page (depts.washington.edu/spanport).

Financial Aid
The department awards annually a number of teaching assistanships. 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.

Faculty

Chair
Cynthia Steele

Professors
Anderson, Farris Furman * 1967, (Emeritus); MA, 1962, Duke University, PhD, 1968, University of Wisconsin; nineteenth- and twentieth-century Spanish literature; Spanish grammar.

Hunn, Eugene S. * 1972, (Adjunct); PhD, 1973, University of California (Berkeley); cognitive anthropology, ethnobiology, cultural ecology and evolution, North American Indians.

Lawson, Victoria A. * 1986, (Adjunct); PhD, 1986, Ohio State University; Latin America, political economy of development, feminism theory in development.

O’Harra, Edgar * 1989; PhD, 1989, University of Texas (Austin); Latin American poetry and essay, composition and creative writing.

Steele, Cynthia * 1986; PhD, 1980, University of California (San Diego); Latin American literature and society, cinema, postcolonial and feminist theory.

Associate Professors
DeYoung, Terri L. * 1991, (Adjunct); PhD, 1988, University of California (Berkeley); Arabic language and literature.

Flores, Lauro H. * 1980, (Adjunct); PhD, 1980, University of California (San Diego); Chicano literature, contemporary Latin American literature (narrative).

Fuchs, Barbara * 1997, (Adjunct); PhD, 1997, Stanford University; early modern English and Spanish literature and culture; literature and imperialism.

Geist, Anthony L. * 1987; PhD, 1978, University of California (Berkeley); twentieth-century Spanish literature; ideology and literary form.

Petersen, Suzanne Helen * 1973, PhD, 1976, University of Wisconsin; medieval Spanish literature, pan-Hispanic ballad.

Shipley, George A. * 1967; PhD, 1968, Harvard University; Spanish golden age literature.

Assistant Professor
Santianez, Nil 1999; PhD, 1991, University of Illinois; nineteenth-century Spanish literature, Realism, Modernism, literary theory.

Senior Lecturers
Basdeo, Ganesdhath D. 1985; MA, 1976, University of Washington; second-year Spanish, Spanish linguistics.

Borrego, Paloma A. 1990; MA, 1992, University of Washington; Spanish language and culture, pedagogy and teaching methodology.

Gillman, Maria 1990; MA, 1986, Oregon State University; third-year Spanish curriculum and pedagogy, Latin American culture.

Lecturers
Bensadon, Leon M. 1989; MA, 1991, University of Washington; Spanish language and reading for graduate students.

Fox, Joan H. 1984; MA, 1973, University of British Columbia (Canada); Spanish language, translation, business Spanish.

Gonzalez, Jorge 1988; MM, 1986, University of Wisconsin; Spanish language.

Kennedy, Donally S. 1986; MA, 1988, University of Washington; Spanish language.

Raneda-Cuartero, I. 1997; MA, 1994, University of Wisconsin; second- and third-year Spanish language, Spanish culture.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

Romanian

RMN 401 Elementary Romanian (5) Comprehensive introduction to spoken and literary Romanian. Offered: jointly with ROMN 401; A.

RMN 402 Elementary Romanian (5) Comprehensive introduction to spoken and literary Romanian. Prerequisite: RMN/ROMN 401. Offered: jointly with RMN 402; W.

RMN 403 Elementary Romanian (5) Designed to increase vocabulary and enhance knowledge of grammar through readings in modern Romanian. Prerequisite: RMN/ROMN 402. Offered: jointly with RMN 403; Sp.

Spanish

SPAN 400 The Syntactic Structure of Spanish (5) VLP A Zagona Principles of word formation, rules, relations of interpretation. Prerequisite: SPAN 301; 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) VLP A Zagona Phonological component of the generative grammar of Spanish; representations of syllabic and segmental units, phonological rules, distinctive features and their articulatory correlates. Prerequisite: SPAN 301; 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) VLP A Zagona Historical survey of Spanish phonology, morphology, and syntax, from Latin origins to the modern language. Prerequisite: SPAN 301; either ANTH 203, LING 200, 201, 203, LING 400, or SPAN 323. Offered: jointly with SPLING 403.

SPAN 403 The Evolution of the Spanish Language (5) VLP A Zagona Historical survey of Spanish phonology, morphology, and syntax, from Latin origins to the modern language. Prerequisite: SPAN 303; SPAN 323. Offered: jointly with SPLING 406.

SPAN 404 Advanced Spanish Grammar (5) VLP A Zagona Historical survey of Spanish phonology, morphology, and syntax, from Latin origins to the modern language. Prerequisite: SPAN 303; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPLING 407.
SPAN 409 Spanish Phonetics (5) VLPA Analysis of sounds: training in pronunciation, intonation, and close transcription of Spanish language in its modalities. Prerequisite: SPAN 301; either ANTH 203, LING 200, 201, 203, LING 400, or SPAN 323. Offered: jointly with SPLING 409.

SPAN 414 Spanish Literature: Eighteenth Century (5) VLPA Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 415 Spanish Literature: Nineteenth Century (5) VLPA Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 420 Spanish Poetry: Origins Through the Fifteenth Century (5) VLPA Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 426 Hispanic Poetry (5) VLPA Modern lyric poetry of the Hispanic world. The period studied extends from 1870 to 1936 and deals with three major poets, from Beccerre to Hernandez. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 433 Golden Age Prose (5) VLPA Representative, and outstanding, prose works of sixteenth- and seventeenth-century Spain. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 436 Spanish Novel of the Nineteenth Century (5) VLPA Representative works of Galdos, Clarin, Pereda, Valera, and Blasco Ibanez. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 437 Spanish Novel: 1900-1936 (5) VLPA Spanish novel from the generation of 1898 to the beginning of the Civil War (1936). Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 439 Women Writers (5) I&S/VLPA Feminist analysis of selected texts by Chicanas/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: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 447 Spanish Theatre Since the Civil War (5) VLPA Works of Spain's major dramatists of the post-war period. Special attention given to the social and political context of the theatre in Spain under the Franco regime. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 453 Cervantes and His Times (5) VLPA Study of Cervantes and his moment in Spanish history, with special attention to his cultural and artistic environments. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 454 Early Spanish Civilization (5) I&S/VLPA Development of Spanish society and art forms from early times to 1700. Prerequisite: SPAN 303; SPAN 322; one additional 300-level course above SPAN 303.

SPAN 464 Chicana Expressive Culture (5) I&S/VLPA Expressive culture of Mexican women in United States. Cultural and artistic practices in home, family, literary (print, oral) performing and visual arts. Focuses on ways Chicana visual artists re-vision traditional iconography. Prerequisite: SPAN 303; SPAN 322; one additional 300-level course above SPAN 303.

SPAN 465 Contempory Chicano Literature (5) VLPA Examination of one or more problems, themes, and/or figures in the developing body of Chicano literature. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 466 Chicano Literature: Fiction (5) VLPA 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; SPAN 321; one additional 300-level course above SPAN 303.

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: SPAN 303; SPAN 322; one additional 300-level course above SPAN 303.

SPAN 468 Latin American Women (5) I&S/VLPA 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, and modernismo. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303. Offered: jointly with WOMEN 468.

SPAN 473 Latin American Fiction: Nineteenth Century (5, max. 1) VLPA Study of prose fiction in Latin America in the nineteenth century. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 474 Latin American Fiction: Twentieth Century (5) VLPA Study of prose fiction in Latin America in the twentieth century. Prerequisite: SPAN 303, SPAN 321; one additional 300-level course above SPAN 303.

SPAN 475 Latin American Poetry: Colonial Through Nineteenth Century (5) VLPA Poetic movements of the eighteenth, eighteenth, and nineteenth centuries in Spanish American, Renaissance, baroque, neoclassicism, romanticism, and modernismo. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 476 Contemporary Latin American Poetry (5) VLPA Evolution of Latin American poetry, from postmodernismo and vanguardismo to the most recent poetic expression: Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 477 Latin American Essay (5) VLPA Literary expression of ideas in Latin American countries, nineteenth and twentieth centuries. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

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: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 480 Spanish Medieval Literature (5) VLPA 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: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 481 Sixteenth- and Seventeenth-Century Spanish Literature (5) VLPA Spanish literature of the sixteenth and seventeenth centuries. Close study of key texts from all genres as well as their socio-historical contexts. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 482 Eighteenth- through Twentieth-Century Spanish Literature (5) VLPA Survey of Spanish literature since 1700, and its historical context. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 483 Latin American Literature: Origins to Independence (5) VLPA The elaboration of discourses of legitimation 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: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 484 Latin American Literature: Modernismo to the Present (5) VLPA Principal literary movements of Latin America, late nineteenth century to the present, with particular emphasis on avant-garde and revolutionary movements: modernismo, postmodernismo, the vanguard, nueva and novisima narratives. Includes essays and autobiographical writings to help place the literary works in socio-historical perspective. Prerequisite: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

SPAN 485 Cultural Studies of Latin America (5) I&S/VLPA Identity, representation, and transculturation in Latin American popular culture. Topics vary but may include cinema, folk art, and historical, ethnographic, and travel writing. Prerequisite: SPAN 303; SPAN 322; one additional 300-level course above SPAN 303. Offered: jointly with SISLA 485.

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. Offered: jointly with SISLA 486.

SPAN 487 Mexican Cinema (5) I&S/VLPA Steele Analysis of representations about particular characters, 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 discourses; construction of gender, class and ethnicity; migration and globalization. Prerequisite: SPAN 303; SPAN 322 and one additional 300-level course beyond 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: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

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: SPAN 303; SPAN 322; 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: SPAN 303; SPAN 321; one additional 300-level course above SPAN 303.

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: SPAN 303; one additional 300-level course above SPAN 303.

SPAN 495 Study in Spain (12) VLPA
Study in Spain. Course content varies from year to year. Consult the Division of Spanish and Portuguese for availability and further requirements.

SPAN 499 Special Topics (1-5, max. 10) Topics to meet special needs.

Courses for Graduates Only

SPAN 510 Methodology of Spanish Language Teaching (3) Borneguero Theoretical and practical foundation for teaching Spanish. Major topics include modern theories of language and language acquisition which underlie modern methods of foreign language teaching, teaching techniques, testing, classroom relations. Emphasis on the multiple-approach direct method. Required for beginning Spanish Teaching Assistants. Credit/no credit only.

SPAN 561 Spanish-American Novel From 1940 to the Present (5) SPAN 571 The Modern Essay in Spanish America (5) SPAN 573 Twentieth-Century Spanish-American Poetry (5, max. 10) 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 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.

Russian, East European, and Central Asian Studies

See International Studies.

Scandinavian Studies

318 Raitt

General Catalog Web page: www.washington.edu/students/gencat/academic/scandinavian.html

Department Web page: depts.washington.edu/scand/

The Department of 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.

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 year’s study of Old Icelandic and concentrate their studies primarily within one of four areas: Danish language and literature, Finnish language and literature, Norwegian language and literature, Swedish language and literature, or Scandinavian philology and linguistics.

For the graduate student, the programs in Scandinavian languages and literature open several areas of study: medieval, with extensive study of Old Scandinavian languages and literature, 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 fiction, drama, and poetry. Opportunities for supervised study and specialization also exist in such areas as Scandinavian history, politics, mythology, and folklore. There are also opportunities for comparative-literature study.

Master of Arts

For the M.A. degree, 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, and society, 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.

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 requirements 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 philology and linguistics, with an emphasis on the student’s chosen target language. Major attention is given to the history of the Scandinavian languages, literary history and theory, and genre study. Opportunities for graduate work also exist in such areas as Scandinavian history, politics, mythology, and folklore.

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 year’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.

Faculty

Chair
Terje I. Leiren

Professors
Leiren, Terje I. * 1977; PhD, 1978, North Texas State University; Scandinavian history, nationalism, immigration, ethnicity.
Rossel, Sven H. * 1974, (Affiliate); PhD, 1968, University of Copenhagen (Denmark); Danish language and literature, Scandinavian ballads, comparative literature.
Steene, Birgitta * 1973, (Emeritus); PhD, 1960, University of Washington; Scandinavian drama and film, children’s literature, comparative literature.

Associate Professors
Bryant-Bertail, Sarah * 1990, (Adjunct); PhD, 1986, University of Minnesota; Western and Asian drama,
theater history, performance practices, film, critical theory.

Conroy, Patricia L. * 1972; PhD, 1974, University of California (Berkeley); Scandinavian philology, Icelandic language and literature, Danish, Faroese.

Gavel Adams, Ann-Charlotte * 1986; PhD, 1990, University of Washington; August Strindberg, Scandinavian women’s literature, Scandinavian turn-of-the-century drama and art.

Ingebritsen, Christine * 1992; PhD, 1993, Cornell University; Scandinavian domestic and foreign policies, European community integration and Scandinavia.

Remley, Paul G. * 1988, (Adjunct); PhD, 1990, Columbia University; Old and Middle English, medieval languages and literatures, critical theory.

Sehmsdorf, Henning K. * 1967, (Emeritus); PhD, 1968, University of Chicago; folklore and mythology, Norwegian language and literature, comparative literature.

Sjavik, Jan * 1978; PhD, 1979, Harvard University; Norwegian language and literature, prose fiction, literary theory.

Stecher Hansen, Marianne T. * 1988; MA, 1981, University of Washington, PhD, 1990, University of California (Berkeley); Danish language and literature, Scandinavian novel, Isak Dinesen (Karen Blixen), H. C. Anderson.

Warne, Lars G. * 1975, (Emeritus); PhD, 1974, University of California (Berkeley); Swedish language and literature, Scandinavian novel, comparative literature.

Assistant Professor

Nestingen, Andrew K. 2001; PhD, 2001, University of Washington; Finnish language and literature, cultural theory, globalization, cinema.

Senior Lecturers

Brandl, Klaus K. * 1991; PhD, 1991, University of Texas (Austin); foreign language pedagogy, applied linguistics, foreign language teacher training.

Dubois, la G. 1989; PhD, 1991, University of Washington; Swedish language and literature, ethnocity.

Lecturer

Smidchens, Guntis I. 1993; MA, 1988, Indiana University; Estonian, Latvian, and Lithuanian languages and literatures; Baltic studies; folklore.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs/cat/.

Danish

DANISH 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Danish language, literature, or related fields.

Estonian

ESTO 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Estonian language, culture, or society.

Finnish

FINN 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Finnish language, culture, or society.

Latvian

LATV 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Latvian culture, culture, or society.

Lithuanian

LITH 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Lithuanian language, culture, or society.

Norwegian

NORW 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Norwegian language, literature, or related fields.

Scandinavian

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 HSTEU 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 431 The Northern European Ballad (5) VLPA Integrative study of the Northern European Ballad, with an emphasis on texts, performance, content, history, theory, genre classification, and interpretive approaches. Offered: jointly with C LIT 431.

SCAND 445 The Nordic-Baltic Region and the War: Literary Representations (5) Treatment of Nazism, Stalinism, collaboration, resistance, national identities in literary texts written during and after World War II in Scandinavia and the Baltic region. Studies different national destinies (German-occupied Denmark and Norway, neutral Sweden, Finland at war, Soviet-occupied Baltic states, Iceland) through literary texts related to period. Offered: jointly with EURO 445.

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 460 History of the Scandinavian Languages (5) VLPA Development of languages from common Scandinavian to contemporary Danish, Norwegian, Swedish, Faroese, and Icelandic. Recommended: DANAN 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 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 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.

Courses for Graduates Only

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 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, mod-
ernism, 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 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 590 Special Topics in Scandinavian Literature (1-5, max. 15)

SCAND 595 Teaching Assistant Workshop (1) Focuses on topics in language pedagogy. Required for teaching assistants in Scandinavian languages. Required for all teaching assistants. Credit/no credit only.

SCAND 600 Independent Study or Research (*) Prerequisite: permission of instructor.

SCAND 700 Master’s Thesis (*)

SCAND 800 Doctoral Dissertation (*)

Swedish

SWED 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Swedish language, literature, or related fields.

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.

Admission Qualifications

For the Master of Arts Program: Bachelor of Arts degree with major in Russian or Eastern European languages and literatures, or equivalent background. For the Doctor of Philosophy Program: Master of Arts degree with major in Slavic Languages, Literatures, and Cultures.

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.

Faculty

Acting Chair

Galya Diment

Professors

Augerlons, James E. * 1960; MA, 1959, New Mexico Highlands University. PhD, 1968, University of Washington; Slavic linguistics, Romanian, Bulgarian.


Kapetanic, Davor * 1972, (Emeritus); MA, 1964, PhD, 1972, University of Zagreb (Yugoslavia); Yugoslav literature, Slavic literary theory.

Kramer, Karl D. * 1970, (Emeritus); MA, 1957, PhD, 1964, University of Washington; Russian literature.

Micklesen, Lew R. * 1966, (Emeritus); PhD, 1951, Harvard University; Slavic linguistics.

Associate Professors


Dziwrek, Katarzyna A. * 1993; MA, 1984, University of Illinois, MA, 1985, University of Lodz (Poland), PhD, 1991, University of California (San Diego); linguistics, syntax and typology.

West, James D. * 1972; PhD, 1970, Cambridge University (UK); Russian literature, philosophy and art, comparative European culture studies/cultural nationalism.

Senior Lecturer

Polack, Zoya M. 1973; MA, 1975, University of Washington; Russian and Ukrainian languages.

Lecturers


Soldanova, Jaroslava M. 1998; MA, 1976, Palacky University (Czech Republic); Czech literature and culture, Czech language.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/gencat/

Slavic Languages and Literatures

SLAVIC 498- Senior Honors Thesis (3-9, max. 9) VLP 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: AWSPS.

Courses for Graduates Only

SLAVIC 600 Independent Study or Research (*)

SLAVIC 800 Doctoral Dissertation (*)

Bulgarian

BULGR 401 Elementary Bulgarian (5) Introduction to Bulgarian phonology and grammar in terms of the modern spoken language. Writing conventions of literary Bulgarian. Offered: A.

BULGR 402 Elementary 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 Elementary Bulgarian (5) Reading of modern texts to increase command of grammar and vocabulary. Prerequisite: BULGR 402. Offered: Sp.

Croatian-Serbian

CR SB 401 Elementary Croatian/Serbian (5) Comprehensive introduction to spoken and written literary Croatian and Serbian. Offered: A.

CR SB 402 Elementary Croatian/Serbian (5) Comprehensive introduction to spoken and written literary Croatian and Serbian. Prerequisite: CR SB 401, which may be taken concurrently. Offered: W.

CR SB 403 Elementary Croatian/Serbian (5) Comprehensive introduction to spoken and written literary Croatian and Serbian. Prerequisite: CR SB 401, which may be taken concurrently. Offered: Sp.

CR SB 404 Advanced Croatian/Serbian (5) VLP Continuation of 401, 402, 403; reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns through the reading of contemporary short stories both Croatian and Serbian. Prerequisite: CR SB 403. Offered: A.

CR SB 405 Advanced Croatian/Serbian (5) VLP Continuation of 401, 402, 403; reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns through the reading of contemporary short stories both Croatian and Serbian. Prerequisite: CR SB 404. Offered: W.

CR SB 406 Advanced Croatian/Serbian (5) VLP Continuation of 401, 402, 403; reinforces basic grasp of language and enlarges both vocabulary and com-
mand of grammatical patterns through the study of contemporary short stories both Croatian and Serbian. Prerequisite: CR SB 405. Offered: Sp.


Czech

CZECH 401 Elementary Czech (5) Introduction to spoken and written Czech. Offered: A.

CZECH 402 Elementary Czech (5) Introduction to spoken and written Czech. Prerequisite: CZECH 401. Offered: W.

CZECH 403 Elementary 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 Advanced 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 403. Offered: A.

CZECH 405 Advanced 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 Advanced 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 401 Elementary Polish (5) Principal morphological and syntactic features of the Polish language through the medium of a basic vocabulary. Offered: A.

POLSH 402 Elementary 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 Elementary 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 Advanced 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 403. Offered: A.

POLSH 405 Advanced 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 Advanced 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.

Romanian

ROMN 401 Elementary Romanian (5) Comprehensive introduction to spoken and literary Romanian. Offered: jointly with RMN 401; A.

ROMN 402 Elementary Romanian (5) Comprehensive introduction to spoken and literary Romanian. Prerequisite: ROMN/RMN 401. Offered: jointly with RMN 402; W.

ROMN 403 Elementary 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.

Russian

RUSS 401 Advanced 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 RUSS 303 or RUSS 350. Offered: AWSp.

RUSS 402 Advanced 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 Advanced 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. 15) 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 Aksyonov, Siniavsky, Voinovich, Zinoviev, and others.

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, Ily 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 RUSS 303 or 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 St. Petersburg (15) VLPA Daily work in phonetics, grammar, conversation, translation, analytical reading, stylistics, newspaper analysis, and advanced syntax. Prerequisite: either RUSS 403 or RUSS 450.

RUSS 482 Research Project in St. Petersburg (12) 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 403 or RUSS 450.

RUSS 483 Russian Literature in St. Petersburg (5, max. 10) VLPA Selection of courses on specialized topics in Russian literature; specific authors or periods. Prerequisite: either RUSS 403 or RUSS 450.

RUSS 484 Russian History in St. Petersburg (5, max. 10) I&S/VLPA Selection of courses on specialized topics in Russian political, economic, social, cultural, or art history. Prerequisite: either RUSS 403 or RUSS 450.

RUSS 485 Economics in St. Petersburg (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: AWSp.

Courses for Graduates Only

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 thematic 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 Emigré 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: alternate years.

RUSS 527 Seminar in Russian Poetry (5, max. 20) One specific theme or frame 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 531 Seminar in Contemporary Russian Prose (5, max. 20) Analysis of Russian prose fiction. Selected authors and topics.

RUSS 532 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 537 Research Seminar in Russian Literature (5) 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 550 Russian Folk Literature (5) Analysis of the various groups of folk literature, including the byliny, skazki, historical and lyrical songs, and the spiritual skithi.

RUSS 600 Independent Study or Research (*)

Slavic

SLAV 420 The Other Europe: Contemporary East European Fiction (5, max. 15) VLPA Crnković 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) VLPA Crnković 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 470 Special Topics in Slavic Linguistics (3-5, max. 15) VLPA Augustor, Coars, Dźwierek Special topics in Slavic linguistics. Course offerings based on instructor's specialty and student demand. Offered: A/WSp.

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: A/WSp.

Courses for Graduates Only

SLAV 501 Using Slavic Resources (2) Introduction to graduate studies in Slavic literatures, languages, and cultures. Discusses field of study and research materials and techniques employed.


SLAV 519 Slavic Language Pedagogy (3, max. 6) Boyle 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 (3) Crnković 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-Fiumara, Crnković, 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 literatures from the beginnings to the present time, including the development of writing systems, external attempts at reform, and the development of vocabulary.


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 555. 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 Elementary Ukrainian (5) Introduction to spoken and written Ukrainian.

UKR 402 Elementary Ukrainian (5) Introduction to spoken and written Ukrainian. Prerequisite: UKR 401, which may be taken concurrently.

UKR 403 Elementary Ukrainian (5) Introduction to spoken and written Ukrainian. Prerequisite: UKR 402, which may be taken concurrently.

Sociology

202 Savery

General Catalog Web page: www.washington.edu/students/gencat/academic/Sociology.html

Department Web page: www.soc.washington.edu

The Department of Sociology has a strong commitment to research, publication, and training and is dedicated to providing a rich graduate program.

Graduate Program

Graduate Program Coordinator 206 Savery, Box 353340 206-543-5396 asksoc@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 will be 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, social psychology, sociological theory, and stratification.

Emphasis is on empirical research aimed at developing explanatory theories. Students are trained in

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problem formulation, research design, data gathering and analysis, and bringing data to bear on significant questions. Instruction is offered in 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. Also available is a program training students to teach.

The graduate program aims at completion of the Master of Arts degree in two calendar years and the Doctor of Philosophy degree in three years beyond the M.A. degree, although not all students finish in this time. A thesis is required for the M.A. degree. For the Ph.D. degree, the student must be certified in general methodology and in a major and a minor substantive area, in addition to completing an approved dissertation.

Special Requirements
Applicants for admission to the Master of Arts program are evaluated on undergraduate performance, Graduate Record Examination scores, statement of educational plans, recommendations, and samples of written work. For admission to the Ph.D. program, students are expected to have completed an M.A. degree in sociology in this department or elsewhere. Occasionally, M.A. degrees in other fields are accepted as a basis for admission to the Ph.D. program. The department encourages applications from minority students.

Financial Aid
Fellowships, research assistantships, and teaching assistantships are available to qualified graduate students including those in their first year of training.

Faculty
Chair
Robert D. Crutchfield

Professors
Barth, Ernest A. T. 1955, (Emeritus); PhD, 1955, University of North Carolina.
Borgatta, Edgar F. * 1980, (Emeritus); PhD, 1952, New York University; methodology, social psychology, demography-ecology, aging.
Bridges, George S. * 1982; PhD, 1979, University of Pennsylvania; deviance, social control, law, and legal institutions.
Burstein, Paul * 1985; PhD, 1974, Harvard University; political sociology, social movements, social stratification, public policy, law.
Campbell, Frederick L. * 1966, (Emeritus); PhD, 1967, University of Michigan; population and ecology, social organization.
Chirot, Daniel * 1974; PhD, 1973, Columbia University; comparative ethnic conflict, social change, post-communist societies.
Costner, Herbert L. * 1959, (Emeritus); PhD, 1960, Indiana University; methodology, social change.
Crutchfield, Robert D. * 1979; PhD, 1980, Vanderbilt University; deviance, criminology, stratification, race and ethnic relations.
Grembowski, David * 1981, (Adjunct); MA, 1975, Washington State University, PhD, 1982, University of Washington; health services research, survey research, program evaluation, performance of health care systems.
Gross, Edward * 1965, (Emeritus); PhD, 1949, University of Chicago; formal organizations, industrial sociology, symbolic interaction.
Hamilton, Gary G. * 1993; PhD, 1975, University of Washington; economic sociology, historical comparative, organizational studies, East Asia.
Handcock, Mark S. * 2000; PhD, 1989, University of Chicago; methodology for the social sciences; spatial, environmental modeling; distributional comparison.
Hechter, Michael N. * 1997; PhD, 1972, Columbia University; rational choice theory, nationalism, intergroup relations, norms and values.
Hirschman, Charles * 1987; PhD, 1972, University of Wisconsin; demography, race and ethnic relations, social stratification, Southeast Asia.
Howard, Judith A. * 1982; PhD, 1982, University of Wisconsin; social psychology, sociology of gender.
Kasaba, Resat * 1985, (Adjunct); PhD, 1985, State University of New York (Binghamton); historical sociology, world systems, social change in the Middle East.
Kiser, Edgar Vance * 1988; PhD, 1987, University of Arizona; political sociology, theory, historical sociology.
Lang, Gladys Engel * 1984, (Emeritus); PhD, 1954, University of Chicago; political effects of mass media, sociology of art, political movements and crowd behavior.
Lang, Kurt * 1984, (Emeritus); PhD, 1953, University of Chicago; political and social effects of the media on mass communication; arts and society; public opinion.
Larsen, Otto * 1958, (Emeritus); PhD, 1955, University of Washington; mass communications, public opinion, collective behavior.
Matsueda, Ross L. * 1998; PhD, 1984, University of California (Santa Barbara); testing sociological theories of crime using quantitative methods and survey data.
Miyamoto, Frank 1941, (Emeritus); MA, 1938, University of Washington, PhD, 1950, University of Chicago; social psychology, collective behavior.
Morris, Wanda Martina 2000; PhD, 1989, University of Chicago; stratification/mobility, social networks, quantitative methodology.
Patrick, Donald L. * 1987; (Adjunct); MS, 1968, PhD, 1972, Columbia University; health status and quality of life, end of life, adolescents.
Raftery, Adrian Elmes * 1985; Doct, 1980, Universite de Paris VI (France); time series, spatial, Bayesian statistics, population estimation, model selection, sociology.
Schmutz, Herb * 1968, (Emeritus); PhD, 1963, Washington University; experimental social psychology, exchange relations.
Schrag, Clarence 1950, (Emeritus); PhD, 1950, University of Washington.
Schwartz, Pepper J. * 1972; PhD, 1974, Yale University; family, gender, human sexuality.
Scott, Joseph W. * 1985; PhD, 1963, Indiana University; political sociology, family sociology, race/ethnic relations.
Stark, Rodney * 1971; PhD, 1971, University of California (Berkeley); scientific methods in theory and research; religion, deviance, prejudice, police.
Tolnay, Stewart E. * 2000; PhD, 1981, University of Washington; social demography, race and ethnicity, marriage and family.
Van Den Berge, Pierre L. * 1965, (Emeritus); PhD, 1960, Harvard University; comparative sociology, stratification, race and ethnic relations, kinship, sociobiology.
Wagner, L. Wesley * 1954; (Emeritus); PhD, 1959, University of Chicago; organizations/occupations, theory, macrosociology.
Weis, Joseph G. * 1974; D.Crim, 1974, University of California (Berkeley); crime, delinquency, social control, deviance.

Associate Professors
Beckett, Katherine A. * 2000; PhD, 1994, University of California (Los Angeles); law, politics, culture and society.
Brines, Julie E. * 1993; PhD, 1990, Harvard University; gender, stratification, family, methods.
Herting, Jerald R. * 1996; PhD, 1987, University of Washington; research methodology and at-risk youth.
Kashima, Tetsuden * 1976, (Adjunct); PhD, 1975, University of California (San Diego); sociology.
Lavely, William R. * 1985; PhD, 1982, University of Michigan; social demography of China.
Minkoff, Debra C. * 2000; PhD, 1991, Harvard University; contemporary American social movements and political advocacy.

Assistant Professors
Kim, Hyojuong * 1998; PhD, 1998, University of North Carolina; social movements, comparative historical analysis, social networks, rational choice.
Kitts, James A. * 2000; PhD, 2001, Cornell University; organizational dynamics, social networks, social exchange, collective action.
Kuo, Hsiang-Hui D. * 1996; PhD, 1995, University of Wisconsin; social stratification, life course and aging, quantitative methods, social demography.
Lepore, Paul C. * 1997; PhD, 1997, University of Wisconsin; social psychology, social structure and personality, sociology of education, adolescence.
Pettit, Elizabeth M. * 1999; PhD, 1999, Princeton University; sociology of the family, social demography, inequality.
Pfaff, Steven J. * 1999; PhD, 1999, New York University; historical and comparative sociology; social movements; sociological theory.
Pitchford, Susan * 1998; PhD, 1994, University of Washington; ethnic images: origins, dissemination through tourism, and social movements to improve them.
Stovel, Katherine W. 1997; MA, 1994, PhD, 1999, University of North Carolina; organizational change and career outcomes; social networks; networks and disease transmission.
Sunindyo, Saraswati * 1993, (Adjunct); PhD, 1993, University of Wisconsin; feminism and nationalism; comparative women’s movements; Southeast Asia.

Warren, John R. * 1998; PhD, 1998, University of Wisconsin; social stratification and inequality, sociology of education, research methods.

Senior Lecturer
Black, Albert W. * 1972; MA, 1968, Wayne State University, PhD, 1976, University of California (Berkeley); race and ethnic relations, stratification, social movements, race and poverty.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

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 Kiser 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 419-Fieldwork: Observation and Interviewing (5)
I&S Perspective, logic, and techniques of qualitative social research and analysis. Nature and uses of intensive interviewing, participant observation, and document analysis. Application of field research principles. Research project required in addition to reading and analysis of classic studies. Offered: W.

SOC 420-Fieldwork: Observation and Interviewing (5)
I&S 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. Offered: Sp.

SOC 424- 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. Offered: W.

SOC 425- Applied Social Statistics (3)

SOC 426 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 426; A.

SOC 428 Principles of Study Design (3)
I&S Study design from problem formulation to the analysis and interpretation of data. Offered: Sp.

SOC 429 Practicum in Data Analysis (3)
I&S 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 430 Urbanism and Urbanization (3)

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 433 Research Methods in Demography (3)
I&S Hirschman Basic measures and models used in demographic research. Sources and quality of demographic data. 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, Lamy Contemporary Asian countries face a number of issues with demographic components: rapid population growth and resource constraints, 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 ‘culti’ emerge and how they proliferate or decay. Examines conflicts within established churches, counter-movements, and the state. Offered: jointly with RELIG 449.

SOC 447 Social Movements (5)
I&S Kim 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 Hamilton Basic trends in economic and social development; comparative and historical analysis of social and economic change; the rise of capitalist societies.

SOC 456 Political Sociology (5)
I&S Burstein 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 457 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 460 Social Differentiation (5)
I&S Analysis of societal organization based on sex, age, residence, occupation, community, class, caste, and race.

SOC 461 Comparative Ethnic Race Relations in the Americas (5)
I&S Sketches the ethnoracial systems operating in American societies. Studies the systems as entities and compares ethnoracial systems in order to arrive at empirical generalizations about race/ethnorelationships 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 Black Examines the historical and sociological experiences of African-Americans from slavery, emancipation, 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 465 Complex Organizations (5)
I&S Hamilton 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 Hamilton 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 analytic categories. Issues of control, process, and change; the individual in social and technical systems.

SOC 467 Immigration and Ethnicity (5)
I&S Hirschman 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 470 Contemporary Southeast Asia (5)
I&S Hirschman Sociological survey of Southeast Asia, including development, demographic changes, family structure, and ethnic relations.

SOC 472 Juvenile Delinquency (5)

SOC 473 Corrections (5)

SOC 476 Miscarriages of Justice (5)
I&S Examines legal and social factors that shape criminal case out-
comes, 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) &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. 18) &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 486 Human Family Systems: Biological and Social Aspects (5) &S Biological bases for human mating and reproduction, and an examination of the range of cross-cultural variability in human systems of kinship and family. Compares wide range of human and nonhuman species, and 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 ANTH 486.

SOC 487 Sociology of Gender and Sexuality (5) &S Schwartz 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) &S Crutchfield 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) &S LePore Emphasizes the ways in which schools and colleges reproduce, reinforce, and challenge prevailing social, economic, and political relationships. Examines the social processes, practices, context, and outcomes of schooling and its relationship to the wider society as well as the rise and dynamics of the modern education system.

SOC 495 Honors Senior Thesis (1-5, max. 5) &S Preparation of senior honors thesis. Sociology majors only.

SOC 497 Honors Senior Seminar (-[3/5]-) &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 498 Honors Senior Seminar (-[3/5]-) &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: Sp.

SOC 499 Undergraduate Independent Study or Research (2-5, max. 10) Credit/no credit only.

Courses for Graduates 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 associated with graduate education and professional socialization. Credit/no credit only. Offered: A.

SOC 502 Seminar on Teaching Sociology (3) Howard 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. Offered: W.

SOC 503 Seminar on Writing Social Science (3) Burstein, Howard 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 scientific analysis of writing and other forms of academic communication. Prerequisite: completion of MA. Offered: A.

SOC 510 Seminar in Sociological Theory (3) Kiser Macrosociological theories; functionalism and neo-evolutionism; conflict and consensus approach; comparative strategies; models and long-range theories; ideology and sociology. From Marx and de Tocqueville to contemporary literature. Offered: A.

SOC 511 Classical Social Theory (3) Chirot Study of classical masters of social theory: Marx, Durkheim, and Weber, their precursors, and their immediate successors.


SOC 514 Current Theories in Social Psychology (3) Broad graduate-level introduction to the theories in the field of social psychology.

SOC 516 Organizations (3) Hamilton Broad graduate-level introduction to the theory and research on complex organizations.

SOC 517 Deviance and Social Control (3) Bridges, Crutchfield, Weis 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) Burstein Intensive preparation in theoretical, methodological, and substantive topics in social stratification.

SOC 526 Causal Approach to Theory Building and Data Analysis (3) Theory construction and testing from a causal models perspective. Path analysis, standardization, and 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 528 Seminar on Selected Statistical Problems in Social Research (3) Raftery Prerequisite: SOC 497 and 514.

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 424, SOC 425, SOC 426 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. Offered: AWsp.


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, class, religion. See quarterly announcement for specific problem to be covered.

SOC 551 Family and Gender Relations (3) Schwarz 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 sociological studies of religion.

SOC 555 Methods in Macro, Comparative, and Historical Sociology (3) Systems of conducting research. Qualitative methods brought to bear on broad questions.

SOC 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 ANTH 556.

SOC 559 Seminar on Gender Roles (3) Brines, Howard 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) Morris Discussion of recent growth in economic inequality in the U.S. and competing explanations for these new trends through examina-
tion of labor market demographics, industrial com-
position and restructuring, and the broader political
context that impacts policies like minimum wage,
strength of unions, and foreign trade. Prerequisite:
SOC 424, SOC 425, SOC 426, or equivalent; recom-
mended: CS&SS 505 and CS&SS 506, or equivalent.
Offered: jointly with CS&SS 565.

SOC 566 Seminar in Complex Organizations (3)
Topic special seminars in the field of complex organi-
zations or industrial sociology.

SOC 569 Demographic Studies of Stratification
(3) Hirschman 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 mar-
ket effects, and other structural variables.
Prerequisite: SOC 513, SOC 518.

SOC 574 Seminar in Methods of Criminological
Research (3) Bridges, Weis Provides training in the
technical analysis of published research in criminol-
y; designs and processes studies in parole pre-
diction, prediction of prison adjustment, and predic-
tion of treatment effect.

SOC 581 Special Topics in Theory and the History
of Sociological Thought (3, max. 9) Examination of
topic examples in theory and the history of sociologi-
cal 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) Reitzman
Examination of current substantive topics in organi-
zational 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 (3, max. 9) Examination of current substan-
tive 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 substan-
tive 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.
Moore, Christopher A. * 1995; MA, 1981, PhD, 1985, Purdue University; speech production, speech physiology, acoustics, motor control, coordination.

Norton, Susan J. * 1991, (Adjunct); PhD, 1982, University of Washington; normal and non-normal hearing, specifically cochlear mechanics, in humans and animals.

Oltswang, Lesley B. * 1977; PhD, 1978, University of Washington; language development and disorders/clinical processes.

Panda, David * 1969, (Emeritus); PhD, 1961, University of Michigan; stuttering.

Stoel-Gammon, Carol * 1983; PhD, 1974, Stanford University; developmental phonology and phonetics.

Thompson, Gary * 1966, (Emeritus); PhD, 1967, University of Minnesota; pediatric audiology, clinical evaluation.

Thompson, Marie D. * 1979, (Adjunct); PhD, 1970, University of Washington; special education (hearing impaired).

Werner, Lynne A. * 1986; PhD, 1980, Loyola University (Chicago); auditory development, infant psychoacoustics.

Yantis, Phillip A. * 1965, (Emeritus); PhD, 1955, University of Michigan; audiology, clinical evaluation.

Yorkston, Kathryn * 1975, (Adjunct); PhD, 1975, University of Oregon; neurogenic communication disorders in adults.

Associate Professors

Burns, Edward M. * 1984; PhD, 1977, University of Minnesota; psychoacoustics.

Carpenter, Robert L. * 1970; PhD, 1969, Northwestern University; language and language disorders.

Coggins, Truman E. * 1974; PhD, 1976, University of Wisconsin; language disorders in children.

Cooker, Harry S. * 1976, (Emeritus); PhD, 1963, University of Iowa; speech physiology.

Rees, Thomas 1971, (Adjunct); MA, 1969, University of Redlands, PhD, 1972, University of Washington; audiology.

Rogers, Margaret A. * 1992; PhD, 1992, University of Iowa; spoken language production, aphasia and apraxia of speech.

Schwartz, Ilene Sharon * 1991, (Adjunct); PhD, 1989, University of Kansas; early childhood, autism, classroom-based interventions, and applied behavior analysis.

Assistant Professors

Souza, Pamela E. * 1996; MS, 1992, PhD, 1996, Syracuse University; hearing aids, effects of sensorineural hearing loss on speech perception, aging.

Tremblay, Kelly L. 1998; PhD, 1998, Northwestern University; central auditory physiology and aging.

Senior Lecturers


Labiak, James M. 1974; MA, 1971, University of Washington; audiology evaluation/calibration.


Lecturer

Miller, Robert M. 1982; PhD, 1976, University of Washington; speech, language pathology, adults, swallowing.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat.

### SPHSC 405 Diagnosis of Speech and Language Disorders (3)

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 (3)

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 425 Speech, Language, and the Brain (5)

Theoretical 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)

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 450 Augmentative and Alternative Communication: Implementation Strategies (2-3)

NW Communication needs of nonspeaking individuals. Interdisciplinary approaches to the evaluation, selection, and implementation of aided and unaided communication augmentation systems. Recommended: basic course work in either SPHSC, OT, PT, or ENGR. Offered: jointly with REHAB 458; S.

### SPHSC 454 Augmentative and Alternative Communication: Access for Technology (3)

NW Communication technology and motor evaluation of augmentative and alternative users. Issues related to hardware, software, switch placement and access, with opportunities for clinical trials. Recommended: SPHSC 453 or REHAB 458. Offered: jointly with REHAB 459.

### 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: A.

### SPHSC 462 Hearing Development (3)

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: every years; A.

### SPHSC 471 Basic Audiology (5)

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)

Introduction to methods of communicative rehabilitation of person with hearing loss. Remediation principles of auditory and visual perception, amplification, communication strategies, and information counseling. Required for majors. Prerequisite: SPHSC 471; may not be repeated. Offered: W.

### Courses for Graduates Only

### SPHSC 501 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 502 Neural Bases of Speech, Language, and Hearing (4)

Neuroanatomical and neuropsychological 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 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 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. Prerequisites: 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 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 530 Language Disorders in Children (4) Consideration of the nature of language impairment in children, the types of children in whom language impairment is a significant dimension, and approaches to treatment. Prerequisite: SPHSC 303 and SPHSC 304, or equivalent.

SPHSC 531 Neurogenic Motor Speech Disorders (4) The nature of apraxia of speech and dysarthria and the assessment and treatment of those disorders. Prerequisite: SPHSC 501 or permission of instructor.

SPHSC 532 Neurogenic Language Disorders (4) Nature of aphasia and other neurogenic language disorders; evaluation and treatment of those 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 Special Topics in Dysphagia and Associated Disorders (2, max. 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 Voice and Resonance Disorders (4) Physiology, acoustics, and perception of voice quality and speech resonance. Etiology, evaluation, and treatment of voice and resonance disorders.

SPHSC 536 Assessment of Language Impairment in Children (4) Principles and procedures used in the assessment of speech- and language-disordered children and adolescents.

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 538 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 or permission of instructor.


SPHSC 542 Counseling and Interactive Skills for Speech-Language Pathologists and Audiologists (2-3) 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, intensive emotions, and counselor feelings and reactions. Prerequisite: graduate standing or permission of instructor.

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 Evaluation (1-10, max. 10) Laboratory experience in the management of speech and language disorders. Credit/no credit only. Prerequisite: permission of instructor.

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 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; comprehensibility 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) Olson (Eds.) Emphasizes instructional techniques and issues as they relate to teaching in the discipline of communication sciences and 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: A/W/S.

SPHSC 565 Speech and Language Pathology Proseminar (1, max. 6) Consideration of professional issues and student and faculty research. Credit/no credit only.

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. Exploration 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 573 Physiologic Assessment of Auditory Function (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 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 electromyostagmography 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 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. 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 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 591 Advanced Practicum in Audiology (1-10, max. 10)
Credit/no credit only. Prerequisite: permission of instructor.

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 (*, max. 10)
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 700 Master’s Thesis (*, max. 10)

SPHSC 800 Doctoral Dissertation (*, max. 10)

**Speech Communication**

See Communication.

**Statistics**

B313 Padelford

General Catalog Web page: www.washington.edu/students/gencat/academic/statistics.html

Department Web page: 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.

By means of joint faculty appointments and joint research projects, courses, and seminars, the Department of Statistics maintains active academic contacts with the School of Business Administration; the College of Engineering; the departments of Applied Mathematics, Atmospheric Sciences, Cardiology, Computer Science, Earth and Space Sciences, Economics, Genetics, Mathematics, Psychology, Radiology, Sociology, and Zoology; the National Research Center for Statistics and the Environment; the Quantitative Ecology and Resource Management program; the Center for Statistics and the Social Sciences; and 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.

**Faculty**

**Chair**

Werner Stuetzle

**Professors**

Besag, Julian E. * 1989; BS, 1963, University of Birmingham (UK); spatial statistics, with applications to epidemiology, image analysis; Bayesian inference; MCMC.

Burdzy, Krzysztof * 1988; (Adjunct); PhD, 1984, University of California (Berkeley); probability theory.

Burke, James V. * 1985, (Adjunct); PhD, 1983, University of Illinois; optimization, nonsmooth analysis.

Felsenstein, Joseph * 1968, (Adjunct); PhD, 1968, University of Chicago; estimation of evolutionary trees, models of long-term evolutionary processes.

Fleming, Thomas Richard * 1984; MA, 1974, PhD, 1976, University of Maryland; survival analysis, cancer clinical trials, AIDS research, sequential analysis.

Ford, E. David * 1985, (Adjunct); PhD, 1968, University College, London (UK); quantitative science, ecosystem analysis, forest productivity.

Groeneboom, Petrus 1998, (Affiliate); PhD, 1979, University of Amsterdam (Netherlands); statistical inverse problems.

Guttorm, Peter * 1980; PhD, 1980, University of California (Berkeley); point processes, stochastic models, applications to hydrology, environmental and atmospheric science.

Handcock, Mark S. * 2000; PhD, 1989, University of Chicago; methodology for the social sciences; spatial, environmental modeling; distributional comparison.

Haynor, David R. * 1979, (Adjunct); PhD, 1971, University of California (Berkeley), MD, 1979, Harvard University; medical image processing and segmentation; image deformation; functional MRI; expression arrays.

Krommal, Richard A. *, PhD, 1964, University of California (Los Angeles); nonparametric density estimation, computer algorithm.

Lunneborg, Clifford E. * 1962, (Emeritus); PhD, 1959, University of Washington; psychometrics, individual differences, multivariate analysis, statistical computing.

Martin, R. Douglas * 1974; PhD, 1969, Princeton University; finance, including portfolio optimization and risk management, options and derivatives, data mining.

Mason, David 1989, (Affiliate); PhD, 1977, University of Washington; nonparametric, order statistics; extreme value theory; limit theorems; empirical, quantile processes.

Morrise, Wanda Martina 2000; PhD, 1989, University of Chicago; stratification/mobility, social networks, quantitative methodology.

Nelson, Charles R. * 1975, (Adjunct); PhD, 1969, University of Wisconsin; time series analysis, economic statistical analysis, advanced macroeconomic theory.

Perlman, Michael D. * 1979; PhD, 1967, Stanford University; multivariate analysis, graphical Markov models, decision theory, probability inequalities, convexity.

**Graduate Programs**

Graduate Program Coordinator
B309 Padelford, Box 354322
206-543-8296

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 for 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: 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, 575, 576. Satisfactory performance in three approved core-course sequences chosen from STAT 570, 571, 572, 581, 582, 583, 521, 522, 523, 534, 535, 536, and 516, 517, 518. (In some circum-
stances, other graduate-level mathematical science courses may be used as a substitute.) Approved performance in statistical consulting (typically STAT 598 and 599). Demonstration of proficiency in computing. 1 credit of STAT 590 per quarter. Final Examination.

The graduation requirements for the Ph.D. tracks in statistics 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.
Raferty, Adrian Elmes * 1985; Doct, 1980, Université de Paris VI (France); time series, spatial, Bayesian statistics, population estimation, model selection, sociology.

Sampson, Paul D. * 1981; PhD, 1979, University of Michigan; spatial statistics, environometrics; morphometrics, multivariate analysis; statistical consulting.

Scholz, Friedrich-Wilhelm * 1982. (Affiliate); PhD, 1971, University of California (Berkeley); estimation and large sample theories; nonparametric statistics; risk and tolerance analysis; bootstrap.

Shorack, Galen * 1965; PhD, 1965, Stanford University; empirical and quantile processes, limit theorems; L-statistics, bootstrapping, reliability.

Siegel, Andrew F. * 1983, (Adjunct); MS, 1975, PhD, 1977, Stanford University.

Stuetzle, Werner * 1984; PhD, 1977, Swiss Federal Institute of Technology; nonparametric methods in multivariate analysis, statistical applications of computer graphics.

Thompson, Elizabeth A. * 1985; PhD, 1974, Cambridge University (UK); statistical analysis of human genetic data, population genetics, conservation and computational biology.

Wellner, Jon A. * 1983; PhD, 1975, University of Washington; large-sample theory, asymptotic efficiency, empirical processes, semiparametric models.

Zeh, Judith * 1982; PhD, 1979, University of Washington; estimation of population size and dynamics; robust methods, computing in infectious disease research.

Associate Professors

Altschul, Roberto 1985, (Affiliate); PhD, 1973, Case Western Reserve University; reliability models, fault trees for phased missions, stochastic models for fault tolerant systems.

Morita, June G. 1982, (Adjunct); MA, 1978, PhD, 1984, University of California (Berkeley); sample surveys, quality control, survival analysis, statistical data analysis, statistics education.

Pericival, Donald B. * 1979, (Affiliate); PhD, 1983, University of Washington; time series and signal analysis, computational environments, statistics of clocks.

Richardson, Thomas S. * 1996; PhD, 1996, Carnegie Mellon University; graphical models; algorithmic model selection; Bayesian inference; causal models; economics problems.

Wakefield, Jonathan Clive * 1999; PhD, 1992, University of Nottingham (UK); Bayesian data analysis, statistics in epidemiology, spatial epidemiology, pharmacodynamic models.

Assistant Professors

Gneiting, Tilmann J. * 1997; PhD, 1997, Bayreuth University (Germany); spatial and environmental statistics, positive definite functions.

Hoff, Peter D. * 2000; PhD, 2000, University of Wisconsin; constrained estimation, nonparametric Bayesian methods, two-sided matching models, cancer research.

Meila-Predoviciu, Marina * 2000; PhD, 1999, Massachusetts Institute of Technology; graphical probability models, machine learning, algorithms, data mining.

Murua, Alejandro E. * 1998, (Affiliate); PhD, 1994, Brown University; statistics and probability applied to machine learning, object recognition, signal processing.

Reynolds, Joel Howard 1989, (Affiliate); PhD, 1989, University of Washington; model assessment, statistical consulting, applications to ecology, wildlife studies.

Stephens, Matthew * 2000; PhD, 1997, Oxford University (UK); Bayesian inference, classification and clustering, Markov chain Monte Carlo, statistical genetics.

Lecturer

Courbois, Jean-Yves Pip 1999; PhD, 2000, Oregon State University; environmental statistics, monitoring network design, stochastic optimization.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsclat.

STAT 400 Mathematical Communication for Undergraduates (2) NW Techniques of effective writing and oral presentations in the mathematical sciences. Offered: jointly with AMATH 400/MATH 400. Prerequisite: at least 15 credits in MATH, STAT, or AMATH, or CSSE at the 300 or 400 level, including MATH 307 or AMATH 351 and MATH 308 or AMATH 352.

STAT 403 Introduction to Resampling Inference (4) NW Introduction to computer-intensive statistical analysis for observational and experimental 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 311, STAT 341, STAT 361, STAT/MATH 390, or STAT/ECON 481. Offered: Sp.


STAT 427 Introduction to Analysis of Categorical Data (4) NW Techniques for analysis of count data. Log-linear models, logistic regression, and analysis of covariance with response categories. Illustrations from the behavioral and biological sciences. Computational procedures. Prerequisite: either STAT 342, STAT/MATH 390, or STAT/ECON 481; recommended: MATH 308. Offered: W.

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/MATH 390, or STAT 421. Offered: alternate years.

STAT 480 Sampling Theory for Biologists (3) NW Gallauci, Rustagi 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 treatments. Credit allowed for 480, 481, and ECON 580. Prerequisite: STAT/MATH 390; one of MATH 126 or MATH 126 with either MATH 308 or MATH 309. Offered: jointly with 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 486. 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, queuing theory, stationary processes, ruin theory. Offered: jointly with MATH/STAT 396. Offered: jointly with MATH 491; A.

STAT 492 Introduction to Stochastic Processes (3) NW Random walks, Markov chains, branching processes, Poisson process, point processes, birth and death processes, queuing theory, stationary processes. Prerequisite: 2.0 in MATH/STAT 491. 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. Offered: when demand is sufficient.

STAT 499 Undergraduate Research (1-5, max. 15) NW Offered: AWSpS.

Courses for Graduates Only


STAT 502 Design and Analysis of Experiments (4) NW Design of experiments covering concepts such as randomization, blocking, and confounding. Analysis of experiments using randomization tests, analysis of variance, and analysis of covariance. Prerequisite: either STAT 342, MATH/STAT 390, STAT/ECON 481, ECON/MATH 580 or equivalent, MATH 308 or equivalent. Offered: A.

STAT 506 Applied Probability and Statistics (4)
discreet and continuous random variables, inde-
pendence and conditional probability, central limit the-
orem, elementary statistical estimation and infer-
ence, linear regression. Emphasis on physical appli-
cations. Prerequisite: some advanced calculus and
linear algebra. Offered: jointly with MATH 506.

STAT 512 Statistical Inference (4) Review of ran-
dom variables; transformations, conditional expecta-
tions, moment generating functions, convergence, limit theorems, estimation. Cramer-Rao lower bound,
maximum likelihood estimation, sufficiency, ancilli-
Hypothesis testing: Neyman-Pearson lemma, mono-
tone likelihood ratio, likelihood-ratio tests, large-
sample theory; asymptotic confidence intervals, in-
variance. 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 ran-
dom variables; transformations, conditional expecta-
tions, moment generating functions, convergence, limit theorems, estimation. Cramer-Rao lower bound,
maximum likelihood estimation, sufficiency, ancilli-
Hypothesis testing: Neyman-Pearson lemma, mono-
tone likelihood ratio, likelihood-ratio tests, large-
sample theory. Contingency tables, confidence inter-
vals, 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, queuing models, like-
lihood 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, queuing models, like-
lihood 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 fil-
ter. 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 multi-
ple time series. Nonparametric estimation of spectral
density, cross-spectral density, and coherency for
stationary time series, real and complex spectrum
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 491, or permission of instructor. Offered:
jointly with E E 520; W.

STAT 521 Advanced Probability (3) Measure the-
tory and integration, independence, laws of large num-
bers. 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 the-
tory and integration, independence, laws of large num-
bers. 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 the-
tory and integration, independence, laws of large num-
bers. 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 elimina-
tion, controls, treatment assignment and randomiza-
tion, precision, replication, power and sample size
calculations, stratification, and ethics. Suitable for students in biostatistics and other scientific fields.
Prerequisite: BIOST 510 or equivalent, and one of
STAT 421, STAT 423, BIOST 504, QMETH 500, BIOST 511, or BIOST 517, or equiva-
 lent; or permission of instructor. Offered: jointly with BIOST 524, even years.

STAT 529 Sample Survey Techniques (3) Design
and implementation of selection and estimation pro-
cedures. Emphasis on human populations. Simple
stratified, and cluster sampling; multistage and two-
phase procedures; optimal allocation of resources;
estimation theory; replicated designs; variance esti-
mation; national samples and census materials.
Prerequisite: either STAT 421, STAT 423, STAT 504,
QMETH 500, BIOST 511, or BIOST 517, or equiva-
 lent; 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
Time-scale analysis. Wavelet packets. Statistical
properties of wavelet signal extraction and
smoothers. Estimation of wavelet variance.
Prerequisite: some Fourier theory and linear algebra.
STAT 518, STAT 481, STAT 504, QMETH 500,
QMETH 507, or permission of instructor. Offered: 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 quad-
ratic 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, (moduliza-
tion, object oriented design), design of data struc-
tures and algorithms, numerical computing and
graphics. Uses C++ for several substantial scientific
programming projects. Prerequisite: experience with
programming in a high level language. Offered: joint-
ly with BIOST 534; Sp.

STAT 535 Statistical Computing (3) Introduction
to scientific computing. Includes programming tools,
modern programming methodologies, (modulariza-
tion, object oriented design), design of data struc-
tures and algorithms, numerical computing and
graphics. Uses C++ for several substantial scientific
programming projects. Prerequisite: experience with
programming in a high level language. Offered: joint-
ly with BIOST 535; A.

STAT 536 Log-Linear Modeling and Logistic
Regression for the Social Sciences (3) Log-linear
modeling of multidimensional contingency tables.
Logistic regression. Applications to social mobility,
educational opportunity, and assortative mating.
Prerequisites: SOC 424, SOC 425, SOC 426, or equivalent;
recommended: CS&SS 505 and CS&SS 567, or equivalent. Offered: jointly with SOC 536/CS&SS 536.

STAT 542 Multivariate Analysis (3) Multivariate
normal distribution; partial and multiple correlation;
Hotelling's T²; Bartlett's decomposition; various like-
lihood ratio tests; discriminant analysis; principal com-
ponents; graphical Markov models. Prerequisite:
STAT 562 or permission of instructor. Offered: alter-
ate years.

STAT 544 Bayesian Statistical Methods (3) Bayesian
methods based on the idea of a probabil-
ity distribution over the parameter space. Coherence
and utility. Subjective probability. Likelihood princi-
ple. Conjugate families. Structure of Bayesian infer-
ence. Limit theory for posterior distributions.
Sequential experiments. Exchangeability. Bayesian
nonparametric methods. Bayesian regression methods.
Prerequisite: STAT 513 or permission of instructor.
Offered: alternate years.

STAT 550 Statistical Genetics I: Mendelian Traits
(3) Thompson Mendelian genetic traits. Population
genetics; Hardy-Weinberg, allelic variation, subdivi-
sion. Likelihood inference, information and power;
latent variables and EM algorithm. Pedigree relations-
ships 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) Monks Statistical basis for describing vari-
ation in quantitative traits. Decomposition of trait var-
ation into components representing genes, environ-
ment 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: Medical Genetics
Studies (3) Wijsman 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 hierar-
chically organized, such as voters nested within elec-
torial districts that are in turn nested within states.
Provides a basic theoretical understanding and prac-
tical knowledge of models for clustered data and a
set of tools to help make accurate inferences.
Prerequisite: SOC 424-425-426 or equivalent;
recommended: CS&SS 550-556 or equivalent. Offered:
jointly with CS&SS 560/PSY 560.

STAT 564 Bayesian Statistics for the Social
Sciences (4) Bayes' Theorem, prior and posterior distri-
utions, and data analysis techniques for statistical
models. SOC 424-425-426 or equivalent; recommended:
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: STAT 571. Offered: jointly with BIOST 571; W.


STAT 573 Statistical Methods for Categorical Data (3) Advanced topics in generalized linear models and the analysis of categorical data: overdispersion, quasi-likelihood, 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 571 or equivalent. Offered: joint with BIOST 576; alternate years.

STAT 577 Advanced Design and Analysis of Experiments (3) Concepts important in experimen-
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, SPLUSS, SAS, and SPLUS). Offered: 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 424, SOC 425, SOC 426 or equivalent; recommended: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with SOC 529.

CS&SS 529 Sample Survey Techniques (3) Design and implementation of sampling 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 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 life course, applied to real data. Offered: jointly with GEOG 544.

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 424-425-426 or equivalent; recommended: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with POL S 560/STAT 560.

CS&SS 564 Bayesian Statistics for the Social Sciences (4) Statistical methods based on the idea of probability as a measure of uncertainty. Topics covered include subjective notion of probability, Bayes’ Theorem, prior and posterior distributions, and data analysis techniques for statistical models. Prerequisite: SOC 424-425-426 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 424, SOC 425, SOC 426, or equivalent; recommended: CS&SS 505 and CS&SS 506, or equivalent. Offered: jointly with SOC 565.


CS&SS 567 Statistical Analysis of Social Networks (4) Statistical and mathematical descriptions of social networks. Topics include graphical and matrix representations of social networks, sampling methods, statistical analysis of network data, and applications. Prerequisite: SOC 424-425-426 or equivalent; recommended: CS&SS 505 and CS&SS 506. Offered: jointly with STAT 567.

CS&SS 590 CSSS Seminar (1, max. 20) Presentations of ongoing social science research involving cutting edge statistical methods. Credit/no credit only. Offered: AWSp.

Women Studies

Women Studies B110 Padelford

General Catalog Web page: www.washington.edu/students/gen-cat/academic/women_studies.html

Department Web page: depts.washington.edu/webwomen/

Women Studies is an interdisciplinary department 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.

Graduate Program

Graduate Program Coordinator B110C 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.

Faculty

Chair
Juditth A. Howard

Professors

Allen, Carolyn * 1972, (Adjunct); MA, 1966, Claremont Graduate School, PhD, 1972, University of Minnesota; twentieth-century literature, women writers, contemporary critical theory.

Allen, David G. * 1988, (Adjunct); PhD, 1975, University of Iowa; philosophy of science, critical and feminist theory, psychosocial nursing theory.

Baldasty, Gerald J. * 1974, (Adjunct); MA, 1974, University of Wisconsin, PhD, 1978, University of Washington; communications history and law, government relations, First Amendment philosophy and theory.

Barlow, Tani E. * 1994; MA, 1979, PhD, 1985, University of California (Davis); modern Chinese history, feminist studies, East Asia/Asian American studies.

Bereano, Philip L. * 1975, (Adjunct); JD, 1965, Columbia University, MRP, 1971, Cornell University; technology assessment, biotech policies, policy and technology, social values, citizen participation.

Blake, Kathleen * 1971, (Adjunct); PhD, 1971, University of California (San Diego); Victorian literature, children’s literature, women’s studies.

Boersma, P. Dee * 1974, (Adjunct); PhD, 1974, Ohio State University; population, ecology.

Butler, Johnella E. * 1987, (Adjunct); EdD, 1979, University of Massachusetts; Afro-American literature, American ethnic women’s literature, Afro-Caribbean literature, pedagogy.

Cauce, Ana Mari * 1986, (Adjunct); PhD, 1984, Yale University; at-risk children, adolescents, and families; normative development in ethnic minority youth.
Clatterbaugh, Kenneth C. * 1966, (Adjunct); PhD, 1966, Indiana University; modern philosophy, social and political philosophy, gender studies.

Glenn, Susan A. * 1993, (Adjunct); PhD, 1983, University of California (Berkeley); twentieth-century U.S. social history including women's history, immigration, labor, popular culture.

Goldsmith, Layne * 1983, (Adjunct); MA, 1975, San Jose State College, MFA, 1979, Cranbrook Academy of Art; fiber arts and related historic and contemporary textile structures and processes.

Gorbman, Claudia L. * 1990, (Adjunct); PhD, 1978, University of Washington; film studies—history, theory, criticism; film sound and music.

Gordon, Margaret T. * 1988, (Adjunct); PhD, 1972, Northwestern University; news media and public policy; urban policy; women's issues.

Hartsock, Nancy C.M. * 1984, (Adjunct); PhD, 1972, University of Chicago; feminist theory, Marxism, contemporary political theory.

Howard, Judith A. * 1982, (Adjunct); PhD, 1982, University of Wisconsin; social psychology, sociology of gender.

Jacobs, Sue-Ellen * 1974; PhD, 1970, University of Colorado (Boulder); women studies, socio-cultural and applied anthropology, anthropological studies of women.


Kaplan, Sydney J. * 1971, (Adjunct); PhD, 1971, University of California (Los Angeles); twentieth-century literature, women writers, feminist criticism.

Killien, Marcia G. * 1973, (Adjunct); PhD, 1982, University of Washington; women's health, reproductive decision making, work and family.

Lawson, Victoria A. * 1986, (Adjunct); PhD, 1986, Ohio State University; Latin America, political economy of development, feminist theory in development.

McElroy, Colleen J. * 1972, (Adjunct); PhD, 1973, University of Washington; Black literature, women writers, poetry writing.

Richey, Cheryl A. * 1973, (Adjunct); DSW, 1974, University of California (Berkeley); cultural and gender issues, intervention design and research.

Schwartz, Pepper J. * 1972, (Adjunct); PhD, 1974, Yale University; family, gender, human sexuality.

Sears, Laurie J. * 1989, (Adjunct); PhD, 1986, University of Wisconsin; Southeast Asian social and cultural history.

Silverstein, Sandra V. * 1982, (Adjunct); PhD, 1982, University of Michigan; applied/critical linguistics. TESOL, ethnicity and gender.

Sokoloff, Naomi B. * 1985, (Adjunct); PhD, 1980, Princeton University; Hebrew language and literature.

Woods, Nancy * 1978, (Adjunct); PhD, 1978, University of North Carolina; women's health.

Associate Professors

Anagnost, Ann S. * 1990, (Adjunct); PhD, 1985, University of Michigan; ethnography of the state, ideology and popular culture, peasant society; China.

Brainard, Suzanne Gage 1987, (Affiliate); PhD, 1989, Ohio State University; educational evaluation, methodology and gender and ethnic issues in science and engineering.

Brines, Julie E. * 1993, (Adjunct); PhD, 1990, Harvard University; gender, stratification, family, methods.

Cabeen, Louise * 1993, (Adjunct); MFA, 1989, The School of Art Institute of Chicago; socially critical art with research specialties in textile history and techniques.

Cummings, Katherine * 1985, (Adjunct); PhD, 1985, University of Wisconsin; cultural studies, critical theory, queer studies, twentieth-century Americanist.

Di Stefano, Christine * 1985, (Adjunct); PhD, 1984, University of Massachusetts; political theory (modern and contemporary), feminist theory, political culture.

Dong, Yue 1996, (Adjunct); MA, 1991, University of Oregon, PhD, 1996, University of California (San Diego); modern Chinese history, urban history, gender studies.

Dubrow, Gail Lee * 1989, (Adjunct); MA, 1979, University of Oregon, PhD, 1991, University of California (Los Angeles); the social history of the built environment; historic preservation; issues of race, class and gender.

England, Kim V. L. 1999, (Adjunct); MA, 1984, PhD, 1988, Ohio State University; employment studies (especially women), families, child care, feminist theory and methodology.

Ensigh, B. Josephine * 1994, (Adjunct); MS, 1986, Virginia College of Medicine, MPH, 1992, DPH, 1994, Johns Hopkins University; health care program planning and evaluation for marginalized populations and high-risk youth.

Friedman, Kathie * 1987, (Adjunct); MA, 1979, PhD, 1991, State University of New York (Binghamton); sociology of gender, immigration, race, and ethnicity in the United States.

Gavel Adams, Ann-Charlotte * 1986, (Adjunct); PhD, 1990, University of Washington; August Strindberg, Scandinavian women's literature, Scandinavian turn-of-the-century drama and art.

Ginorio, Angela B. * 1981; PhD, 1979, Fordham University; women and science, violence against women, sexual harrassment, racial identity among Latinas.

Heuving, Jeanne D. * 1990, (Adjunct); PhD, 1988, University of Washington; 20th century American poetry, modern literature, critical theory (especially poststructuralist).

Ingebritsen, Christine * 1992, (Adjunct); PhD, 1993, Cornell University; Scandinavian domestic and foreign policies, European community integration and Scandinavia.

Jarosz, Lucy A. * 1990, (Adjunct); PhD, 1990, University of California (Berkeley); critical development studies, food and agriculture, rural poverty and inequality, political ecology.

Kenney, Nancy J. * 1976; PhD, 1974, University of Virginia; neural and endocrine controls of food and fluid intake, physiological basis of motivation.

Klawitter, Marieka * 1990, (Adjunct); MPP, 1982, University of Michigan, PhD, 1992, University of Wisconsin; family and employment policy, women's studies, sexual orientation discrimination.

Lafer, Wendy L. * 1981, (Adjunct); PhD, 1981, University of Washington; family centered health care of children at risk, disabled or handicapped.

Mitchell, Katharyne 1993, (Adjunct); PhD, 1993, University of California (Berkeley); urban economic and cultural geography, with focus on social theory, the Pacific Rim.


Noble, Kathleen D. * 1984; PhD, 1984, University of Washington; the psychology of talent development, spiritual intelligence, feminist psychological theory.

Poiger, Uta G. * 1995, (Adjunct); MA, 1990, PhD, 1995, Brown University; modern German history, gender history, cultural studies.

Rhodes, Lorna A. * 1983, (Adjunct); PhD, 1973, Cornell University; medical anthropology, symbolic anthropology, South Asia, religion, psychiatry.

Robert, Jean Valerie * 1991, (Adjunct); PhD, 1982, University of Pittsburgh; ancient Greek philosophy, ethics, philosophy of feminism.

Rose, Elaine 1993, (Adjunct); PhD, 1993, University of Pennsylvania; economics of the household in developed and developing countries.

Ross, Luana K. 1999; MSW, 1981, Portland State University, PhD, 1992, University of Oregon; criminology/deviance, race/ethnic relations and gender, documentary film.

Salas, Elizabeth 1987, (Adjunct); MA, 1977, California State University, Los Angeles, PhD, 1987, University of California (Los Angeles); New Mexican history and politics, Chicana, Mexican and Chicano history, minorities in the military.

Schroeder, Carole A. * 1993, (Adjunct); MSN, 1985, University of Nevada, PhD, 1993, University of Colorado (Denver); women's health experiences, critical approaches to knowledge development, and developing partnership.

Simpson, Caroline Chung * 1994, (Adjunct); MA, 1989, University of Houston, PhD, 1994, University of Texas (Austin); Asian American studies and postwar American culture.

Stacey, Robin C. * 1988, (Adjunct); PhD, 1986, Yale University; early and high medieval history, tribal law, Celtic/ Anglo-Saxon literature, heresy.

Stecher Hansen, Marianne T. * 1988, (Adjunct); MA, 1981, University of Washington, PhD, 1990, University of California (Berkeley); Danish language and literature, Scandinavian novel, Isak Dinesen (Karen Blixen), H.C. Anderson.

Stygall, Gail * 1990, (Adjunct); PhD, 1989, Indiana University; discourse analysis, rhetoric and composition, English language linguistics, forensic linguistics.

Ward, Deborah * 1987, (Adjunct); PhD, 1987, Boston University; health policy and politics, women's paid and unpaid caregiving work.


Assistant Professors

Camp, Stephanie M. H. 1998, (Adjunct); PhD, 1998, University of Pennsylvania; African American history.

Ramamurthy, Priti * 1997; PhD, 1995, Syracuse University; political economy of development; third world feminism; agro-food systems; South Asia.
Sunindy, Sarawasti 1993; PhD, 1993, University of Wisconsin; feminism and nationalism; comparative women's movements; Southeast Asia.

Taylor, Janelle S. 1999; Adjunct; PhD, 1999, University of Chicago; anthropology of medicine, science and technology; reproduction, gender, and consumption.

Thomas, Lynn M. 1997; Adjunct; MA, 1989, Johns Hopkins University, MA, 1993, Northwestern University, PhD, 1997, University of Michigan; 20th c. Kenyan history; gender, social, and cultural history.

Weinbaum, Alys E. 1998; Adjunct; PhD, 1998, Columbia University; feminist theory; representations of race and reproduction in modern literature.

West, Carolyn M. 1997; Adjunct; PhD, 1994, University of Missouri; intimate partner violence and stereotypes of Black women.

Woody, Andrea I. 1997; Adjunct; PhD, 1996, University of Pittsburgh; philosophy of science, history of science, philosophy of feminism.

Senior Lecturer

Tupper, Kari Lynn 1988; PhD, 1997, University of Washington; literature and law, American studies, women writers.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/undergrad/crs cata.

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 Twine Explores shifting meanings and reconfigurations of femininity, feminism, and antifeminism in United States popular culture. Examines 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 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 Jacobs, Ross Seminar based on social science writings, autobiographies, biographies, and fiction written by, with, or about indigenous women of the United States and Canada. Prerequisite: either WOMEN 342, WOMEN 423, AIS 201, AIS 330, or AIS 423. 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. Prerequisite: AIS 330; WOMEN 200. Offered: jointly with AIS 442.

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: ECON 300. Offered: jointly with ECON 447.

WOMEN 450 Language and Gender (5) I&S/ VLPA Bilanjuk 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 and other aspects of identity such as sexuality, class, and age. Prerequisite: LING 200; either LING 201, LING 203, or ANTH 203. Offered: jointly with ANTH 450/LING 458.

WOMEN 454 Women, Words, Music, and Change (5) I&S/ VLPA Jacobs Comparative analysis of use of myths, tales, music, and other forms of expressive culture as a medium for change, and the changes in women's status and roles. Recommended: WOMEN 393. Offered: jointly with ANTH 454.

WOMEN 455 Contemporary Feminist Theory (5) I&S Barlow 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 race 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 HISTAS 457.

WOMEN 458 Ideologies and Technologies of Motherhood (5) I&S Examines how motherhood is culturally constructed, 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, transnational mothers, co-mothers, and 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 HISTAS 459.

WOMEN 462 Isak Dinesen and Karen Blixen (5) VLPA Stig-Hanssen 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 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 home, and aging. Examines gendered urban patterns and 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) VLPA 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 488 Women and/in Science (5) &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 489 Ethnicity, Gender, and Communication (5) &S Baldasty-Media portrayal of women and people of color; creation of alternative media systems by women and people of color in the United States. Offered: jointly with COM 489/AES 489.

WOMEN 490 Special Topics in Women Studies (2-5, max. 15) &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 491 Senior Thesis I (3) &S Introductory course of the senior thesis sequence required of all majors. Students attend a weekly seminar, select a thesis topic, and contract with an appropriate faculty adviser. Successful completion of the course is contingent on submission of an acceptable thesis proposal. Majors and senior standing only. Offered: A, W.

WOMEN 492 Senior Thesis II (3) &S Second course in senior thesis sequence required of majors. Majors and seniors only. Prerequisite: WOMEN 491. Offered: W.

WOMEN 493 Senior Thesis III (4) &S Research and writing of thesis under supervision of a faculty member. Required of all majors. Prerequisite: WOMEN 492. 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 497 Fieldwork in Women Studies (1-15, max. 15) Internships in local agencies. Allows development of specific skills in area of specialization. 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.

Courses for Graduates Only

WOMEN 501 History of Feminism (5) Barlow; Yee 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) Barlow 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) Allen 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 512 Critical and Interdisciplinary Approaches to Women’s Health (3) Ensign, Schneider 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 (3) 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 544 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. Prerequisite: AIS 330; WOMEN 200; WOMEN 310.

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 553 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 ANTH 555; W.

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 598 Directed Readings in Women Studies (*, max. 35) Selected topics for individualized or small group study. Offered: AWSpS.

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 (*)

Zoology

106 Kincaid

General Catalog Web page: www.washington.edu/students/gencat/academic/zoology.html

Department Web page: depts.washington.edu/zooweb/

Zoology is a natural science concerned primarily with animals; their development, structure, and function, and their relationship with their environments. Zoology field courses are offered both at the main campus and at the Friday Harbor Laboratories. See individual course listings for location.

Graduate Program

Graduate Program Coordinator 106 Kincaid, Box 351800 206-685-8240

Programs of study leading to the degree of Doctor of Philosophy are available in the areas of cell biology, molecular biology, developmental biology, developmental genetics, ecology, evolution, behavior, invertebrate and vertebrate morphology, organismic and comparative physiology, endocrinology, and neuro-biology, as well as mathematical approaches to the above topics. Interdisciplinary programs are offered in developmental biology, cell and molecular biology, and neurobiology.

Research Facilities

Modern instruments (TEM, confocal microscopy) and special facilities (radioisotope, neurophysiology, and sea-water rooms) needed for instructional and research purposes are available in Kincaid Hall. The department maintains a network of workstations, including both Macintosh and Windows machines. Programs include systems for mathematical and statistical analysis, visualization, image processing and reconstruction, drafting, illustration, desktop publishing, and symbolic mathematics. Extensive natural history collections are housed at the Burke Museum. The facilities of the Friday Harbor Laboratories on San Juan Island are available for research. The department is within 100 yards of the Magnuson Health Sciences Center, one of the top medical research institutions in the country. Several researchers at the Fred Hutchinson Cancer Research Center are appointed as affiliate faculty in the department.

Special Requirements

Completed applications for entry in autumn quarter must be received by January 15.

Entering students should have preparation in several of the areas listed above, organic chemistry, physical chemistry in some cases, two quarters of college physics, and mathematics through calculus. All students are required to acquire at least three quarters of teaching experience regardless of their source of support.

Financial Aid

Normally all prospective candidates for the Ph.D. degree are supported by teaching or research assistantships or by fellowships or traineeships from national or private agencies. Summer appointments are available both on the Seattle campus and at the Friday Harbor Laboratories on San Juan Island.
Faculty

Chair
Wingfield, John C.

Professors
Beecher, Michael D. * 1978, (Adjunct); MA, 1965, PhD, 1970, Boston University; animal behavior, animal communication, sensory processes.
Boersma, P. Dee * 1974, PhD, 1974, Ohio State University; population, ecology.
Brenowitz, Eliot A. * 1987, PhD, 1982, Cornell University; animal behavior, neuroethology, neuroendocrinology, animal communication.
Cloney, Richard A. * 1961, (Emeritus); PhD, 1959, University of Washington; invertebrate embryology, histology, morphogenetic movements, metamorphosis, biology of ascidians.
Deyrup-Olsen, Ingrid J. * 1964, (Emeritus); PhD, 1944, Columbia University; general physiology cell membrane phenomena.
Edwards, John S. * 1967, (Emeritus); PhD, 1960, Cambridge University (UK); arthropod neurobiology, insect physiology and development, tundra and alpine biology.
Felsenstein, Joseph * 1968, (Adjunct); PhD, 1968, University of Chicago; estimation of evolutionary trees, models of long-term evolutionary processes.
Gorbman, Aubrey * 1963, (Emeritus); PhD, 1940, University of California (Berkeley); endocrinology and neuroendocrinology, mechanisms of actions of hormones.
Graubard, Katherine * 1979, PhD, 1973, University of Washington; cellular neurophysiology, neural basis of behavior.
Hauschka, Stephen D. * 1967, (Adjunct); PhD, 1966, Johns Hopkins University; regulation of skeletal muscle differentiation, growth factor-receptor signaling mechanisms.
Herring, Susan W. * 1990, (Adjunct); PhD, 1971, University of Chicago; vertebrate functional morphology, relations between muscular function and skull growth.
Hille, Merrill B. * 1976; PhD, 1965, Rockefeller University; developmental biology, gastrulation in sea urchin embryos, translational regulation during meiosis.
Huey, Raymond B. * 1977; PhD, 1975, Harvard University; evolutionary and physiological ecology, herpetology, behavior.
Karr, James * 1991; PhD, 1970, University of Illinois; stream and watershed ecology, tropical forest ecology, conservation biology, environmental policy.
Kenagy, George James * 1976; PhD, 1972, University of California (Los Angeles); ecophysiology and behavior, reproduction and life history, population biology, evolution, mammalogy.
Kimelman, David * 1989, (Adjunct); PhD, 1985, Harvard University; molecular biology of early development in the frog, Xenopus laevis, and the fish, Danio rerio.
Kingsolver, Joel * 1986, (Affiliate); PhD, 1981, Stanford University; physiological ecology and evolutionary morphology of insects.
Kohn, Alan J. * 1961, (Emeritus); PhD, 1957, Yale University; invertebrate zoology, ecology and functional morphology of marine invertebrates, especially mollusks.
Kozloff, Eugene N. * 1964, (Emeritus); PhD, 1950, University of California (Berkeley); biology of lower invertebrates, ciliates, orthoects, turbellarians and kinorhynchs.
Laird, Charles D. * 1971; PhD, 1966, Stanford University; cell and developmental biology, human genetics.
Moody, William J. * 1982; PhD, 1977, Stanford University; single cell electrophysiology, development of electrical properties in embryos.
Morse, M. Patricia 1992; PhD, 2000, University of New Hampshire; invertebrates, interstitial mollusks, functional ultrastructure of bivalve heart-kidney and blood.
Murray, James D. * 1988, (Adjunct); PhD, 1956, DSc, 1968, Oxford University (UK); mathematical biology, biological pattern formation, wound healing, spread of epidemics.
Odeil, Garrett M. * 1985; PhD, 1972, Johns Hopkins University; mathematical biology, ecology, models in cell and developmental biology.
Orians, Gordon H. * 1960, (Emeritus); PhD, 1960, University of California (Berkeley); ecology and ethology, vertebrate social systems, community structure, plant herbivore interactions.
Paine, Robert T. * 1962, (Emeritus); PhD, 1961, University of Michigan; experimental ecology, organization and structure of marine communities.
Palka, John M. * 1969; PhD, 1965, University of California (Los Angeles); neurophysiology, sensory physiology, developmental neurobiology.
Pietsch, Theodore W. * 1978, (Adjunct); PhD, 1973, University of Southern California; ichthyology.
Ridoff, Lynn M. * 1973; PhD, 1961, Cornell University; insect development and physiology, invertebrate endocrinology.
Rohwer, Sievert A. * 1973; PhD, 1971, University of Kansas; ecology and evolution of social behavior, deception and evolution of status-signaling systems, avian.
Schubiger, Gerold A. * 1972; PhD, 1968, University of Zurich (Switzerland); developmental biology of insects, embryonic determination in Drosophila.
Steiner, Robert A. * 1977, (Adjunct); PhD, 1975, University of Oregon; neuroendocrinology, neuroscience, endocrinology.
Truman, James W. * 1973; PhD, 1970, Harvard University; hormones and invertebrate behavior, insect physiology, circadian rhythms.
Wakimoto, Barbara T. * 1984; PhD, 1981, Indiana University; developmental genetics, gene expression and chromosome organization in eukaryotes.
Ward, Peter D. * 1984, (Adjunct); PhD, 1976, McMaster University (Canada); paleontology, paleobiology, regional coastal stratigraphy.
Whiteley, Arthur H. * 1947, (Emeritus); PhD, 1945, Princeton University; comparative development and physiology of invertebrates, genetic control of development.
Willox, A. O. Dennis * 1969, PhD, 1967, University of Oregon; invertebrate neurophysiology, neural mechanisms underlying behavior.
Wingfield, John C. * 1985, PhD, 1973, University College of North Wales (UK); hormone behavior interactions; environmental and hormonal control of life history cycles of vertebrate.
Yao, Meng Chao * 1988, (Affiliate); PhD, 1975, University of Rochester; regulation of gene amplification and chromosome rearrangements in Tetrahymena.

Associate Professors
Bakken, Aimee * 1973, PhD, 1970, University of Iowa; developmental and cell biology, chromosome structure and function in oogenesis and embryogenesis.
Cooper, Mark S. * 1990; PhD, 1985, University of California (Berkeley); cellular physiology and cell motility in developing tissues.
Edwards, Scott V. 1994; PhD, 1992, University of California (Berkeley); molecular evolution and population genetics; evolutionary history of birds.
Griffiths, W. Mary 1971, (Emeritus); MA, 1942, PhD, 1953, University of California (Berkeley); zoology.
Naeem, Shahid * 1998; PhD, 1988, University of California (Berkeley); ecosystem consequences of declining plant, animal and microbial biodiversity.
Ostrander, Elaine A. * 1994, (Affiliate); PhD, 1987, Oregon Health Sciences University; genetic mapping of simple and complex traits.
Priess, James R. * 1993, (Affiliate); PhD, 1983, University of Colorado (Boulder); reliability models, fault trees.
Raible, David W. * 1995, (Adjunct); PhD, 1989, University of Pennsylvania; zebrafish neural development.
Swalla, Billie J. 1999; PhD, 1988, University of Iowa; how developmental and evolutionary processes influence animal body plans.
Wasser, Samuel K. * 1962; PhD, 1981, University of Washington; behavioral ecology, endocrinology, conservation genetics and reproductive biology.
Wright, Robin L. * 1990; PhD, 1985, Carnegie Mellon University; membrane dynamics and regulation of sterol biosynthesis in yeast.

Assistant Professors
Bergstrom, Carl T. 2001; PhD, 1998, Stanford University; game theoretic models of signaling among relatives.
Bosma, Martha * 1987; PhD, 1986, University of California (Los Angeles); electrophysiological and secretory development of central nervous system neurons.
Groom, Martha 1989, (Adjunct); PhD, 1995, University of Washington; ecology and conservation of patchy populations; restoration ecology; conservation biology.
Moens, Cecilia B. * 1998, (Affiliate); PhD, 1993, University of Toronto; development of segmentation and segment identity in the vertebrate hindbrain.
Parrish, Julia * 1990; PhD, 1988, Duke University; organismal biology, aggregation of animals: schooling in fish and colonial nesting in seabirds.
Perkel, David J. 2000; PhD, 1992, University of California (San Francisco); neural mechanisms of learning; focus on vocal learning in songbirds.
Ruessink, Jennifer 1990; PhD, 1996, University of Washington; marine intertidal ecology, especially community dynamics, food webs, introduced species.
Schindler, Daniel E. * 1997; PhD, 1995, University of Wisconsin; ecosystem and community ecology - especially of aquatic systems.
Secord, David I. 1989, (Adjunct); PhD, 1995, University of Washington; host specificity and animal-algal symbiosis.

Course Descriptions
See page 29 for an explanation of course numbers, symbols, and abbreviations.
For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crskat/.

ZOOL 403 Comparative Vertebrate Histology (5) NW Microscopic and submicroscopic anatomy of vertebrates. Emphasis on mammals. Light microscopy and interpretation of ultrastructure. Functions of basic tissue types and organs as related to structure. Prerequisite: either BIOL 202, BIOL 220, or BIOL 355.

ZOOL 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 BIOL 102, BIOL 203, BIOL 220, or PSYCH 200. Offered: jointly with PSYCH 408; W.

ZOOL 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, alternative reproductive strategies, and parent/offspring conflict. Prerequisite: either PSYCH 200, BIOL 220, or both BIOL 202 and BIOL 203. Offered: jointly with PSYCH 409.

ZOOL 410 Ethology and Ecology Laboratory (4) NW Boersma Filed 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: BIOL 472. Offered: Sp.

ZOOL 414 Molecular Evolution (5) NW S. Edwards Survey of empirical approaches to the study of molecular evolution, discussing evidence for evolutionary trends in a variety of taxa and recent literature. Topics include DNA sequencing and systematics, fingerprinting approaches in behavioral ecology, and adaptive evolution at the molecular level.

ZOOL 430 Marine Zoology (8) NW Strathmann Survey of groups of invertebrate animals represent- ed 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; co-requisite: BOTANY 445, Offered: at Friday Harbor Laboratories; Sp.

ZOOL 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 430 or 434. Recommended: 20 credits in biological sciences. Offered: at Friday Harbor Laboratories; S.

ZOOL 433 Invertebrate Zoology (5) NW Comparative biology and morphology of invertebrates. Laboratory work emphasizes structures and functions. Deals with principles of animal organization, Protista, simpler multicellular animals, echinoderms, and chordates. Not open to students who have taken 433 or 432. Prerequisite: either BIOL 102, BIOL 202, or BIOL 220. Offered: A.

ZOOL 434 Invertebrate Endocrinology (5) NW Comparative biology and morphology of invertebrates. Laboratory work emphasizes structures and functions. Emphasizes anemids and related worms, mollusks, and arthropods and is open to students who have taken 430 or 432. Prerequisite: either BIOL 102, BIOL 202, or BIOL 220. Offered: W.

ZOOL 436 Invertebrate Endocrinology (3) NW Survey of endocrine mechanisms used by invertebrate groups to regulate homeostasis, growth, reproduction, and behavior. Special emphasis given to invertebrate model systems that provide unique insights into biological regulation, development, and behavior. Prerequisites: either BIOL 202, BIOL 220, ZOOL 301, or ZOOL 315; either CHEM 220, CHEM 224, CHEM 239, or CHEM 337; either PHYS 115 or PHYS 122.

ZOOL 438 Comparative Endocrinology (3) NW Wingfield Hormonal integration of living processes at all levels in animals: molecules, cells, organs, organisms, populations. Prerequisite: either BIOL 202 or BIOL 220 or BIOL 102 with either ZOOL 301 or ZOOL 315; recommended: a 400-level course in physiology and biochemistry.

ZOOL 439 Comparative Endocrinology Laboratory (2) NW Wingfield A broad introduction to endocrine techniques with appropriate experiments to accompany and enlarge on material presented in 438. Prerequisite: ZOOL 438 which may be taken concurrently.

ZOOL 440 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. Prerequisite: either BIOL 102, BIOL 202, either MATH 125 or Q SCI 292; either PHYS 114 or PHYS 121.

ZOOL 444 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 or both BIOL 202 and BIOL 203. Offered: Sp.

ZOOL 445 Entomology Laboratory (2) NW Structure and function of arthropods, with emphasis on terrestrial, aquatic, and marine invertebrate taxonomy of important insect groups. Students may be required to share a portion of the transportation costs of field trips. Prerequisite: ZOOL 444 which may be taken concurrently. Offered: Sp.

ZOOL 448 Concepts of Nervous System Function (3) NW Bosma, Perkel Broad examination of integrative mechanisms in central nervous system function, with emphasis on sensory and motor plasticity, and control of behavior. Examples are taken from a variety of animal groups. Prerequisite: either BIOL 202 or BIOL 220.

ZOOL 451 Vertebrate Zoology (5) NW Kenagy 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 180, or both BIOL 202 and BIOL 220.

ZOOL 453 Comparative Anatomy of Vertebrates (5) NW Study of the comparative structure of vertebrate organ systems: integument, skeletal, muscle, digestive, respiratory, cardiovascular, urinary, and reproductive, with an emphasis on evolutionary trends. Prerequisite: BIOL 220; recommended: B STR 301; ZOOL 451. Offered: W.

ZOOL 455 Developmental Biology of Animals (4) NW Schubiger 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 BIOC 456, BIOC 440, BIOL 200, BIOL 202, BIOL 355, BIOL 401, or ZOOL 301 with either GENET 371 or GENET 372.

ZOOL 465 Developmental Biology of Animals Laboratory (3) NW Normal development of living embryos (frog, chick, insect, echinoderm). Internal anatomy of embryos on prepared slides. Concepts of development and behavior. Developmental genetics, experimental embryology, molecular mechanisms of developmental regulation, and gene function in cell determination and cell differentiation in animal systems. Prerequisite: either ZOOL 455 or either BIOL 200 or BIOL 202 with BIOL 401 and either GENET 371 or GENET 372.

ZOOL 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-dependency plasticity. Prerequisite: either BIOL 220, BIOC 355, or ZOOL 301; either BIOL 401 or ZOOL 455.

ZOOL 464 Natural History of Birds (5) NW S. Edwards, Wingfield 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 Saturdays and weekend field trips for which students are required to share a portion of transportation costs. Prerequisite: either BIOL 200, BIOL 220, or both BIOL 202 and BIOL 203. Offered: Sp.
ZOOL 465 Natural History of Mammals (5) NW
Kenagy Field, lecture, and laboratory course intro-
ducing mammals in the general biological context, emphasizing ecology, evolution, behavior, morphol-
ogy, and adaptation to the environment. Includes weekend field trips, for which students may be required to share a portion of transportation costs. Either BIOL 102, BIOL 180 or both BIOL 202 and BIOL 203; recommended: ZOOL 451.

ZOOL 467 Comparative Animal Reproduction (3) NW
Ramenofsky, Wingfield Reproductive mecha-
nisms, environmental influences on reproductive endocrinology, physiology, behavior, ecology of ver-
tebrates. Discussions extend from organismal to cel-
lular level, and focus on diversity of reproductive pat-
terns among vertebrates. Prerequisite: BIOL 102, BIOL 220, or both BIOL 202 and BIOL 203; recom-
mended: biochemistry and physiology.

ZOOL 468 Comparative Animal Reproduction Laboratory (2) NW
Ramenofsky, Wingfield Field and laboratory studies on animal reproduction involving endocrinology, anatomy, behavior, and ecology. Accompanying supplementary materials, and extends material presented in 467. Prerequisite: ZOOL 467 which may be taken concurrently.

ZOOL 470 Techniques for Mathematical Biology (3) NW
Odell Equips students to use, rather than prove, many applied mathematics techniques essen-
tial in mathematical biology. Includes instruction to use symbolic computation software (Mathematica, Macsyma) to do by computer the kind of mathemati-
cal formula manipulation that mathematicians formerly did by hand. Recommended: calculus, lin-
ear algebra.

ZOOL 471 Models in Biology (4) NW
Odell Explores use of models in biology in a wide range of topics, including morphogenesis, nerve signals, ecologic interactions, population biology, and evolutionary theory. Emphasis on the biological insights models can provide rather than mathematical techniques. Prerequisite: either ZOOL 470, MATH 125, MATH 129, MATH 134, MATH 145, or Q SCI 202.

ZOOL 484 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, osmoregula-
tion, respiration, circulation, digestion. Prerequisite: either BIOL 202, BIOL 220, ZOOL 301, ZOOL 315, or BIOL 355; either CHEM 155, CHEM 160, CHEM 162, CHEM 164, CHEM 165, or CHEM 220; either PHYS 114 or PHYS 121.

ZOOL 485 Animal Physiology (3) NW
Riddiford, Truman Physiology at levels of organisms and behavior, organ systems, and cells—an evolutionary and integrative perspective. Integrative physiology: neurons, muscles, and hormones. Prerequisite: either BIOL 202, BIOL 220, ZOOL 301, ZOOL 315, or BIOL 355; either CHEM 160, CHEM 162, CHEM 164, CHEM 165, or CHEM 220; either PHYS 114 or PHYS 121.

ZOOL 486 Animal Physiology Lab (2) NW
Huey, Riddiford, Truman Laboratory experience of a similar type to ZOOL 485; laboratory work conducted in laboratory facilities. Recommended: ZOOL 485 which may be taken concur-
cently.

ZOOL 487 Animal Physiology Lab (2) NW
Riddiford, Truman Laboratory experience of a similar type to ZOOL 485; laboratory work conducted in laboratory facilities. Recommended: ZOOL 485 which may be taken concur-
cently.

ZOOL 490 Undergraduate Seminar (3, max. 6) NW
Supervised reading and group discussion on select-
ed concepts of zoology. Recommended: one upper-
division zoology course.

ZOOL 491 Topics in Zoological Research (1, max. 3) NW
Undergraduate seminar on research problems currently under investigation by department faculty members. Includes discussions and laboratory demonstrations of aims, techniques, and results of zoological research. Credit/no credit only. Recommended: one upper-division zoology course.

ZOOL 492 Animal Migration (3) NW
Undergraduate seminar on evolution, ecology, behavior, and physi-
ology of migration. Student presents a seminar and leads class discussion on a selected topic. Prerequisite: either BIOL 102, BIOL 203, or BIOL 220; recommended: course in physiology, ecology, or ani-
mal behavior.

ZOOL 498 Special Problems in Zoology (1-5, max. 15) Recommended: one upper-division zoology course. Offered: AWSPP.

Courses for Graduates Only

ZOOL 506 Topics in Developmental Biology (1-2, max. 15) Seminars and discussions of aspects of growth of special current interest.

ZOOL 520 Seminar (1) Credit/no credit only. Offered: A.

ZOOL 521 Seminar (1) Credit/no credit only. Offered: W.

ZOOL 522 Seminar (1) Credit/no credit only. Offered: Sp.

ZOOL 523 Foresight in Science and Technology: Choices and Consequences (3) Examination of the foresight process and lack of generic models we practice sci-
icence and use technology. Contrasts potential risks of various choices with potential benefits. Credit/no credit only. Offered: jointly with PHYS 535/PHIL 501/ENVIR 535.

ZOOL 525 Seminar in Mathematical Biology (2, max. 12) Bergstrom, Daniel, Guniban, Kot, Odell, Thompson Examines mathematical models in a broad range of topics in biology, from cellular and subcellular to organisational and population phenome-
a. Participants present research topics, supple-
mented with selected readings from the primary liter-
ture, showing how mathematical methods and mod-
eling are used to predict observable phenomena. Credit/no credit only.

ZOOL 526 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 man-
agement, whaling, by-catch, salmon, marine protect-
ed areas, introduced species, citizen action, co-
mancement, and marine ethics. Offered: jointly with FISH 578; odd years; W.

ZOOL 528 Advanced Topics in Physiology (1-3, max. 15) Recent developments. Prerequisite: one 400-level course in physiology.

ZOOL 529 Advanced Topics in Physiology (1-3, max. 15) Recent developments. Credit/no credit only. Prerequisite: one 400-level course in physiology.

ZOOL 530 Science and Environmental Policy (3) Role of science and scientists in formulating public policy related to conservation and the environment. Conceptualizes process policies as a means of understanding opportunities for, and limits of, sci-
cence in development and implementation of public policy. Prerequisite: concurrent registration in ZOOL 531. Offered: Sp.

ZOOL 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.

ZOOL 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; recommend-
ed: courses in invertebrate zoology and develop-
mental biology. Offered: at Friday Harbor Laboratories; SpS.

ZOOL 538 Advanced Invertebrate Physiology (9) General and comparative aspects of nerve and muscu-

ZOOL 540 Topics in Cellular Developmental Biology (1, max. 16) Bakken, Cooper, Hille, Moody Seminar on current topics dealing with cellular aspects of developmental biology. Variable topics on both vertebrate and invertebrate development. Credit/no credit only.

ZOOL 541 Experimental Design in Cell Biology (1.5) Wakimoto, Wright, Hille, Cooper Focuses on experimental design in cell biology. A topic of cur-
rent research interest covered in depth in order to fol-
low a line of investigation and critically evaluate the strengths and limitations of various experimental strategies. Offered: jointly with CONJ 536.

ZOOL 543 Morphogenesis and Gene Networks (1, max. 12) Odell Seminar on current topics in genetic networks and the mechanics of morphogenesis. Topics vary.

ZOOL 556 Insect Development (3) Characterizes developmental processes and their adaptations in diverse insect groups. Emphasizes hormonal control mechanisms in metamorphosis, polyembryism and diapause, larval diapause, regeneration and genetic analysis of development. Prerequisite: either ZOOL 444 or ZOOL 455, or equivalent; either BIOL 202 or BIOL 220, or equivalent.

ZOOL 557 Topics in Molecular Insect Endocrinology (1, max. 12) Riddiford Assigned reading and discussion of current topics in molecu-
ar insect endocrinology. Prerequisite: ZOOL 438 or ZOOL 486 or equivalent.

ZOOL 560 Population Biology I: Evolution and Systematics (3) Rigorous overview of historical foun-
dations and current perspectives in the fields of evo-
uolutionary biology and systematics. Offered: jointly with BOTANY 560/GENET 572.

ZOOL 561 Population Biology II: Ecology and Conservation Biology (3) Rigorous overview of historical foun-
dations and current perspectives in the fields of ecology, population biology, and conserva-
tion biology. Offered: jointly with BOTANY 561/GENET 573.

ZOOL 568 Chemical Integration (2, max. 6) Wingfield Graduate seminar dealing with current problems in endocrinology and neuroendocrinology. Credit/no credit only.

ZOOL 570 Evolutionary Physiological Ecology (2, max. 16) Huey Assigned reading, discussion, and student presentations on issues in physiological and
ecological aspects of evolution. Topics variable. Credit/no credit only. Prerequisite: BIOL 454 and BIOL 472 or equivalent.

**ZOOL 571 Current Topics in Evolution (1, max. 16)**
*Huey*
Assigned reading and discussion of current topics in evolution. Topics variable. Credit/no credit only. Prerequisite: BIOL 454 or equivalent.

**ZOOL 572 Topics in Ecology (1-3, max. 15)**
Graduate seminar on modern problems in ecology. Prerequisite: BIOL 472 or equivalent.

**ZOOL 573 Physiological Ecology (1-3, max. 15)**
*Huey, Kenagy*
Perspectives and principles of research in the physiology and behavior of animals in an ecological and evolutionary context, emphasizing whole animals and integration with diverse levels of biological organization.

**ZOOL 575 Topics in Historical Ecology (2, max. 14)**
Assigned reading and discussion of the history of conceptual issues or significant individuals. Topics variable. Credit/no credit only. Prerequisite: BIOL 472 or equivalent.

**ZOOL 579 Criticism in Evolutionary Ecology and Behavior (2, max. 16)**
*Rohwer*
Critical analysis of manuscripts under preparation that treat evolutionary ecology, morphology, and behavior. Topics variable. Credit/no credit only. Prerequisite: ZOOL 409 or equivalent introduction to evolutionary thinking.

**ZOOL 580 Environmental Physiology and Behavior (2, max. 14)**
*Kenagy, Wingfield*
Current conceptual issues and research results. Topics vary. Credit/no credit only. Prerequisite: two upper-division courses in physiology or behavior or equivalent.

**ZOOL 600 Independent Study or Research (*)**
Credit/no credit only. Offered: AWSpS.

**ZOOL 700 Master’s Thesis (*)**
Credit/no credit only. Offered: AWSpS.

**ZOOL 800 Doctoral Dissertation (*)**
Credit/no credit only. Offered: AWSpS.
To serve the continuing education needs of middle- and senior-level managers, the School of Business Administration 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 in all areas of management, including marketing strategy, finance, and accounting for non-financial executives, negotiation skills, and many others. 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 Center for International Business Education and Research (CIBER). These activities include special graduate and undergraduate certificate programs, the Global Business Program (GBP), seminars, internships, business foreign-language programs, special guest-speaker programs, and study tours. In addition, the MBA program coordinates sixteen foreign-exchange programs around the world. 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.

The Education for the Global Entrepreneur (EDGE) program trains undergraduate and graduate students with local businesses to provide information and assistance necessary to compete successfully in the international arena. This is accomplished through student consulting teams, overseas research projects which involve Business School students on exchange programs, and student internships.

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 Center for Technology Entrepreneurship 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, workshops, a business plan competition, club activities, and consulting opportunities with area businesses.

The Center for Technology Entrepreneurship (CTE) is open to both undergraduate and graduate students from the Business School as well as other schools and colleges of the University. Graduate students who wish to complete this specialization must participate in the CTE consulting club, attend the High-Tech Entrepreneurship Speaker Series, complete several CTE core classes, and participate in the Business Plan Competition. Contact CTE for more information at 206-685-9888, cte@u.washington.edu.

The Business and Economic Development Program (BEDP) 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 Program can be directed to the program office at 206-543-9227.

Business Career Center

The Business Career 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 Career Center also administers executive mentoring programs. Questions regarding these programs and services may be directed to the center’s office, 202 Lewis, 206-685-2410, bcc@u.washington.edu.

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.

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.

Student Organizations

The goals and interests of graduate students are served by the MBA Association, the Association of Black Business Students, Challenge for Charity, Graduate Consulting Club, MBA Finance Club, Global Business Association, Graduate Accounting Club, Environmental Business Alliance, Graduate and Professional Student Senate, MBA Marketing Club, Program in Entrepreneurship and Innovation Club, PEI Consulting Network, Net Impact, High-Tech Club, MBA Speakeasy, Women in Business, and the Doctoral Association.
Graduate Programs

Associate Dean for Masters Programs
Gary Sundem

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.

Executive Master of Business Administration
Assistant Dean
Jill Bowman
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 Puget Sound Option meets on campus for a full day once a week, alternating Fridays and Saturdays. In addition, students attend spring and fall residence sessions each year. (2) The Northwest and Beyond Option 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. 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.

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 program consists of 48 credits of required first-year courses and 48 elective credits. 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.

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

Assistant Dean
Jill Bowman
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 Puget Sound Option meets on campus for a full day once a week, alternating Fridays and Saturdays. In addition, students attend spring and fall residence sessions each year. (2) The Northwest and Beyond Option 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. 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.

Master of Science in Information Systems

Director
Sherri Anderson
206-543-2446
msis@u.washington.edu

The Master of Science in Information Systems Program is designed for business and technology professionals who want to develop expertise in using information systems to solve critical business problems. The MSIS is a professional degree that integrates the use of information systems and organizational practices. It is designed for business and technology professionals who would like to enhance their information systems abilities or who desire a career change into the technology field. A graduate of this program would be prepared for positions such as Business Analyst, Functional Analyst, IS Liaison, Project Manager, or IS consultant.

Technology plays a central role in both the content and delivery of the MSIS Program. It provides students with exposure to state-of-the-art information technologies. Virtually all program courses require hands-on student work with a wide variety of IT-based systems and applications. Additionally, the curriculum focuses on key managerial issues such as project/team management, collaboration, and the ability to justify information systems investments using financial, strategic, as well as organizational arguments. The four main components of the curriculum are foundation courses, IS core, career tracks and the career track practicum. The program requires 68 credits based on a student's educational background and prior experience.

The program does not require specific undergraduate majors or work experience, just a strong desire to build a career around the development of IT-based solutions. Students continue to work full-time while pursuing their MSIS degree. The MSIS Program runs for a consecutive 6 quarters, spanning 18 months. It begins in January each year and ends the following year in June. Classes are held once a week on a mid-week evening for three hours and sessions are scheduled two Saturdays per month. Candidates may be sponsored by their organizations or apply on their own.

This new program will admit its first class in January 2003 with approximately 50 students. Applications are accepted throughout the year. Please contact the MSIS office for more information.

Technology Management Master of Business Administration

Director
Sherri Anderson
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 working 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 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.

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.
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. Enrolment 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.

Doctor of Philosophy

Program Coordinator
Jame 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 their individual 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, 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 will 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.

Accounting

Department Web page: depts.washington.edu/acctgweb/

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.

Faculty

Chair
Stephan E. Sefcik

Professors
Berg, Kenneth B. * 1950, (Emeritus); MS, 1941, PhD, 1952, University of Illinois; financial and managerial accounting.
Burgstahler, David C. * 1980, PhD, 1981, University of Iowa; financial and managerial accounting, statistical methods.
Dukes, Roland E. * 1979; PhD, 1974, Stanford University; financial and managerial accounting.
Jambalvo, James * 1977; PhD, 1977, Ohio State University; managerial accounting, auditing.
Mueller, Fred J. * 1953, (Emeritus); PhD, 1956, Ohio State University; auditing, not-for-profit, tax accounting.
Noreen, Eric W. * 1976, (Emeritus); PhD, 1976, Stanford University; managerial accounting.
Ramanathan, K V. * 1972; PhD, 1970, Northwestern University; managerial accounting.
Sefcik, Stephan E. * 1986; PhD, 1983, University of Illinois; financial reporting and environmental accounting issues.
Shevlin, Terrence J. * 1985; PhD, 1986, Stanford University; financial accounting, capital markets, taxation.
Sundem, Gary L. * 1971; PhD, 1971, Stanford University; managerial accounting.

Associate Professors
Kennedy, S. Jane 1991; MBA, 1977, University of Alberta (Canada); PhD, 1992, Duke University; professional judgment/decision making in accounting, auditing, or business contexts.
Shores, Donna J. * 1986; MS, 1980, University of Wisconsin, PhD, 1986, Stanford University; financial accounting, corporate reporting, role of accounting choices in equity valuation and contra.

Assistant Professors
Hodge, Frank D. 2000; MBA, 1996, Indiana State University, PhD, 2000, University of Indiana; financial reporting, investor judgment and decision making, decision theory.
Kadous, Kathryn K. 1998; PhD, 1996, University of Illinois; auditing, financial accounting.
Matsumoto, Dawn A. 1998; PhD, 1998, University of Washington; financial reporting and disclosure, the role of intermediaries on disclosure decisions.
Rajgopal, Shivaram 1998; PhD, 1998, University of Iowa; reverse recognition accounting.

Senior Lecturers
Gillick, James V. 1986; BBA, 1957, University of Louisville.
Rice, Steven J. 1985; MS, 1971, Oklahoma State University, PhD, 1974, University of Texas (Austin); tax accounting.

Lecturers
Adams, Helen D. 1992; PhD, 1986, University of Washington.
Ducharme, Larry L. 1994; BS, 1992, City University.
Rice, Steven J. 1985; MS, 1971, Oklahoma State University; tax accounting.
Du Charme, Larry L. 1994; PhD, 1994, University of Washington.
Scott, Bert G. 1997; MBA, 1976, University of Montana, DBA, 1985, Mississippi State University.
Widdison, Elizabeth 1999; BS, 1992, City University.

Finance and Business Economics

Department Web page: depts.washington.edu/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.


**Faculty**

**Chair**
Avraham Kamara

**Professors**

Alberts, William * 1967; Emeritus; PhD, 1961, University of Chicago; capital investment planning, business strategy, economics of industrial organization.

Bourne, Philip J.* 1957; Emeritus; PhD, 1956, University of Pennsylvania; business economics.

Bradford, William D. 1994; PhD, 1972, Ohio State University; corporate finance and financial institutions.


D’ambrosio, Charles A. * 1960; Emeritus; PhD, 1962, University of Illinois; finance.

Frost, Peter A. * 1969; PhD, 1966, University of California (Los Angeles); econometrics and stock market behavior.

Haley, Charles * 1966; PhD, 1968, Stanford University; financial management and banking.

Hanson, Kermit O. 1948; Emeritus; MS, 1940, PhD, 1950, Iowa State University; accounting and statistics.

Hess, Alan C. * 1967; PhD, 1969, Carnegie Mellon University; banking, financial markets, interest rates and risk management.

Higgins, Robert C. * 1967; PhD, 1969, Stanford University; financial management.

Johnson, Dudley * 1960; Emeritus; PhD, 1957, Northwestern University; business economics.

Kamara, Avraham * 1984; PhD, 1986, Columbia University; financial economics, investments, futures and options.

Karpoff, Jonathan M. * 1983; PhD, 1982, University of California (Los Angeles); corporate finance, law and economics, microeconomics, natural resources.

Malatesta, Paul H. * 1980; PhD, 1982, University of Rochester; corporate finance, security and capital markets, corporate mergers, and empirical methods in finance.

Riley, V. Vance * 1983; PhD, 1977, Harvard University; financial markets, monetary theory, monetary policy.

Schall, Lawrence D. * 1968; PhD, 1969, University of Chicago; corporate finance.

Siegel, Andrew F. * 1983; MS, 1975, PhD, 1977, Stanford University.

**Associate Professors**

Dewenter, Kathryn L. * 1992; MBA, 1985, Stanford University; PhD, 1993, University of Chicago; empirical analysis of finance models in an international context.


**Assistant Professors**

Duarte, Jefferson 2002; PhD, 2000, University of Chicago; empirical asset pricing, derivatives, term structure of interest rates.

Lin, Pansy C. 2000; PhD, 2000, University of California (Los Angeles); investments, behavioral finance and empirical asset pricing.

**Senior Lecturers**

Glassman, Debra A. 1989; PhD, 1980, University of Wisconsin; international finance, international economic policy, macroeconomics.

Hadjimichalakis, Karma G. 1970; PhD, 1974, University of Rochester; monetary policy, banking, financial markets, domestic and international macroeconomics.

Tarhouni, Ali A. 1985; PhD, 1983, Michigan State University; economic theory, international trade and finance, financial markets.

**Lecturer**

Maloy, Frances 1986; PhD, 1999, University of Washington; finance and business economics.

**Management and Organization**

**Department Web page:**

[depts.washington.edu/bschool/mo/](http://depts.washington.edu/bschool/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 (HRM38B) 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 (OE) 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.

**Faculty**

**Chair**
Thomas M. Jones

**Professors**

Fenn, Margaret P. * 1950; Emeritus; DBA, 1963, University of Washington; organizational behavior and administrative theory.

French, Wendell L. * 1983; Emeritus; EdD, 1956, Harvard University; organizational behavior, human resources management, organization development.

Gist, Marilyn Elaine * 1987; PhD, 1985, University of Maryland; cognitive processes involved in motivation training and work task performance.

Hennig, Dale A. * 1955; Emeritus; PhD, 1954, University of Illinois; administrative theory and organizational behavior.

Hill, Charles William L. * 1988; PhD, 1983, University of Manchester (UK); business policy, corporate strategy, multinational enterprise.

Huber, Vandra Lee * 1987; DBA, 1982, Indiana University; human resource decision making, compensation, and performance appraisal.

Johnson, Richard A. * 1969; Emeritus; DBA, 1958, University of Washington; business policy.

Jones, Thomas M. * 1977; PhD, 1977, University of California (Berkeley); corporate governance, shareholder litigation, corporate social responsibility, business and society.

Kast, Fremont E. * 1978; Emeritus; DBA, 1956, University of Washington; administrative theory and organizational behavior.

Lee, Thomas W. * 1983; PhD, 1984, University of Oregon; administrative theory and organizational behavior, human resources management.

Mitchell, Terence R. * 1969; PhD, 1969, University of Illinois; leadership, group processes, motivation, turnover.


Newell, William T. * 1963; Emeritus; PhD, 1962, University of Texas (Austin).

Peterson, Richard B. * 1971; Emeritus; PhD, 1966, University of Wisconsin; human resources management.

Rosenzweig, Jim E. * 1956; Emeritus; PhD, 1956, University of Illinois, administrative theory and organizational behavior.

Saxberg, Borje O. * 1957; PhD, 1958, University of Illinois; administrative theory and organizational behavior.

Scott, William George * 1966; Emeritus; DBA, 1957, Indiana University; administrative theory and organizational behavior.

Sutermeister, Robert A. 1949; (Emeritus); MA, 1942, University of Washington; personnel and organizational behavior.

Vesper, Karl H. * 1969; PhD, 1969, Stanford University; business policy, mechanical engineering, marine studies.

Wheeler, Bayard O. 1972; Emeritus; MA, 1930, University of Washington, PhD, 1942, University of California (Berkeley); urban economics.

Woodworth, Robert T. * 1966; Emeritus; PhD, 1963, Northwestern University; administrative theory and organizational behavior, human resources management.

**Associate Professors**

Boeker, Warren * 1998; PhD, 1987, University of California (Berkeley); business strategy, the management of technology and innovation, and entrepreneurship.
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).

**Faculty**

**Chair**

Bruce H. Faaland

**Professors**

Chiu, John S. Y. * 1960, (Emeritus); PhD, 1960, University of Illinois; quantitative methods.

Faaland, Bruce H. * 1971; PhD, 1971, Stanford University; quantitative methods.

Gupta, Yash P. 1999; MS, 1974, University of Brunel (England); PhD, 1976, University of Bradford (England); management and administration.

Klastorin, Theodore * 1974; PhD, 1973, University of Texas (Austin); operations management, facility location, project management, waiting lines, logistics, inventory.

Moinzadeh, Kamran * 1984; MS, 1982, PhD, 1984, Stanford University; operations management, production management, inventory, quality and supply chain management.

Siegel, Andrew F. * 1983; MS, 1975, PhD, 1977, Stanford University.

Tamura, Hirokuni * 1967; MS, 1961, PhD, 1967, University of Michigan; quantitative methods.

**Associate Professors**

Dey, Debabrata * 1997; MS, 1989, Syracuse University, MS, 1992, PhD, 1994, University of Rochester; heterogeneous and distributed systems; database theory; design and performance.

Hiller, Mark S. * 1993; MS, 1991, PhD, 1994, Stanford University; operations management, inventory, commonality, mathematical programming applications.

Schmitt, Thomas G. * 1979; MBA, 1974, University of Cincinnati, DBA, 1979, Indiana University; management of service and manufacturing operations.

**Assistant Professors**

Jain, Apurva 1999, PhD, 1999, Purdue University; supply chains, Web retailing, logistics, inventory.

Tan, Yong 1987; MS, 1988, PhD, 1993, PhD, 2000, University of Washington.


**Senior Lecturers**

Burrows, William E. 1968; MA, 1972, University of Washington; systems analysis/design methodologies and data/file structures.

Pilcher, Martha G. * 1987; MS, 1978, PhD, 1985, Georgia Institute of Technology; operations research/operations management, health care applications and logistics.

**Lecturer**

McKay, Mark 1992; MS, 1989, Clemson University, PhD, 1999, University of Washington.
Wheatley, John J. * 1960, (Emeritus); MBA, 1954, PhD, 1959, State University of New York (Buffalo); marketing.

Yalch, Richard F. * 1971; MS, 1970, Carnegie Mellon University, PhD, 1974, Northwestern University; advertising management and consumer behavior; marketing management, marketing research.

**Associate Professors**
Grathwohl, Harrison L. * 1983, (Emeritus); DBA, 1957, Indiana University; marketing.

Louie, Therese A. * 1993; PhD, 1992, University of California (Los Angeles); behavioral biases that influence the perception of self and others.

**Assistant Professors**
Forehand, Mark Robeck 1997; PhD, 1997, Stanford University; consumer decision making and attitude development.

Okada, Erica Mina 1999; MBA, 1992, Dartmouth College, PhD, 1999, University of Pennsylvania; decision theory, entrepreneurial marketing, and marketing strategy.


Turner, Daniel J. 1999; MBA, 1993, Washington University, PhD, 2001, Northwestern University; retailing, pricing, and marketing models.

**Senior Lecturer**
Sears, Elizabeth P. 1985; MBA, 1978, New York University; strategic planning, customer loyalty, advertising, direct marketing.

**Lecturers**
Giambattista, Michele D. 1995; MBA, 1969, Harvard University; marketing, international business, technology.

Kalitzki, Judith Ann 1974; PhD, 1979, University of Washington; business communications.

Odegaard, Mary Ann 1995; MBA, 1971, PhD, 1980, Stanford University; retailing and retail management.

Stone, Jessica 1991; MA, 1979, University of Denver, PhD, 1984, University of Washington; advertising, consumer behavior, gender-based communication.

Whelan, John F. 1985; MA, 1977, Yale University; business communications.

### Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the *General Catalog* or visit the online course catalog at www.washington.edu/students/crs.crt/.

#### Accounting

**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: either 2.0 in ACCTG 225 or 2.0 in ACCTG 230; may not be repeated.

**ACCTG 411 Auditing Standards and Principles (3)** Intensive introduction to the attest function in society today. The environment, the process, and the report of the public auditor are analyzed. Potential extensions of the attest function are examined. Prerequisite: 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 IS 470 and 480. Prerequisite: 2.0 in ACCTG 330; 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 on the role of accounting information in financial decisions. Topics include the accounting and financial 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, 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 personal and business income, income taxation, 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 470 Strategic Overview of Accounting (3)** Provides a strategic overview of accounting functions in industry, government, and public accounting. Includes comprehensive exam covering all required courses in the accounting major. Prerequisite: ACCTG 321; ACCTG 421 which may be taken concurrently; ACCTG 440 which may be taken concurrently; 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 student. Offered only if faculty is available and student interest is sufficient. Class is announced in advance of scheduled offerings.

**ACCTG 495 Accounting Internship (1-4, max. 4)** 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.

#### Courses for Graduates Only

Approval of the graduate business program office required. Entry code required for nonmajors.

**ACCTG 500 Financial Accounting (4)** Introduction to concepts and procedures underlying determination and presentation of information for financial decisions by investors and other decision makers outside the business enterprise. Study of problems of valuation, income determination, and financial reporting.

**ACCTG 501 Managerial Accounting (4)** Study of the generation and the use of accounting information within the firm for purposes of planning and controlling operations. Topics covered include cost concepts, responsibility accounting systems, cost control, and the use of accounting information in short- and long-term management decision problems. Prerequisite: ACCTG 500.

**ACCTG 503 Introduction to Accounting for Managers (4)** Provides potential managers with a basic knowledge of financial and managerial accounting. Focuses on the use, not the preparation, of accounting information. Examples presented for a variety of for-profit and nonprofit organizations.

**ACCTG 505 Intensive Analysis of Accounting Principles and Practices (18)** Covers the subjects in the required core for undergraduate accounting majors: intermediate accounting, advanced accounting, cost accounting, auditing, and tax accounting. Credits will not count toward MAB degree. Prerequisite: ACCTG 215 and ACCTG 225 or equivalent, or permission of instructor.

**ACCTG 510 Problems in Financial Reporting (4)** Extension of 500 emphasizing financial reporting from a user’s perspective. Alternative approaches to recognition, valuation, and measurement of assets, equities, and income considered. Choice of accounting methods and effects on the firm of accounting policy regulation also examined. Prerequisite: B A 502 or permission of instructor.

**ACCTG 511 Problems in Managerial and Cost Accounting (4)** Discussion and analysis of costing techniques, use of accounting data in planning and evaluating managerial performance, and use of accounting data in short-run and long-run decisions. Special attention directed to issues in human behavior involved in cost allocation, budgeting, and performance evaluation. Prerequisite: B A 502 or permission of instructor.

**ACCTG 513 Tax Effects of Business Decisions (4)** Importance of tax considerations in making business decisions. Relationship of taxable income to accounting and economic concepts of income, and the economic, political, and social background of important tax provisions. Prerequisite: B A 502 or permission of instructor.

**ACCTG 515 Seminar in Financial Statement Analysis (4)** Emphasizes use of published financial reports by decision makers external to the firm (e.g., investors, creditors). Within each decision context,
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 534 Fundamentals of Corporate Taxation (3) Detailed analysis of corporate income. Calculation of recognized gains and basic effects of asset contributions. Treatment of income and deduction items of corporate operations. Analysis of distributions 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: acquitive 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 partnership and S corporations. Corporate reorganizations are analyzed in detail. Prerequisite: undergraduate accounting concentration or equivalent; ACCTG 534 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-liquidity 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 analytical 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 540 Communications for Taxation Professionals (4) Introduction to the communications forms and to practices of professional accountants and accounting managers. Development of effective written and oral skills employed in accounting presentations, such as audit reports and consultants' reports. Study of results of organizational communication research applied in business, government, 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 548 State and Local Taxation (3) Differences in definition of income at state and federal levels, treatment of state income taxes, piggyback for state income taxes, state tax rates, minimum tax, double taxation of income by home and host states. Uniform Division of Income for Tax Purposes Act, concept of nexus for taxation, multistate tax planning. Offered: S.

ACCTG 549 Employee Tax Problems and Deferral Compensation (3) Covers the tax issues facing employees and self-employed tax payers, including deferred compensation arrangements, fringe benefits, stock options, deferred compensation packages, restricted property, independent contractor status, achieving favorable tax treatment of retirement plans, and substantiating employee business expenses. Offered: S.

ACCTG 550 Special Topics in Professional Accounting (1-4, max. 4) Lectures, discussions, and case analyses dealing with special current topics relevant to professional accounting. Satisfies the professional accounting elective requirement for the M.P.Acc. degree program. Prerequisite: permission of instructor.

ACCTG 552 Accounting for Business Combinations in a Global Marketplace (4) The examination of acquisitions and mergers in a global context. Explores the issues involved in accounting for domestic and foreign equity investments, partnerships with respect to financial statement interpretations.

ACCTG 554 Governmental Accounting (4) Budgetary and financial accounting/reporting as applied at the state, local, and special-purpose governmental units and for-profit organizations.

ACCTG 556 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 568 Advanced Management Accounting (4) Discussion and analysis of costing techniques, use of accounting data in planning and evaluating managerial performance, and use of accounting data in short-term and long-run decisions. Special attention directed to issues in human behavior involved in cost allocation, budgeting, and performance evaluations. Prerequisite: ACCTG 502.
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 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 financial managerial accounting problems. Prerequisite: ACCTG 511 or permission of instructor.

ACCTG 582 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 standards setting. Prerequisite: doctoral student status and ACCTG 580 or equivalent or permission of graduate office.

ACCTG 583 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 584 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 standards setting. Prerequisite: doctoral student status and ACCTG 580 or equivalent or permission of graduate office.

ACCTG 585 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 596 Seminar in Financial 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 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 598 Seminar in Financial 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 (*, max. 10) Approval of the graduate business program office required. Entry code required for nonmajors. 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.

ACCTG 601 Recognition and assurance track. Approval of the graduate business program office required. Entry code required for nonmajors.

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.

Courses for Graduates Only Approval of the graduate business program office required. Entry code required for nonmajors. 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 (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 502 Business Administration III (10) 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 541 Environmental Management I (4) Survey of environmental ethics, environmental laws and regulations, 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, and environment, and management of environmental 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 strategies and methods applied to problems in the environment of business, management, and organizational behavior. 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 events 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 546 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 700 Master's Thesis (*) B A 800 Doctoral Dissertation (*, max. 10)

**Business Administration Research Methods**

**Courses for Graduates Only** Approval of the graduate business program office required. Entry code required for nonmajors.


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 410 Business Reports and Other Specialized Communications (4) Covers both internal and external communications that businessmen and businesswomen write on the job. Emphasis on various types of internal reports, ranging from short informal memos to the more complex formal reports. Also covered are specialized external types of communications directed to customers. Prerequisite: B CMU 301; may not be repeated.

B CMU 490 Special Topics in Business Communications (1-4, max. 12) Students and faculty focus on current topics of concern. Prerequisite: B CMU 301.

B CMU 499 Research in Business Communications (1-6, max. 9)
Courses for Graduates Only
Approval of the graduate business program office required. Entry code required for nonmajors.

B CMU 510 Business Communications for Managers (4) Seeks to develop understanding of communications and related theories, to describe strategies for planning managerial communications, and to build skills in oral and written reporting and persuading.

Business Economics
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 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.

Courses for Graduates Only
Approval of the graduate business program office required. Entry code required for nonmajors.

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 Macroeconomics and Global Issues (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: jointly with MGMT 526; WSp.

B ECON 527 International Finance and Investments (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 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: FIN 509.

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 (1, max. 10)

Business Policy
B POL 470 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 appraisal of policies and objectives. This course integrates and builds upon the work of the core curriculum. Prerequisite: FIN 350; MKTG 301; either HRM 300 or HRM 400; recommended: OPMT 301. Offered: AWSp.

B POL 471 Entrepreneurship (4) Entrepreneurship presents the real challenges of starting new businesses, focusing on the skills and contacts an entrepreneur needs to develop ideas. The many facets of entrepreneurship—organization form, funding sources, the start-up team, the product launch—are illustrated through field and case studies and guest speakers. Prerequisite: FIN 350; MKTG 301; either HRM 300 or HRM 400; recommended: OPMT 301. Offered: AWSp.

B POL 472 Business Planning for Entrepreneurs and Product Managers (4) Focuses on the process of developing and selling the new venture's business growth plan. Also covers franchising and business acquisition. Students develop their own business plans for venture concepts. Prerequisite: B POL 471.

B POL 473 Practicum in Entrepreneurship (4) Explores requirements and challenges in establishing a business in the State of Washington. Bread areas of interest include developing business concepts, marshaling resources, startup actions, and strategic and operation planning. Recommended: B POL 472.

B POL 474 Small Business Management (4) Explores entrepreneurial activities within the special environment of the small firm and family-owned companies. Combines case studies with field projects assisting companies in the Puget Sound area.

B POL 490 Special Topics in Business Policy (1-6, max. 6) Study and research topics of current interest to faculty and students. Offered only when faculty is available and student interest is sufficient. Class is announced in advance of scheduled offerings.

B POL 499 Undergraduate Research (1-6, max. 9)

Courses for Graduates Only
Approval of the graduate business program office required. Entry code required for nonmajors.

B POL 579 Special Topics in Business Policy (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: FIN 509.

B ECON 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: FIN 509.

E-Business
Courses for Graduates Only
Approval of the graduate business program office required. Entry code required for nonmajors.

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) Mockejee 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, Tarhoui Uses economic principles to assess the implications of evolving Internet technology for business strategy—making, market pricing, 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 applications, business-to-business interaction and delivery of content via the Internet. Contrasts client- 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.

Entrepreneurship
Courses for Graduates Only
Approval of the graduate business program office required. Entry code required for nonmajors.

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.

ENTRE 521 Corporate Entrepreneurship (4) Focuses on entrepreneurial activities in large, established corporation. Introduces the theory and best practices 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) Serves 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) Serves as a focus on the commercialization of emerging technologies. 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 557 Entrepreneurial Finance (4) Analyzes the unique financial issues facing entrepreneurial firms. Topics include assessing financial performance, financial forecasting and planning, financial management of rapidly growing businesses, start-up ventures, valuation, sources of financing, venture capital, initial public offerings, and the decision to harvest. Prerequisite: MBA core courses. Offered: jointly with FIN 557.

ENTRE 579 Special Topics in Entrepreneurship (2-4, max. 12) Topics vary. Offered only when faculty members are available and there is sufficient student interest.

ENTRE 600 Independent Study or Research (*, max. 10) Study and research on topics of current concern to the faculty and students. Offered only when faculty members are available and there is sufficient student interest.

**Finance**

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 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 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 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 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.

**Courses for Graduates Only**

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: Permission of School of Business Administration. Offered: Sp.

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 restructuring. 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 control within the corporation. 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 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 investment in 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 579 Special Topics in Finance (2/4, max. 12) Topics vary. Offered only when faculty members are available and there is sufficient student interest.

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: FIN 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 Corporate Finance (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 Research (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 (*, max. 10)

Human Resources Management and Organizational Behavior
HRMOB 410 Staffing (4) Affirmative action, recruitment, testing, interviewing, placement, promotion, and overall human resource planning.

HRMOB 415 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.


HRMOB 450 Leadership and Decision Making (4) The manager as leader and decision maker. Various leadership theories, styles, and behaviors. Decision-making models and techniques.

HRMOB 460 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.

HRMOB 470 Motivation and 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.

HRMOB 475 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.

HRMOB 490 Special Topics in Human Resources Management and Organizational Behavior (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.

HRMOB 499 Undergraduate Research (1-6, max. 9)

Information Systems
I S 423 Object-Oriented Systems (4) Covers the design and programming of object-oriented application software. Includes introduction to object-oriented principles, representing objects in software, object management, object analysis and design, construction of object-oriented applications, and use of object-oriented language to program working applications. Prerequisite: 3.5 in I S 320; may not be repeated.

I S 460 Systems Analysis and Design I (4) First course in analysis and design of business information systems. Covers introduction to analysis phase of systems development. Systems development life cycle, the feasibility study, analysis of user requirements, and the development of a logical model for the system under study. Prerequisite: I S 320; may not be repeated.

I S 461 Systems Analysis and Design II (4) Second course in analysis and design of business information systems. Concentrates on design and implementation issues of systems development. Translation of logical system model into physical model, design of modules, file design, testing, implementation. Includes a project using third- and fourth-generation software development tools. Prerequisite: I S 460; may not be repeated.

I S 470 Business Data Communications (4) Technology and applications of business data communications including characteristics of data, fundamentals of transmission, communications hardware and software, common-carrier services, network configurations (LAN, MAN, WAN), design, management, and security. Exercises in use of information retrieval/distribution systems, file transfer, and Internet resources. Prerequisite: I S 320; may not be repeated.

I S 480 Database Management (4) Concepts of physical and logical data base organization. Physical file structures used in data management. Logical data models, including hierarchical, network, relational. Data base design, data dictionaries, data manipulation languages. Exercises in design, implementation, and use of data base systems. Survey of commercial data base management systems. Prerequisite: I S 320; 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.

Courses for Graduates Only
Approval of the graduate business program office required. Entry code required for nonmajors.

I S 504 Computer-Based Information Systems for Management (4) Introduces students to information systems and computer technology. Covers concepts of information use in decision making. Use of decision-support problem-solving tools (e.g., spreadsheet, database software). Management's responsibility in defining, developing, using information systems is focal point.

I S 530 Management of Information Systems Resources (4) Topics include general control problems 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, transaction management, distributed and heterogeneous systems, data warehousing, data mining, database administration issues. Focuses on the use and management of business data as an organizational resource. Prerequisite: B A 502 or I S 504.

I S 560 Information Systems Development (4) Offers comprehensive look at information systems development from the initial stage of defining requirements to final evaluation of installed systems. Topics include analysis of user requirements, development of logical system model, translation of logical systems model into physical system model, testing, and implementation. Prerequisite: B A 501 or I S 504 or equivalent.

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 585 Advanced Database Research (4) Introduces students of interest in database research, including heterogeneous database, derived data management, expert systems, database systems, logical and physical database design, formal languages for data manipulation, and temporal databases. Prerequisite: doctoral student and previous course work and experience with database management system or permission of instructor.

I S 588 Advanced Expert Systems (4) Study of methodological, behavioral, and economic considerations of uncertainty handling in expert systems. Topics include the Certainty Factor model, the Dempster-Shafer theory, and probabilistic belief networks. Prerequisite: doctoral student and introductory knowledge of a programming language and basic probability theory 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 (*, max. 10)

International Business
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 470- Management of International Trade Operations (4-8, max. 8) 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. Designed as a two-semester sequence. Students may enroll at the begin-
Management

Courses for Graduates Only

Approval of the graduate business program office required. Entry code required for nonmajors.

MGMT 500 Management and Leadership (4) Behavioral aspects of management with emphasis on leadership, motivation, and decision making. May include communication, conflict management, group dynamics, and organizational change.

MGMT 502 Business Strategy (4) Policy decisions and strategic leadership from the general management point of view. Determination of corporate product-service objectives, development of a network of internal operating policies and methods to achieve objectives for the benefit of the customer and to society. Prerequisite: all first-year required courses in MBA curriculum.

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 520 International Business (2) Introduction to governmental and organizational forces shaping international business. Consider 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.

MGMT 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.

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) Examiners 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 high-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: jointly with B ECON 526; 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 536 Software Entrepreneurship (4) Case- and project-based course. Focuses 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.

MGMT 540 Managing Human Capital (4) Covers principal issues of 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 social settings 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, buy-seller agreements, and mediated and arbitrated agreements.

MGMT 548 Dealmaking in High Velocity Ventures (2) Focuses on negotiation in environments 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 Dealing in the Global Arena (2) For students who expect to engage in significant interna-
tional 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 negotiat-
ing 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, organi-
zational behavior, and strategic management. Offered on an ad hoc basis. Content announced before scheduled offering.

MGMT 600 Independent Study or Research (*, max. 
12)

Marketing
MGMT 430 Sales Force Management (4) Sales and 
distribution planning; sales organization and training; 
management of the sales force; methods of sales, 
cost, and performance analysis. Prerequisite: MGMT 301; may not be repeated.

MGKT 450 Consumer Behavior (4) Theory and 
practice pertinent to marketing decisions of individu-
als and business firms; utilization of theories from 
behavioral sciences in marketing research, theories of 
fashion, characteristics of goods, shopping behav-
ior, product differentiation, market segmentation, and 
opinion leadership; application of concepts to man-
agement of advertising, personal selling, pricing, and 
channels of distribution. Prerequisite: MGMT 301; may not be repeated; recommended: either ECON 311, QMETH 201, STAT 220, STAT 301, STAT 311, or STAT 390.

MGKT 452 Marketing Issues for New Ventures (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: MGMT 301; may not be repeated.

MGKT 460 Marketing Research (4) Marketing research 
process; preliminary steps and research design, questionnaires, secondary and primary data, sampling, processing and interpreting data, evalua-
tion and effective presentation of findings. A class 
research project provides practical application of 
methods studied. Prerequisite: MGMT 301; one 
ECON 311, QMETH 201, STAT 220, STAT 301, STAT 311, or STAT 390 may not be repeated.

MGKT 465 Marketing Research Topics (4) Topics 
such as experimental design, market analysis, posi-
tioning and segmentation research, advertising research, forecasting, and new product research cov-
ered in varying depths, depending on instructor’s 
emphas. Prerequisite: MGMT 301; may not be repeated.

MGKT 470 International Marketing (4) Focuses on 
assessing international marketing opportunities, for-
mulating and implementing international marketing 
strategies. Examines how to use marketing analyses 
and deductive decision modeling in assessing inter-
national marketing opportunities. Uses marketing 
tools and concepts in the planning, preparation, and 
presentation and discussion of cases and class proj-
ect. Prerequisite: MGMT 301; may not be repeated.

MGKT 475 Retail Structure and Strategy (4) Analysis of the nature and scope of competition with-
in and among sectors of retail trade. Emphasis is placed 
on the importance of demographic, environ-
mental, and legal differences between geographical 
areas in determining the level of competition. Prerequisite: MGMT 370; may not be repeated.

MGKT 490 Special Topics and Issues in Marketing 
(1,6, max. 8) Contemporary topics and issues in mar-
keting: marketing in nonprofit organizations, market-
ing 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: MGMT 301.

MGKT 499 Undergraduate Research (1-6, max. 9) 
Prerequisite: MGMT 301.

Courses for Graduates Only
Approval of the graduate business program office 
required. Entry code required for nonmajors.

MGKT 501 Marketing Management (4) Analysis and 
management of customer satisfaction in goods and 
services markets by profit and nonprofit organiza-
tions. Buyer behavior, market segmentation and prod-
uct positioning, pricing, distribution, sales force and advertising management, and mar-
ket research in the contexts of strategy development, 
decision making, implementation, and control.

MGKT 509 Foundations of Marketing Analysis (2) Examine 
al 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 MGKT 501. Offered: Sp.

MGKT 510 New Product Development (4) Integrates business, design, and engineering func-
tions in the presentation and application of structures, tools, and methodologies important for successful new product development. New product develop-
ment projects are accomplished with a cross-
functional team emphasis. Prerequisite: B A 501.

MGKT 511 Business-to-Business Marketing (4) Inte-
grated approach to product marketing manage-
ment in the business-to-business marketplace. 
Analysis of core competencies, competitive environ-
ment, 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.

MGKT 512 Consumer Marketing and Brand 
Management (4) Analysis of marketing strategies for 
consumer products and services. Focuses on con-
sumer satisfaction and brand management including 
product line and brand developments, pricing strate-
gies, channel and retail relationships, and marketing communication strategies for consumer goods 
and services. Prerequisite: B A 501.

MGKT 520 Marketing Channels (4) Channels of dis-
tribution decisions for goods and services in profit 
and nonprofit organizations. Examines 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 mar-
keting mix and strategies. Prerequisite: B A 501.

MGKT 530 Managing the Sales System (4) Management of the system of personal selling 
responsibilities and activities. Setting objectives, determining sales strategies; recruiting, selection, 
and training of sales representatives; allocation of effort, supervision, compensation, and control. 
Emphasis on case studies. Prerequisite: B A 501.

MGKT 540 Advertising and Promotion Management (4) Management of advertising and 
promotional activities and their integration with other 
elements of the marketing mix. Topics include: un-
derstanding the communication process, analyzing mar-
kets, working with suppliers, establishing objectives, 
determining budgets, selecting media, measuring and 
analyzing advertising effectiveness; building publicity and promotion. Legal, social, and economic consequences are considered. Prerequisite: B A 501.

MGKT 550 Managing Customer Relationships 
Through Direct Marketing (4) Management of 
customer relationships through the lens of direct mar-
keting. Topics include direct marketing creative activ-
ity, strategy, and execution; media and segmentation; 
direct marketing budgeting and financials; targeting, 
database, and predictive modeling; catalogue mar-
keting; relationship marketing; business-to-business 
complex sales; privacy. Prerequisite: B A 501.

MGKT 555 Entrepreneurial Marketing and 
Management (4) Examines the skills and tools entre-
preneurs need for bootstrap marketing in their firms. 
Courses focus on helping markets and targeting and 
position product, estimate demand, set prices, gain access to channels, and manage issues of rapid growth. Prerequisite: B A 501.

MGKT 560 Research for Marketing Decisions (4) Methods and applications of marketing research 
incorporating analytical procedures and relevant con-
cepts from behavioral and quantitative sciences. 
Deals with various aspects of research: problem def-
inition, research design, questionnaire construction, 
sampling, and data analysis. Introduces promising 
new developments: multivariate techniques of data 
analysis, laboratory and field experimentation, and 
demand analysis in both business and public envi-
ronments. Prerequisite: B A 501.

MGKT 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 prob-
lems and support of marketing decisions. Prerequisite: B A 501.

MGKT 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 strategi-
es. Prerequisite: either B A 501; recommended: one I BUS 
course.

MGKT 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, per-
ceived risk of adoption by customers, requirements 
for intensive customer service and relationships, and 
growing reliance on business partners. Prerequisite: B A 501.

MGKT 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 con-
tent to be announced in advance of scheduled offer-
ings. Prerequisite: B A 501.

MGKT 581 Doctoral Seminar in Consumer Behavior (4) Louie, Yalch. Survey of the field of con-
sumer behavior introduces fundamental topics in 
consumer behavior including cognitive processes, 
emotion, and consumer satisfaction. Provides expo-
sure to a variety of research methods including exper-
iments, surveys, and phenomenological research.
MKTG 582 Doctoral Seminar in Multivariate Analysis for Marketing Research (4) MacLachlan, Moran. Surveys and special topics 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 584 Doctoral Seminar in Marketing Systems (4) Erickson. 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 in marketing applications. Emphasis is placed on application in a spreadsheet environment. Techniques of analysis include advertising, publicity, word of mouth, packaging, product description, price, and retail outlets, and examines ways in which modeling is used to characterize and summarize the nature of general marketing situations in complex environments.

MKTG 591 Doctoral Seminar in Consumer Behavior Research Topics (4) Louie, Yalcin. 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 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 is conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status.

MKTG 600 Independent Study or Research (1-6, max. 10) 

Operations Management

OPMGT 402 Introduction to Logistics (4) Logistics studies of the efficient delivery of goods and services. A total-cost approach recognizing 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 in the management of such projects. The course covers all elements of project planning, scheduling and control as well as implementation and organizational issues. 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 499 Undergraduate Research (1-6, max. 9) 

Courses for Graduates Only 

Approval of the graduate business program office required. Entry code required for nonmajors.

OPMGT 502 Introduction to Operations Management (4) 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, factory location, management of service systems, and quality assurance. Prerequisite: QMETH 500.

OPMGT 535 Global Logistics Management (4) Provides an overview of the concepts and substance of trade, transportation, and logistics. Deals with management of physical, documentation, and information flows within supply chains, including purchasing, distribution, intermodal transportation, ERP e-commerce and e-fulfillment, financial transactions, and regulations. Prerequisite: permission of instructor. Offered: jointly with GTTL 501; AW.

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 computing. Topics range, 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 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 (1-6, max. 10)

Organization and Environment


O E 490 Special Topics and Issues in Organization and Environment (1-6, max. 6) Topics and issues of business organization and a changing environment. Content reflects interests of faculty members and students not otherwise covered in the curriculum.

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 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.

Courses for Graduates Only 

Approval of the graduate business program office required. Entry code required for nonmajors.

QMETH 500 Statistical Data Analysis for Management (2) Statistical models, techniques, and tools for aiding management decisions. Use of spreadsheets in basic business problems. Probability distributions, random sampling, confidence intervals, 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 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 (*)

**Strategic Management**

**Courses for Graduates Only**

Approval of the graduate business program office required. Entry code required for nonmajors.

ST MGT 591 Theories of the Firm and Strategic Management: Economic Models (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.

ST MGT 592 Theories of the Firm and Strategic Management: Sociological Models (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.

ST MGT 593 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.

ST MGT 594 The Social and Political Environment of the Firm (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.
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 periodontal 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, are significant contributors 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

Reinhard (Ron) Hahn
DS83 Health Sciences, Box 35745
206-543-5820
dhyg@u.washington.edu

Department Web Page:
www.depts.washington.edu/dhyg

Bachelor of Science

The University of Washington Dental Hygiene Degree Completion Program provides postlicensure education for dental hygienists who have completed a prelicensure program and who are certified or licensed to work as dental hygienists. Completion of this education enables graduates to function professionally as dental hygienists in business, management, advanced clinical dental hygiene services, public health, research, education, or private enterprise, depending upon professional needs. It also provides opportunity for dental hygienists to prepare for advancement into graduate or professional schools or other careers.

For information on the dental hygiene undergraduate program, see the undergraduate volume of the General Catalog or visit the General Catalog online at www.washington.edu/students/gencat/.
works with Health Sciences schools to provide student development and support programs, networking opportunities, and summer research programs. The HSMS 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.

The School belongs to the American Association of Dental Schools Application Service (AADSAS). The School has established November 1 as its AADSAS priority filing deadline. 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. Applications Are available online at www.aidea.org. Information regarding the Dental Admission Test should be requested from the American Dental Association, Dental Admissions Testing Program, 211 East Chicago Ave., Suite 1846, Chicago, IL 60611-2678, 312-440-2689, 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, askuwso@u.washington.edu, www.dental.washington.edu, or Jason Boyd, Predental Advising Office, University of Washington, 171 Mary Gates Hall, Box 353760, Seattle, WA 98195-3760, advdacu@u.washington.edu.

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 should 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 will accept letters of recommendation processed by AADSAS.
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 of 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 will be forwarded upon request. Applications will not be considered until completed disclosure forms have been returned to Student Admissions.

The application will be 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 and DAT scores. 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 a member of the Admissions Committee. In addition to the interview, the applicant will have an opportunity to hear information about financial aid, meet with enrolled students, take a tour of the School, and meet one of the School’s deans.

Following the interview, the Admissions Committee, which is composed of faculty, students, and alumni, will make a decision concerning admission status. In their deliberations, the following seven areas are considered, with the first two areas receiving the most weight in assessing the applicant’s merits as a candidate:

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.
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, these 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 matriculation.
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 strong academic record. A minimum of three years’ full-time coursework is required.
4. Dental Knowledge. Knowledge of the field of dentistry through experience in a dental setting (dentist’s office, clinic, etc.), introductory dental course work, and exploration of the dental literature are considered as admission factors. A qualified applicant will have a clear understanding of the profession and a demonstrated interest in the field.
5. 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.
6. 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.
7. Contribution to Diversity. Diversity in the student body contributes to the development of oral health care professionals prepared to address the needs of society.

Although interviews begin in October, the earliest the Admissions Committee will notify 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 will make one of three decisions regarding all applications:

1. Offer of Acceptance. Admission application has been accepted. The applicant will have a specified time to reply to reserve enrollment in the entering first-year class. In addition, enrollment will be contingent on timely submission of the following requirements: required registration deposit, transcripts showing completion of predental courses, physician statement, 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 will have 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 will 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 will provide 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. Prep Weeks begin approximately ten days prior to the start of the School of Dentistry’s autumn quarter. 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 from the WICHE commission office in their state of residence. Students who enroll in the School under the WICHE program pay in-state tuition, the nonresident portion being paid by the member state that sponsors the student.

Information on loans and scholarships may be obtained from the Director of Financial Aid, D322 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, D322 Health Sciences, Box 356365.

Facilities

School clinics, teaching laboratories, and lecture halls are up-to-date, well maintained, and periodical- ly renovated. Clinical Modules are assigned to students for their patient treatment. The D-1 Simulation 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
Research is 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.

Applicants for admission to the M.S.D. and certificate programs must be graduates of a school of dentistry approved by the Commission on Dental Accreditation of the American Dental Association. A concurrent program affords.

Health Care and Immunization Policy
Accepted students at the university of Washington School of Dentistry are entitled to limited outpatient basic healthcare at the Hall Health Primary Care Center. There are additional fees associated with this care. This care does not cover spouses and dependents. In addition, the University has arranged for an Accident and Sickness Insurance Plan specifically designed for students, their dependents, and domestic partners.

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, students 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 their clinical skills to a level to permit successful clinical practice, teaching, or research. The curriculum of the programs includes basic and advanced courses in dental science, clinical and research activities, and health care. The graduate prosthodontic program requires a minimum of 12 full-time quarters of didactic, clinical care, and research activities. The graduate orthodontic program is ten consecutive full-time quarters. The M.S.D. program in endodontics requires three to six months of additional training beyond the eight quarter requirement for the certificate program only.

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, Doctor of Philosophy
Curriculums for the M.S. and Ph.D. programs are offered through the Department of Oral Biology. Faculty from several dental departments also participate in the Oral Biology Ph.D. Program.

Oral biology is concerned with the nature of the oral and paraoral tissues and with the applicability of basic scientific knowledge to oral tissues in health and disease. The courses and research programs in the department deal with the origin, growth and development, structure, and functions of oral tissues, as well as with the etiology and pathogenesis of oral diseases and infections. By its nature, oral biology overlaps the basic medical sciences and clinical dental sciences.

The department contains well-equipped laboratories actively engaged in various aspects of research involving the following approaches: biochemical, including studies on protein synthesis and secretion and the structure of salivary macromolecules, as well as studies on the structural proteins of the cytoskeleton of oral epithelial and epidermal cells; pharmacological, including molecular mechanisms in the regulation of secretion; physiological, including ion fluxes and their control in secretory tissues; microbiological, including the structural basis of bacterial colonization of oral surfaces, and the identification, taxonomy, and pathogenicity of oral pathogens; pathological, including the growth and metastasis of oral tumors; tissue culture, including studies on factors regulating the growth and development of oral epithelial cells; and morphological, including studies on oral tissues at the light and electron microscopic levels.

Several programs are available through the Department of Oral Biology to accommodate students with different educational objectives. A program of study and research leading to the Doctor of Philosophy degree is available for those students desiring extensive research training as well as in-depth course work in oral biology. In addition to the courses offered by this department, students in the Ph.D. program are expected to gain proficiency in one of the biomedical sciences.

The separate program of study and research leading to the Master of Science degree is available for those students who want less training than the Ph.D. program affords.

The School offers a program leading to the degree of Master of Science in Dentistry in oral pathology. Students enroll in a series of advanced courses in general and oral pathology. Clinical specialty training (e.g., endodontics, oral medicine and orofacial pain, orthodontics, pediatric dentistry, periodontics; November 1 for oral medicine and orofacial pain; a concurrent program affords.

A program of study and research leading to the Doctor of Philosophy degree is available for those students desiring extensive research training as well as in-depth course work in oral biology. In addition to the courses offered by this department, students in the Ph.D. program are expected to gain proficiency in one of the biomedical sciences.

The separate program of study and research leading to the Master of Science degree is available for those students who want less training than the Ph.D. program affords.

The School offers a program leading to the degree of Master of Science in Dentistry in oral pathology. Students enroll in a series of advanced courses in general and oral pathology. Clinical specialty training (e.g., endodontics, oral medicine and orofacial pain, orthodontics, pediatric dentistry, periodontics) can also be obtained in conjunction with either the M.S. or Ph.D. programs.

Applicants for all programs must have either a bachelor's or professional degree from a dental or medical school. Acceptance into the programs depends on the student's performance in the undergraduate curriculum, the nature of the student's undergraduate major, and the student's interest in research.
SCHOOL OF DENTISTRY / DENTAL PUBLIC HEALTH SCIENCES

apprenticeship programs in 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. 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 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 98195-7137, 206-543-5044.

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 course work 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 Department of Dental Public Health Sciences, Box 357475, School of Dentistry, University of Washington, Seattle, WA 98195-7475, 206-543-2054.

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 health-care 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, Arizona, and Hawaii. Preceptorships and externships are available in endodontics. These are specially designed programs for dentists to gain additional training in endodontics. Further information can be obtained from the Department of Endodontics, Box 357448, University of Washington, School of Dentistry, Seattle, WA 98195-7137, 206-543-5044.

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/.

Dental Hygiene

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs catast/.

D HYG 404 Field Experience in Delivery of Oral Health Care (2-12, max. 12) Focuses on healthcare delivery issues: environmental, social, educational, economic, or cultural. Students participate at approved health agencies to learn about societal, ethical, cultural, and client oral healthcare needs and demands. The 2-credit minimum includes 30 hours on-site, end-of-quarter seminar, written assignment, and weekly e-mail communication with faculty. Offered: AWSpS.

D HYG 465 Theoretical and Scientific Basis for Dental Hygiene Practice (3) Emphasis on new or emerging oral health theory and science and its relevance to global and local unsolved preventable dental diseases in context of economic, political, cultural, social, and moral issues. Provides framework for Internet search and retrieval of information and evidence-based science decision-making. Includes technical writing and public speaking. Offered: A.

D HYG 482 Local Anesthesia for Dental Hygienists (2) Techniques of local anesthesia and initial management of emergencies in the dental office.

D HYG 492 Principles of Scientific Investigation for Oral Health Professionals (3) QSR Introduction to principles of scientific investigation and their application to resolved preventable oral health problems. Includes development of a research study protocol, scientific writing, and critical-thinking skill development. Offered: W.

D HYG 493 Review of Literature for Oral Health Professionals (3) QSR Implementation and testing of a research project designed to promote oral health or prevent dental disease in a community-based setting. Includes skills for critical review of literature, technical writing, and public speaking. Offered: Sp.

D HYG 494 Principles of Teaching for Oral Health Professionals (3) Application of principles of learning to teaching methods and techniques used in education, with opportunity for course planning, demonstration, and practice teaching. Offered: A.

D HYG 497 Directed Studies for Oral Health Professionals (*, max. 14) Based on student interest in special areas. Independent study and tutorial student-faculty relationships. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

D HYG 566 Theoretical and Scientific Basis for Dental Hygiene Practice (3) Emphasis on new or emerging oral health theory and science and its relevance to global and local unsolved preventable dental diseases in context of economic, political, cultural, social, and moral issues. Provides framework for Internet search and retrieval of information and evidence-based science decision-making. Includes technical writing and public speaking. Offered: A.

D HYG 595 Internship (*, max. 12) Clinical and/or didactic teaching experience or program administration. Teaching and administration responsibilities assigned according to student’s previous experience, education needs, and interest. Seminar required. Prerequisite: D HYG 494 or D HYG 594 and permission of instructor. Offered: AWSpS.

Dental Public Health Sciences

Faculty

Chair

Timothy De Rouen

Professors

Beaton, Randal D. * 1976; (Adjunct Research); PhD, 1972, University of Washington; assessment and treatment of temporomandibular joint pain and dysfunction.

Cameron, Cheryl A. 1979; MSEd, 1978, University of Kentucky, PhD, 1986, University of Washington, JD, 1994, Seattle University; dental hygiene, educational policy, and academic health law.

Chapko, Michael K. *, (Adjunct Research); MA, 1970, Hunter College, PhD, 1972, City University of New York; ambulatoeuctiveness in health care, international health.


De Rouen, Timothy * 1975; PhD, 1971, Virginia Polytechnic Institute and State University; applications of biostatistics to clinical epidemiology of oral and infectious diseases.

Domoto, Peter K. * 1973, (Adjunct); DDS, 1964, University of California (San Francisco), MPH, 1975, University of Washington, pediatric dentistry, dental behavioral science.

Fales, Martha H. * 1959, (Emeritus); PhD, 1978, University of Michigan; dental hygiene.

Grembowski, David * 1981; MA, 1975, Washington State University; PhD, 1982, University of Washington; health services research, survey research, program evaluation, performance of health care systems.

Milgrom, Peter M. * 1974; DDS, 1972, University of California (San Francisco); management of fearful and phobic dental patients, quality of dental care.
Weinstein, Philip * 1972; PhD, 1971, University of Kentucky; dental behavioral science, treatment and prevention of fear and pain, clinical assessment.

### Associate Professors

Chin, Mae 1984, (Clinical); BS, 1963, University of Washington.

Critchlow, Cathy W. * 1979, PhD, 1993, University of Washington; epidemiology of sexually transmitted diseases; HIV prevention, diseases of oral cavity.

Hujoel, Philippe P. 1989; DDS, 1984, University of Brussels (Belgium); MSD, 1986, PhD, 1993, University of Washington.

Leroux, Brian * 1991; MSc, 1985, PhD, 1989, University of British Columbia (Canada); mixed models, correlated data, statistical applications in dentistry, toxicology, and psychology.


Wells, Norma J. 1960; MPH, 1966, University of California (Los Angeles); oral health promotion, dental caries, dental hygiene education.

### Assistant Professors


Mancl, Lloyd A. * 1995, (Research); MS, 1988, University of Washington, PhD, 1992, University of Washington; statistical methodology in periodontal disease, TMD, and correlated data.

### Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/students/crsCat/.

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: Sp.

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**

### Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/students/crsCat/.

DPHS 510 Introduction to Clinical Dentistry (1) Introduction to clinical dental training including infection control, personal dental hygiene, oral pathological 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. Credit/no credit only. Offered: A.

DENT 516 Introduction to Clinical Dentistry (1) 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. Credit/no credit only. Offered: W.

DENT 520 P-Practical Clinical 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 bioceramic restorative 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: S.

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 primarily on 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/refresher 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/criothoaryotomy), 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 (2) Provides student with sufficient knowledge and experience to select and use correct photographic equipment for photographing patients (facial and introral), 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 fundings 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. Offered: AS.

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: A.W.S.P.S.

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: A.W.S.P.S.

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: A.W.S.P.S.

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: A.W.S.P.S.

DENT 700 Master's Thesis (*) Offered: A.W.S.P.S.

Endodontics

Faculty

Chair

Gerald Glickman

Professors

Byers, Margaret R. * 1972, (Adjunct Research); PhD, 1969, Harvard University; sensory neurobiology, neurochemistry, and neuropathologic reactions; neuroimmune interactions.

Glickman, Gerald N. 2001; DDS, 1978, Ohio State University, MS, 1984, Northwestern University, MBA, 1988, Southern Methodist University, JD, 1994, Texas Wesleyan University; endodontics and biomaterials; Diplomate, American Board of Endodontics.

Harrington, Gerald W. * 1969, (Emeritus); DDS, 1959, St Louis University, MSD., 1969, University of Washington; endodontics.

Natkin, Eugene * 1962, (Emeritus); DDS, 1957, New York University, MSD, 1962, University of Washington; endodontics.

Oswald, Robert J. * 1974, (Affiliate); DDS, 1969, Virginia Commonwealth University; endodontics.

Steiner, James C. * 1992, (Clinical); DDS, 1956, Case Western Reserve University, MSD, 1966, University of Washington; normal sensory mechanisms of human dental pulp and pathologic alterations causing pain.

Associate Professor

Pitts, David Leroy * 1977; DDS, 1972, Indiana University, MSD, 1977, University of Washington; endodontics.

Assistant Professor

Oviir, Tiina 1999; DDS, 1986, University of Tartu (Estonia); biology and mechano-sensory system of pulp-dentin complex, dental (bone) fluid.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/students/crsctl/.

ENDO 520 P-Introduction to Endodontics (2) Lecture course dealing with the differential diagnosis and the treatment of pulp pathosis and associated periapical pathosis. This course also deals with criteria and procedures for the evaluation of success and failure of endodontic treatment. Offered: Sp.

ENDO 531 P-Endodontic Technique (4) Lecture-laboratory course in root canal therapy in terms of present-day concepts. Treatment of extracted teeth as practice for clinical cases. Offered: A.

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 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 and difficult diagnostic cases.

ENDO 593 Clinical Practice Teaching (1, max. 3) Closely supervised experience in teaching clinical endodontics to the undergraduate dental student.

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 660 Clinical Endodontics (4, max. 32) Clinical diagnosis and treatment of pulpal pathosis and related sequelae.

Oral and Maxillofacial Surgery

Faculty

Chair
Owen Ross Beirne

Professors
Beirne, Owen Ross * 1985; DMD, 1972, Harvard University, PhD, 1976, University of California (San Francisco); basic and clinical biology of bone tissue reconstruction, bone alloplasts, and anesthesia.

Gehrig, John D. * 1954, (Emeritus); DDS, 1946, MSD, 1951, University of Minnesota; oral and maxillofacial surgery, biological structure.


Oda, Dolphine * 1985, BDentS, 1975, University of Baghdad (Iraq), MSc, 1981, University of Manitoba (Canada); chemical and viral carcinogenesis and genetic alteration of oral cancer.

Worthington, Philip 1976; MD, 1956, BDentS, 1962, University of Liverpool (UK); oral and maxillofacial surgery.

Associate Professors
Bloomquist, Dale S. * 1972; DDS, 1969, University of Washington; oral and maxillofacial surgery.

Egbert, Mark A. 1986; DDS, 1981, University of Washington; oral and maxillofacial surgery.

Kinney, Lisa A. 1996; DDS, 1982, Case Western Reserve University; oral and maxillofacial surgery.

Assistant Professors
Evans, John R. 1982, (Clinical); DDS, 1975, University of Washington; oral and maxillofacial surgery.

Pirinjian, Goarik G. 1994; DDS, MD, 1984, Kiev Medical Institute (Armenia), PhD, 1989, Moscow Medical Institute (Russia); oral and maxillofacial surgery.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/students/crscl.

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 560 P-Directed Studies in Oral Surgery (*, max. 16) See DPHS 449 for course description and prerequisite.

O S 560 Dental Sedation (2) For graduates of 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. Clinical experience is provided in the second half of the quarter.

O S 630 P-Oral Surgery Clinic (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.

O S 651 P-Harborview Clerkship (2-10, max. 10) 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.

Oral Biology

Faculty

Chair
Kenneth Izutsu

Professors
Byers, Margaret R. * 1972, (Adjunct Research); PhD, 1969, Harvard University; sensory neurobiology, neurocytochemistry, and neuropathologic reactions; neuroimmune interactions.

Byers, Peter H. * 1976, (Adjunct); MD, 1969, Case Western Reserve University; extracellular matrix synthesis, genetic disorders of collagen metabolism, secretion, human genetics.
Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/students/crs/.

ORAL 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: AWSp.


ORAL 520 P-Molecular Microbiology and Oral Diseases (3) Lamont Applies students' background knowledge in basic sciences to an understanding of the molecular bases of the interactions between microorganisms and oral tissues that lead to plaque formation and dental diseases. Principles of clinical asepsis and diagnosis of caries and periodontal diseases also covered. Offered: A.

ORAL 521 Medical Microbiology and Immunology (2) Bacterial structure, physiology and genetics. Viral structure and function. Bacterial and viral disease, oral mycosis and periodontal T. UG tract: Innate and adaptive immunity. Immune responses to infection, immunodeficiencies, and autoimmunity.

ORAL 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 therapeutic modalities for oral pathology cases drawn from files of the Division of Oral Pathology. Offered: A.

ORAL 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: AWSp.

ORAL 561- Oral Tissue Development, Structure, and Function (3, max. 6) 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 tissue functions. Prerequisite: permission of instructor. Offered: WSp.

ORAL 562 Supervised Teaching in Oral Biology (1-5, max. 10) Directed and guided experience in selected topics in teaching techniques, teaching philosophies, 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: AWSp.

ORAL 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: AWSp.

ORAL 566 Surgical Oral Pathology (2-4, max. 16) Students are trained to interpret microscopic slides of lesions from the oral cavity and related areas, and to correlate these with the clinical findings. Each student is responsible for the grossing of specimens and the preparation of histology reports. Primarily designed for students with DDS, MD, or DVM degrees. Prerequisite: permission of instructor. Offered: AWSp.

ORAL 569 Advanced Oral Microbiology (2) Lamont Viral, bacterial classification; physiology; toxicity mechanisms reviewed. Formation and compostition of plaque and calculus, and chemical methods of control discussed. Specific microbial flora of acute and chronic gingivitis, early onset forms of periodontitis, and adult periodontitis studied. Principles of antibiotic use reviewed. Offered: A.

ORAL 570 Seminar in Oral Pathology (1-3, max. 9) Morton In-depth study 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: AWSp.

ORAL 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 support structures and diseases of the oral and paraoral soft tissues and bones. Correlations between histopathologic features and clinical findings. Attendance in the laboratory is required. Offered: AW.

ORAL 574 Clinical Stomatognathics (3) Morton Diseases of the oral cavity and jaw area presented as they occur to the practitioner encounters them—detailed clinical pictures, laboratory tests, radiographic findings, surgical exploration for the establishment of a therapeutic diagnosis. Offered: Sp.

ORAL 575 Oral Biology Seminar (1-3, max. 10) Morton Presentation and discussion of current research problems by members of the staff and investigators from other departments in the University, visiting scientists, and trainees. Prerequisite: permission of instructor. Offered: AWSp.

ORAL 576 Molecular Aspects of Epithelial Biology (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: BIOL 440 (or equivalent) or permission of instructor. Offered: odd years; Sp.

ORAL 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 con-
A. mental biology relevant to head and neck embryology and growth, bone biology and orthodontic tooth movements. 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 and molecular biology as well as in vitro techniques of tissue and organ culture. Prerequisite: permission of instructor. Offered: AWSpS.

ORALB 579 Molecular Biology (2) Preslund Applications of molecular biology and recombinant DNA methodologies to oral biology topics of interest in dental sciences. Credit/no credit only. Prerequisite: BIOCHEM 405 or BIOCHEM 406 or equivalent, and permission of instructor. Offered: even years; S.

ORALB 581 Secretory Process in Exocrine Glands (1-3, max. 3) Izutsu Bistruetrical, 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: A.

ORALB 582 Secretory Process in Exocrine Glands (1-3, max. 3) Izutsu Bistruetrical, 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: W.

ORALB 583 Secretory Process in Exocrine Glands (1-3, max. 3) Izutsu Bistruetrical, physiological, and biochemical aspects of individual secretory systems as integrated units. Faculty members with appropriate expertise participate in discussions and presentations during each of the three quarters. Offered: Sp.

ORALB 591 Advanced Topics in Oral Biology 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. Credit/no credit only. Offered: jointly with ORTHO 591; A.

ORALB 592 Advanced Topics in Oral Biology and Medicine II (1-2, max. 2) Herring, Izutsu Review of current scientific literature relevant to cranioskeletal development and growth, bone biology and orthodontic tooth movement. Credit/no credit only. Offered: jointly with ORTHO 592; W.

ORALB 593 Advanced Topics in Oral Biology and Medicine III (1-2, max. 2) Herring Review of current scientific literature relevant to oral soft tissue structure and physiology, including mastication and swallowing, salivary glands, periodontium and dental pulp. Credit/no credit only. Offered: jointly with ORTHO 593; 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.

**Oral Medicine**

**Faculty**

**Chair**

Edmond L. Truelove

**Professors**

Dworkin, Samuel F. * 1974; (Emeritus); DDS, 1958, PhD, 1970, University of Minnesota; dentistry and clinical psychology, pain, psychosomatic and illness-related behavior.

Epstein, Joel B. 1983; DMD, 1976, University of Washington; psychoanalytic and family psychology.

Epstein, Joel B. 1983; DMD, 1976, University of Washington; psychoanalytic and family psychology.

Epstein, Joel B. 1983; DMD, 1976, University of Washington; psychoanalytic and family psychology.

Hollender, Lars Gosta * 1988; DDS, 1958, University of Lund (Sweden), MD, 1964, University of Lund (Sweden); oral radiology.

Izutsu, Kenneth * 1971; PhD, 1970, University of Washington; salivary gland physiology and pathophysiology, Ca2+ signaling in cell function and differentiation.

Le Resche, Linda A. * 1963; DSc, 1977, Johns Hopkins University; epidemiology of pain, specificality of gender and pain; nonverbal behavior (facial expression).

Morton, Thomas H. * 1975; DDS, 1972, Creighton University; oral medicine.

Omnell, Karl-Ake * 1981, (Emeritus); DDS, 1950, Royal Dental School (Sweden), DO, 1957, University of Lund (Sweden); oral radiology.


**Associate Professors**


Sommers, Earl E. * 1972, (Clinical); DDS, 1971, Indiana University; diagnosis/management of orofacial pain, stomatitis, salivary gland disorders and dental management.

Stiefel, Doris * 1972, (Emeritus); DDS, 1964, University of Washington; dental education in oral health care of persons with disability.

**Assistant Professors**

Jackson, Douglas L. * 1997; DMD, 1986, University of Pittsburgh, MS, 1989, University of Michigan, PhD, 1996, University of Minnesota; the peripheral regulation of sensory neurons during tissue injury.

Middaugh, Dan 1967, (Emeritus); DDS, 1961, University of Minnesota, MPA, 1972, University of Washington; oral medicine.

**Lecturers**


Govan, Glenn M. 1999; DDS, 1985, University of Texas (San Antonio), MPH, 1992, University of Texas (Houston); dental education in oral health care of persons with disabilities.

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/undergrad/crsкал/

**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; medication, 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 524 Communication Skills in Dentistry—Introduction to Patient Interviewing (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 525 P-Introduction to Patient Assessment (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 effective understand the “whole patient” so as to diagnose, plan, and provide appropriate treatment. Offered: A.

**ORALM 526 P-Physical and Oral Diagnosis (2) Techniques of patient assessment including history taking, physical examination, and interpretation of findings. Includes development of skills through participation in clinical sessions with patients. Offered: W.

**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 P-General Medicine, Disabilities, and Oral Medicine (6) Review of fundamentals and specifics of most common medical, physical, mental, and psychological conditions that impact the practice of dentistry. Examines how to gather appropriate data and integrate information into plans and practices relevant to the routine management of patients in dental practices. 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 chron-
Chronic Orofacial Pain (2)

Essential clinical and technical information and skills for diagnosis and treatment of acute and chronic pain, including differential diagnosis, and behavorial 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: AWSpS.

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 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 extroral 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, and 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 home-bound service, using mobile equipment. Prerequisite: ORALM 564 and permission of instructor. Offered: AWSpS.

ORALM 665 Clinical Oral Medicine (*, max. 33)

Clinical 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 570 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.

Orthodontics

Chair

Gregory J. King

Professors

Herring, Susan W. * 1990; PhD, 1971, University of Chicago; vertebrate functional morphology, relations between muscular function and skull growth.

King, Gregory J. * 1996; DMD, 1969, Tufts University; bone remodeling, bone cells, mineral metabolism, bone paracrine/endoctrine mechanisms.

Little, Robert M. * 1974; DDS, 1966, Northwestern University, MSD, 1970, PhD, 1974, University of Washington; orthodontics.

Moffett, Benjamin C. * 1964, (Emeritus); PhD, 1952, New York University; anatomy.

Moore, Alton W. 1980, (Emeritus); DDS, 1941, University of California (San Francisco), MS, 1948, University of Illinois; orthodontics.


Associate Professors

Boilen, Anne-Marie 1999; DDS, 1984, University of Brussels (Belgium), MSD, 1986, PhD, 1990, University of Michigan; bone metabolism, skeletal growth and development.


Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/students/crsocal/.

ORTH 449 Directed Studies in Orthodontics (*)

See DPHS 449 for course description and prerequisite. Credit/no credit only. Offered: AWSpS.

ORTH 520 P-Craniofacial Growth and Development in Orthodontic Diagnosis and Treatment (4)

Basic principles of pre- and postnatal growth and development integrated with the recognition, analysis, and treatment planning of problems encountered in dental and skeletal malocclusions. Offered: Sp.

ORTH 522 P-Beginning Adjunctive Orthodontics (2)

Lecture/laboratory instruction in indications for, and techniques of, simple orthodontic tipping, rotational and extrusive movements, as well as orthodontic study model fabrication. Prerequisite: ORTH 520. Offered: S.

ORTH 550 P-Directed Studies in Orthodontics (*, max. 6)

See DPHS 449 for course description and prerequisite. Offered: AWSpS.

ORTH 551 Review of Selected Literature in Orthodontics (1)

Students select a topic for review,
review appropriate literature, and prepare written cri-

ORTH 552 Journal Club (1) Predoctoral students join
students in review of current orthodontic literature.
Offered: AWSp.

ORTH 560 Orthodontics Seminar (1-5, max. 25)
Methods of diagnosis, analysis, and treatment plan-
ing of malocclusion; analysis of methods and theo-
retical principles used in the treatment of malocclu-
sion. The student presents a detailed case analysis
and plan of treatment for each clinical patient super-
vised. Offered: AWSpS.

ORTH 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.

ORTH 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.

ORTH 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.

ORTH 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.

ORTH 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.

ORTH 570 Roentgenographic Cephalometry (2)
Basic principles, history, and techniques of
roentgenographic cephalometry. Offered: AS.

ORTH 575 Post-Retention Seminar (1, max. 2)
Each student is required to locate three or more for-
mer orthodontic patients who qualify as at least ten
years posttreatment. Complete orthodontic records
must be obtained, analyzed, and discussed in the seminar.
Instructor critiques the presentation and
offers similar or contrasting cases for comparison.
Offered: WSp.

ORTH 580 Orofacial Biology (*, max. 8)
Three-quarter sequence pertaining to craniofacial anatomy,
development, and function. Summer quarter is com-
bined lecture/laboratory on clinical and functional anatomy and may be taken separately. Autumn and winter quarters are lecture/seminars on
development, growth, and function. Outside reading assignments by the students are discussed and critiqued during sessions. Offered: AWS.

ORTH 582 Adult Orthodontics Seminar (2)
Seminar for orthodontic, periodontic, and restorative
dentistry graduate students in comprehensive, inte-
grated diagnosis and treatment planning of the den-
tal problems of the adult patient. Offered: AWSpS.

ORTH 585 Surgical Orthodontic Diagnosis and
Treatment Planning (3) Seminar and clinic for ortho-
dontic graduate students and oral surgery residents
in comprehensive, integrated diagnosis, and treat-
ment planning for patients with major facial deformi-
ties. Offered: AWSpS.

ORTH 584 Clinical Management of Cleft Lip and
Palate and Craniofacial Anomalies (2)
Management of these complex entities involves a dedi-
cated, highly specialized multidis-
ciplinary 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: grad-
uate students in orthodontics. Offered: AW.

ORTH 587 Management of Debilitated
Dentitions (1-, max. 2) Integrated diagnosis and
treatment planning for patients with edentulous
spaces, emphasizing use of osseointegrated
implants. Offered: AW.

ORTH 589 Applied Psychology in Orthodontics
and Pediatric Dentistry (1) Application of psycho-
logical theories, research, and intervention strategies
to orthodontics and pediatric dentistry. Topics include
the principles of behavior change, patient compli-
ance with therapeutic regimens, and motivations for
orthodontic treatment. Prerequisite: graduate stand-
ing in dentistry or permission of instructor. Offered: A.

ORTH 590 Scientific Methodology in Dental
Research (2) Review of the scientific method of
Evaluation of dental literature. Discussion of pro-
posed master’s degree research projects. Formulation and discussion of hypothetical research projects related to orthodontics. Offered: W.

ORTH 597 Preclinical Technique (1) Techniques
of construction and manipulation of the edgewise
arch mechanism. Offered: AWS.

ORTH 598 Archwire Formation (1) Principles of
wire bending and the use of orthodontic pliers.
Offered: AS.

ORTH 599 Biomechanics (1) Principles of biologic
reactions to application of orthodontic forces. Credit/no credit only. Offered: S.

ORTH 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.

ORTH 630 P-Introduction to Clinical
Orthodontics (1) Direct clinical application of princi-
ple 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: ASpS.

ORTH 631 Minor Orthodontic Treatment (1)
Clinical treatment of minor orthodontic problems suit-
able for the general dentist i.e., direct clinical appli-
cation 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. Offered: WS.

ORTH 660 P-Clinical Orthodontics (1-6, max. 24)
Clinical application of the techniques in the treatment
of malocclusion. Offered: AWSpS.

ORTH 682 Adult Orthodontics Clinic (1) Clinic for
orthodontic graduate students in the treatment of the
dental problems of the adult patient. Offered: AWSpS.
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 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: A.

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: S.

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 577 Pediatric Dentistry Seminar VIII (2) Series of seminars covering principles and theory of child development and behavior management for pedodontic 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 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 600 Independent Study or Research (*) Prerequisite: permission of instructor. Offered: AW.

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 5-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 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 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’s Hospital Dental Clinic. Offered: S.

PEDO 671 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Children’s Hospital Dental Clinic. Offered: A.

PEDO 672 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Children’s Hospital Dental Clinic. Offered: W.

PEDO 673 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Children’s Hospital Dental Clinic. Offered: Sp.

PEDO 675 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Children’s Hospital Dental Clinic. Offered: A.

PEDO 676 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Children’s Hospital Dental Clinic. Offered: W.

PEDO 677 Hospital Pediatric Dentistry (1-3, max. 3) Diagnosis, management, and treatment of patients with disabilities in Children’s Hospital Dental Clinic. Offered: Sp.

MEPH 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 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 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 699 Pediatric Orthodontic Clinic (1-4, max. 4) Clinical orthodontic care for pediatric patients. Offered: AWSpS.

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Periodontics

Faculty

Chair
Murray Robinovitch

Professors

Ammons, William F. * 1970, (Emeritus); DDS, 1959, University of Texas (Houston), MSD, 1970, University of Washington; periodontics.

Dale-Crunk, Beverly A. * 1972, (Adjunct); PhD, 1968, University of Michigan; keratin biochemistry, epithelial differentiation, antimicrobial peptides.


Lukehart, Sheila A. * 1980, (Adjunct Research); PhD, 1978, University of California (Los Angeles); immunolog-
ogy of infectious diseases, microbiology, sexually transmitted diseases.

Page, Roy C. *; DDS, 1957, University of Maryland, PhD, 1967, University of Washington; conninflammation, immunopathology, periodontal disease.

Persson, Gosta Rutger * 1985; DDS, 1967, PhD, 1978, University of Lund (Sweden); diagnosis of periodontal diseases and the consecutive process of clinical decision making.

Robertson, Paul B. * 1992; DDS, 1966, MS, 1972, University of Alabama; host-bacterial interactions in the etiology and pathogenesis of the periodontal diseases.

Robinson, Murray * 1966; DDS, 1961, University of Minnesota, PhD, 1967, University of Washington; salivary biochemistry and salivary anti-HIV activity.

Associate Professors

Bordin, Sandra * 1981; PhD, 1966, University of Ferrara (Italy); regulation of connective tissue repair by immune-inflammatory complement components.

Darveau, Richard P. * 1989; PhD, 1981, Washington State University; innate host defense interactions between bacteria and their hosts.

O’Neal, Robert B. * 1995; MEd, 1971, Wayne State University, DMD, 1971, University of South Carolina; periodontics.

Assistant Professor

Roberts, Frank A. 1996; DDS, 1990, University of Tennessee, PhD, 1996, University of Alabama; immunological and biochemical regulatory mechanisms of inflammatory periodontal disease progression.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/students/crsca1.

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 542 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: Sp.

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 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: jointly with ORALB 569; 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, immune-inflamatory mechanisms, tumor immunology and immunologic manifestations in mucocutaneous oral lesions as well as immunology of cancers and periodontal disease. Offered: W.


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 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: Sp.

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-) 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 660- Clinical Periodontics (2-6), max. 60 Clinical experience in diagnosis and treatment of periodontal disease.

PERIO 663 Pre-Prosthodontics Clinical Periodontics (*) Clinical diagnosis and treatment of periodontal disease for prosthodontics 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 anesthesia, general anestheisa, intravenous premedication, treating of out- and inpatients.
Prosthodontics

Faculty

Chair
L. Brian Toolson

Professors
Boledner, Charles L. * 1959, (Emeritus); DDS, 1956, MS, 1957, University of Iowa; removable prosthodontics.

Brudvik, James S. * 1979, (Emeritus); DDS, 1957, University of Minnesota; removable prosthodontics.

Frank, Richard P. * 1971; DDS, 1962, University of Iowa, MSD, 1968, University of Washington; removable prosthodontics.


Associate Professors

Faine, Mary P. 1982, (Emeritus); MS, 1975, University of Washington; nutrition.

Rubenstein, Jeffrey E. * 1989; DMD, 1975, Tufts University, MS, 1980, University of Texas (Houston); maxillofacial and implant prosthodontics.


Lecturers


Press, Randi J. 1998; DDS, 1995, Western Ontario University; (Canada), MSD, 1999, University of Washington; implant prosthodontics.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/students/crsCatalog/.

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-Removable Partial Denture Clinical Preparatory Course (4) Lecture-laboratory course dealing with those procedures the dentist must perform in order to fabricate a physiologically acceptable removable partial denture. The student gains experience via clinically simulated laboratory exercises prior to beginning prosthodontic treatment of a partially edentulous patient. Offered: S.

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 prosthetic 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, max. 3) Clinical course involving the diagnosis and management of completely and partially edentulous patients. Removable partial dentures and immediate dentures are fabricated. Follow-up care provided for patients previously treated. Offered: AWSp.

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.

Restorative Dentistry

Faculty

Acting Chair
Richard B. McCoy

Professors

Canfield, Robert C. * 1967, (Emeritus); DDS, 1951, University of Washington; restorative dentistry.

Hamilton, A. Ian * 1968, (Emeritus); DDS, 1936, University of Toronto (Canada), MA, 1958, University of Washington, PhD, 1968, University of London (UK); restorative dentistry.

Hodson, Jean Turnbaugh * 1952, (Emeritus); MS, 1958, University of Washington; restorative dentistry.


Morrison, Kenneth N. * 1948, (Emeritus); DDS, 1943, University of Toronto (Canada), MSD, 1952, University of Washington; restorative dentistry.

Nicholls, Jack I. * 1965; PhD, 1965, Purdue University; dental materials.

Warnick, Myron E. * 1956, (Emeritus); DDS, 1955, University of Alberta (Canada); restorative dentistry.

Yuodelis, Ralph A. * 1963, (Emeritus); DDS, 1955, University of Alberta (Canada), MSD, 1964, University of Washington; restorative dentistry; periodontics.

Associate Professors


Johnson, Barton S. * 1991; DDS, 1985, MS, 1989, University of California (Los Angeles); hospital dentistry, medical compromise, oncology, sedation, pharmacology, molecular biology.

Lepe, Xavier * 1993; DDS, 1980, University of Guadalajara (Mexico), MS, 1987, Loyola University (Chicago); dental materials.

Ostlund, Lyle E. 1972, (Emeritus); DMD, 1947, University of Oregon, PhD, 1993, Johns Hopkins University; restorative dentistry.

Assistant Professors

Albers, Marco 2001, (Clinical); DMD, 1979, Catholic University of Nijmegen (Netherlands), MPH, 1999, University of South Florida; public health dentistry, hospital dentistry, geriatric dentistry.


Junge, Thomas 2000, (Clinical); DDS, 1988, Pontifical Catholic University (Brazil), MBD, 1997, University of Washington; implants, post/core systems.

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 one-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: A.

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 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 532 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 534 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 (1, 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 different 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 procurement of dental materials for clinical practice. Offered: W.

RES D 588 Masticatory Functional Analysis and Occlusal Treatment (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 student. Use and application of several articulators. Offered: A.

RES D 600 Independent Study or Research (*) Prerequisite: permission of graduate program advisor. Offered: AWspS.

RES D 620 P-Introduction to Clinical 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 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.
College of Education

Dean
Patricia Wasley
222 Miller

Associate Deans
James Antony
Deborah E. McCutchen

The College of Education is 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), school counseling, mental health counseling, and school psychology.

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 www.educ.washington.edu or email edinfo@u.washington.edu.

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. Academic counselors 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/principal.html
For superintendents, the School District Leadership Program, depts.washington.edu/k12admin/superintendent.html

Educational Staff Associate Certificates
Educational Staff Associate Certificate preparation programs are offered for the school counselor, school psychologist, school speech language pathologist or audiologist (SLP), occupational therapist, and school social worker. Information concerning requirements and admission may be obtained as follows: school counselor and school psychologist—College of Education Office of Student Services, 206 Miller, or Area of Educational Psychology, 312 Miller, Box 353600, University of Washington, Seattle, Washington 98195-3600; school speech language pathologist or audiologist—Department of Speech and Hearing Sciences, 203 Eagleson, Box 354875, University of Washington, Seattle, Washington 98195-4875; occupational therapist—Department of Rehabilitation Medicine, CC902 University of Washington Medical Center, Box 356490, Seattle, Washington 98195-6490; school social worker—School of Social Work, Box 354900, University of Washington, Seattle, Washington 98195-4900.

Teaching Certificates
The College of Education is authorized by the State Board of Education to prepare and recommend individuals for Residency and Professional Teaching Certification. The Teacher Education Program is accredited by the National Association of State Directors of Teacher Education and Certification, and the National Council for Accreditation of Teacher Education. Graduates are qualified for certification in all states party to the Interstate Certification Compact and in other states as well.

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 viewed on the Web at www.educ.washington.edu/COEWebSite/pdf/TitleII.pdf, or requested via email from 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 course work in special education. All programs are offered at the master’s level. For additional information, email edinfo@u.washington.edu, or visit the College’s Web site at www.educ.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/cert.

For information about the Professional Teacher Certificate programs at the University, contact the Office of Teacher Education at 206-543-1754.

Endorsements on Teaching Certificates
Teachers holding an initial/residency or continuing/professional teaching certificate may add endorsements to their certificates which will qualify them to teach additional subjects. Information on endorsement requirements is available on the Web at www.educ.washington.edu/COEWebSite/research/endorsement.html, or contact the Office of Teacher Education, 211 Miller, Seattle, WA 98195-3600, or email teached@u.washington.edu.

Graduate Degree Programs
Graduate Program Coordinator
206 Miller, Box 353600
206-543-7833
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 may specialize their degree studies in teacher preparation, curriculum and instruction, educational psychology including cognitive studies, educational leadership and policy studies, or special education. A focus on higher education leadership leading to Master of Education or Doctor of Education degrees is offered through the Evening Degree Program. Questions regarding graduate study in education should be directed via email to edinfo@u.washington.edu, or visit the College’s Web site at www.educ.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 counselor and school psychologist—College of Education, 211 Miller, Seattle, WA 98195-3600, or email teached@u.washington.edu.

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 course work 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.

Doctor of Education
The Doctor of Education (Ed.D.) degree is designed to prepare professionals whose primary interest is to

Endorsements on Teaching Certificates
Teachers holding an initial/residency or continuing/professional teaching certificate may add endorsements to their certificates which will qualify them to teach additional subjects. Information on endorsement requirements is available on the Web at www.educ.washington.edu/COEWebSite/research/endorsement.html, or contact the Office of Teacher Education, 211 Miller, Seattle, WA 98195-3600, or email teached@u.washington.edu.

Graduate Degree Programs
Graduate Program Coordinator
206 Miller, Box 353600
206-543-7833
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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 may specialize their degree studies in teacher preparation, curriculum and instruction, educational psychology including cognitive studies, educational leadership and policy studies, or special education. A focus on higher education leadership leading to Master of Education or Doctor of Education degrees is offered through the Evening Degree Program. Questions regarding graduate study in education should be directed via email to edinfo@u.washington.edu, or visit the College’s Web site at www.educ.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 counselor and school psychologist—College of Education, 211 Miller, Seattle, WA 98195-3600, or email teached@u.washington.edu.

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 course work 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.

Doctor of Education
The Doctor of Education (Ed.D.) degree is designed to prepare professionals whose primary interest is to
Consideration for admission to either doctoral program requires a master's degree or equivalent preparation in a field appropriate to the area of specialization, a sample of scholarly writing, goal statement, and other prerequisites stipulated by the individual program of study. Graduate Record Examination general test scores are required.

Although admission is competitive, admitted students have exhibited a wide range of performance on traditional criteria such as GPA and GRE scores. The College values diversity and encourages all interested persons to seek additional information and apply. For more information email edinfo@u.washington.edu or visit the College’s Web page at www.educ.washington.edu.

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 success in one or more of the College's major research areas: (a) curriculum and instruction, special education, or educational leadership and policy making. A student may develop a course of study that integrates various elements of more than one study area (e.g., multietnic 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.

Degree requirements include a minimum of 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.

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 the National Association of Social 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. The School Counseling M.Ed. program is also accredited by the Washington State Board of Education for Initial/Residency and Continuing/Professional teaching certificates and Initial/Residency certification. The administrator preparation programs are accredited through the National Council for Accreditation of Teacher Education and University Council for Educational Administration (UCEA). Graduates qualify for certification in all states party to the Interstate Certification Compact.

Admission Requirements

Applicants to the Master of Education and Master in Teaching degree programs must hold a baccalaureate degree from an accredited institution. Admission decisions are based on the applicant’s grade-point average, Graduate Record Examination general test scores, goal statement, and other prerequisites stipulated by the area of specialization within the College. Application deadlines vary by program.

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.

Faculty

Professors

Abbott, Robert D. * 1975; PhD, 1970, University of Washington; measurement, statistics and research design.


Anderson, Robert A. * 1965, (Emeritus); PhD, 1964, University of Minnesota; educational administration.

Banks, James A. * 1969; MA, 1967, PhD, 1969, Michigan State University; social studies, multiethnic education.

Berringer, Virginia Wise * 1986; PhD, 1981, Johns Hopkins University; educational psychology.

Billingsley, Felix F. * 1977; PhD, 1974, University of Washington; special education (severely handicapped).

Bolton, Dale Leroy * 1965, (Emeritus); PhD, 1958, University of Wisconsin; educational administration.

Boroughs, Homer, Jr. 1978, (Emeritus); MA, 1947, PhD, 1949, University of Washington; history and philosophy of education.

Brammer, Lawrence M. * 1963, (Emeritus); PhD, 1950, Stanford University; counseling, adult development.

Brown, Frances A. 1953, (Emeritus); MA, 1950, Columbia University; business education.

Burgess, Charles O. * 1964, (Emeritus); PhD, 1962, University of Wisconsin; history of education.

Doi, James I. * 1979, (Emeritus); PhD, 1952, University of Chicago; finance and management of colleges and universities.

Driscoll, John P. * 1967, (Emeritus); PhD, 1957, Pennsylvania State University; educational communications.

Edgar, Eugene Bayard * 1972; PhD, 1972, George Peabody College; special education.

Evans, Ellis D. * 1964, (Emeritus); EdD, 1964, Indiana University; human development and cognition.

The Center for the Study of Multicultural Education investigates interventions for pre-
Forster, Jerald R. * 1966, (Emeritus); PhD, 1966, University of Minnesota; counseling.

Foster, Clifford D. * 1959, (Emeritus); PhD, 1957, University of Washington; elementary education (curriculum).

Freehill, Maurice F. * 1962, (Emeritus); EdD, 1948, Stanford University; school psychology/human development and cognition.

Gay, Geneva * 1989; PhD, 1972, University of Texas (Austin); general curriculum theory; multicultural education, and educating African American students.

Gehrke, Nathalie J. * 1979; PhD, 1976, Arizona State University; curriculum.

Gillen, Allen D. * 1989; PhD, 1970, University of Michigan; teacher education, social studies education, and instructional computing.


Haring, Norris Grover * 1965, (Emeritus); EdD, 1956, Syracuse University; special education (early childhood).

Heckman, Paul E. 2000; PhD, 1982, University of California (Los Angeles); school and after-school program revitalization, neighborhood political organizing.

Hill, Paul T. 1993, (Adjunct Research); PhD, 1972, Ohio State University; politics and reform of K-12 education; business and public policy; urban politics.

Hunkins, Francis Peter * 1966, (Emeritus); PhD, 1966, Kent State University; curriculum.

James, William 1979; PhD, 1979, University of Massachusetts; cross-cultural factors and substance abuse issues, program evaluation.

Jarolimek, John * 1962, (Emeritus); PhD, 1955, University of Minnesota; social studies.

Jenkins, Joseph R. * 1978; PhD, 1967, University of Minnesota; special education (mildly handicapped).

Kalsounis, Theodore * 1967, (Emeritus); PhD, 1961, University of Illinois; social studies.

Kerr, Donna H. * 1973; PhD, 1973, Columbia University; philosophy and education.

Kerr, Stephen T. * 1985; PhD, 1975, University of Washington; information technology and telecommunications.

Klockars, Alan J. * 1963; PhD, 1967, University of Washington; measurement, statistics and research design.

Knapp, Michael S. * 1990; PhD, 1981, Stanford University; public policy in education; policy research; sociology of education.

Lowenbraun; Sheila * 1968, (Emeritus); PhD, 1969, Columbia University; special education (hearing impaired).

Madsen, David L. * 1962, (Emeritus); PhD, 1961, University of Chicago; history of education.

Mantle-Bromley, Corinne 2000, (Research); PhD, 1990, University of Idaho; preparing teachers to teach and model critical democratic skills.

McCartin, Rosemarie E. * 1969, (Emeritus); PhD, 1964, University of Southern California; school psychology/human development and cognition.

McCutchen, Deborah Elaine * 1986; PhD, 1985, University of Pittsburgh; cognitive processes underlying reading and writing skills.

Meacham, Merle L. * 1964, (Emeritus); MS, 1956, University of Washington; school psychology.

Mizokawa, Donald T. * 1973; PhD, 1974, Indiana University; human development and cognition.

Morishima, James K. * 1960, (Emeritus); PhD, 1967, University of Washington; measurement and evaluation.

Neel, Richard S. * 1972; PhD, 1972, University of Southern California; special education (behavior disorders, learning disabilities); education (social behavior).

Olswang, Steven G. * 1975; JD, 1971, University of Illinois, PhD, 1977, University of Washington; law and education.

Parker, Walter C. * 1985; PhD, 1982, University of Washington; curriculum and instruction; social studies, democratic education.

Peckham, Percy D. * 1968, (Emeritus); PhD, 1968, University of Colorado (Denver); measurement, statistics and research design.

Reitan, Henry M. 1967, (Emeritus); PhD, 1950, University of North Dakota; educational leadership and policy studies, higher education.

Schwartz, Ilene Sharon * 1991; PhD, 1989, University of Kansas; early childhood, autism, classroom-based interventions, and applied behavior analysis.

Sebasta, Sam L. * 1963, (Emeritus); EdD, 1963, Stanford University; reading/language arts.

Sirotkin, Kenneth A. * 1985; PhD, 1969, University of California (Los Angeles); measurement, statistics, research design and evaluation, educational change and school renewal.

Standal, Timothy * 1976; PhD, 1976, University of Minnesota; reading/language arts.

Stowitschek, Joseph James * 1986; EdD, 1973, Utah State University; early childhood education, linguistic and social development, school-to-adult life transition.

Strayer, George D. 1976, (Emeritus); MA, 1928, PhD, 1934, Columbia University; educational administration.

Tostberg, Robert E. * 1960, University of Wisconsin; philosophy of education.

Valetina, Sheila Denise W. * 1987; PhD, 1978, University of Colorado (Boulder); reading remediation, comprehension, instruction and assessment.

Wineburg, Samuel S. * 1989; PhD, 1990, Stanford University; educational psychology, cognitive psychology of school subjects, historical cognition.

Williams, Donald T. * 1969, (Emeritus); PhD, 1963, Stanford University; higher education.

Williams, Richard C. * 1990, (Emeritus); PhD, 1966, University of Minnesota; career socialization of school principals; the process of school reform.

Winn, William David * 1985; PhD, 1972, Indiana University; educational technology, instructional theory, instructional design, visual information processing.

Zumeta, William M. * 1985; MPP, 1973, PhD, 1978, University of California (Berkeley); public policy analysis, higher education policy and finance, education and workforce policy.

Associate Professors

Antony, James Soto * 1995; PhD, 1996, University of California (Los Angeles); identifying the factors that influence aspirations and success of professional occupations.

Beadie, Nancy Elizabeth * 1993; PhD, 1989, Syracuse University; history of education.

Brown, Robert Lewis * 1965, (Emeritus); EdD, 1961, University of Arkansas; school psychology.

Brown, Sharan E. 1987; MA, 1979, Seattle University, PhD, 1991, University of Washington; educational law.

Cheney, Douglas A. * 1989; PhD, 1992, University of Washington; education, treatment and support of students with behavioral/learning disabilities.


Frenchs, Alberta J. 1955, (Emeritus); MEd, 1951, University of Nebraska; business education.

Frey, Karin S. * 1983; PhD, 1978, University of Washington; social-emotional development, adult-child and peer interaction, motivation, teacher development.

Gray, Carol A. * 1971, (Emeritus); PhD, 1971, University of Washington; school psychology/human development and cognition.

Hansen-Krenning, Nancy M. * 1974; PhD, 1974, University of Oregon; reading/language arts.

Herrenkohl, Leslie R. * 1996; PhD, 1995, Clarkson University; cognitive and social processes of students in preschool and elementary school settings.

Jones, Diane Carlson * 1996; MA, 1969, University of Texas (Austin), MA, 1977, PhD, 1980, Wayne State University; the development of social-cognitive/emotional competencies and peer relations, especially friendship.

Kerry, Samuel E. 1970, (Emeritus); MA, 1960, Marshall University, PhD, 1971, University of Washington; educational leadership and policy study, higher education.


Mazza, James J. * 1996; MS, 1990, PhD, 1993, University of Wisconsin; educational psychology/child and adolescent mental health.

Nelson, Mary Lee * 1990; PhD, 1989, University of Oregon; counseling, interpersonal theory, process research, supervision, gender issues.

Nerad, Maresi * 1988, (Research); PhD, 1988, University of California (Berkeley); race, gender, class, cultural issues; focus on women, higher education.
Nolen, Patricia A. * 1970, (Emeritus); PhD, 1970, University of Washington; school psychology/human development and cognition.

Nolen, Susan B. * 1990; PhD, 1986, Purdue University; achievement motivation in educational settings, development of motivation.

Ostrander, Kenneth H. * 1968; EdD, 1968, University of Tennessee; educational administration.

Pieck, Margaret L. * 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. * 1995; MEd, 1987, Seattle Pacific University, DPhil, 1995, Oxford University (UK); educational leadership, principalship, education policy and politics, and comparative education.

Smith, Albert J. 1988; PhD, 1983, University of Washington; K-12 schools, community-based programs focusing on students at risk of failure.

Smith, John P. * 1969, (Emeritus); EdD, 1969, Stanford University; science education.

Stage, Scott A. * 1995; MS, 1988, PhD, 1991, Florida State University; educational psychology.

Sulzbacher, Stephen 1976, (Adjunct); MA, 1964, Hollins College (Virginia), PhD, 1971, University of Washington; psychiatry and behavioral sciences.

Taylor, Catherine S. * 1991; MS, 1978, PhD, 1986, University of Kansas; educational psychology.

Taylor, Edward, Jr. 1990; MA, 1983, Gonzaga University, PhD, 1994, University of Washington; leadership, critical theory and discourse concerning race in education and society.

Thalberg, Stanton P. * 1965, (Emeritus); PhD, 1964, University of Iowa; school psychology.

Valadez, James R. * 1996; PhD, 1990, University of California (Santa Barbara); sociology of education, social and cultural influences that shape the decisions students make.

Vasquez, James A. * 1975, (Emeritus); PhD, 1973, University of California (Los Angeles); learning (minority youth)/bilingual education.

Windischti, Mark A. * 1996; MS, 1993, PhD, 1995, Iowa State University; the impact of technology, constructivism, and epistemological beliefs on learning.

Assistant Professors

Bashey, Husain Ismail 1968, (Emeritus); MA, 1955, Bombay University (India), MA, 1960, MacMurray College, PhD, 1975, University of Oregon; counseling.

Bell, Philip L. * 1998; PhD, 1998, University of California (Berkeley); cognition and learning, science education, learning technologies.

Copeland, Michael A. * 2001; PhD, 1999, Stanford University; the principalship, research and development of problem-based instructional materials.

Duto, Elizabeth M. 1999; PhD, 1999, University of Michigan; critical and feminist approaches to literacy; children’s and adolescent’s gendered literacy practice.

Kazemi, Elham * 1999; PhD, 1999, University of California (Los Angeles); sociocultural analyses of learning, mathematics education, teacher education, school reform.

Kimball, Kathleen L. * 1987; EdD, 1993, University of Washington; school leadership, assessment and accountability, program evaluation, education reform.

Rodriguez, Patricia 1999; PhD, 2001, University of North Carolina; special education (early childhood).

Sandall, Susan R. * 1999; PhD, 1986, University of Washington; effective intervention practices for very young children with disabilities.

Stevens, Reed R. * 1998; PhD, 1999, University of California (Berkeley); ethnography research on cognition, learning, social interaction, and technology use.

Strikus, Tom * 2000; PhD, 2000, University of California (Berkeley); second language development, ESL/bilingual education, literacy, education policy.

Thomson, Jennifer B. 1992, (Research); PhD, 1992, University of Victoria (Canada); neuropsychology, reading and learning disabilities, cognition and learning.

Tria, Gary A. 1999; PhD, 1999, University of Maryland; oral and written language development, disabilities, assessment, and intervention.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/students/crsCat/.

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: AWSpS.

EDUC 305 The Purpose of Public Schools in a Democracy (5) 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: AWSpS.

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’ interests 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’ interests 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’ interests 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 certify- ed teachers working on additional endorsements. Arrangements must be made prior to enrolling with an advisor in the Teacher Education Office. Offered: AWSpS.

EDUC 700 Master’s Thesis (*) Prerequisite: permission of faculty advisor and graduate program coordinator. Offered: AWSpS.

EDUC 800 Doctoral Dissertation (*) Prerequisite: permission of supervisory committee chairperson and graduate program coordinator. Offered: AWSpS.

Curriculum and Instruction

EDC&I 324 Physical Education and Health in the Schools (2) Techniques and procedures for teaching physical education and health in elementary and secondary schools. For students in Teacher Education Program. Credit/no credit only.

EDC&I 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 TC 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 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 cooperative management of classroom 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) Preparing preservice and inservice 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 459 Workshop in Instructional Improvement: Reading (1-6, max. 15) Projects on the improvement of reading instruction. 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 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 466 Social Studies Education: Secondary School Programs and Practices (3) Stresses curriculum patterns, instructional procedures, resource materials, and a selection of content in social studies for middle, junior, and senior high school teachers. For experienced 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. Offered: A

EDC&I 471 Science Education: Secondary School Programs and Practices (3) Survey of the status and potential role of science in education; trends and their implications for the teaching of both biological and physical sciences in the junior and senior high schools; representative curricula and related teaching procedures; the psychology of concept formation and problem solving, and organization of science programs.

EDC&I 472 Environmental Education for Teachers (3) Status, selected problems, and role of environmental education in program of elementary, middle, and junior high schools. Opportunity to examine and receive instruction in use of existing environmental education instructional materials. Instruction is in the spirit of inquiry/discovery.

EDC&I 473 Workshop in Instructional Improvement: Science (1-6, max. 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, 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 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 (computing, 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 486 Educational Technology in Alternative Settings (3) How educational technology can be used to encourage learning in non-school 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 487 Workshop in Instruction of Curriculum (1-6, max. 15) Emphasis is placed on objectives, methods, and materials as related to the concepts and processes of science.

EDC&I 495 Workshop in Instruction of Teaching: Selected Topics, Issues, or Problems (1-6, max. 15) Individual or group projects to help teachers adapt, develop, and design 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 (1-3, 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 elementary schools, invention of schools, the invention of teaching aids, evolution of 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
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 510 or instructor permission.

EDC&I 524 Seminar in Teacher Education (3, max. 6) Focus on recent research, issues, and proposals for future development of teacher education. Certification, and continuing professional growth. Alternate year offering focuses on either preservice or in-service issues. Prerequisite: permission of instructor.

EDC&I 530 Approaches to Literacy Instruction (3) 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 to teaching reading and writing. 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: written permission of instructor 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 reading 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 542 Seminar in Bilingual Education: Instructional Foundations and Issues (4) Study of the theoretical foundations and instructional implications of psychology and linguistics as they apply to bilingual education. Assists graduate students in exploring learning styles of bilingual children and in becoming familiar with the crucial issues in bilingual education.

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 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 forming an educational experience 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 the 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 an educational arena. Prerequisite: prior graduate course work or experience in education.

EDC&I 556 Elementary School Curriculum (3) 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 curricular foundations.

EDC&I 560 Seminar in Language Arts (3) Study of language with special attention to research pertaining to social contexts 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 reading, oral language, writing, and the relationship between teaching and learning. 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. Prerequisite: EDC&I 561.

EDC&I 565 Seminar in Social Studies Education: Elementary Emphasis (3) Intensive study of the school's 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 school's 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 568 Educating Ethnic Minority Youths (4) Intensive analysis and review of the research on 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 curricular 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, 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 or 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 or consent of instructor. Offered jointly with EDPYS 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 cogni-
tive 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 engagement 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 graphics in 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 opportunities 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) Focuses on problem areas of greatest importance and interest in the field of educational communication. 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, curricular and instructional 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 issues 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 evaluation procedures. Examples are drawn from the various 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.

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 on the 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 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 roles, emerging policy issues, 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
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 journal of readings 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 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 educational 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 (5, 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 relationship 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 prob-
lems; individual problems and investigations. For teachers, administrators, and those using education- 
al sociology as a field for advanced degrees.

EDLPS 543 Seminar: Research in Educational Sociology (3) Theory, concept, and method of soci- 
ological 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 unfa- 
miliar contexts, identifies the common pitfalls of inter- 
national comparisons. Reviews ethnographic methods of interviewing, cross-cultural observa- 
tion strategies, documentary analysis. Education policy and practice is primary focus; useful for com- 
paring other public policy issues internationally.

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 con- 
temporary 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 assump- 
tions 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 
thetical bases that allow to complex organizations, charac- 
terized by problematic goals, knotty decision-making 
processes, and fluid participation. Impact of in- 
formation, power, beliefs, resources, organizational 
structure, and environment. Although issues dis- 
cussed are generic, examples focus on educational 
organizations.

EDLPS 552 Organizational Change in Education (3) Change and innovation in educational organiza- 
tions. Theoretical approaches include socioecological, 
rational planning, political perspectives, and those associated with notion of organized anarchies. 
Specific topics such as roles of 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 semi-

EDLPS 563 Education, The Workforce, and Public Policy (3, max. 6) Examination of policy issues 
involved in education, training, the economy, and the development of the nation's human resources. Relationship between education, training, and work, 
underutilized workers, race and gender discrimina- 
tion 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 financial impli- 
cations of educational principles. The economics of 
public education. Problems of federal, state, and 
local school support. Financing capital outlay, re- 
search, 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 
study of power relations and political processes are 
provided.

EDLPS 566 Education Policy Serving Disenfran- 
chised 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 pro-
grams and policies on institutions and individuals. 
Designed for advanced doctoral students. Others 
admitted with permission of instructor.

EDLPS 567 Education Policy and the Improve- 
ment of Teaching and Learning (3) Examines con- 
nections between policies and classroom practice, 
intended and unplanned education settings. Of particular concern is the capacity of policy to improve the qua-

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 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 
annotated in Time Schedule for topic(s) to be cov-

ed.

EDLPS 580 The American College and University 
(3) Introduction to contemporary United States high-
er 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; profes-
sionalization 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 grow-
ing popularity as a governance mechanism; the legal 
framework within which it operates; the rights, pow- 
ders, and duties subsumed under it; operation; and 
its relationship to the traditional form of faculty gov-
ernance 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 fund-
ing 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 admin-
istration of community colleges.

EDLPS 589 The Community College (3) Intensive 
study of the community college—its history and pres-
ent and future status. Curriculum, instruction, finan-
cial, and governance issues are also discussed.

EDLPS 590 Student Populations and Experiences 
in Higher Education (3) Examines foundational liter-

EDLPS 591 Higher Education and Public Policy 
(3) Covers public policy processes affecting higher 
education. Issues examined vary, but typically 
include fiscal context of higher education policy, 
access, equity, distance learning, and accountability 
policies.

EDLPS 598 Special Topics in Higher Education (1-
6, max. 15) Readings, lectures, and discussions per-
taining 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 fac-
tulty 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 pros- 
spectus endorsed by the appropriate faculty 
adviser for the work proposed, and which with per-
misson of the instructor, must be filed with the 
Office of Leadership and Policy Studies in the College of Education. Credit/no credit only. Prerequisite: per-
mission of instructor.

EDLPS 601 Internship (1-4, max. 12) Name of fac-
ulty 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 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 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 signals, attention deficit, and hyperactivity; language, reading, and learning disabilities; and medical syndromes. Credit/no credit only. Offered: Sp.

**EDPSY 490 Basic Educational Statistics (3)** Measures of central tendency and variability, point and interval estimation, linear correlation, hypothesis testing. Offered: AWSp.

**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 (1)** 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: AWSp.

**EDPSY 500 Field Study (1)** 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: AWSp.

**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 development perspectives on learning. Offered: AWSp.

**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 understanding the basic 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. Offered: AWSp.

**EDPSY 509 Educational Issues in Human Development (5)** Human development theories and models. Educational implications of these theories and their problematics, 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)** Designated 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: EDCI 460 or permission. Offered: alternate years; Sp.

**EDPSY 519 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. Review of research of language environments that relate to early literacy and education and how to use this information to modify environments for special needs children. Offered: jointly with EDSE 521; W.

**EDPSY 520 Psychology of Reading (3)** Reading and writing processes in developmental contexts. Current research and theories on reading processes. Prerequisite: EDPSY 501 or equivalent.

**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 processes, together with instructional implications. Prerequisite: EDPSY 501 or equivalent.

**EDPSY 522 Reading Disability Clinic (3-5)** Supervised practicum in diagnosis and remediation of reading disabilities. Prerequisite: EDTEP 532, EDTEP 533 or equivalent; EDCI 460 or permission of instructor.

**EDPSY 524 Problem Solving and Critical Thinking in Education (3)** Study of the classic and contemporary approaches to problem solving and critical thinking. Prerequisite: 12 credits in educational psychology or psychology specialization and permission of instructor.

**EDPSY 525 Creativity and Education (3)** Study of the classic and contemporary research literature about creativity with emphasis upon applications to educational practice 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 in 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.
EDPSY 534 School Problems of Adolescence (3) Study of the classic, contemporary, and emerging school problems of adolescents with an emphasis on 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) Examines multifaceted issues and problems in study and nurture of highly capable children and youth in the educational setting. Emphasis is 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 Learning Variables of Minority Children: Instructional Implications (3) Provides students with data base regarding (1) four variables (language/dialect, cognitive style, locus of control, and motivational systems) that affect learning among minority students, and (2) teaching strategies appropriate for these cultural socioeconomic variables. No credit given for students who have completed EDC&I 425.

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.

EDPSY 545 Preregistration (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: enrolled in school counseling or 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. Offered: W.

EDPSY 550 Family Counseling (3) Introduction to family counseling theory and practice, emphasizing family dynamics and communication analysis. Prerequisite: 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. Theorifer: credit/no credit only. Prerequisite: graduate standing in school psychology specialization and 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 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) Offers 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. Offered: W.

EDPSY 566 Case Study Seminar (1-6, max. 6) Integrating theoretical concepts with practice/serve issues. Cases selected for discussion represent a wide range of problems found in schools. Activities include group supervision and peer review. Offered: AWSp.

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. 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. Limited to graduate students in school psychology. Offered: A.

EDPSY 571 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 471 or permission of the instructor.

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: school psychology or counseling student or permission of instructor. Offered: A.

EDPSY 573 Psychological Assessment of Preschool Children (3) Students learn to give and interpret assessment 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 specialization 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 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.

EDPSY 583 Seminar in Learning and Thinking (3, max. 15) Seminar in the psychology of learning language and language learning. Each seminar is
EDPSY 584 Seminar in Quantitative Methods (3, max. 15) Seminar on such topics as measurement techniques, research design, psychometrics, and statistics.

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&E 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&E 578; second-year doctoral standing and one course in statistics. Offered: jointly with EDC&E 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: A.

EDPSY 589 Scholarly Writing in Education and Psychology (3) Introduction to the theory 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: A.

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 ecological constraints on the evaluators. Prerequisite: EDPSY 593, EDPSY 594, EDC&E 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 interpolated scores; evidence for validity and reliability. Prerequisite: EDPSY 490 or equivalent, EDPSY 592, EDPSY 595.


EDPSY 600 Independent Study or Research (*) Prerequisite: permission of instructor. required. Offered: A/WSp.

EDPSY 601 Internship (3-10, max. 10) Offered: A/WSp.

Special Education

EDSPE 404 Exceptional Children (3) Edgar, Rodríguez Children with disabilities studied from the point of view of education. Offered: AWS.

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: A.

EDSPE 419 Interventions for Families with Children with Disabilities (3) Rodríguez Upper-division course for professionals and paraprofessionals working with families of children with disabilities. Offered: Sp.

EDSPE 420 Classroom Management of the Physical Problems of Individuals with Severe or Profound Disabilities (3) Overview of physical management of pupils with severe or profound disabilities in educational settings. Principles of normal motor development, motor learning, and handling procedures are applied to the development of classroom strategies. Effects of abnormal motor development on educational programming. Offered: WS.

EDSPE 496 Workshop in Special Education (1-10, max. 15) Demonstration, observation, and/or participation with groups of disabled children in laboratory or controlled classroom settings. Offered: A/WSp.

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: A/WSp.

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: A/WSp.

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 paraprofessionals. Focus is on the role of the special educator in forming and sustaining school, family, and community partnerships. Offered: W.

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) Billingsley Addresses issues and practices in the development of appropriate materials for students with moderate to severe or profound disabilities. Includes curriculum models, methods for the selection of appropriate skills for inclusion in Individualized Education Plans, and establishing priorities for instruction. Offered: W.

EDSPE 507 Instructional Methods for Students with Moderate to Severe Disabilities (3) Billingsley 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. Offered: A.

EDSPE 510 Behavioral Measurement and Management in the Classroom (3) White 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) Billingsley, 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, Troia Diagnostic instruments used in the clinical appraisal of exceptional children. Theoretical and measurement considerations are used to buttress practical experience in appraisal related to eligibility and intervention. Offered: AS.

EDSPE 514 Fundamentals of Reading for Children with Disabilities (3) Jenkins Emphasis on basic pre-reading and reading skills, such as phonics and structural analysis, specifically for the disabled child. Acquisition of comprehension skills by the disabled. Diagnosis of reading disabilities by classroom teachers. Offered: Sp.

EDSPE 515 Problems and Issues in Special Education (3, max. 9) Edgar 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: EDSPE 490 and EDSPE 591 or equivalent and permission of instructor. Offered: A/WSp.

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 topic and submits a proposal. Topics such as the procurement of subjects, the reporting and commu-
onication of research findings, and the evaluation of research are stressed. The seminar leads to the evolu-
tion of a viable dissertation proposal. Credit/no
credit only. Offered: AWSp.

EDSPE 520 Seminar in Applied Special Education
(1-12, max. 12) Jenkins, Rodríguez, Sandal,
Schwartz, Troia Designed for graduate students in
special education. Focus on contemporary topics
relating to the application of the theoretical con-
structs to special education. Offered: AWSp.

EDSPE 521 Communication and Language in
Young Exceptional Children (3) Schwartz 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 infor-
mation to modify environments for children with
special needs. Offered: jointly with EDSPSY 519; W.

EDSPE 522 Seminar on the Education of Students
with Severe Disabilities (3) White Advanced gradu-
ate seminar arranged to study and discuss the
essential components of providing a comprehensive
approach to the identification and education of
infants, children, 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: SP.

EDSPE 525 Educating Students with Autism or
Severe Behavior Disorders (3) Schwartz Consideration
of the identification, etiology, education,
and outcomes of individuals with autism or other
severe behavior disorders. Offered: Sp.

EDSPE 526 Techniques for Instructing Social
Behaviors for Elementary Students with Mild
Disabilities (3) Cheney, Troia 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. AsSpS.

EDSPE 541 Education of Children with Behavior
Disorders (3) Cheney, Troia Introductory course cov-
ering characteristics of and educational practices for
children with emotional/behavioral disabilities.
Reviews theory, definitional issues, models, assess-
ment, and instructional methods for educating chil-
dren with emotional and behavioral disorders.
Students develop a working knowledge of educa-
tional approaches for teaching students with emo-
tional/behavioral disabilities. Offered: alternate years;
W.

EDSPE 545 Instructional Modifications for the
Education of Children with Mild Disabilities (3)
Lovitt, Troia In-depth analysis and application of sev-
eral modifications of instructional techniques nec-
tary for the education of students with mild disabili-
ties. Offered: WS.

EDSPE 546 Seminar in Educating Children with
Behavior Disorders (3, max. 9) Cheney, Neel
Advanced-level seminars focus on contemporary
research topics relating to the effective education of
classroom children with special behavior disorders. Students
analyze and review research pertinent to the chosen
topics and prepare a scholarly manuscript for dis-
sertation. Offered: alternate terms; 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 disabili-
ties with focus on the synthesis of research findings
and their application to the educational environment.
A paper suitable for publication is required.
Prerequisite: course in learning theory, introductory
course in learning disabilities, or equivalent prepara-
tion.

EDSPE 561 Educational Assessment of Young
Children with Special Needs (3) Sandall Specialized
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 applica-
tion 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 disabili-
ties. Promote specific preschool curricula and develop skills to assist students in critiquing and
evaluating curricula. How to adapt materials for spe-
cific populations and to plan a program for excep-
tional preschoolers. Offered: SP.

EDSPE 563 Issues in Working with Families of
Young Children with Special Needs (3) Rodriguez
Adjustment of parents to the presence of a young
child with disabilities, transactions that occur
between parents and their children, procedures that
facilitate the child's development through these inter-
actions, and strategies to promote relationships among families and professionals. Offered: W.

EDSPE 565 Seminar: Early Childhood Education
for Children with Disabilities (3, max. 9) Rodríguez,
Sandal, Schwartz Advanced seminar on early child-
hood education for infants and young children with
disabilities. Historical and current research from spe-
cial 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) Introduces students
to theory and current research related to early inter-
vention with infants and toddlers and how to evalu-
ate research articles. Selected topics cover typical
and atypical development in the areas of cognitive,
social communication, and social development, as
well as issues in assessment, curricula, and interven-
tion strategies.

EDSPE 599 Independent Studies in Education (*)
Independent studies or readings of specialized
aspects of education. Registration must be accom-
panied 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 appropriat faculty
adviser for the work proposed. Offered: AWSpS.

EDSPE 601 Internship (1-10) Prerequisite: gradu-
ate standing and permission based on prearrange-
ment of internship placement and approval by advis-
er. Offered: AWSpS.

Teacher Education Program

EDTEP 501 First Quarter Field Experience—
Elementary (2) Field experience and use of reflec-
tive process in small group discussions accompanying
the first quarter of study in the Elementary Teacher Education Program. Field experience dur-
ing the quarter in supervised school placements. Credit/no credit only. Prerequisite: elementary TEP student.

EDTEP 502 Second Quarter Field Experience—
Elementary (3) Field experience and use of reflect-
tive process in small group discussions accompanying
the second quarter of study in the Elementary Teacher Education Program. Field experiences dur-
ing the quarter in supervised school placements. Credit/no credit only. Prerequisite: elementary TEP student.

EDTEP 503 Third Quarter Field Experience—
Elementary (4) Field experience and use of reflect-
tive process in small group discussions accompany-
ing 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: ele-
mentary TEP student.

EDTEP 505 Portfolio: Tool for Reflection—
Elementary (2) Group discussions fostering integra-
tion of course work and field experience through
reflection. Using program goals and targets, stu-
dents illustrate their learning through multiple forms of evidence. Final portfolio is presented to an audi-
ence. 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 mat-
ters 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
(3) Focus on mathematics from the perspective of
the learner and on the meaning of understanding a
mathematical 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 conjunc-
tion with field experience, students extend under-
standing 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 activi-
ties similar to those used with elementary school chil-
dren and to experience many of the problems and
successes of preadolescents. Prerequisite: elemen-
tary TEP student.

EDTEP 531 Teaching and Learning in Literacy I (3)
Investigation of the multiple natures of literacy devel-
oped. Students study the impact of culture and
family on literacy development by reading and dis-
cussing a variety of text while also experiencing the
development of their own learning through literature
study, the writing process, and oral presentations.
Prerequisite: elementary TEP student.

EDTEP 532 Teaching and Learning in Literacy II
(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 stu-
dent progress. Prerequisite: elementary TEP student.

EDTEP 533 Teaching and Learning in Literacy III
(3) Introduces participants to the content and
process of literacy learning in elementary school.
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) Introduction to objectives, content, and teaching strategies for social studies and the arts as taught in elementary school.

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, prejudice reduction, equity pedagogy, and empowering school culture and social structure. Prerequisite: TEP student.

EDTEP 552 Assessment in Elementary Education (3) Emphasis on methods of assessment that reinforce understanding of the various disciplines. Includes performance assessment, traditional exams, and observational exams. Prerequisite: elementary TEP student.

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 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 (-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 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. Three 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. Four 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 the third quarter of study in the 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 portfolio 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, max. 6) 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

Dean
Denise D. Denton
371 Loew

Associate Deans
Mary E. Lidstrom
Chen-Ching Liu

General Catalog Web page: www.washington.edu/students/gencat/academic/College_Engineering.html
College Web page: www.engr.washington.edu

Engineering is an increasingly critical societal enterprise. More than ever before, the engineer is challenged both to design products whose value is high both socially and economically and to provide for efficient manufacture of such products within the constraints of environmental protection and diminishing raw-material resources. Requirements imposed on the transportation system and other elements of society's physical infrastructure pose analogous challenges. At the same time, reductions in computer costs and increases in sophistication are dramatically influencing both the products and processes designed by the engineer and the actual practice of engineering.

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.

The College offers active educational and research programs, both departmental and interdisciplinary, at the graduate levels. (See Interdisciplinary Engineering Studies Program for interdisciplinary undergraduate and 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 1999, 1,566 upper-division undergraduate majors and 1,407 graduate students were enrolled in engineering programs taught by a faculty of 195 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 at the University's Academic Computer Center.

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 his or her 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, and the Society of Hispanic Professional Engineers. The Pre-Engineering Student Association (PESA) is the major College-wide organization for all students enrolled in a pre-engineering course of study but not yet admitted to a department. The Student Council, comprising student representatives from all departments and professional societies, is the major College-wide student organization and participates actively in College affairs. Honor societies open to engineering students are Tau Beta Pi and Sigma Xi.

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.

Educational Outreach
Engineering Professional Programs:
www.engr.washington.edu/~uw-epp/

Education at a Distance for Growth and Excellence: www.engr.washington.edu/edge/

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. Through Engineering Professional Programs (EPP) and Education at a Distance for Growth and Excellence (EDGE) thousands of practicing engineers update their technical knowledge or pursue advanced degrees each year. For more information contact Engineering Professional Programs at 206-543-5539, or Education at a Distance for Growth and Excellence at 206-685-2242.

Special Facilities
Office of Engineering Research
Coordinator, Mary Heusner
372 Loew, Box 352180

www.engr.washington.edu/research/

The Office of Engineering Research promotes, stimulates, and coordinates research in all fields of engineering. Its primary role is to coordinate interdisciplinary research programs and national research initiatives. The Office of Research 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.

Interdisciplinary Engineering Studies Program
356 Loew
The College of Engineering directly administers non-departmental undergraduate and graduate degree programs. Some engineering fundamentals and writing courses required for admission to the departments are managed by specific engineering departments.

Graduate Programs
The College also offers graduate programs leading to the Master of Science in Engineering and Master of Science degrees, without designation of a specific major.

Approved programs lead to the M.S. degree in civil, mechanical, electrical, chemical, and interdisciplinary, and approved programs lead to the M.S. degree in civil engineering, interdisciplinary, and master science and engineering. Admission requires a B.S. degree in engineering, mathematics, or physical science, and evidence of aptitude for graduate study. Submission of scores on the Graduate Record Examination is required.

Master of Science in Engineering
The Interdisciplinary Master of Science in Engineering (M.S.E.) and Master of Science (M.S.) program is intended for students whose desired course of study includes two or more engineering departments and may also include study in departments outside the College of Engineering. Applications and files of students entering the M.S./M.S.E. option are handled in the Office of Organizational Infrastructure. Admission to the interengineering 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. Graduation and entrance requirements, which differ for the various programs, may be obtained from the Office of Organizational Infrastructure, College of Engineering, 206-543-8590.

Program in Engineering and Manufacturing Management—PEMM Fellows
For students interested in a career in manufacturing management, PEMM offers a two-year (24-month) joint degree program leading to both M.B.A. (Master of Business Administration) and M.S.E. (Master of Science in Engineering) degrees. PEMM applicants must apply to the M.B.A. program as well as the M.S.E. Interengineering/PEMM program. Prospective students must take the GMAT examination before applying. The Graduate Program Office in the School of Business must receive all M.B.A. applications by March 1. The deadline for submitting the PEMM application to the College of Engineering is March 1. Graduation and entrance requirements may be obtained from the Program in Engineering and Manufacturing Management (PEMM) at 206-543-5349 or 206-685-8047 or via email at pemm@u.washington.edu.
Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs/scat/.

ENGR 498 Special Topics in Engineering (1-5, max. 6) Offered: AWSpS.

ENGR 499 Special Projects in Engineering (1-3, max. 6) Offered: AWSpS.

Courses for Graduates Only

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

General Catalog Web page: www.washington.edu/students/gencat/academic/Aeronautics_Astro.html

Department Web page: www.aa.washington.edu

206 Guggenheim

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. Established in 1930, the department is the only one of its kind in the Pacific Northwest, a region whose vast aerospace industry is a major contributor to the technological development, economic vitality, and security of the United States. Educators and researchers in the department have contributed profusely to all major areas of aerospace engineering. Graduates at all degree levels have been successful and valued at Global, national, and international industries, as well as at government organizations and institutions of higher learning. The department is unique at the University of Washington, in terms of its specific technological applications, its capacity for multidisciplinary integration of complex systems, and its long-term interaction with local industry.

Graduate Program

Graduate Program Coordinator

206 Guggenheim, Box 352400

206-616-1113

gradadvising@aa.washington.edu

The Department of Aeronautics and Astronautics offers programs that provide a foundation in the engineering sciences and study in various engineering applications. These lead to the degrees of Master of Science in Aeronautics and Astronautics, Master of Aerospace Engineering, or Doctor of Philosophy.

Master of Science in Aeronautics and Astronautics (M.S.A.A.)

The M.S.A.A. is a traditional research-oriented master’s degree program intended for students who are interested in research and development careers in industry or government, or who plan to continue graduate studies toward a Ph.D.

The M.S.A.A. program of study is tailored to the needs and interests of the student. Each program must be approved by the department graduate committee and must provide breadth through a variety of subjects, depth through extensive study of a specialized field, and analytical strength. Minimum programs consist of either 13 courses, or 10 courses and a 9-credit thesis.

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 aeronautics, such as business, management, manufacturing, or technical communication. The student must complete a minimum of 33 credits of course work and 8 credits of independent or team project work in a program approved by the department graduate committee. The Master of Aerospace Engineering (M.A.E.) program is structured to permit completion of the degree requirements as a full-time or part-time student. The M.A.E. is a terminal degree and is not intended for those seeking a Ph.D.

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. In addition to the formal steps for obtaining the degree listed in the Graduate School section of this catalog, the student must complete an approved program of study consisting of 30 credits of course work beyond that required for the Master of Science in Aeronautics and Astronautics.

Research Activities

Research facilities include the Kirsten 8x12-foot low-speed wind tunnel, a 3x3-foot low-speed wind tunnel, a water tunnel, a small supersonic blow-down tunnel, a hypervelocity projectile accelerator (ram accelerator), material and structural test machines, a composite-materials laboratory, an unmanned aerial vehicle (UAV) laboratory, a controls laboratory, various plasma and fusion-research and engineering physics laboratories, and a development laboratory for small satellites. A variety of computer facilities is available, including 17-computer parallel cluster for a computational fluid dynamics research. The Aerospace and Energetics Research Program, which conducts interdisciplinary research in the Aerospace and Engineering Research Building, is also part of the Department of Aeronautics and Astronautics.

Externally funded research is carried out by faculty members and students on such topics as buoyant flows, flow separation control, combustor mixing, shear layers, computational fluid dynamics, internal flows, reacting flows, ram accelerators, space energy systems, space system design, control system design and engineering, robust and optimal control, wing optimization, impact mechanics, composite material structure and fracture, plasma dynamics, space propulsion, and fusion research.

Special Facilities/Programs

Aerospace and Energetics Research Program (AERP)

120 Aerospace and Engineering Research Building

The Aerospace and Energetics Research Program is directed toward high-technology engineering research and teaching through research. The program anticipates and tries to outpace the nation’s critical technology needs. It therefore emphasizes those engineering skills that both match the requirements of the present and future, and develop in students a broad understanding of the impact of technology on society. Suitable programs are designed to develop the student’s imagination and a willingness to research the complex and rapidly changing future of engineering. This directs the faculty’s efforts and creates within the principal investigators, research faculty, and students the concept of engineering as an adventure.

The program covers many fields, usually centered on energy or aerospace systems. Currently the program is active in plasma engineering related to fusion power and space propulsion, ram accelerators for direct space launch, and research on new terrestrial energy conversion and vehicle propulsion technologies.

University of Washington Aeronautical Laboratory (UWAL)

Kirsten Aeronautical Laboratory

The primary facility that UWAL operates is the Kirsten Wind Tunnel, a subsonic, closed-circuit, double-return tunnel with an 8x12-foot test section. Undergraduate students, usually from the Department of Aeronautics and Astronautics, are employed at UWAL to run tests for University research or for commercial customers for instructional uses, such as student projects. UWAL provides departmental support for research projects such as the unmanned aerial vehicle (UAV) project.

Admission

Students who have earned a baccalaureate degree in an accredited program of aeronautics and astronautics or closely related field are eligible for the M.S.A.A. and M.A.E. programs. Backgrounds in related fields require review on a case-by-case basis and may require preparatory courses, depending on the student’s educational objectives and previous studies. Admission is competitive, with the equivalent of a 3.00 GPA a minimum standard. Submission of verbal, quantitative, and analytical scores on the Graduate Record Examination is required. Entrance requirements details, application deadlines, application forms, and advising literature may be obtained from the department office or the department’s Web page (www.aa.washington.edu).

Admission to the Doctor of Philosophy program requires a master’s degree, preferably in aerospace or mechanical engineering. The minimum GPA is 3.35 and satisfactory performance on a departmental qualifying examination.

Additional Information

Students who intend to work toward advanced degrees must apply for admission to the Graduate School. 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 departmental programs, contact the Graduate Program Coordinator, 206 Guggenheim, Box 352400, or visit the department’s Web site at www.aa.washington.edu.

Faculty

Chair

Adam Bruckner

Professors

Breidenthal, Robert E. * 1980; PhD, 1979, California Institute of Technology; turbulence, entrainment, mixing, vorticity.

Bruckner, Adam * 1972; PhD, 1972, Princeton University; space systems, propulsion, hypervelocity accelerators, energy conservation astrophysics.
Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

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 applications. Prerequisite: PHYS 123; CHEM E 260. Offered: W.


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 406 Gas Discharges for Plasma Processing and Other Applications (3) Lectures and demonstrations on direct-current and radio-frequency electrical discharges for sputtering, plasma etching and other plasma processing applications. Prerequisite: either MATH 136 or MATH 307; PHYS 122.

A A 409 Computer Tools for Aerospace III (2) Introduction to programming, 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 (4-5) 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 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 421 Spacecraft and Space System Design II (4-5) 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 applications to 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 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 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-hour laboratory per week. Prerequisite: either A A 450 or E E 446. Offered: jointly with E E 448.
A A 449 Design of Automatic Control Systems (4)
Design problems for aerospace vehicles, systems with unstable dynamics, lightly damped modes, non-minimum 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 450, E E 446, or M E 471. Offered: jointly with E E 449; Sp.

A A 450 Control in Aerospace Systems (4)

A A 461 Advanced Propulsion (3)

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 497 Aerospace Industry Tour (1)
Tours to local aerospace facilities to see how aerospace vehicles and systems are built, designed, and tested. Credit/no credit only. Offered: W.

A A 498 Special Topics in Aeronautics and Astronautics (0-1, max. 10) Lectures and discussions on topics of current interest in aviation and space engineering. Three quarters required for credit. Offered: AWSp.

A A 499 Special Projects (1-5, max. 10) Investigation on a special project by the student under the supervision of a faculty member. A maximum of 6 credits may be applied toward senior technical electives. Offered: AWSpS.

Courses for Graduates Only

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 502 Physical Gasdynamics II (3) Introduction to vibrational relaxation and nonequilibrium chemistry. Nonequilibrium physics applied to flow. Brief introduction to nonequilibrium kinetic theory. Application to a variety of research and development areas such as high-temperature energy systems and gas lasers. Prerequisite: A A 501 or permission of instructor. Offered: even years; W.

A A 503 Kinetic Theory/Radiative Transfer (3) Boltzmann and Collisionless Boltzmann (Vlasov) equations. Instabilities in homogeneous and inhomogeneous plasma, quasi-linear diffusion, wave-particle interaction, collisional (Fokker-Planck) equation. Introduction to radiative non-equilibrium, scattering and absorption processes. Integral equation of radiative transfer. Prerequisite: A A 501 or permission of instructor. Offered: even years; W.


A A 505 Fluid Mechanics of Inviscid Flow I (3) Ideal incompressible flow: potential and stream functions. Airfoil theory and lifting line theory. Introduction to nonsteady flow; sound waves after surface waves; special topics. Offered: even years; W.

A A 506 Fluid Mechanics of Inviscid Flow II (3) Ideal compressible flow; supersonic airfoils; shock waves; slender-body theory; lifting surface theory; approximate methods. Transonic flow; similarity; special topics. Prerequisite: A A 505. Offered: even years; Sp.

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 Computational Fluid Dynamics II (3) Numerical approximation of equations of compressible viscous flow. Mesh requirements for resolving viscous effects in high Reynolds number flows. Analysis of numerical accuracy, stability, and efficiency. Use of explicit and implicit methods, boundary condition procedures. Applications to solution of the Navier-Stokes equations. Prerequisite: A A 509 or permission of instructor. Offered: odd years; Sp.


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 (1-5, 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 525 Aerothermodynamics of Aircraft Engines Components (3) Estimation of component performances. Inlets and nozzles, Aerodynamics of turbines and compressors. Radial equilibrium theory, throughflow 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 Energy Conversion II (3) Heat exchangers, energy storage. Direct conversion of heat to electricity. Electrochemical processes. Recommended: A A 527. Offered: odd years; W.

A A 529 Space Propulsion (3) Nuclear fuels, and heat transfer of nuclear-heated rockets. Electrothermal, electromagnetic, and electrostatic thrusters. Power/propulsion systems. Prerequisite: permission. Offered: odd years; Sp.


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 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 535 Analysis of Shells I (3) General development of the geometrically non-linear theory of thin elastic shells. Topics include an introduction to tensor analysis with applications to curved two-dimensional spaces, theory of surfaces, Kirchoff approximations, membrane theory and non-linear shallow shells. Offered: even years; Sp.

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 546 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
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 course work, 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.

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 Computing Center, instrument-making shops, research centers (e.g., biomaterials, nanotechnology, chemical analysis), and the Chemistry and Engineering Libraries.

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. All 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.

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 depts.washington.edu/chemeng/ or visit the online course catalog at Catalog. For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscti/.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscti/.

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 experimental design, instrumentation, laboratory safety, and report writing; laboratory experiments on fluid mechanics and heat transfer. Emphasis on experimental planning, procedures, and report writing. Prerequisite: CHEM E 326; CHEM E 340 which may be taken concurrently: T C 321; 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 design equipment 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...
emphasize on proton exchange membrane and solid oxide fuel cells. Prerequisite: CHEM E 330.

CHEM E 450 Solid State Materials and Chemical Processes (3) Sefieris Fundamentals of solid state including process analysis, mechanical properties; heterogeneity, thermodynamics; phase diagrams; laws of solid transformations; rate processes; thermal analysis; viscoelasticity; microscopy; molecular characterization techniques. Application of fundamentals in examining polymers, metals and ceramics as used in the electronics and aviation industries. Prerequisite: CHEM E 340; CHEM E 465. Offered: W.

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, colloidal 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 462 Application of Chemical Engineering Principles to Environmental Problems (3) Environmental problems in chemical engineering. Team taught; topics vary from year to year. Includes: geo-media, flow and dispersion through porous media water flow in dry soils, chemistry of radioactive waste, in situ site cleanup, ex situ site cleanup, colloid and surface science. Prerequisite: CHEM E 330. Offered: Sp.

CHEM E 465 Reactor Design (4) Application of principles of chemical kinetics to the design of commercial-scale chemical reactors; characterization of batch and 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 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 and principles of design and operating characteristics 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 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 pulps. Prerequisite: PSE 476. Offered: jointly with PSE 478; Sp.

CHEM E 480 Process Dynamics and Control (4) Analysis of the dynamics of simple chemical process units and systems; applications to stability, control, and instrumentation of such processes. Weekly two-hour laboratory included. Majors only. 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 485 Process Design I (4) Applied economics in chemical engineering design and operations; market survey and plant location; introduction to plant and process design. 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 effects of the environment, and the instrumental 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 control of 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 year to year.

CHEM E 499- Undergraduate Research (1-6), max. 12 Independent research projects in chemical engineering. Offered: A/WSpS.

Courses for Graduates Only

CHEM 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/E E M E 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; A/WSp.

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. Prerequisites: MATH 205, MATH 307 or AMATH 351, MATH 324 or permission of instructor. Offered: jointly with AMATH 512; A.

CHEM E 523 Seminar in Chemical Engineering (1) Topics of current interest in chemical engineering. Credit/no credit only. Offered: A/WSp.

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 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 film and physical properties of polymers, and computer simulation.

CHEM E 556 Principles and Applications of Colloidal Materials (3/4) Berg, Hoffman Preparation, stabilization, properties, and destruction of important colloidal materials. The theory and structure of the electric double layer, electrolykinetics. Includes selected case studies pertinent to air and water pol-
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. Consent 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 559 Thin Film Science, Engineering, and Technology (3) Stuve 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 MSE 559.

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 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) Pitel Physical and chemical processes used to control gaseous air pollutants. Absorption into liquids. Aqueous spray dryers 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) Pitel 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 571 Polymer Physics and Engineering (3) Seferis Description and analysis of methods for processing polymeric materials. Introduction to solid polymer physics with emphasis on the coupling of structure morphology and properties. Development of structure-property models for quantitative description and control of properties in synthetic and natural polymers and composite materials. Offered: A.

CHEM E 572 Advanced Polymeric Composites (3) Seferis Design, manufacture, and properties of organic and inorganic particle and fiber-reinforced composites. Advanced techniques for characterization of processing and properties, including anisotropic elasticity/viscoelasticity theory, polymerization and network formation of matrices, theory of reinforcement, environmental and chemical effects. Prerequisite: CHEM E 571 or MSE 423 or permission of instructor. Offered: Sp.

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 588 Research in Applied Microbiology (1) Libstrom Weekly research seminar and discussion of scientific literature pertaining to applied microbiology. Consent/no credit only. Prerequisite: permission of instructor. Offered: jointly with MICROM 588; AWSp.

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. Consent/no credit only. Offered: jointly with A/E/ErM E 591; AWSp.

CHEM E 598- Effective Teaching of Chemical Engineering (1, max. 3) Finlayson Topics of activities include: curriculum development: outlining a course, comparing textbooks, preparing lectures, use of lectures versus quiz sections, microteaching, other modes of instruction, e.g., self-paced, use of design problems. Tests: creating and grading. Role of computer users, review of engineering software, diversity, international teaching assistants, sexual harassment, assessment of teaching, resume. Offered: WSp.

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: AWSp.

CHEM E 700 Master’s Thesis (*) Offered: AWSp.


Civil and Environmental Engineering

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General Catalog Web page: www.washington.edu/students/gencat/academic/Civil_Engineering.html

Department Web page: 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 include air transport modes: highways, aeros, rivers, and harbors; water resources, hydraulics, and coastal engineering; structures, mechanics, and geotechnical engineering; surveying, mapping, and photogrammetry; urban planning and development; water supply, wastewater treatment, and water-quality management; solid- and hazardous-waste disposal; and quality control and management of the air resources.

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 often 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.

To accommodate these wide interests, the department is organized into six academic areas: construction management; transportation engineering; geotechnical engineering; structural engineering and mechanics; environmental engineering; and water resources, hydrology, and hydraulic systems.

Graduate Program

Graduate Program Coordinator 309 More, Box 352700,
206-543-2574

The Department of Civil and Environmental Engineering offers courses leading to the degrees of Master of Science in Civil Engineering and Doctor of Philosophy. The department also provides authorized options leading to the College-wide Master of Science and Master of Science in Engineering 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 of Science degrees are 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 construction.
management; transportation engineering; geotechnical engineering; structural engineering and mechanics; environmental engineering; and water resources, hydrology, and hydraulic systems.

Priority for admission is based on an applicant's apparent ability to progress satisfactorily in a graduate degree program. The applicant's scholastic record is of major importance; usually, at least a "B" or 3.00 GPA in the junior and senior years is required. Consideration is also given to Graduate Record Examination scores and other information.

**Degree Requirements**

The master's degree requires a minimum of 42 credits. A student may choose between a thesis and a course-work-only master's degree. The thesis option requires 30 course-work credits, 3 seminar credits, and 9 thesis credits. The course-work-only master's degree requires 39 course-work credits and 3 seminar credits. Both master's degrees require 3 credits outside the major field of study, 5 credits minimum of 400- and 500-level courses in Civil and Environmental Engineering, and a minimum of one-half of the course-work credits in courses numbered 500 and above. Students working for the Ph.D. degree must complete an approved program of studies and research normally requiring an additional two or three years beyond the master's degree.

**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 and Wilcox Hall have 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 coastal engineering and in fluid mechanics are located in the Harris Hydraulics Laboratory.

**Faculty**

**Chair**

G. Scott Rutherford

**Professors**

Benjamin, Mark M. * 1977; MS, 1973, MS, 1975, PhD, 1979, Stanford University; chemistry of natural waters, chemical and biological treatment of water and wastewater.

Bogan, Richard H. * 1954, (Emeritus); DSc, 1954, Massachusetts Institute of Technology; water and air resources, environmental engineering.

Brown, Colin B. * 1969, (Emeritus); PhD, 1962, University of Minnesota, structural engineering and systems.

Burges, Stephen J. * 1970; PhD, 1970, Stanford University; surface and ground water hydrology, water resource systems analysis and design.

Carlson, Dale A. * 1955, (Emeritus); PhD, 1960, University of Wisconsin; water resources and solid-waste management.

Colcord, J. E. * 1949, (Emeritus); MSCE, 1949, University of Minnesota; surveying engineering.

Covert, David S. * 1975, (Adjunct Research); MS, 1971, PhD, 1974, University of Washington; atmospheric chemistry; aerosol physics, chemistry, optics, and instrumentation.

Elias, Ziad * 1969, (Emeritus); DSc, 1963, Massachusetts Institute of Technology; engineering mechanics.

Evans, Roger J. * 1966, (Emeritus); PhD, 1965, University of California (Berkeley); engineering mechanics, structural engineering.

Ferguson, John F. * 1974; PhD, 1970, Stanford University; chemical and biological processes in water and waste treatment and in natural water systems.

Hammer, Vernon B. 1981, (Emeritus); MS, 1941, Harvard University; solid-waste management.

Hartz, Billy J. * 1983, (Emeritus); PhD, 1955, University of California (Berkeley); engineering mechanics, structural mechanics.

Hodge, David C. * 1975, (Adjunct); MS, 1973, PhD, 1975, Pennsylvania State University; urban geography, urban transportation geography, equity, gender.

Holtz, Robert Dean * 1988; PhD, 1970, Northwestern University; geotechnical engineering.

Karr, James * 1991, (Adjunct); PhD, 1970, University of Illinois; stream and watershed ecology, tropical forest ecology, conservation biology, environmental policy.

Kramer, Steven * 1984; PhD, 1984, University of California (Berkeley); soil mechanics, foundation engineering, geotechnical earthquake engineering.

Larson, Timothy * 1970; PhD, 1976, University of Washington; airborne particles, air quality modeling, and instrument development.

Lettenmaier, Dennis P. * 1973; PhD, 1975, University of Washington; systems analysis and water resources planning.

Mahoney, Joseph P. * 1978, PhD, 1979, Texas A&M University; construction materials, pavement systems, airport design.

Manning, Fred L. * 1986, (Affiliate); PhD, 1983, Massachusetts Institute of Technology; traffic flow theory, networks, econometric methods, equilibration in transportation markets.

Mar, Brian W. * 1967, (Emeritus); PhD, 1968, University of Washington; system engineering, environmental management, interdisciplinary management.

Mattock, Alan * 1964, (Emeritus); PhD, 1955, University of London (UK); structural behavior and design.

Miller, Gregory * 1983; PhD, 1984, Northwestern University; structural materials, solid mechanics, non-linear dynamics.

Morgan, Michael S. * 1974, (Adjunct); DSc, 1972, Massachusetts Institute of Technology; applied respiratory physiology and inhalation toxicology.

Nece, Ronald E. * 1959, (Emeritus); DSc, 1958, Massachusetts Institute of Technology; hydraulic and coastal engineering.

Nihan, Nancy L. * 1973; PhD, 1970, Northwestern University; transportation planning and systems analysis.

Palmer, Richard * 1979, PhD, 1979, Johns Hopkins University; civil engineering systems, computer methods, water resources planning and management.

Pilat, Michael J. * 1967; PhD, 1967, University of Washington; air resources engineering (design of air-pollution-control equipment).

Reed, Dorothy * 1983; MSc, 1977, PhD, 1980, Princeton University; structural and wind engineering.


Roeder, Charles W. * 1977; PhD, 1977, University of California (Berkeley); structures and materials.

Rossano, August T. 1981, (Emeritus); MS, 1941, ScD, 1954, Harvard University; air resources.

Rutherford, G. Scott * 1981; PhD, 1974, Northwestern University; transportation planning and engineering, transit planning, demand forecasting.

Sawhill, Roy 1983, (Emeritus); MEng, 1952, University of California (Berkeley).

Schneider, Jerry * 1967, (Emeritus); PhD, 1966, University of Pennsylvania; metropolitan area and regional planning, transportation and other urban models.

Seabloom, Robert * 1954, (Emeritus); MSCE, 1956, University of Washington; water-quality and solid-waste management.

Stahl, David A. 2000; MS, 1975, PhD, 1978, University of Illinois (Urbana).

Stanton, John F. * 1978; PhD, 1978, University of California (Berkeley); structural engineering, analysis and design.

Stensel, H. David * 1983; PhD, 1971, Cornell University; biological wastewater treatment, fixed film reactors, mass transfer mechanics, modeling.

Strand, Stuart E. * 1982, (Adjunct Research); MS, 1975, Ohio State University, PhD, 1982, Pennsylvania State University; forest biotechnology, environmental pollution control.

Sylvester, Robert O. 1947, (Emeritus); MS, 1941, Harvard University; water resources.

Terrel, Ronald L. 1967, (Emeritus); MSCE, 1961, Purdue University; PhD, 1967, University of California (Berkeley).

Welch, Eugene B. * 1968, (Emeritus); PhD, 1967, University of Washington; water resources and aquatic biology.

Wenk, Edward 1970, (Emeritus); MS, 1947, Harvard University; PhD, 1950, Johns Hopkins University.

Yeh, Harry H. * 1983; PhD, 1963, University of California (Berkeley); fluid mechanics, water wave motions, coastal and hydraulic engineering.

Zabinsky, Zelda * 1985, (Adjunct); PhD, 1985, University of Michigan; operations research, applications in industrial engineering, optimization with stochastic elements.

**Associate Professors**

Booth, Derek B. * 1980, (Research); PhD, 1984, University of Washington; environmental geology, particularly human influences on hillslopes, runoff, and rivers.

Brett, Michael T. * 1997; PhD, 1990, University of Upsala (Sweden); eutrophication and food web and nutrient regulation of algal biomass and secondary production.
Chenoweth, Harry H. 1979, (Emeritus); MSCE, 1957, University of Washington; engineering mechanics and hydraulic engineering.

Dailey, Daniel J. * 1982, (Adjunct Research); MS, 1982, PhD, 1988, University of Washington; time series modeling of physical phenomena, optimization, distributed computing, networking.

Eberhard, Marc O. * 1989; PhD, 1989, University of Illinois; structural analysis and design, reinforced concrete, earthquake engineering, nondestructive testing.

Goldblatt, Steven M. 1982, (Adjunct); JD, 1977, Golden Gate University; construction law, labor relations, and accounting.

Horner, Richard R. * 1981, (Adjunct Research); PhD, 1978, University of Washington; effects of human activities on water resources in urban areas.

Jacoby, Jean M. * 1994, (Affiliate); PhD, 1986, University of Washington; applied aquatic ecology and restoration; water quality management.

Jansen, Donald J. * 1985; PhD, 1985, University of Illinois; construction materials, pavements.

Jessup, Andrew T. * 1990, (Affiliate); PhD, 1990, Massachusetts Institute of Technology; applications of remote sensing to air-sea interaction.

Kent, Joseph C. *, (Emeritus); PhD, 1952, University of California (Berkeley); hydraulic engineering.

Korshin, Gregory * 1991; PhD, 1983, Chemical Engineering Institute (Russia); environmental chemistry and engineering, aquatic chemistry.

MacRae, Gregory Anthony * 1994; PhD, 1990, University of Canterbury (New Zealand); design of structures to withstand earthquakes.

Massmann, Joel W. * 1991; PhD, 1987, University of British Columbia (Canada); groundwater hydrology, subsurface contaminant transport, site remediation, applied decision analysis.

Miller, William * 1983, (Emeritus); MSCE, 1952, University of Washington; materials.

Nemati, Kamran M. * 1998, (Adjunct); PhD, 1994, University of California (Berkeley); civil engineering materials, concrete technology, mechanical behavior of concrete.

Spyridakis, Dimitris * 1970, (Emeritus); PhD, 1965, University of Wisconsin; soil and water chemistry.

Strasser, Howard * 1955, (Emeritus); MSEng, 1950, Johns Hopkins University; hydraulic engineering.

Turkiyyah, George * 1991; PhD, 1990, Carnegie Mellon University; computer-aided engineering, finite element modeling.

Waddell, Paul A. * 1997, (Adjunct); PhD, 1989, University of Texas (Dallas); urban policy, regional planning, growth management, land use, transportation, GIS.

Assistant Professors

Arduino, Pedro * 1997; PhD, 1996, Georgia Institute of Technology; mechanics of porous media, constitutive modeling of soils, numerical methods of geomechanics.

Lowes, Laura N. 2000; PhD, 1999, University of California (Berkeley); structural engineering, numerical modeling.

Petroff, Catherine * 1993, (Affiliate); PhD, 1993, California Institute of Technology; sediment transport, coastal engineering, and environmental fluid mechanics.

Shankar, Venkataraman * 1999; PhD, 1997, University of Washington; modeling of transportation infrastructure and civil engineering systems.

Zeitler, Teresa Taylor * 1992, (Affiliate); PhD, 1988, Washington State University; geotechnical/geological engineering, physical modeling, centrifuge modeling.

Senior Lecturer

Bucknam, Ronald E. 1985; PhD, 1964, University of Illinois; Professional Engineering Practice Liaison (PEPL).

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

CE 405 Construction Planning and Scheduling (3) Principles of construction planning and scheduling, including network analysis of construction activities, evaluation of arrow and precedence diagrams, time-cost tradeoffs, resource leveling, resource allocation,PERT, integrated cost/schedule systems, computer applications, and a CPM project.

CE 406 Construction Engineering II (3) Heavy construction equipment. Equipment economics, contractor equipment policies, equipment specifications, selection and performance of equipment, estimating productivity of construction equipment, and engineering support for construction operating. Prerequisite: CEE 306.

CE 407 Contracts and Specifications (3) Construction industry, forms of organizations, real property laws, and bidding procedures. Basic elements of contracts, types of specifications, general conditions of standard construction contracts, legal disputes related to construction contract provisions, surety bonds and construction insurance. Prerequisite: CEE 306.

CE 410 Traffic Engineering Fundamentals and Surveys (3) General review of the fundamentals of traffic engineering, including their relationship to transportation operations management and planning, with special emphasis on traffic engineering field surveys and data analysis. Prerequisite: CEE 320. Offered: A.

CE 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.

CE 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.

CE 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: A.

CE 422 Construction Materials II (4) Types, sources, uses, performance behavior from construction point of view of aggregates; asphalt products and mixtures; Portland cement, concrete, and other materials the civil engineer is responsible for selecting and manufacturing on job site. Includes laboratory work. Prerequisite: CEE 363. Offered: A.

CE 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.

CE 431 Seismology and Earthquake Engineering (3) NW Presents an overview of earthquake processes and an understanding 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 156 or both MATH 307 and MATH 308. Offered: jointly with ESS 465.


CE 437 Engineering Geology I (3) General overview of engineering geology and its importance to civil engineers. Topics include geologic processes, hazards, and classification of geologic materials, data synthesis, and natural construction materials.

CE 440 Design Seminar (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.

CE 441 Highway and Traffic Engineering-Geometric Design (4) Factors and elements in geometric design of arterials, intersections, freeways, interchange, including problem solution. Prerequisite: CEE 320, CEE 440 which may be taken concurrently.

CE 442 Structural Geotechnical 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.

CE 443 Design of Subsurface Remediation Activities (4) Technologies for cleaning sites with subsurface contamination, including groundwater extraction, vapor extraction, groundwater containment, and in-situ treatment. Analytical tools and methods for making design calculations are emphasized. Comprehensive design project involving design and evaluation of site remediation activities required. Prerequisite: CEE 440.
CENG 444 Water Resources and Hydraulic Engineering Design (3) 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 440.

CENG 445 Environmental Engineering Design Studies (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 482; CEE 440 which may be taken concurrently.

CENG 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, girders, moment frames, connections, and tension members. Prerequisite: CEE 380; recommended: CEE 457, CEE 458.

CENG 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.

CENG 453 Prestressed Concrete Design (3) Analysis, design, and construction of prestressed concrete structures. Prerequisite: CEE 452.

CENG 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.

CENG 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.

CENG 457 Advanced Structures I (3) The displacement method in matrix form with programming applications. Fundamentals of modeling of various types of structures. Prerequisite: CEE 380.

CENG 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 379.

CENG 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.

CENG 461 Biological Problems in Water Pollution (3/5) NW Ecological risk assessment of toxic chemicals and problems associated with electrical power production. Consider safety and toxicity effects on individuals, populations, and communities. Laboratory covers simulation models of chemical exposure and community effects. Recommended: senior or graduate standing in fisheries, engineering, or related field. Offered: jointly with FISH 450.

CENG 462 Ecological Effects of Waste Water (3/5) NW Ecological principles in ecology that relate to causes and effects of water quality problems in lakes and streams. Population growth kinetics, nutrient cycling, eutrophication; acidification; oxygen/temperature requirements, and effects of various wastes on aquatic animals. Offered: jointly with FISH 434.

CENG 464 Subsurface Contaminant Transport (3) Principles of transport through porous media used to study fate and movement of subsurface contamination. Processes include aqueous phase transport, flow of immiscible fluids, vapor transport, solid-liquid-vapor interactions. Techniques for simulating transport processes are addressed. Effects of subsurface heterogeneities and uncertainties are emphasized. Prerequisite: CEE 342.

CENG 472 Introduction to Hydrodynamics in Water Resources (3) Hydrodynamics related to environmental issues. Global hydrology; stratified flows; two-phase (bubble) flows; pollutant transport and mixing in reservoirs; lakes, rivers, and oceans; diffusion and design and related case studies. Prerequisite: CEE 342; CEE 345.

CENG 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.

CENG 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, streamlined roughness analysis, sediment discharge formulae, and modeling of scour and deposition in rivers and channels. Prerequisite: CEE 345.

CENG 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.


CENG 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. Prerequisite: either CEE 491, ATM S 458, or CHEM 458. Offered: jointly with ATM S 480.

CENG 481 Environmental Engineering Design (3) Stensen 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.

CENG 482 Water and Wastewater Treatment (3) Fundamental mechanisms, basic design models, and applications of engineered treatment processes for water treatment, wastewater treatment, nutrient removal, and protection of public health and the environment. Prerequisite: CEE 350.

CENG 484 On-Site Wastewater Disposal (3) Latest information on design, construction, operation, maintenance of individual and small community waste-water disposal systems. Conventional water carriage septic tank soil absorption systems considered with new alternatives, such as mound, evapotranspiration systems, high efficiency septic treatment systems, sand filters. Nonwaver carriage methods studied. Pressure and vacuum sewers introduced.

CENG 485 Aquatic Chemistry (3) Benjamino, 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.

CENG 486 Water-Quality Analysis (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.

CENG 487 Solid-Waste Disposal (3) Describes sources and handling of municipal and industrial solid waste; examination of collection, processing, recycling, and material 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.

CENG 488 Hazardous Wastes Engineering (3) Classification of hazardous wastes; resource conservation, recovery, and recycling program regulations, emission standards, air-quality standards, processes and equipment for controlling emissions. Offered: jointly with ENV H 461.

CENG 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.

CENG 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.

CENG 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, system simulation, and goal programming. Class project required. Prerequisite: CEE 390.

CENG 492 Stochastic Systems (3) Introduction to probability distributions and statistics useful in systems analysis and design, 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.

CENG 493 Air-Pollution Source Testing and Equipment Evaluation (3) Engineering evaluation of air pollutant sources and air control equipment. Air-pollutant source testing and stack sampling. Analysis of equipollution and source emissions in the field and in the laboratory.

CENG 494 Air-Quality Monitoring (2)
C CEE 494 Air-Pollution Control Equipment Design
(3) Designs to control air pollutants from stationary sources. Proctoring, 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.

C CEE 495 Sustainability and Design for Environ-
ment (3) Cooper Analysis and design of technol-
yogy 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 ENVR 415/M E 415; S.

C 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.

C 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.

C Courses for Graduates Only

C CEE 500 Structures Seminar (1) Credit/no credit only. Prerequisite: graduate standing in Civil and Environmental Engineering.


C CEE 511 Advanced Reinforced Concrete (3)
Eberhard, MacRae, Stanton Behavior and design of reinforced concrete members and structures. Members subject to tension and torsion combined with flexure and shear; members with small shear span/depth ratios, slabs. Offered: A.

C CEE 512 Advanced Structural Systems (3)
Eberhard, Stanton Prestress loss. Design of statically indeterminate prestressed concrete structures; continuous beam, frame, and slab structures (cast in place or assembled from precast units). Prerequisite: CEE 453 or equivalent. Offered: Sp.

C 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, CEE 503. Offered: W.

C CEE 515 Earthquake Engineering I (3) Earthquake mechanism and ground shaking, response spectra, linear elastic methods for prediction of behavior, displacement prediction methods for inelasically behaving structures, modeling and solution schemes, earthquake design philosophy, capacity design, reinforced concrete, steel, and base-isolated structures. Prerequisite: CSEG 501, CSEG 502.

C 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, and retrofit of structures. Prerequisite: CEE 515.

C CEE 517 Fundamentals of Wind Engineering (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.

C 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.

C 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.

C CEE 522 Shear Strength and Slope Stability (3) Shear strength of cohesive and cohesionless soils and slope stability analyses of natural and man-made slopes. Prerequisite: CSEG 561.

C 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.

C 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 522, CEE 527.

C CEE 526 Geotechnical Earthquake Engineering (3) Plate tectonics and elastic rebound theory of earthquakes and faults; characterization of ground motions; seismicity; seismic risk analysis; effects of local soil conditions on ground response; development of design ground motions; liquefaction; dynamic lateral earth pressures; seismic slope stability. Prerequisite: CEE 526 or permission of instructor.

C CEE 527 Advanced Geotechnical Laboratory (4) Soil and slope investigations, analysis of existing 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.

C 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.

C 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.

C 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.

C 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.

C 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, anaerobic treatment, anaerobic treatment and toxic organics removal. Prerequisite: CEE 550 and CEE 482 or equivalent.

C CEE 542 Microbial Degradation of Toxic Contaminants (3) Herwig, Strand Detailed survey of current understanding of microbiology and degradation pathways of industrial organic compounds, pesticides, plastics, oil, and metals. Microbial requirements for bioremediation. Methods of scientific investigation of microbial transformations. Requires basic understanding of metabolism and organic chemistry. Prerequisite: biological science course. Offered: jointly with ESC 518/MICROM 518; W.

C CEE 543 Aquatic Chemistry (3) 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, oxidation/reduction, and adsorption and equilibria for chemical speciation. Prerequisites: CEE 224 and CEE 400. Offered: jointly with OCEAN 521. Prerequisite: Graduate standing or permission of instructor.

C 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 membrane filtration, biological and chemical coagulation, chemical precipitation, 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.
CxEE 545 Advanced Environmental Chemistry (3) Behavior of controlled chemical species (heavy metals, pesticides, decomposition by-products, and endocrine disruptors) and persistent organic pollutants in the environment. Modeling of chemical interactions pertinent to environmental technologies (ozonation, advanced oxidation, photochemical transformation, bioremediation, dehalogenation, application of zero-valence metals and electrochemical controls). Prerequisite: aquatic chemistry or permission of instructor.

CxEE 546 Topics in Ecological Effects of Wastewater (3) Application of ecological concepts for analysis and interpretation of biodegradation 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.

CxEE 547 Lake 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.

CxEE 548 Industrial Waste Treatment (3) Survey of laws and regulations governing industrial waste discharge. Sources, amounts, and characteristics of wastes from various industries. Specialized treatment processes, case studies, and site visits. Prerequisite: CEE 540 or CEE 541 or permission of instructor.

CxEE 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.

CxEE 553 Seminar-Topics in Atmospheric Chemistry (1-3, max. 6) Charison, Hanson 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.

CxEE 554 Acoustics of Environmental Noise (4) Offered: jointly with M E 529.

CxEE 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.


CxEE 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.

CxEE 558 Control of Gaseous Air Pollutants (3) Physical and chemical processes used to control gaseous air pollutants. Absorption into liquids. Aqueous spray dry scrubbers. Adsorption beds. Control of sulfur oxide and nitrogen oxide. Case studies of control systems. Prerequisite: CEE 468 or CHEM E 435 or permission of instructor. Offered: jointly with CHEM E 566, even years.

CxEE 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.

CxEE 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/PH AF 599; A.

CxEE 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. Solution techniques. 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.

CxEE 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.


CxEE 573 Advanced Computational Hydraulics (4) Review of hydrodynamic and transport equations for hydraulic engineering applications; 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.

CxEE 575 Groundwater Transport Modeling (3) Review of equations for flow and transport in porous media; techniques for simulating transport as boundary value problems; analytical and numerical solution techniques; finite element models; field-scale applications and case histories.

CxEE 576 Water Resources Planning (3) Mar, 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 resources systems. Offered: W.

CxEE 577 Water-Quality Management (3) Application of biological, ecological, and chemical processes to modeling of water quality and use of such models in water resource development and management. Includes models 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.

CxEE 578 Water Resource System Management and Operations (3) Burgess, Mar, Palmer A readings contemporary and recent literature related to the modeling and management of water resource systems. Topics include stream and lake drainage management, expansion of existing water supplies, hydropower production, streamflow forecasting, water demand forecasting, regional water planning, climate change, and other topical issues. Recommended: 557, 558. Offered: A.

CxEE 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.

CxEE 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.

CxEE 582 Intelligent Transportation Systems (3) Application of modern computer and communication technologies to transportation systems. Benefits to public agencies, commercial companies, and transportation between private and public sectors. Intelligent Transportation System’s (ITS) social, organizational, and operational changes.

CxEE 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.

CxEE 584 Analytical Methods in Transportation I (3) Mannering 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.

CxEE 585 Analytical Methods in Transportation II (3) Shankar 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: CxEE 584 or permission of instruction.

CxEE 586 Transportation Infrastructure Management (3) Shankar Integrated perspective on the management of transportation infrastructure with special attention to the roadside, pavements, and bridges. Topics include needs assessment, design and construction of new facilities, management and monitoring of built systems to maintenance, rehabilitation and construction of facilities in-service. Emphasizes empirical applications.

CxEE 587 Transportation Networks (3) Mannering, Shankar Traffic flow, theories of traffic, user equilibrium and system optimization, and algorithms used for network assignment. Theoretical and empirical traffic assignments, multivariate characteristics of traffic flow on networks. Interactive work with network and econometric models.

CxEE 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 management, and freight traffic systems. 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) CEE 593 Construction Labor Law (3) Goldberg 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 Construction Automation (3) Dunston Motivations, methods, and technologies for developing automation and robotics in the construction industry. Examples range from computers to mechanical systems, from laboratory research to field applications. Topics include database management systems (DBMS), artificial intelligence, data collection and communication technologies, sensor technologies, and robotic mechanical systems.

CEE 597 Construction Productivity (3) Work improvement techniques applied to construction operations. Review of major contributions in behavioral science that may be applicable to the construction industry. Case studies. Innovative productivity programs successfully implemented on construction projects. Safety in construction projects, especially as influenced by managerial practices.

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, max. 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.

Computer Science and Engineering

114 Sieg

General Catalog Web page: www.washington.edu/students/gencat/academic/Computer_Sci_Eng.html

Department Web page: www.cs.washington.edu

Computer science and computer engineering are fields of unparalleled excitement and opportunity, now and for the future—fields where the most skilled young men and women are choosing to study and to work. Whether your goal is graduate study and research, employment in the Northwest’s vibrant information technology industry, business leadership, or public service, the UW Department of Computer Science and Engineering should be on your “short list.” Ranked among the top ten research programs in the nation (along with MIT, Stanford, Berkeley and Princeton), UW CSE’s focus on educational excellence was recognized in 1999 by the Brotman Award for Instructional Excellence.

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 algorithmic areas such as artificial intelligence, computer graphics, and computational biology; and also lead to the theoretical investigations of computers, algorithms, and data.

Computer engineering is a closely related field that is 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. The program provides an in-depth education in computer engineering while retaining strong foundations in traditional electrical engineering and computer science. The computer engineering program involves digital hardware, software, and architecture. Mathematics, engineering design, laboratory work, and communication skills development are emphasized. A capstone design course is used to apply the knowledge and skills gained during the program to a major team project that must be completed during the senior year. The objective of undergraduate education in computer engineering is to develop broadly educated and competent graduates for professional careers or graduate study. Especially important is a foundation that will endure as technology advances and changes.

Instructional and Special Research Facilities

The Computer Science laboratories provide extensive, efficient, and powerful state-of-the-art facilities for undergraduate, graduate, and faculty instruction and research. The equipment base is upgraded frequently; for an up-to-date description please see the descriptions in the online undergraduate and graduate brochures, which can be accessed through the department’s Web page. The same is true for the department’s software base, where there are several modern operating systems including Windows NT, Unix, Solaris, and Linux, as well as extensive collections of software applications and development tools for each.

Graduate Program

Graduate Program Coordinator 114 Sieg, Box 352350 206-543-1695 gradadmissions@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 an M.S. or Ph.D. Students can also pursue part-time graduate study in the evening, leading to an M.S. Individual programs can be 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.

Full-Time Graduate Program

The full-time graduate program offers both M.S. and Ph.D. degrees. An M.S. degree can usually be completed in two years, and a Ph.D. degree can be completed in four to five years. It is not necessary to complete an M.S. program before entering the Ph.D. program. Degree requirements are outlined in The Computer Science and Engineering Graduate Program Brochure, available from the department.

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, 326, 321, 322, and either 401 or 451). Some exceptions to these requirements are made for other exceptionally promising students. Graduate Record Examination scores are required; a GRE subject-test score (not necessarily in computer science) is recommended. Scores should be earned within the preceding five years. The Computer Science and Engineering Graduate Program Brochure gives full details of application procedures.

Complete applications must be received by January 1 (December 1 for international students) for autumn-quarter admission.

Assistantships

Research and teaching assistantships are available and are allocated on the basis of scholastic excel-
lence 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 January 1 (December 1 for international students).

The application packet contains all the necessary forms for applying to the Graduate School and to the graduate program in Computer Science and Engineering and for consideration for assistantships.

**Professional Master's Program**

The Professional Master's degree program (PMP) is designed for active professionals in the vibrant information-technology industry who wish to further their educational and professional goals. Courses are offered in the evening and by distance to accommodate students working full-time.

To satisfy the requirements of the Professional Master's Program, students must successfully complete eight core PMP courses 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 UWTW and through live Internet video. Students who take one course per quarter, plus 1 credit of colloquium, complete the program in two-and-a-half years.

Successful applicants to the program will have a bachelor's degree in computer science or a related field and professional experience in advanced computing technology. Most incoming students will have taken the following courses at the undergraduate level: data structures, discrete math, machine organization, automata theory, and programming languages, and will have programming experience.

Applications are accepted quarterly. Deadlines are July 1 for autumn quarter; November 1 for the winter quarter; and February 1 for spring quarter. For more information, see the department's Web site.

**Faculty**

**Chair**

David S. Notkin

**Professors**

Anderson, Richard J. * 1986; PhD, 1985, Stanford University; educational technology, algorithms.

Anderson, Thomas E. * 1997; MS, 1990, PhD, 1991, University of Washington; Internetworking, local and wide area distributed systems, operating systems, computer architecture.

Atlas, Les Eugene * 1983, (Adjunct); MS, 1979, PhD, 1984, Stanford University; time-frequency representations, digital signal processing applied to speech, audio, manufacturing.

Baer, Jean-Loup * 1969; MS, 1963, Grenoble (France), PhD, 1968, University of California (Los Angeles); computer architecture and performance evaluation.

Beame, Paul W. 1987; MS, 1982, PhD, 1987, University of Toronto (Canada); computational complexity, proof complexity.


Borning, Alan H. * 1980; MS, 1974, PhD, 1979, Stanford University; human-computer interaction; constraint-based languages and systems.

Borriello, Gaetano * 1988; MS, 1981, Stanford University, PhD, 1988, University of California (Berkeley); invisible and ubiquitous computing, embedded and networked systems.

Brinkley, James F., III * 1988, (Adjunct Research); MD, 1974, University of Washington, PhD, 1984, Stanford University; computer applications in medicine and biology; structural informatics.

De Rose, Anthony David * 1985, (Affiliate); PhD, 1985, University of California (Berkeley); computer-aided geometric design and modeling, graphical user interfaces, high resolution graphics.

Duchamp, Thomas E. * 1979, (Adjunct), PhD, 1976, University of Illinois; differential geometry.


Eggers, Susan Jane * 1989, PhD, 1989, University of California (Berkeley); uniprocessor and parallel architectures and program behavior, back-end compiler optimizations.

Golde, Helmut * 1959, (Emeritus); PhD, 1959, Stanford University; programming languages, programming systems, compilers, computer networks.

Green, Philip * 1994, (Adjunct); PhD, 1976, University of California (Berkeley); mathematical and computer methods for genome analysis.

Hood, Leroy E. * 1992, (Affiliate); PhD, 1968, California Institute of Technology; molecular immunology, large-scale DNA mapping and sequencing, molecular evolution.

Karlin, Anna R. * 1996; PhD, 1987, Stanford University; online algorithms, probabilistic algorithms and probabilistic analysis.

Kehl, Theodore * 1963, (Emeritus); PhD, 1961, University of Wisconsin; hardware design (VLSI), telephony and API programming.

Kim, Yongmin * 1982, (Adjunct); MS, 1979, PhD, 1982, University of Wisconsin; computer architecture, imaging systems, medical imaging, computer graphics, multimedia.

Ladner, Richard E. * 1971; PhD, 1971, University of California (Berkeley); design and analysis of algorithms, data compression, network algorithms, cache performance.

Lazowska, Edward D. * 1977; MSc, 1974, PhD, 1977, University of Toronto (Canada); computer systems: modeling and analysis, design and implementation, distributed and parallel systems.


Noe, Jerre D. * 1968, (Emeritus); PhD, 1948, Stanford University; operating systems, computer measurement and evaluation, distributed computer networks, simulation.

Notkin, David S. * 1984; PhD, 1984, Carnegie Mellon University; software engineering, software evolution, software tools and environments.

Olson, Maynard V. 1992, (Adjunct); PhD, 1970, Stanford University; methods and applications of large-scale DNA analysis.

Ruzzo, Walter L. * 1977; PhD, 1978, University of California (Berkeley); computational biology.

Salesin, David Henry * 1992; PhD, 1991, Stanford University; computer graphics.

 Shapiro, Linda G. 1986; MS, 1972, PhD, 1974, University of Iowa; computer vision, multimedia information systems, medical informatics, pattern recognition.

Shaw, Alan Cary * 1971, (Emeritus); PhD, 1968, Stanford University; operating systems, software specifications, real-time systems.

Snyder, Lawrence * 1983; PhD, 1973, Carnegie Mellon University; parallel computation, especially hardware languages and algorithmic issues, computer fluency.

Stuetzle, Werner * 1984, (Adjunct); PhD, 1977, Swiss Federal Institute of Technology; nonparametric methods in multivariate analysis, statistical applications of computer graphics.

Tanimoto, Steven L. * 1977; MA, 1974, PhD, 1975, Princeton University; visual languages, image analysis, computer graphics, artificial intelligence, educational technology.

Tampa, Martin * 1978; MSc, 1975, PhD, 1978, University of Toronto (Canada); computational complexity, computational biology.

Weld, Daniel Sabye * 1988; MS, 1984, PhD, 1988, Massachusetts Institute of Technology; artificial intelligence, intelligent user interfaces, software agents, planning.

Zahorjan, John * 1980, MSc, 1976, PhD, 1980, University of Toronto (Canada); computer systems, performance analysis, parallel programming models, scheduling and runtime support.

**Associate Professors**

Bershad, Brian * 1993; MS, 1989, PhD, 1990, University of Washington; operating systems, architecture, distributed systems, parallel systems.

Chambers, Craig D. * 1991; PhD, 1992, Stanford University; programming language design, optimizing compilation, object-oriented systems.

Dekker, David B. 1948, (Emeritus); PhD, 1948, University of California (Berkeley); numerical analysis, curve fitting, numerical solutions of differential equations.

Diorio, Christopher J. * 1997; MS, 1984, California Institute of Technology; silicon learning chips, neural networks and learning algorithms.

Etzioni, Oren 1991; MSc, 1988, PhD, 1990, Carnegie Mellon University; artificial intelligence and information retrieval, natural language interfaces, software agents.

Friedman, Batya * 1999, (Adjunct); PhD, 1988, University of California (Berkeley); value-sensitive design, social-cognitive and cultural aspects of information systems.

Hailey, Alon Y. * 1998; PhD, 1993, Stanford University; database systems, artificial intelligence, data integration, peer-based data management.

Haeley, Alon Y. * 1998; PhD, 1993, Stanford University; database systems, artificial intelligence, data integration, peer-based data management.

Johnson, Ronald A. 1986, (Adjunct); MA, 1972, University of Chicago, MS, 1975, University of Southern California; information sciences.
Kalet, Ira J. * 1980, (Adjunct); PhD, 1968, Princeton University; computer simulation of radiation therapy, artificial intelligence, computer graphics.

Kautz, Henry 2000; MS, 1982, University of Toronto (Canada), PhD, 1988, University of Rochester; artificial intelligence, knowledge representation, decision-theoretic control of reasoning.

Assistant Professors


Böhninger, Karl F. * 1998, (Adjunct); PhD, 1997, Cornell University; microelectromechanical systems (MEMS), applied microtechnology, micro spacecraft.

Curless, Brian L. 1998; MS, 1991, PhD, 1997, Stanford University; computer graphics; active machine vision.

Domingos, Pedro Morais Del 1999; MS, 1992, Instituto Superior Tecnico (Portugal), MS, 1994, PhD, 1997, University of California (Irvine); artificial intelligence, machine learning, data mining.

Fox, Dieter 2000; MS, 1993, PhD, 1998, University of Bonn (Germany); artificial intelligence and mobile robotics, probabilistic state estimation, particle filters.

Gribble, Steven 2000; MS, 1997, PhD, 2000, University of California (Berkeley); cluster computing, operating systems, Internet infrastructure and services, distributed computing.

Oskin, Mark H. * 2001; PhD, 2001, University of California (Davis); computer architecture, intelligent memory systems.

Padmanabhan, Venkata N. Z. * 1999, (Affiliate); PhD, 1998, University of California (Berkeley); Internet performance analysis, wireless networking and mobile computing.

Popovic, Zoran * 1999; MS, 1993, PhD, 1999, Carnegie Mellon University; computer graphics, character animation, physically based modeling and modeling, simulation.

Rao, Rajesh P. N. 2000; MS, 1994, PhD, 1998, University of Rochester; neural computing, machine vision and learning, robotics, computational neuroscience.

Seitz, Steven M. 2000; PhD, 1997, University of Wisconsin; computer vision, computer graphics.

Sengupta, Rimli 1999, (Research); MS, 1993, PhD, 1995, Georgia Institute of Technology; computational complexity, computational biology.

Suciu, Dan 2000; MS, 1991, University of Bucharest (Romania), PhD, 1995, University of Pennsylvania; databases, XML.

Wetherall, David James 1999; MS, 1994, PhD, 1998, Massachusetts Institute of Technology; networks and distributed systems.

Senior Lecturers

Dickey, Martin 1996; MS, 1971, University of Kentucky, PhD, 1992, Arizona State University; computer science education, computational linguistics.

Mones, Barbara 1999; MFA, 1979, Rhode Island School of Design; computer graphics, character animation.


Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

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 project group 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 321; CSE 341; CSE 378; recommended: CSE 401; CSE 451; 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. No credit to students who have completed 378 or 451. Prerequisite: CSE 373.

CSE 413 Programming Languages and Their Implementation (3) Concepts and implementation strategies for ALGOL-class languages, including Pascal, Modula, ALGOL 68, Ada, Compilers for ALGOL-class languages. Languages with late binding times, including LISP, APL, Smalltalk. No credit to students who have completed 341 or 401. Prerequisite: CSE 373.

CSE 415 Introduction to Artificial Intelligence (5) NW Principles and programming techniques of artificial intelligence: LISP, control manipulation, knowledge representation, logical and probabilistic reasoning, learning, language understanding, vision, expert systems, and social issues. Not open for credit to students who have completed 473. Prerequisite: CSE 373.

CSE 417 Algorithms and Computational Complexity (4) 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 Prerequisite: CSE 373. Offered: W.

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 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 444 Introduction to Database Systems (3) Fundamental concepts, system organization, and implementation of database systems. Relational, hierarchical, and network data models; file organizations and data structures; query languages; query optimization; database design; concurrency control, security; issues involving distributed database systems. Prerequisite: CSE 326.

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 457 Computer Graphics (4) Introduction to computer image synthesis, modeling, and animation. Topics may include visual perception, color theory, displays and framebuffers, image processing, affine and projective transformations, quaternions, 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 326.

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 461 Introduction to Computer-Communication Networks (4) Computer network architecture, protocol design, 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 143; either MATH 500/STAT 300, STAT 301, IND E 315, or CSE 321. Offered: jointly with E E 461.

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 (3) NW/VLPA Introduction to computer applications of linguistic theory, including syntactic processing, semantic, and pragmatic interpretation and natural language generation. Prerequisite: either ANTH 461 or LING 461. Offered: jointly with LING 472.
CSE 473 Introduction to Artificial Intelligence (3) Principal ideas and developments in artificial intelligence: theorem proving, problem-solving methods, representation of knowledge and reasoning. Analysis and synthesis, programming languages for artificial intelligence. 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) Students use laboratory to design, simulate, construct, and debug a substantial project that includes hardware, software, and communication components. Lectures focus on use of embedded processors in digital system design and interfacing techniques. Writing and debugging of real-time reactive software emphasized. Prerequisite: CSE 378; CSE 467.

CSE 481 Capstone Software Design (5) 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 and substantial programming experience, such as in CSE 451 or 457.

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. Offered: AWSpS.

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; 9 credits are required for 498H. Offered: AWSpS.

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. Offered: AWSpS.

Courses for Graduates Only

CSE 501 Implementation of Programming Languages (3) Design of compilers and run-time systems for traditional and non-traditional programming languages. Intra- and interprocedural analyses and optimization. Compile-time and run-time implementation techniques for LISP-like, functional, and object-oriented languages. Students construct an optimizing compiler. Prerequisite: CSE major and CSE 401 and CSE 505.

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 specification, 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 Concepts of Programming Languages (3) Data structures, types, control structures. Languages in the ALGOL family; functional, object-oriented, and logic programming languages. Prerequisite: CSE major, CSE 401 and a working knowledge of Pascal and LISP.

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-support ed cooperative work. Offered: odd years.

CSE 519 Computer Science Research Seminar (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. Offered: AWP.

CSE 520 Computer Science Colloquium (1, max. 9) Varied public presentations on topics of current interest by visiting computer scientists. Credit/no credit only. Offered: AWP.

CSE 521 Design and Analysis of Algorithms I (3) Principles of design of efficient algorithms: recursion, divide and conquer, balancing, dynamic programming, greedy method, data structure selection. Correctness and analysis of algorithms. Examples drawn from problems for sorting, searching, set manipulation, pattern-matching, graphs, matrices, polynomials, and integers. Prerequisite: CSE major and CSE 326 or equivalent.

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. Offered: alternate years.

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. Offered: alternate years.

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 531 Computability and Complexity (3) Computational models including deterministic and nondeterministic Turing machines, and techniques for analyzing them. Fundamentals of computability theory and undecidability. Fundamentals of computational complexity theory and NP-completeness. Prerequisite: CSE majors only; CSE 322 or equivalent.

CSE 532 Complexity Theory (3) Deterministic, non- deterministic, alternating, and probabilistic Turing machines. Time and space complexity, complexity classes, complexity hierarchies, and provably intractable problems. Prerequisite: CSE major and CSE 531.

CSE 533 Advanced Topics in Complexity Theory (3) Topics in computational complexity more sophisticated than those treated in 532. Topics are expected to vary from year to year, but typically focus on such areas as parallel complexity, probabilistic complexity, circuit- or automaton-based complexity, or logic. Prerequisite: CSE major. Offered: alternate years.


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 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-multiprocessor and algorithmically specialized processors, data flow architectures. Prerequisite: CSE major and CSE 548 or permission of instructor. Offered: alternate years.

CSE 551 Operating Systems (3) Operating system design and construction techniques. Concurrent programming, operating system kernels, correctness, deadlock, protection, transaction processing, design methodology, comparison of different types 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 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. Offered: alternate years.


CSE 563 Fault Tolerant Computing (3) Faults and their manifestation, issues, theory, and techniques of reliable systems design, testing, design for testability, self-checking and fail-safe circuits, coding techniques, system testing, fault diagnosis, fault-tolerant communication, reliable software design, and evaluation criteria. Prerequisite: basic knowledge of digital systems design or permission of instructor. Offered: jointly with E E 563.

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 ratiored gates, delay estimation and performance analysis, arithmetic circuits, memories, clocking methodologies, synthesis and simulation tools, VLSI process and 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 and system-clocking methodologies; data path 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 573 Artificial Intelligence I (3) Introduction to computational models of thought and construction of intelligent information systems. Topics include search algorithms, data dependencies and truth-maintenance systems, approaches to knowledge representation, automated deduction, reasoning under uncertainty, and machine learning. Prerequisite: CSE 421 or equivalent; exposure to logic, LISP programming experience, 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 Image Understanding (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: CSE 573 or E E 562 or equivalent or permission of instructor. Offered: jointly with E E 578.

CSE 577 Mathematical Morphology (3) Theory of mathematical morphology and its application in various commercial, industrial, medical, and research applications. Contents include binary and grayscale morphological dilation, erosion, opening and closing, morphological sampling theory, structuring element decomposition, thinning, skeletonizing, and relational shape description. Group project. Prerequisite: CSE 576 or E E 568 or permission of instructor. Offered: jointly with E E 577; alternate years.

CSE 578 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 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 icon-to-symbolic transforms. Study of parallel programming methodologies. Prerequisite: permission of instructor. Offered: alternate years.

CSE 582 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 583 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 584 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 reengineering (tools, models, approaches). Prerequisite: CSE majors only.

CSE 585 Design and Implementation of Digital Systems (4) Overview of current implementation techniques for digital systems including instruction set, system architecture, processor control, and processor implementation (pipelining, multiple issue, speculative execution). Memory hierarchy: on-chip and off-chip caches, and their implementation, virtual memory from the hardware viewpoint. I/O devices and control: buses, disks, and RAIDs. Prerequisite: CSE majors only.

CSE 586 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, and their implementation, virtual memory from the hardware viewpoint. I/O devices and control: buses, disks, and RAIDs. Prerequisite: CSE majors only.

CSE 587 Computer Operating Systems (4) A study of developments in operating systems from the 1960s to the present. Topics include operating system structure, protection, virtual memory, communication mechanisms, concurrency, lightweight threads, object-oriented systems, distributed systems, and transaction support in operating systems. Prerequisite: CSE majors only.

CSE 588 Network Systems (4) Current choices and challenges in network systems. Fundamental concepts combined with emphasis on evaluation of selected design 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 589 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 590 Special Topics in Computer Science (*) Several offerings each quarter, on topics of current interest. Prerequisite: permission of instructor. Offered: AWSp.

CSE 591 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 592 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 593 Transaction Processing (4) Technology supporting reliable large-scale distributed computing, including transaction processing 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 594 Database Management System (4) Introduction to the principles of database management systems. Topics include database system architecture, rapid prototyping and iterative design, safety and critical systems, evaluation techniques, and computer supported cooperative work. Prerequisite: CSE majors only.

CSE 595 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, fault-tolerance, evaluation techniques, and computer supported cooperative work. Prerequisite: CSE majors only.

CSE 596 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; algorithms for pipelining, data and 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 597 Performance Analysis (4) Broad introduction to computer system performance evaluation techniques and their application. Includes measurement/benchmarking, stochastic and trace driven simulation, stochastic queueing 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. Offered: AWSp.

CSE 600 Independent Study or Research (*) Credit/no credit only. Offered: AWSp.

CSE 700 Master's Thesis (*) Credit/no credit only. Offered: AWSp.

CSE 800 Doctoral Dissertation (*) Credit/no credit only. Offered: AWSp.
Electrical Engineering

253 Electrical Engineering

General Catalog Web page: www.washington.edu/students/gencat/academic/Electrical_Eng.html

Department Web page: www.ee.washington.edu/ee.html

Electrical engineering is concerned with the understanding and utilization of electricity and with providing society useful, efficient, and economic products and services. Electrical engineering is an amazingly broad-based and rapidly growing discipline. 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 manners of devices and systems that use electric and electromagnetic energy. Electrical engineers 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.

Graduates with a degree in electrical engineering find employment in industries such as aerospace, communications, computer manufacturing, power distribution, consumer electronics, and biomedical engineering. Positions can be found focusing on the research, design, and testing of new products, in technical sales and marketing, business consulting; and even growing areas such as intellectual property. Students who pursue graduate studies are quite successful in highly competitive programs nationally and internationally.

Graduate Program

Graduate Program Coordinator
253 EE/CSE Building, Box 352500
206-543-4924
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), and electronic materials (including devices and microelectronics), 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.

The M.S.E.E. degree is also offered to part-time students employed in local industries through the Education at a Distance for Growth and Excellence (EDGE) program. Regular graduate courses are offered over cable television or by videotape to enable working engineers to participate in the program without traveling to campus.

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.

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.

Admissions Qualifications

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/admissions.html.

Financial Aid

Research assistantships, teaching assistantships, 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.

Faculty

Chair
Howard Jay Chizeck

Professors

Afromowitz, Martin J. * 1975; MS, 1966, PhD, 1969, Columbia University; microtechnology, solid-state and fiber-optics sensors, biomedical instrumentation.

Alexandro, Frank J. * 1964, (Emeritus); MS, 1959, DSC, 1964, New York University; control systems, stochastic estimation methods.

Allstot, David James * 1999; PhD, 1979, University of California (Berkeley); design and simulation of RF and mixed-signal integrated circuits.

Atlas, Les Eugene * 1983; MS, 1979, PhD, 1984, Stanford University; time-frequency representations, digital signal processing applied to speech, audio, and video.

Baer, Jean-Loup * 1969, (Adjunct); MS, 1963, Grenoble (France); PhD, 1968, University of California (Los Angeles); computer architecture and performance evaluation.

Beach, Kirk Watson * 1976, (Adjunct Research); MSCH, 1968, PhD, 1971, University of California (Berkeley), MD, 1976, University of Washington; artemial disease in diabetes, blood flow studies with ultrasonic Doppler.


Borriello, Gaetano * 1988, (Adjunct); MS, 1981, Stanford University, PhD, 1988, University of California (Berkeley); invisible and ubiquitous computing, embedded and network systems.

Chizeck, Howard Jay * 1998; MS, 1976, Case Western Reserve University, ScD, 1982, Massachusetts Institute of Technology; biologically inspired control systems for autonomous robotics, prosthetics, and rehabilitation.

Crum, Lawrence A. * 1992; PhD, 1967, Ohio University; physical acoustics, underwater acoustics, medical ultrasound, acoustic cavitation, sonoluminescence.

Damborg, Mark J. * 1969; MSEE, 1963, PhD, 1969, University of Michigan; control systems theory, and applications, power system dynamics and control, database methods.

Darling, Robert B. * 1985; MS, 1982, PhD, 1985, Georgia Institute of Technology; semiconductor devices, solid state, optoelectronics, microelectronics.

Denton, Denice Dee 1996; MS, 1982, PhD, 1987, Massachusetts Institute of Technology; micromachining for the design and fabrication of microelectronic systems.

Dow, Daniel G. * 1969, (Emeritus); PhD, 1958, Stanford University; microwave, physical electronics, semiconductor devices, sensors.

Dunham, Scott T. * 1999; MS, 1980, PhD, 1985, Stanford University; modeling and simulation of microfabrication processes and device behavior.

Ehrenberg, John E. * 1970, (Affiliate); PhD, 1973, University of Washington; communications, signal processing, underwater acoustics.

El-Sharkawi, Mohamed A. * 1980; MS, 1977, PhD, 1980, University of British Columbia (Canada); analysis and control of power electronics, systems, and electric drives; artificial neural networks.

Furness, Thomas A. * 1989, (Adjunct); PhD, 1981, University of Southampton (UK); display systems engineering, human factors, computer graphics, virtual reality.

Guilford, Edward C. * 1983, (Emeritus); PhD, 1959, University of California (Berkeley); electronics, computer engineers.

Hannaford, Blake * 1989; MS, 1982, University of California (Berkeley); PhD, 1985, University of California (Berkeley); haptic interfaces, robotics, bio-
mechanics, bioengineering, controls, human-machine interaction.

Haralick, Robert M. * 1986, (Emeritus); MS, 1967, PhD, 1969, University of Kansas; computer vision, artificial intelligence, pattern recognition, image processing.

Hsu, Chih-Chi * 1958, (Emeritus); PhD, 1951, Ohio State University; control systems and cybernetics.

Huang, Xuecong D. * 1997, (Affiliate); PhD, 1989, University of Edinburgh (UK); speech recognition and synthesis, user interfaces, artificial intelligence, computational linguistics.

Hwang, Jenq-Neng * 1969; MS, 1983, National Taiwan University (Taiwan), PhD, 1988, University of Southern California; parallel architectures, signal and image processing, neural networks.

Johnson, David L. 1955, (Emeritus); PhD, 1955, Purdue University; digital design, artificial intelligence, models of learning systems.

Kim, Yongmin * 1982; MS, 1979, PhD, 1982, University of Wisconsin; computer architecture, imaging systems, medical imaging, computer graphics, multimedia.

Kuga, Yasuo * 1991; MS, 1979, PhD, 1983, University of Washington; microwave and millimeter-wave remote sensing, optics, and electromagnetics.

Ladner, Richard E. * 1971, (Adjunct); PhD, 1971, University of California (Berkeley); design and analysis of algorithms, data compression, network algorithms, cache performance.

Lauritzen, Peter O. * 1968, (Emeritus); MS, 1958, PhD, 1961, Stanford University; power electronics, electronic devices, instrumentation.

Lewellen, Thomas * 1967, (Adjunct); PhD, 1972, University of Washington; bioengineering, electrical engineering.

Lewis, Laurel J. 1946, (Emeritus); PhD, 1947, Stanford University; circuits and systems.

Liu, Chen-Ching * 1983; MS, 1978, National Taiwan University, PhD, 1983, University of California (Berkeley); power system analysis/computing, intelligent system methodologies/applications, power electronics.

Marks, Robert J. * 1977; MS, 1973, Rose Hulman Institute of Technology, PhD, 1977, Texas Technological University; neural networks, computational intelligence, fuzzy systems, statistical communication theory.

Meditch, James S. * 1977, (Emeritus); MS, 1957, Massachusetts Institute of Technology, PhD, 1961, Purdue University; broadband communication networks, video and multimedia systems.

Meldrum, Deirdre R. * 1992; MS, 1985, Rensselaer Polytechnic Institute, PhD, 1993, Stanford University; laboratory automation systems, genome analysis, modeling and control of dynamic systems, robots.

Moritz, William E. * 1973, (Emeritus); PhD, 1969, Stanford University; human-powered transportation.

Noges, Endrik * 1958, (Emeritus); PhD, 1959, Northwestern University; automatic control systems, nonlinear and discontinuous control.

Ostendorf, Mari 1999; MS, 1981, PhD, 1985, Stanford University; speech synthesis and understanding; spoken document retrieval; statistical pattern recognition.

Pearsall, Thomas P. * 1989, (Affiliate); PhD, 1973, Cornell University; physics of semiconductors and the technology of semiconductor devices.

Peden, Irene Carswell * 1961, (Emeritus), PhD, 1962, Stanford University; subsurface remote sensing and applied electromagnetics.

Porter, Robert P. * 1985, (Emeritus); PhD, 1970, Northeastern University; acoustics, electromagnetics, signal processing.

Rictey, James A. * 1985; MS, 1979, Syracuse University, PhD, 1985, University of California (San Diego); communications, signal processing, radar/sonar.

Sechen, Carl M. * 1992; MS, 1979, Massachusetts Institute of Technology, PhD, 1986, University of California (Berkeley); design and computer-aided design of digital integrated circuits and systems.

Shapiro, Linda G. 1966; MS, 1972, PhD, 1974, University of Iowa; computer vision, multimedia information systems, medical informatics, pattern recognition.

Sigelmann, Rubens A. * 1959, (Emeritus), PhD, 1963, University of Washington; bioengineering, ultrasonics, propagation, acoustics.

Soma, Mani * 1982; MS, 1977, PhD, 1980, Stanford University; computer-aided design, device modeling, I.C. technology and design, bioengineering.

Spindel, Robert C. 1987; MS, 1966, PhD, 1971, Yale University; ocean acoustics, signal processing, acoustic navigation systems, acoustic tomography.

Sun, Ming-Ting * 1996; MS, 1981, University of Texas (Arlington), PhD, 1985, University of California (Los Angeles); multimedia/video networking/VLSI.

Szablya, John F. * 1984, (Affiliate); PhD, 1948, Jose Nador University (Hungary).

Tanimoto, Steven L. * 1977, (Adjunct); MA, 1974, PhD, 1979, Princeton University; visual languages, image analysis, computer graphics, artificial intelligence, educational technology.

Tsai, Minoru * 1986, (Adjunct); PhD, 1977, Northwestern University; composite materials, elasticity and plasticity, impact physics, fracture theory.

Tsang, Leung * 1983; MS, 1973, PhD, 1976, Massachusetts Institute of Technology; wave propagation and scattering, remote sensing and optics.

Vagner, Juris * 1967, (Adjunct); PhD, 1967, Stanford University; optimal control and estimation theory, applications to aircraft systems.

Yee, Sinclair S. * 1966; MS, 1961, PhD, 1965, University of California (Berkeley); physical electronics, semiconductor devices, microsensors.

Yuan, Chun 1991, (Adjunct); PhD, 1988, University of Utah; magnetic resonance imaging in medical application.

Zabinsky, Zelda * 1985, (Adjunct); PhD, 1985, University of Michigan; operations research, applications in industrial engineering, optimization with stochastic elements.

Zick, Gregory L. * 1974; MS, 1972, PhD, 1974, University of Michigan; multimedia and digital information management systems.

Associate Professors

Shi, Chuan Jin 1998; PhD, 1994, University of Waterloo (Canada); VLSI and VLSI-CAD, optimization.

Sinanan, Mika N. * 1980, (Adjunct); MD, 1980, Johns Hopkins University, PhD, 1986, University of British Columbia (Canada); surgical education, biomorphic surgical instrument development, and clinical procedure development.

Thorsos, Eric I. * 1980; PhD, 1972, Massachusetts Institute of Technology; rough surface scattering, numerical simulation and theory, underwater acoustics.

Troll, Mark 2001, (Research); PhD, 1983, University of California (San Diego).


Wilson, Denise M. * 1999; PhD, 1995, Georgia Institute of Technology; distributed sensing systems design with emphasis on electronics interface.

Winebrenner, Dale P. * 1986; PhD, 1985, University of Washington; optical and radiowave propagation and scattering, remote sensing of planetary surfaces.

Yuan, Chun 1991, (Adjunct); PhD, 1988, University of Utah; magnetic resonance imaging in medical application.

Assistant Professors

Alilovic-Curgus, Jadranka 1997, (Affiliate); PhD, 1993, University of British Columbia (Canada).

Belcher, Edward O. * 1982, (Affiliate); MA, 1970, Stanford University, MSEE, 1973, Purdue University; signal processing, artificial intelligence, underwater acoustics.

Bilmes, Jeffrey A. * 1999; PhD, 1999, University of California (Berkeley); speech and pattern recognition, learning, audio processing, high-performance computing, human-computer.

Böhninger, Karl F. * 1998; MS, 1993, PhD, 1997, Cornell University; microelectromechanical systems (MEMS), applied microtechnology, micro spacecraft.


Chinowsky, Timothy M. 2000, (Research); MS, 1997, PhD, 2000, University of Washington.

Choi, Jai Joon * 1988, (Affiliate); PhD, 1990, University of Washington; adaptive signal processing, neural networks, and fuzzy logic.

Diorio, Christopher J. * 1997, (Adjunct); MS, 1984, PhD, 1997, California Institute of Technology; silicon learning chips, neural networks, and learning algorithms.

Goldcsneider, Jill * 1989, (Affiliate); PhD, 1997, University of Washington; data compression, image processing and clustering.

Jandhyala, Vikram 2000; PhD, 1998, University of Illinois; computational and applied electromagnetics, high-speed circuit applications of field solvers.

Liu, Hui * 1998; PhD, 1995, University of Texas (Austin); wireless system and network design; DSP and VLSI for communications, numerical computing.

Luby, James C. * 1979, (Affiliate); PhD, 1984, University of Washington; signal processing, under-water acoustics, computer simulation, adaptive array processing, tracking.

Mamishev, Alexander V. * 1999; PhD, 1999, Massachusetts Institute of Technology; sensors, non-destructive testing, power, MEMS, inverse problems, optimization.


Oh, Seho * 1987, (Affiliate); PhD, 1989, University of Washington; neural networks and fuzzy systems.

Padmanabhan, Venkata N. Z. * 1999, (Affiliate); PhD, 1998, University of California (Berkeley); Internet performance analysis, wireless networking and mobile computing.

Pooventrad, Raadhakrishnan 2000; PhD, 1999, University of Maryland; communications and networking, network security, cryptography.

Senior Lecturers

Peckol, James 1994; PhD, 1985, University of Washington; real-time embedded systems, hardware/software co-design, computer architecture, digital fuzzy logic.


See page 39 for an explanation of course numbers, symbols, and abbreviations.

Course Descriptions

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. Offered: AWSp.

E E 411 Network Synthesis (4) Network representation in the complex frequency domain, realizability criteria for driving-point and singly and doubly terminated transfer function, canonical forms, Butterworth and Bessel Approximation methods, and application of the digital computer in synthesis procedures. Prerequisite: 1.0 in E E 233. Offered: A.

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 Communications I: Random Signals (4) Probability and random processes in communications. Random variables, distributions, and expectation. Statistical filter design for detection and estimation. Prerequisite: 1.0 in E E 341; 1.0 in STAT 390.

E E 417 Communications II: Modulation and Coding (4) Modulation techniques for modern digital communication systems. Signal space, optimum receiver design, and its effects on performance, diversity signaling, spread spectrum signaling and code division multiple access for wireless communications. Prerequisite: 1.0 in E E 416. Offered: W.


E E 420 Design in Communications (4) Design projects in communications. Frequent projects solved by student teams. Reports and presentations. Prerequisite: 1.0 in E E 417 which may be taken concurrently. Offered: Sp.

E E 423 Analog Circuit Design (5) Design of analog circuits and systems applying modern integrated circuit technology: operational amplifiers, differential amplifiers, active filters, voltage references and regulators. Prerequisite: 1.0 in E E 332. Offered: AW.

E E 426 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. Offered: jointly with BIOCEN 436; Sp.

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. Offered: A.


E E 446 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: 1.0 in E E 233. Offered: A.

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, piezoelectric materials, gyroscopes. Experimental determination of component models and model parameters. Two 3-hour laborato-
E E 449 Design of Automatic Control Systems (4)
Design problems for aerospace vehicles, systems with unstable dynamics, lightly damped modes, non-minimum phase, nonlinear dynamics, Computer-aided analysis, design, and simulation, with laboratory hardware-in-the-loop testing. Team design reviews, oral presentations. Prerequisite: either 1.0 in A A 450, 1.0 in E E 446, or 1.0 in M E 471. Offered: jointly with A A 448, Sp.

E E 452 Power Electronics Design (5)
Electronic conversion and control of electrical power. Includes semiconductor switching devices, power converter circuits, design of magnets, 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 332; 1.0 in E E 351. Offered: A.

E E 453 Electric Drives (5)
Elements of drive systems, speed-torque characteristics of electric motors and industrial loads, solid-state converter. Starting and braking methods of loaded motors. Speed control of electric motors. Solid-state drives. Transient analysis of loaded motors. Special forms of individual- and multimotor drives. Prerequisite: 1.0 in E E 351. Offered: W.

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. Offered: A.

E E 455 Power System Dynamics and Protection (4)
Analysis of symmetrical and unsymmetrical power systems’ networks, fault analysis, and stability studies. Prerequisite: 1.0 in E E 351. Offered: W.

E E 456 Computer-Aided Design in Power Systems (4)
Design-oriented course in power system engineering. Students are assigned a project concerning system operation and planning, steady-state and dynamic behavior of power systems, protection of power distribution systems. Each involves formulation of design criteria, development of approach, application of existing software. Prerequisite: either 1.0 in E E 454 or 1.0 in E E 455. Offered: Sp.

E E 457 Electric Energy Distribution Systems (4)
Introduction to electric utility distribution systems. Primary and secondary network analysis and design, distribution substation problems, distribution transformers, capacitor application, overcurrent and over-voltage protection. System planning and reliability. Prerequisite: 1.0 in E E 351. Offered: Sp.

E E 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 143, either MATH 360/STAT 390, STAT 392, MATH 315, or CSE 321. Offered: jointly with CSE 461.

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-tasks, laboring. Laboratory exercises include design, construction, and testing of autonomous mobile robots, which compete at the end of the term. Offered: A.

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. Offered: W.

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 352; recommended: E E 361. Offered: W.

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 antennae, arrays, numerical methods for analysis, horn antennae, microstrip antennae, and reflector antennae. Prerequisite: 1.0 in E E 371; 1.0 in E E 466. Offered: Sp.

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, computer-organized memory, computer design, virtual memory, I/O organization, and I/O hardware design. Prerequisite: 1.0 in E E 371, Offered: W.

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: E E 471. Offered: W.

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: 1.0 in E E 351; 1.0 in E E 371. Offered: A.

E E 477 VLSI II (5)
Sechen Provides a fairly deep understanding of how IC-based memory and data-path 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 (Hsipice). 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 design, 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. Offered: W.

E E 480 Microwave Engineering I (4)
Analysis and design of transmission lines and matching circuits. Lossy transmission lines. Mode structures in metallic and dielectric waveguides. Microwave resonators and magnetic devices. Smith chart and matching techniques. Prerequisite: 1.0 in E E 361. Offered: A.

E E 481 Microwave Electronic Design (4)
Design of microwave circuits using S-parameter techniques. Measurement techniques, CAD of microwave systems. Includes design, fabrication, and evaluation of a microwave amplifier. Prerequisite: 1.0 in E E 332; 1.0 in E E 361. Offered: W.

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; homojunctions and heterojunctions, operating principles of bipolar, junction, and MOS field-effect transistors. Prerequisite: 1.0 in E E 332. Offered: A.

E E 484 Sensors and Sensor Systems (4)
Introduction to optical and solid-state chemical and physical sensors. Topics include transduction mechanisms, design parameters, fabrication methods and applications. Offered: Sp.

E E 485 Introduction to Photonics (4)
The properties of photodetectors and light-emitting diode devices. Photography, imaging, holograms, and flat panel displays. The physics of photodetectors. Prerequisite: either E E 482 or MSE 446. Offered: jointly with MSE 486. Offered: W.

E E 489 Integrated Circuit Laboratory (1) Hands-on experience in the building of a PMOS device, complete with oxidation, diffusion, photolithography, etching, metallization, and testing. Credit/no credit only. Prerequisite: E E 486/MSE 486, which may be taken concurrently. Offered: jointly with MSE 489. W.

E E 498 Design of Consumer Electronics (4)
Design of consumer electronics products. Typical products include conventional audio systems, CD players, VCRs, camcorders, and FAX systems. Choice of products varies from quarter to quarter. Course includes an integrated laboratory and design project. Prerequisite: 1.0 in E E 233; recommended: E E 332. Offered: A.

E E 499 Special Projects (2-5, max. 10) Assigned construction or design projects carried out under the supervision of the instructor. Offered: AWSp.

Courses for Graduates Only

E E 500 Graduate Seminar (1, max. 3) 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 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, microsensor and microactuator 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 504/MSE 504.

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, random and ergodicity, Gaussian processes, power spectral densities. Prerequisite: graduate standing and understanding of probability at the level of E E 416.


E E 510 Mathematical Foundations of Systems Theory I (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 546/CEM E 510/E M 510.

E E 513 Active Circuit Theory (3) Andersen Principles of analysis and synthesis of active circuits. Emphasis on general principles, including conservation theorems, invariant, performance limitations in the presence of parasitic elements and realizations for arbitrary components. Detailed application of active negative resistance amplifiers, feedback amplifiers, and active filters. Prerequisite: E E 341 or permission of instructor.

E E 516 Computer Speech Processing (4) Blimes, 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) Blimes, 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 density functions, power spectral density functions (made on a variety of physical systems (e.g., electronic, mechanical, chemical, acoustic, nuclear). Lecture plus laboratory. Prerequisite: E E 505 or equivalent.


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 permission of instructor.

E E 522 Shannon Sampling and Interpolation Theory (4) Marks Historical overview of Shannon sampling theorem; fundamentals of the cardinal series; generalizations including those of Papoulis, Kramers, and Lagrange. Effects of jitter, truncation and data noise on interpolation; continuous sampling restoration using prolate spheroidal wave functions and the Papoulis-Gerchberg algorithm. Prerequisite: E E 505.

E E 523 Computational Neural Networks (3) Atlas, Hwang, Marks Fundamentals of computational neural networks from perspectives of system theory and electrical engineering applications: historical review, adaptive parameter estimation, nonlinear optimization, combinatorial optimization, learning rules, neural network models, data clustering and relationship pattern classification, speech recognition, image modeling, nonlinear principal component analysis, probability density estimation. Prerequisite: permission of instructor.

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 familiarization with laboratory 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, evaporation, and sputtering of thin films using photoresist. Extensive laboratory with limited enrollment. Prerequisite: graduate standing and permission of instructor.

E E 528 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 technologies. 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 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 532 Device Modeling for Circuit Simulation (4) Darling Compact modeling of semiconductor devices. Analytical models, standard SPICE models, lumped-parameter models, special applications. Emphasis on basic diodes, MOSFETs, BJTs, and other models of interest, including sensor, photonic, and power models. Compact models using AHDL languages. Prerequisite: one of E E 531 or permission of instructor.

E E 533 Photodetectors and Photodetection (4) Afromowitz, Yee Includes both the device physics and signal processing aspects of photodetection. Photodiodes, photococonverters, 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, pulse-width modulation 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: fundamental concepts of circuit design, simulator, CMOS and BiCMOS technology. 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. Numerical aspects of important analyses: large-signal nonlinear DC, small-signal AC, nonlinear transistor, 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. Prerequisite: 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 (3) Soma VLSI testing and design-for-test techniques. Reliability predictions and characterizations for integrated circuits and systems. Circuits fabricated in 536 are tested as laboratory work. Prerequisite: E E 535, E E 536.
CSE 541 Automatic Layout of Integrated Circuits

Schenk

Examines the algorithms behind the following commonly used physical design automation tools: floorplanning, placement, routing, compaction, and verification. Prerequisite: CSE 371; CSE 373 or CSE 326 or equivalent.

CSE 543 Models of Robot Manipulation

Hannaford

Mathematical models of arbitrary articulated robotic (or biological) arms and their application to realistic arms and tasks, including the homogeneous coordinate description of position and orientation, 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.

CSE 544 Advanced Robot Manipulation

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 fingered hands. Students will perform a project and critique a research paper in the area of the project. Prerequisite: CSE 543.

CSE 545 Autonomous Robots

Damborg, El-Sharkawi

Advanced computer modeling and analysis of power systems. Application of modern systems and control theories. Prerequisite: E E 455 or equivalent.

CSE 551 Power System Protection

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.

CSE 552 Power Systems Dynamics and Control

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. Offered: odd years; 3p.

CSE 553 Power System Economics

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.

CSE 554 Large Electric Energy Systems Analysis

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.

CSE 555 Fundamentals of Intelligent Systems

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. Offered: Sp.

CSE 559 Special Topics in Electrical Energy Systems

Topics of current interest in electrical energy, power and its applications and systems. Content varies from year to year, based on current professional interests of faculty member in charge. Prerequisite: permission of instructor.

CSE 562 Artificial Intelligence for Engineers

Shapiro

Covers the design of computer vision algorithms. Examines the computation of computer vision algorithms; broad perspective of computer vision applications; and relationship of computer vision to other fields. Prerequisite: CSE 373 or equivalent.

CSE 563 Fault-Tolerant Computing

Soma Faults and their manifestation, issues, theory, and techniques of reliable systems design, testing, design for testability, self-checking and fail-safe circuits, computer techniques, system-level fault diagnosis, fault-tolerant communication, reliable software design, and evaluation criteria. Prerequisite: basic knowledge of digital systems design or permission of instructor. Offered: jointly with CSE 563.

CSE 564 Parallel Computer Systems

Hwang, Kim

Examines the design and implementation of parallel computer systems, focusing on the hardware and software design of parallel processing systems. Prerequisite: E E 471, permission of instructor.

CSE 565 Computer-Communication Networks

Network architectures and protocols; broadband- ISDN and Asynchronous Transfer Mode (ATM); performance modeling and analysis of packet-switched networks, digital switching systems. Prerequisite: CSE 505 or equivalent.

CSE 566 Computer-Communication Networks II

Local area, metropolitan area, satellite, and packet radio networks; routing algorithms for wide area networks; optimal design of packet-switched networks; control of flow and congestion; fast packet switching; gigabit networks. Prerequisite: E E 565 or permission of instructor.

CSE 568 Image Processing Computer Systems

Kim

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; Sp.

CSE 571 High Frequency Circuits and Antennas

Computation of Fields and Waves

Planar microstrip structures are high frequency circuits and antennas used in communication, aerospace and computer industries. Examines the computation of fields and structures in such microstrip systems with focus to calculating circuit parameters and radiation characteristics. Structures studied include microstrip lines, coupled lines, antennae, resonators, and discontinuities. Prerequisites: E E 482, E E 572, or equivalent.

CSE 572 Electromagnetic Theory and Applications

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.

CSE 573 Electromagnetic Computations and Applications

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.

CSE 574 Electromagnetic Computations and Applications

Tsang

Various and applications of 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.

CSE 575 Waves in Random Media

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, snow, 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.

CSE 576 Image Understanding

Haralick

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: E E 573 or E E 562 or equivalent or permission of instructor. Offered: jointly with CSE 576.

E E 577 Mathematical Morphology (3) Haralick
Theory of mathematical morphology and its application in various commercial, industrial, medical, and research applications. Contents include binary and grayscale morphologic dilation, erosion, opening, and closing, morphological sampling theorem, constructing element decomposition, thinning, skeletonizing, and relational shape description. Group project. Prerequisite: E E 568 or E E 576 or permission of instructor. Offered: jointly with CSE 577.

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 581 Digital Control I (3) Alexandre, Berg, Ly

E E 582 Digital Control II (3) Alexandre, Berg, Ly
Vagners Controller design via state feedback and observers. Introduction to discrete-time stochastic processes. Quantization effects. Introduction to parameter identification using noisy measurements. LQR optimal control. Kalman filter design. LQG optimal control. Prerequisite: E E 581 or permission of instructor. Offered: jointly with A A 582/M E 582.

E E 583 Nonlinear Control Systems (3) Analysis and synthesis of nonlinear controls systems. Assessment of stability by phase plane and describing function methods, circle and Popov criteria, Lyapunov criteria. Construction of Lyapunov functions by method of Krassovskii and Lu’e.e. Introduction to nonlinear control system design. Prerequisite: E E 446, E E 584, or permission of instructor. Offered: jointly with M E 583; odd years; Sp.

E E 584 Linear Systems Theory (3) Campbell, Ly

E E 586 Digital Video Coding Systems (3) 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 Vector Quantization and Data Compression (3) Kim, Riskin
Introduction to data compression and information theory; vector quantization including theory, applications, design, performance criteria, variable rate systems, and reduced complexity structure including transform coding, wavelets, lossless compression algorithms, and applications of compression to images, speech, and video. Prerequisite: E E 505 or STAT 390 and computer programming experience.

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/CHM 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 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 599 Selected Topics in Electrical Engineering (*) Prerequisite: permission of instructor. Offered: A W Sp.

E E 600 Independent Study or Research (*) Offered: A W Sp.


Industrial Engineering
G-7 Mechanical Engineering Building

Department Web page: depts.washington.edu/ei/

The formal definition of industrial engineering, as adopted by the Institute of Industrial Engineers, is as follows: industrial engineering is concerned with the design, improvement, and installation of integrated systems of people, materials, information, equipment, and energy. It draws upon specialized knowledge and skill in the mathematical, physical, and social sciences together with principles and methods of engineering analysis and design to specify, predict, and evaluate the results obtained from such systems.

Industrial engineering is set apart from other engineering disciplines by its broader scope. Industrial engineers are, by definition, specialists in designing and operating systems that make optimal use of resources when labor, materials, capital, and technology are constrained. They deal with people as well as things, looking at the “big picture” of what makes society perform best: the right combination of human resources, natural resources, and man-made structures and equipment. Bridging the gap between management and operations, they deal with and motivate people as well as determine what tools should be used and how they should be used.

Industrial engineers are the “productivity people” who must provide leadership and integrate technology. They include the human factor in finding workable, effective solutions to production problems while retaining high standards of quality. Demand for industrial engineers has grown dramatically over the past two decades for one chief reason: the need for organizations to raise their levels of productivity through thoughtful, systematic applications. The profit-making organization must have high productivity in order to compete in the domestic and world market place. The nonprofit organization must have high productivity in order to sustain its position as a useful service unit.

Graduate Program
Graduate Program Coordinator
G7 Mechanical Engineering, Box 352650
206-543-5041
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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, and applied engineering, computer-integrated manufacturing, simulation, supply chain, human factors, virtual reality, and human interface technology.

For the M.S.I.E. degree, a minimum of 41 credits is required, with both a thesis and course-work-only option. Students pursuing the thesis option must complete a minimum of 9 credits of master’s thesis (IND E 700).

For the Ph.D. degree, students must initially pass the departmental qualifying examination, followed by successful completion of an advanced General Examination and subsequent Final Examination in which the student defends his or her dissertation.

Faculty
Chair
Tony C. Woo

Professors
Furness, Thomas A. * 1989; PhD, 1981, University of Southampton (UK); display systems engineering, human factors, computer graphics, virtual reality.

Kapur, Kailash C. * 1992; PhD, 1969, University of California (Berkeley); quality/reliability engineering, system design/optimization, total quality/reliability management.

Klastorin, Theodore * 1974, (Adjunct); PhD, 1973, University of Texas (Austin); operations management, facility location, project management, waiting lines, logistics, inventory.

Moinzadeh, Kamran * 1984, (Adjunct); MS, 1982, PhD, 1984, Stanford University; operations management, production management, inventory, quality and supply chain management.

Ramey, Judith A. * 1983, (Adjunct); PhD, 1983, University of Texas (Austin); computer-assisted communication user-centered design, usability testing.

Ramulu, M. * 1978, (Adjunct); PhD, 1982, University of Washington; manufacturing processes, production engineering, applied mechanics, fatigue and fracture mechanics.

Rockfellar, R. T. * 1966, (Adjunct); PhD, 1963, Harvard University; variational analysis and optimization.

Storch, Richard L. * 1975; PhD, 1978, University of Washington; ship production, large scale assembly and manufacturing systems, statistical quality control, design.
Tuttle, Mark E. * 1985, (Adjunct); PhD, 1984, Virginia Polytechnic Institute and State University; applied solid mechanics, composite materials and structures, adhesion mechanics.

Wilson, William R. D. * 1999, (Adjunct); PhD, 1967, Queen’s University of Belfast (Ireland); manufactur- ing and tribology, particularly metal forming.

Woo, Tony C. * 1995; MSEE, 1974, PhD, 1975, University of Illinois; graphics, imaging, robotics, design, manufacturing, differential geometry, opti- mization.

Zabinzky, Zelda * 1985; PhD, 1985, University of Michigan; operations research, applications in indus- trial engineering, optimization with stochastic ele- ments.

Associate Professors

Atman, Cynthia J. * 1998; PhD, 1990, Carnegie Mellon University; engineering education issues and developing cognitive models of engineering design.

Drui, Albert B. * 1959, (Emeritus); MS, 1957, Washington University; industrial engineering, human factors.

Kumar, Vinip * 1988, (Adjunct); PhD, 1988, Massachusetts Institute of Technology; manufactur- ing, polymer processing, microcellular plastics, design theory and methodology.

Reinhall, Per G. * 1982, (Adjunct); PhD, 1982, California Institute of Technology; nonlinear dynam- ics, vibrations, vibration control, acoustics, biomed- ical engineering.

Roberts, Norman H. * 1953, (Emeritus); PhD, 1958, University of Washington; reliability and probability theory.

Assistant Professors

Beamon, Benita M. * 1999; PhD, 1994, Georgia Institute of Technology; production, material handling, and transportation systems.

Yen, Joyce Wen-Hwei * 2000; PhD, 2001, University of Michigan; operations research, stochastic pro- gramming.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs-cat/.


IND E 424 Simulation (4) Beamon Discrete-event simulation methodology emphasizing model formula- tion and construction with modern simulation lan- guages and environments, statistical basis for evalu- ating model results, design and management of sim- ulation projects. Application to manufacturing, retail, and service industries. Prerequisite: IND E 237, which may be taken concurrently; IND E 325. Offered: W.


IND E 430 Manufacturing Scheduling and Inventory (4) Beamon, Storch Manufacturing schedul- ing and inventory control for different work organi- zations. 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 manu- facturing and service industries. Prerequisite: IND E 237; IND E 325.

IND E 433 Introduction to Computational Manufacturing (3) Woo Fundamentals in computer aided design/manufacturing. Visualization, 3-D wire-frames, curves and surfaces, solid modeling. Numerical control machining, robotics, and assembly. Prerequisite: IND E 237; IND E 324. Offered: W.

IND E 439 Plant Layout and Material Handling (4) Beamon, Storch Design of new or expanding indus- trial facilities. Consideration of work-organization and layout. Study of basic design of plant systems, includ- ing plumbing, electrical, HVAC, illumination, acoustics, and waste handling. In depth coverage of material handling system design and equipment choices.

IND E 455 User Interface Design (3) Furness Design oriented to cover fundamentals of user interface design; models on human computer interaction, soft- ware psychology, input devices, usability, cognitive and perceptual aspects of human-computer interac- tion, advanced interface design and technology. Prerequisite: IND E 316. Offered: joint with T C 455, A.

IND E 494 Design in the Manufacturing Firm (4) Engineering design in manufacturing firms is present- ed. Topics include design methodology, concurrent engineering, and project management. Focus on the relationship between product design and manufac- turing. Use of advanced computer-aided design and manufacturing, community health, construction, and urban development. Prerequisite: IND E 324, IND E 250, and IND E 315, or permission of instructor.

IND E 511 Management Decision Models (3) Kapur Quantitative approaches, using decision models. Topics include elements of a decision, theory of optimal decisions, resource allocation, simulated deci- sion making, decisions under uncertainty, risk and pressure, utility theory, and game theory. Projects in manufacturing, community health, construction, and urban development. Prerequisite: IND E 324, IND E 250, and IND E 315, or permission of instructor.

IND E 513 Linear Optimization Models in Engineering (3) Zabinzky Advanced formulation techniques to expand applications of linear program- ming to large-scale models. Appreciation of role of optimization models in engineering applications through introduction of techniques such as decom- position. Individual engineering projects. Prerequisite: IND E 324 and MATH 308 or permission of instructor.


IND E 518 Seminars on Advances in Manufacturing and Management (1) Mescher, Ramulu, Woo Current topics and advances made in manufacturing and management. Topics presented by invited speakers from academia and industry. Emphasis on the multidisciplinary nature of manufac- turing and management Offered: jointly with M E 518 AWSp.

IND E 521 Quality Control in Manufacturing (3) Kapur, Storch Design of quality control systems in manufacturing. Use of advanced statistical process controls, sampling inspection techniques, process capability, and other statistical tools. Also include vendor sourcing and control tools, methods for estab- lishing 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 lin- ear 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 531 Computer Integrated Manufacturing (3) Design and analysis of advanced manufacturing sys- tems from a strategic as well as technological per- spective. Focus on information generation, manage- ment, and coordination aspects of complex manu- facturing organizations. Examination of system inte- gration alternatives and consequences for relations- hips with customers and suppliers. Prerequisite: IND E 431 or equivalent.

IND E 532 Geometric Modeling (3) Woo Mathematics and computations in geometric model-
Materials Science and Engineering

302 Roberts

General Catalog Web page: www.washington.edu/students/gencat/academicMaterial_Sci.html

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.

The faculty of the Department of Materials Science and Engineering recognizes that a strong graduate program is an essential component of a balanced educational effort in materials. The department’s graduate programs in materials science and engineering are designed to build on and enhance the educational experience imparted in its undergraduate programs. Therefore, a related department goal is to provide coordination and balance between the undergraduate and graduate degree programs, and to ensure that each program is allocated the resources necessary to meet its goals.

Within the overall field of materials science and engineering, students are offered both broad options and in-depth core. The program provides the needed background and understanding of all types of engineering materials, including metals, ceramics, polymers, biomaterials, composites and hybrids, electronic materials, nanomaterials, and photonic materials.

Ceramic materials are resistant to high temperatures, chemically durable, strong, rigid, and exhibit a broad range of functional and electronic properties. The ceramic engineering program provides students with an understanding of the chemical, electrical, optical, mechanical, and thermal properties of ceramics; of processing methods and their effects on the structure and properties; and of the feasibility and economics of manufacture of ceramic materials for engineering applications.

Metallurgical engineering is concerned with the processing, fabrication, and utilization of metals, alloys, and other engineering materials. Extractive metallurgy relates to the processing and refining of metals and their compounds. Physical metallurgy is concerned with the structure and properties of materials, the development of new materials with improved properties, and the application and performance of materials in modern engineering systems and design.

Electronic and optical materials are utilized in a variety of modern technology, from fiber optic communications to computer technology. Semiconductor and insulating materials are utilized in many applications from computer chips to light-emitting diodes. These materials have special properties provided by structural modification, impurity incorporation, and special processing techniques. Conducting materials of high purity are needed for many electronic applications. Fiber optics depend on glass fiber of special composition and are made using specific processes. Optical materials such as those used in lasers are specially modified using crystal growth and doping techniques. The University’s materials engineering program provides students with the background and experience needed for a career in this broad area.

The M.S.E. program has recently experienced rapid expansion into new research areas. These include polymers, hybrids, biomaterials, nanomaterials, and photonics. These areas demand a broad spectrum of interdisciplinary knowledge from chemistry, physics, optics, device fabrication, and biology. Many new synthesis techniques are developed or applied in these materials processing. New physical properties are found in these atomically engineered materials with well-controlled microstructures. Potential applications of nanomaterials, biomaterials, and photonic materials exist in modern industries and cutting-edge technologies.

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 degree of Master of Science in Materials Science and Engineering with defined options in materials science, ceramic engineering, metallurgical engineering, and engineering materials. The Doctor of Philosophy program is offered with defined pathways in ceramic engineering, metallurgical engineering, and materials science.

The materials science option or pathway is a course of study that combines the basic elements of understanding ceramics, metals, polymers, composites, and electronic materials. Many specialized courses, including engineering fracture mechanics, semiconductor devices, and polymer chemistry, may be taken in other departments to provide a broad, yet basic, materials-study program.

Ceramic engineering graduate programs are designed to develop a fundamental understanding of the physical, chemical, and structural relationships that influence the properties and applications of ceramic materials. Processing, the development of microstructure, and the relationships of microstructure to properties are considered from a basic viewpoint that is applicable to a broad range of materials.

Graduate programs in metallurgical engineering encompass a variety of courses and research programs that are related to the physical and chemical aspects of metals, alloys, and related engineering materials. Programs in the physical-metallurgy and materials-science areas include the structure and properties of alloys, phase transformations, biomaterials, lattice defects, the optical properties of nonmetallic solids, failure analysis, x-ray diffraction, and the mechanical behavior of materials. Programs include metallurgical thermodynamics, rate phenomena, and carbothermic reduction processes.

The engineering materials option is open to students with industrial experience. In this option, students take practice-oriented courses, complete an analysis, and develop a recommended solution to an engineering-materials problem in place of a research thesis. Programs of study generally are related to a specific field of materials-engineering practice.

Graduates in material science become professionals in multiple industries, including electronics, automotive, and aerospace. They work in material design and manufacturing, including electronic and optical material and devices, microelectromechanical systems (MEMS), system design, and materials selection as related to the structure, properties, processing, and applications of materials.
Master of Science in Materials Science and Engineering

All Master of Science degrees offered by the department require course work and the satisfactory completion of an M.S. thesis research problem, with the exception of the engineering-materials option, which requires 32 credits plus 4 credits for the problem-solution project. Of the course credits, 12 are specified to include courses on thermodynamics, crystal structure, interfacial properties, and the principles of phase transformations, and a graduate seminar. Other courses may be required for specific program options. The residence and grading requirements follow those of the Graduate School.

The department is authorized to supervise an option in materials science and engineering that leads to the College of Engineering Master of Science degree. This degree program is intended to accommodate students who have a strong science background but lack an undergraduate engineering degree. The required courses are the same for all of the above degrees. Students with deficiencies in their intended area of engineering specialization may be required to take undergraduate courses in addition to the normal graduate course requirements.

Doctor of Philosophy

Students who have completed one year of graduate work must take the Ph.D. qualifying examination to determine whether the faculty will advise continued study proceeding to the General Examination for the degree of Doctor of Philosophy. Students are required to pass the Ph.D. Qualifying Examination which includes an evaluation portfolio. This portfolio consists of both a written fundamental exam and a research report and presentation. A critical examination of the applicant's complete academic record, recommendations, and proposed course of study will be pertinent to this decision. In addition to course work, each student is required to pass the General Examination, which is sufficiently comprehensive to demonstrate the student's ability to deal with broad aspects of materials science, as well as with a specialized subject area. Proficiency in basic research is of paramount importance. Each prospective candidate is required to present a written dissertation that makes an original and independent contribution to knowledge in the student's field of specialization.

Research Facilities

The research laboratories in the Department of Materials Science and Engineering are well equipped for a variety of research endeavors. Facilities include equipment for electron and optical microscopy, x-ray diffraction, a variety of spectrometers, high-temperature heat treatment, electrical, optical and mechanical property testing, specialized processing equipment, including hot and cold isostatic presses, and thermal analysis equipment. The University's Department of Geology and Geography provides facilities and a graduate seminar for the study of the relationship between configuration, conformation, molecular ordering, microstructure and properties of polymeric materials.

Financial Aid

A number of teaching-assistant and research-assistant appointments are available. Early application and direct correspondence or interviews with faculty members who may have open positions on research projects are encouraged. Requests for application forms and financial aid should be directed to the academic advisor. Further information about financial aid and the graduate application process is available from the department's Web site at deptmat.washington.edu/mece/.

Faculty

Chair
Rajendra Kumar Bordia

Professors
Allan, G. Graham * 1966, (Adjunct); PhD, 1956, University of Glasgow (UK); DSc, 1971, University of Strathclyde (UK); creativity and innovation.

Anderson, Donald 1947, (Emeritus); BS, 1941, University of Illinois; mining and exploration.

Archbold, Thomas F. * 1961, (Emeritus); PhD, 1961, Purdue University; corrosion, thermal diffusion, substructure characterization, fatigue.

Dunham, Scott T. * 1999, (Adjunct); MS, 1980, PhD, 1985, Stanford University; modeling and simulation of microfabrication processes and device behavior.

Fischbach, David B. * 1969, (Emeritus); PhD, 1955, Yale University; structure and properties of carbons graphite, other non-oxide ceramics, and composite materials.

Ghose, Subrata * 1972, (Adjunct); MS, 1955, Calcutta University (India); PhD, 1959, University of Chicago; mineral physics, crystallography, mineralogy.

Inoue, Kanyu * 1993, (Research); PhD, 1977, Osaka City University (Japan); mechanical, physical, and magnetic properties, phase transformations of intermetallic alloys.

Jen, Alex K.Y. * 1999; PhD, 1984, University of Pennsylvania; organic and polymer chemistry, interdisciplinary materials science.

Jonsson, Hannes * 1988, (Adjunct); PhD, 1985, University of California (San Diego); computer simulations and scattering calculation in materials and surface science.

Kalonji, Gretchen * 1990; PhD, 1989, Technische Universität Berlin; biomimetics, nanocomposites, dyes, and surface science.

Kumar, Vinod * 1988, (Adjunct); PhD, 1988, Massachusetts Institute of Technology; nanoscale mechanics, thermal properties of high-temperature superconductors.

Krishnan, Kannan M. 2001; PhD, 1984, University of California (Berkeley); thin films/nanomaterials, magnetism/transport, metal/semi-conductors, and functional ceramics.

Kumar, Vinip * 1988, (Adjunct); PhD, 1988, Massachusetts Institute of Technology; nanoscale mechanics, thermal properties of high-temperature superconductors.


Rao, Y. Krishna * 1976; PhD, 1965, University of Pennsylvania; kinetics and thermodynamics in materials systems, materials processing, mineral engineering.

Stoebbe, Thomas Gaines * 1966, (Emeritus); PhD, 1965, Stanford University; physics of solids, compound semiconductors, thermoluminescence, materials education.

Taya, Minoru * 1986, (Adjunct); PhD, 1977, Northwestern University; composite materials, elasticity and plasticity, impact physics, fracture theory.

Whitemore, Osgood J. * 1964, (Emeritus); MS, 1941, University of Washington, PhD, 1950, Iowa State University; ceramic processing, refractories, industrial minerals.

Associate Professors

Bordia, Rajendra Kumar * 1991; PhD, 1986, Cornell University; processing and mechanical properties of ceramics, polymer and ceramic composites.

Brush, Lucien N. * 1990; PhD, 1988, Carnegie Mellon University; computational modeling of solidification, modeling studies of materials processing.

Dogan, Fatih * 1990, Technische Universität (Germany); ceramic processing; electronic and magnetic materials, crystal growth of high-Tc superconductors.

Kumar, Vinip * 1988, (Adjunct); PhD, 1988, Massachusetts Institute of Technology; manufacturing, polymer processing, nanomaterials, design theory and methodology.

Sarikaya, Mehmet * 1984; PhD, 1982, University of California (Berkeley); biomimetics, nanocomposites, dyes, and high-temperature semiconductors, electron microscopy.

Stang, Robert George * 1973, (Emeritus); PhD, 1972, Stanford University; mechanical behavior of materials, elastic/plastic materials deformation.

Assistant Professors

Cao, Guozhong * 1996; PhD, 1991, Eindhoven University (Netherlands); inorganic materials (films) by sol-gel processing and chemical vapor deposition (CVD).

Finn, Brian D. * 1991, (Research); PhD, 1991, University of California (Santa Barbara); processing-structure-property relationships of advanced structural materials.

Xia, Younan * 1997, (Adjunct); PhD, 1996, Harvard University; materials chemistry and nanotechnology.

Zhang, Minjun * 1999; PhD, 1998, University of California (Berkeley); biomaterials, BioMEMS, surface/protein/cell interactions, cell micropatterning for tissue engineering.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

Materials Science and Engineering

MSE 421 Thermodynamics of Solids (3)
Applications of thermodynamics to the solid state. Statistical interpretation of entropy. Heterogeneous equilibria. Theories of solutions. Thermodynamics of surfaces and of defects in solids. Offered: W.

MSE 423 Fiber-Reinforced Composite Materials (4)
Introduction to composites in polymer, metal, or ceramic matrices. Properties of individual phases and of fiber/matrix interface; micromechanisms of load transfer from matrix to fiber; fabrication and elastic and failure properties. Laboratory studies of processing and properties of composites. Offered: A.

MSE 433 Polymeric Materials (3)
Relationship between configuration, conformation, molecular ordering, microstructure and properties of polymeric materials.

MSE 442 Seminar in Ethics and Safety (1) Deals with issues of engineering ethics and industrial safety within the context of materials science and engi- neering. Requires short updates on the senior proj- ect and progress (MSE 499). Credit/no credit only. Offered: W.

MSE 466 Physical Properties of Materials (4) Introduction to elementary solid-state concepts in materials. Atom bonding, statistical mechanics, free electron and band theories, thermal properties. Application of principles to conduction in metals, insulators, semiconductors, and to magnetic and optical processes in solids. Offered: W.

MSE 485 Introduction to Electronic Packaging and Materials (3) The governing equations of transport phenomena: mechanical, thermal, and electromag- netic behavior, thermomechanical and electromagnetic properties of packaging materials, electromagnetic characteristics of circuit and transmission lines, thermal management and reliability analysis of pack- aging, interconnect and material processing technol- ogy. 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 anneal- ing, oxidation, chemical vapor deposition, photore- sists. Design considerations for bipolar and MOS devices, materials and process characterization. Future trends. Prerequisite: either E E 482 or MSE 466. Offered: jointly with E E 486, W.

MSE 487 Laboratory in Electronic Packaging and Materials (1) Laboratory course to accompany MSE 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, etch- ing, metallization, and testing. Prerequisite: E E 486/MSE 486, which may be taken concurrently. Offered: jointly with E E 489, W.

MSE 498 Special Topics (1-5, max. 8) Materials science and engineering field or laboratory investiga- tions in group or individual setting. Written report required. Offered: A/WSPs.

Courses for Graduates Only

MSE 501 Advanced Processing of Inorganic Materials (3) Discusses advanced processes of inor- ganic materials including metals, ceramics and electro- nics materials, such as high-temperature processing, sintering, solidification, single crystal growth form 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 sol-gel science and the physics and chemistry of the sol-gel process. Emphasizes the synthesis and appli- cations of various materials, such as multi-compo- nent oxides, nano-composites, meso- and micropor- ous materials, organic/inorganic hybrids, and bio- cleaning processes, electrodeposition, surface treat- ments, finishing processes. Offered: odd years; A.

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 314, MSE 316, or equivalent. Offered: W.

MSE 544 Mechanical Behavior of Materials (3) Mechanical properties of metals, ceramics, and poly- mers. 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 553 Vacuum Science and Technology (3) Fundamental theory and gas kinetics and treatment of gas flow, working principles of vacuum pumps and gauges, characteristics required of the vacuum com- ponents, material selection, fundamentals essential to vacuum system design. Covers both fundamental and practical aspects of modern vacuum science and technology.

MSE 555 Biomimetics: Bioinspired Design and Processing of Materials (4) How biological organ- isms produce materials with controlled structure, changes in composition and technology. Materials that surpass biological materials in terms of structure and function are 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 engi- neering aspects of thin film deposition and technolo- gy. 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 562 Introduction to Electronic Composites (3) Fundamentals of microstructure-macro-property relation of electronic composites. This course covers applications (computers, laser packages, medical devices, aerospace electronics). Function (mechanical, thermal, electromagnetic and optical), microstruc- ture-macro-property relations, processing issues, and modeling of electronic composites. Recommended: 423 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 manu- facturing techniques; non-destructive testing of com- posite structures. Fiber-matrix interfacial features and interactions, stress transfer, thermodynamics applied to selection of fiber-matrix combinations. Prerequisite: MSE 423 or M E 450 or equivalent by permission of instructor. Offered: jointly with ME 563; Sp.

MSE 565 Electron Theory of Materials (3) Solid- state concepts of materials. Atomic bonding, statisti- cal mechanics, Brillouin zone theory. Applications to conduction, optical, and magnetic properties of met- als, semiconductors, and insulators. Prerequisite: MSE 466 or equivalent. Offered: W.

MSE 590 Advanced Seminar in Materials Science and Engineering (2) Advanced topics in material sci- ence, led by faculty with specific expertise in the area of interest. Topics to be chosen and announced quar- terly.
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: AWSpS.

MSE 600 Independent Study or Research (*) Offered: AWSpS.

MSE 700 Master's Thesis (*) Offered: AWSpS.

MSE 800 Doctoral Dissertation (*) Offered: AWSpS.


CER E 411 Vitreous State (4) Chemistry and physics of glass, glazes, and porcelain enamels; structure, properties and processing of vitreous materials. Offered: Sp.

CER E 413 Physical Ceramics: Mechanical Properties (3) Mechanical properties, elasticity, strength, thermal shock, and high temperature effects relative to structural design. Fracture mechanics and notch sensitivity of brittle materials. Environmental effects, plastic flow, and high temperature deformation. Offered: W.

CER E 414 Electrical Properties of Ceramics (3) Ionic and electronic conduction in crystalline and noncrystalline inorganic solids. Dielectric and ferroelectric behavior, magnetic properties of ferrimagnetic materials, optical properties of dielectrics. Undergraduate ceramic engineering majors must take 415 concurrently. Offered: W.

CER E 415 Electrical Properties of Ceramics/Laboratory (1) Ionic and electronic conduction in crystalline and noncrystalline inorganic solids. Dielectric and ferroelectric behavior, magnetic properties of ferrimagnetic materials, optical properties of dielectrics. Offered: W.

CER E 416 Mechanical Properties Laboratory (1) Measurements of the mechanical properties of ceramics: strength, fracture, toughness, thermal shock damage. Use of Weibull statistics to characterize strength and failure. Offered: W.

CER E 421 Ceramic Processing (4) Technology of ceramic fabrication processes. Material characterizations at processing stages for control. Laboratory study of all operations in the manufacture of selected ceramic products. Offered: A.

CER E 470 Refractories (4) Chemical and mineralogical composition; processing methods; thermal, physical, and chemical properties and tests; application in high-temperature processes.

MET E 421 Metallurgical Processing (4) Principles and applications of techniques used to process metals and alloys including solidification and casting, heat treating, forming, joining and machining and their effects on microstructure and properties. Offered: A.

MET E 432 Corrosion of Engineering Materials (3) Applications of physical chemical principles to the reaction of materials with their environments. Prevention and control of corrosion and oxidation processes. Corrosion problems in materials applications. Offered: W.

MET E 435 Corrosion (1) Laboratory experiences in application of physical chemical principles to reaction of materials with their environments. To accompany 432. Offered: W.

MET E 461 Engineering Physical Metallurgy (4) Phase transformations and strengthening mechanisms in ferrous and nonferrous alloys; heat treatment and microstructure control; physical metallurgy of carbon and alloy steels, aluminum and titanium alloys; microstructure-property relationships and alloy design. Offered: A.

MET E 462 Mechanical Behavior of Metals (3) Theories of elastic and plastic deformation in materials. Application of the principles of thermodynamics, stress and strain, tensile and compression loading, yielding and plastic deformation, fracture, introduction to fracture mechanics, creep and fatigue. Offered: W.


MET E 465 Mechanical Behavior Laboratory (1) Laboratory experience in mechanical behavior of metals. To accompany 462. Offered: W.

Mechanical Engineering

143 Mechanical Engineering Building

General Catalog Web page: www.washington.edu/students/gencat/academic/Mechanical_Eng.html

Department Web page: 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 (B.S.M.E.) and graduate (M.S.M.E. and Ph.D.) degree programs are offered by the department. Courses are presented in both traditional and on-line classes and laboratory settings as well as via distance learning through either televised instruction or Webcast methods. 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 1 SAE car; human-powered submarine; mechatronics, and fuel cell technology.

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 (e.g., Masters in Manufacturing Engineering, and Program in Engineering and Manufacturing Management). 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 course work provide opportunities both for a broad scientific and professional background and for specialty training.

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 electromagnetic control systems; fluid flow, heat exchanger; mechatronics; human-powered submarine, and bioengineering flow facility.

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. This 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.

Faculty

Chair
William R. D. Wilson

Professors
Alexander, Daniel 1960, (Emeritus); MS, 1954, University of Washington, PhD, 1977, Washington State University, engineering degree.
Balise, Peter * 1950, (Emeritus); MS, 1950, Massachusetts Institute of Technology; systems analysis and control.


Chalupnik, James * 1964, (Emeritus); PhD, 1964, University of Texas (Austin); sound and vibration, wave propagation.

Corlett, Richard * 1964, (Emeritus); PhD, 1963, Harvard University; energy systems and combustion.

Daly, Colin H. * 1967, PhD, 1966, University of Strathclyde (UK); bioengineering, materials.

Day, Emmett E. * 1947, (Emeritus); PhD, 1962, University of California (Berkeley); materials, experimental stress analysis.

Depew, Creighton A. * 1960, (Emeritus); PhD, 1960, University of California (Berkeley); heat transfer, fluid mechanics.

Emery, Ashley F. * 1961; MS, 1958, PhD, 1961, University of California (Berkeley); experimental design, heat transfer, HVAC, thermal stress/fracture, bioengineering.

Firey, Joseph C. 1983, (Emeritus); MSME, 1941, University of Wisconsin; combustion, lubrication.

Fridley, James * 1988; MS, 1981, University of Michigan, PhD, 1984, University of Washington; forest engineering systems design, interactive computer simulation.

Galle, Kurt R. * 1960, (Emeritus); PhD, 1951, Purdue University; instrumentation, controls, bioengineering.

Ganter, Mark * 1986, PhD, 1985, University of Wisconsin; solid modeling, computer graphics and geometry, kinematics, rapid prototyping, manufacturing design.

Garbini, Joseph * 1979; PhD, 1977, University of Washington; systems and controls analysis, instrumentation, manufacturing automation.

Gessner, Frederick B. * 1967, PhD, 1964, Purdue University; fluid mechanics, turbulence.

Hyman, Barry * 1975; PhD, 1965, Virginia Polytechnic Institute and State University; engineering design, energy systems and policy, technology and public policy.

Jenkins, Michael G. * 1992; PhD, 1987, University of Washington; mechanical properties, characterization, thermomechanical testing, design analysis of brittle materials.

Jorgensen, Jens E. * 1968, (Emeritus); DSc, 1969, Massachusetts Institute of Technology; systems analysis, manufacturing, automation and controls, forest engineering.

Kippenhan, Charles J. * 1963, (Emeritus); PhD, 1948, University of Iowa; energy conservation in buildings, heating ventilating and air conditioning, heat transfer.

Kobayashi, Albert S. * 1958, (Emeritus); PhD, 1959, Harvard University; designs, manufacturing, polymer processing, microcellular plastics, design theory and methodology.

Kramlich, John C. * 1991; PhD, 1980, Washington State University; heterogeneous combustion, pollution formation and control from thermal systems, waste remediation.

Kulke, Martin C. * 1949; PhD, 1953, University of Washington; corrosion, material science, design, manufacturing processes.

Lamb, John C. * 1965; PhD, 1963, University of California (Berkeley); mechanical properties, characterization, thermomechanical testing, design analysis of brittle materials.

McMullen, Michael A. * 1959; PhD, 1963, University of California (Los Angeles); manufacturing automation, manufacturing systems, mechanical properties, characterization, thermomechanical testing, design analysis of brittle materials.

Mowery, Charles D. * 1985; PhD, 1982, University of Washington; manufacturing systems, mechanical properties, characterization, thermomechanical testing, design analysis of brittle materials.

Naughton, James P. * 1979; PhD, 1975, University of California (Berkeley); mechanical properties, characterization, thermomechanical testing, design analysis of brittle materials.

Nester, William J. * 1970, (Emeritus); PhD, 1972, University of California (Berkeley); mechanical properties, characterization, thermomechanical testing, design analysis of brittle materials.

Oleynikovych, Serhiy * 1998; PhD, 1995, University of California (Berkeley); mechanical properties, characterization, thermomechanical testing, design analysis of brittle materials.

Pappas, George * 1960; PhD, 1967, University of Virginia; energy conservation in buildings, heating ventilating and air conditioning, heat transfer.

Rice, Ronald A. * 1963; PhD, 1967, University of California (Berkeley); mechanical properties, characterization, thermomechanical testing, design analysis of brittle materials.

Ruel, Joseph * 1975; PhD, 1973, University of California (Berkeley); mechanical properties, characterization, thermomechanical testing, design analysis of brittle materials.

Sandwith, Colin J. * 1966; PhD, 1966, Oregon State University; corrosion, material science, design, manufacturing processes.

Shen, I-yue (Steve) * 1993; PhD, 1991, University of California (Berkeley); linear and nonlinear vibrations, disk and machine dynamics, damping and vibration control.

Sherrer, Robert E. * 1960, (Emeritus); PhD, 1958, University of Wisconsin; solid mechanics.
Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

Mechanical Engineering

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 these processes. Prerequisite: M E 355 which may be taken concurrently. Offered: A.

M E 406 Corrosion and Surface Treatment of Materials (3) Sandwin
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. Offered: Sp.

M E 409 Introduction to Numerical Control and Computer-Aided Manufacturing (3) Li
Control system fundamentals, numerical control (NC) machine control systems, and the design aspect of NC machine tools, programming methods of NC machines, automation, assembly, DNC, and process optimization. Prerequisite: M E 355 which may be taken concurrently. Offered: Asp.

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 ENVR 415/CEE 495, W.

M E 424 Combustion Systems and Pollutant Formation (4) Malte
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. Offered: every year, Sp.

M E 425 HVAC Engineering (4) Emerich
Heating, ventilating, and air conditioning of built environment. Human comfort, psychrometric 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. Offered: Sp.

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: CHEM E/ENV/RM E/PHYS 342 or M E 430; recommended: M E 331. Offered: Sp.

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, 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. Offered: W.

M E 431 Advanced Fluid Mechanics (4) Forster
Advanced topics in fluid mechanics, including kinematics, systems engineering, design, component characteristics, flow, turbulence, experimental and numerical methods, and design. Prerequisite: M E 333. Offered: A.

M E 432 Gas Dynamics (3) Gessner
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) Gessner
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 characteristics of turbomachines. Offered: Sp.

M E 436 Friction and Wear of Materials (3) Wilson
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 339; M E 356. Offered: Sp.

M E 440 Advanced Mechanics of Materials and Solids (3) Jenkins

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 BIODEN 440, Sp.

M E 450 Introduction to Composite Materials and Design (3) Tuttle
Tuttle Stress and strain analysis of continuous fiber composite materials. Orthotropic elasticity, laminate theory, failure criterion, and design philosophies, as applied to structural polymeric composites. recommended: MSE 423. Offered: W.

M E 459 Introduction to Fracture Mechanics (3) Ramulu
Fracture mechanics principles leading to fracture, and linear elastic fracture mechanics. Fatigue crack propagation. Fracture control and failure analysis. Prerequisite: M E 354; M E 356. Offered: W.

M E 460 Kinematics and Linkage Design (3) Ganter
Synthesis of linkage-type mechanisms using graphical and computer methods. Offered: W.

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 adsorption and adsorption of gaseous pollutants, electrostatic precipitation and filtration of particulate pollutants. Actual case studies. Offered: jointly with CHEM E 468/CEE 494; W.

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. Offered: A.

M E 470 Mechanical Vibrations (3) Reinhall
Single-degree-of-freedom linear systems techniques. Multiple techniques for multi-degree-of-freedom linear systems. Applications in vibration isolation, transmission, and absorption problems and instrumentation. Prerequisite: M E 373. Offered: A.

M E 473 Instrumentation (4) Gobbini
Principles and practice of industrial and laboratory measurement. Dynamics of instrument response; generalized performance analysis of sensor systems; theory of transducers; signal conditioning, force, pressure, flow, and other measurements. Lecture and laboratory. Prerequisite: M E 374. Offered: A.

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 simulations and analogs. Applications to control, vibrations, and other problems. Prerequisite: M E 374. Offered: W.

M E 477 Embedded Computing in Mechanical Systems (4) Gobbini
Analysis of electromechanical systems employing microcomputers for control or data acquisition. Microcomputer architecture, memory organization, assembly language programming, software 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 470; M E 473. Offered: W.

M E 478 Finite Element Analysis (4) Labossiere
Finite element method 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. Offered: Asp.

M E 480 Introduction to Computer-Aided Technology (4) Principles of computer-aided technology, computer-aided design, 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. Offered: Asp.

M E 481 Combustion Engines and Alternatives (4) Kramlich
Malte Thermodynamics, fuels, performance, combustion, and exhaust emission control for spark ignition and compression ignition piston
Courses for Graduates Only

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) Wilson 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; Sp.

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 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 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 (0-1) 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 the laws. 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 523 Energy and Environment Seminar (1) Marie Student discussions of topics in combustion science and technology. Special topics and recent advances in 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 Acoustics in Engineering I (3) Forster Acoustic wave transmission, reflection, refraction, and diffraction. Review of continuum mechanics and examples from acoustics. Basic wave equations; plane homogeneous shear flow; source modeling; mean flow. Prerequisite: graduate standing in mechanical or electrical engineering, or permission of instructor. Offered: W.

M E 526 Acoustics in Engineering II (3) Forster Continuation of 525. Material differs each year, covering such topics as scattering, moving media, ultrasound, acoustic holography, optoacoustics, transducer design, propagation in an isotropic medium. Prerequisite: M E 525 or permission of instructor. Offered: Sp.

M E 528 Acoustics of Environmental Noise (4) Offered: jointly with CEE 554.

M E 530 Heat Conduction and Radiation (3) McCormick 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) McCormick 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) Fundamentals of 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) Gessner 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) Gessner 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) Gessner Methods of characterizing fluid turbulence; probability concepts; spatial and temporal structure; mathematical models; 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 548 Linear Multivariable Control (3) Single loop feedback control theory; poles, zeros, Nyquist stability, performance, robustness of multivariable systems; multivariable control synthesis: Linear-Quadratic-Gaussian methods, transfer recovery, Youla parameterization, H-infinity theory, parameter optimization design. Prerequisite: E E 584 or M E 575; E E 446 or A A 448 or M E 471 or equivalent. Offered: jointly with A A 548/E E 548; W.

M E 549 Estimation and System Identification (3) Review of system models, model structure, model
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) Tayo Elastostatics, including general formulations of 2D and 3D elastostatic problems (stress function method, complex variable method, displacement potential method). Prerequisite: M E 559 or equivalent. Offered: jointly with A A 550/E E 550; odd years.

M E 552 Elasticity II: Viscoelasticity and Elastodynamics (3) Tayo Elastodynamics includes wave propagation in linear elastic and linear viscoelastic solids where solids are mono- tional materials, composite materials. Viscoelasticity part includes 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: every years; Sp.

M E 555 Thermoelectricity (3) Emerjy Basic equations of thermoelectricity for isotropic elastic solids. Analysis of disks, cylinders, spheres, beams, and plates under steady temperature and sudden and slow heating and cooling. Introduction to thermoelectric 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: every years; W.

M E 557 Experimental Stress Analysis II (3) Tuttle Theory and practice of optical mechanics, including interferometric techniques (moire and holographic), geometric moir methods, and photoelasticity. Lecture and laboratory. Prerequisite: graduate standing or permission of instructor. Offered: every 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: every years; Sp.

M E 562 Introduction to Electronic Composites (3) Taya Fundamentals of microstructure-macro-property relation of electronic composites. This course cov- ers applications (computers, laser packages, medical devices, MEMS, avionics), functions (mechani- cal, thermal, electromagnetic and optical), microstructure-property relations, processing issues, and modeling of electronic composites. Recommended: 450 or MSE 423. 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 manu- facturing techniques; non-destructive testing of com- posite structures. Fiber-matrix interfacial features and interactions. Interfacial thermodynamics applied to selection of fiber-matrix combinations. Prerequisite: M E 450 or MSE 423 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 descrip- tion and analysis of systems in mechanical engineer- ing. Analogies in heat transfer, fluid flow, stress distri- bution, 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 differ- ential equations to mechanical engineering systems, including computational techniques and analogies. Prerequisite: graduate standing in mechanical engi- neering or permission of instructor. Offered: W.


M E 572 Methodologies for Engineering Design: Conceptual Design (3) Kumar Methodologies par- ticularly aimed at pre-conception or preliminary design of a design. The design process. Impact of formulat- ing 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: every years; W.

M E 573 Methodologies for Engineering Design: Probabilistic Mechanical Design (3) Jenkins Study, implementation of probabilistic methods to design. Loading, geometry, stress, stain/deflection described as random variables, compared to material proper- ties/behavior in terms of random variables. Design, analysis, reliability, risk analyses conducted on com- mon structures with results compared to convention- al deterministic approaches. Projects using proba- bilistic methods to optimize selected component designs. Offered: every years; Sp.

M E 575 Linear Systems Theory (3) Transfer-func- tion and state-space descriptions, Solution of the state equation; state transition matrix. Controllability and observability. Zeros and poles of multivariable systems; the Smith McMillan form. Systems invertibil- ity. Prerequisite: graduate standing or permission of instructor. Offered: A.


M E 582 Digital Control II (3) Berg Controller design via state feedback and observers. Introduction to dis- crete-time stochastic processes. Quantization effects. Introduction to parameter identification using noisy measurements. LQR optimal control. Kalman filter design. LQG optimal control. Prerequisite: M E 581 or permission of instructor. Offered: jointly with A A 582/E E 582; Sp.

M E 583 Nonlinear Control Systems (3) Hannaford Analysis and synthesis of nonlinear control systems. Assessment of stability by phase plane and describ- ing function methods, circle and Popov criteria, Lyapunov criteria. Construction of Lyapunov functions by method of Krasovskii and Li’u. Introduction to nonlinear control systems design. Prerequisite: M E 446, M E 584, or permission of instructor. Offered: jointly with E E 583; odd years; Sp.

M E 584 Combustion in Airbreathing Propulsion (3) Gesnerr Fundamentals of gasdynamics, mixing, and thermodynamics applied to the analysis and design of gas turbine, ramjet and scramjet engine combustors, with treatment of computer simulation. Offered: by request only.

M E 589 Vibrations (3) Storti Study of systems with nonlinear damping and restoring forces excited by deterministic or random inputs. Applications in measure- ment, testing, and design of mechanical systems. Nonlinear systems are emphasized. Prerequisite: M E 588 or permission of instructor. Offered: every 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 measure- ment, testing, and design of mechanical systems. Random inputs are emphasized. Prerequisite: M E 588 or permission of instructor. Offered: every years; Sp.

M E 591 Robotics and Control Systems Colloquium (1-3, 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-disci- plinary nature of robotics and control systems. Credit/no credit only. Offered: jointly with A A/ CHEM E E/E E 591; A/W.

M E 598 Topics in Research (1) Doctoral seminar. Credit/no credit only. Offered: A/W.

M E 599 Special Projects (1-5, max. 9) Written report required. Prerequisite: permission of department Chairperson. Offered: A/W.

M E 600 Independent Study or Research (*) Written report required. Offered: A/W.

M E 700 Master’s Thesis (*) Offered: A/W.

M E 800 Doctoral Dissertation (*) Offered: A/W.
Mechanical Engineering
Industrial Engineering

Courses for Graduates Only
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.

Technical Communication

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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. The Department of Technical Communication prepares students to design, create, edit, and evaluate technical and scientific discourse. The department also provides course work 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 have become important for a vast array of readers. In the Information Age, gaining and sharing technological understanding and capability has become a constant and 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.

The Department of Technical Communication prepares students to assume positions of intellectual leadership in industry, government, and nonprofit 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.

Other major interests of the department are the human-computer interface, hypermedia, communications technology, the rhetoric of technical discourse, international communication, visual communication, international technical communication, publications and communications management, policy analysis of technological systems, and research and testing.

Graduate Programs

Graduate Program Coordinator
14 Loew, Box 352195
206-543-2567
tc@uwtc.washington.edu

Master of Science, Day Program

Technical Communication offers a Master of Science (M.S.) in technical communication. (An evening program is offered through UW Educational Outreach.) A total of 45-48 credits is required for the M.S. degree, which includes 25 credits of required TC graduate courses; 11 credits of approved electives; and 9 to 12 credits of degree-completion credits. To complete their degrees, students choose from one of three options: 9 credits of thesis; 5 credits of internship and 4 credits of a project report related to the internship; or 12 credits of a linked set of courses.

In making recommendations for admission, the faculty consider the following from an applicant’s record: (1) undergraduate GPA; (2) undergraduate degree program and work experience; (3) 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.

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 kind of 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.

Master of Science in Engineering—Technical Japanese Program

The Technical Japanese Master’s Program, within the College of Engineering Interengineering Program, offers a range of classes in advanced, practical Japanese for both master’s and non-master’s track students. Master’s track students follow a two-year, 54-credit program which combines graduate work in an engineering or science field with advanced instruction in technical Japanese language. Non-master’s track students may take any combination of technical Japanese oral communication or reading courses. These courses equip students with the skills necessary to read business/technical literature in Japanese and to work effectively with Japanese engineers, scientists, and business people in research and business environments. The complete program includes an internship in Japan in an industrial or research setting.

Master’s track students are admitted to the program during the winter quarter only, and the application deadline is February 28. Other students may begin any quarter.

To be admitted, master’s track applicants must have a bachelor’s degree in engineering or science, a minimum undergraduate GPA of 3.00, three years of college-level Japanese or equivalent training, satisfactory scores on the TOEFL, and satisfactory scores on the Japanese Proficiency Test (administered by the Technical Japanese Program).

Applicants with a bachelor’s degree in areas other than engineering or science can also earn a master’s degree through the Technical Japanese Master’s Program by specializing in technical communication as their inter-engineering track.

Faculty

Chair
Judith A. Ramey

Professors

Bereano, Philip L. * 1975; JD, 1965, Columbia University, MRP, 1971, Cornell University, technology assessment, biotech policies, policy and technology, social values, citizen participation.

Coney, Mary B. * 1976; PhD, 1973, University of Washington; writing style and theories of technical communication, rhetoric, reader response theory.

Farkas, David K. * 1983; PhD, 1976, University of Minnesota; information design, Web design, computer documentation.

Furness, Thomas A. * 1989, (Adjunct); PhD, 1981, University of Southampton (UK); display systems engineering, human factors, computer graphics, virtual reality.

Haselkorn, Mark P. * 1985; PhD, 1977, University of Michigan; strategic management of information and communication systems, human/machine interaction.

Ramey, Judith A. * 1983; PhD, 1983, University of Texas (Austin); computer-assisted communication user-centered design, usability testing.

Spyridakis, Jan * 1982; PhD, 1986, University of Washington; comprehension and usability, document design, Web design, research methods.

Warnick, Barbara P. * 1980, (Adjunct); PhD, 1977, University of Michigan; rhetorical theory and criticism.

White, Myron 1947, (Emeritus); PhD, 1958, University of Washington; technical editing, publications management, bibliography for document design.

Winn, William David * 1985, (Adjunct); PhD, 1972, Indiana University; educational technology, instructional theory, instructional design, visual information processing.

Associate Professors

Brainard, Suzanne Gage 1987, (Affiliate); PhD, 1989, Ohio State University; educational evaluation,
methodology and gender and ethnic issues in science and engineering.

Ceccarelli, Leah M. * 1996, (Adjunct); MA, 1992, PhD, 1995, Northwestern University; rhetoric of science, rhetorical criticism.

Koeko, Beth E. * 2000; MA, 1991, PhD, 1994, University of Texas (Austin); computer-mediated communication; virtual environments.


Tsutsui, Michio * 1990, PhD, 1984, University of Illinois; computer-aided instruction, international communication, Japanese linguistics, technical Japanese.

Williams, Thomas R. * 1976; MCP, 1981, PhD, 1988, University of Washington; text and visual information processing, document design, interactive multimedia.

Assistant Professors

Ilman, Deborah L. 1982; PhD, 1981, University Estudal de Campinas (Brazil); science/engineering news reporting, public understanding of science and technology.


Senior Lecturer

Plumb, Carolyn Sue * 1986; PhD, 1991, University of Washington; cognitive dimensions of reading, writing, and the human/computer interface.

Lecturer

Kato, Masashi 1988; MA, 1980, University of Washington; technology-enhanced instruction, distance learning, research methods, international communication.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs/cat/.

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. Prerequisite: T C 402. Offered: Wsp.

T C 406 Understanding Research in Technical Communication (3) Spyridakis Provides a basis for integrating knowledge acquired in other technical communication courses. Students computing, the research literature of various disciplines that impact technical writing. Structured around theoretical and empirical literature as it relates to different textual issues in technical writing. Offered: W.


T C 411 Visual Media in Technical Communication (5) &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: Asp.

T C 412 Print Production (3) Sauer, Williams Introduction to print production for technical communicators. Topics include digital pre-press, printing, binding, and finishing. Prerequisite: T C 411. Offered: W.

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 pre-requisites; as they relate to those of other professionals in the production phase of the publications field.

T C 420 Introduction to Technology as a Social and Political Phenomenon (5) &S/Zereano Introductory survey presenting some of the issues pertaining to technology and social change, technology and values. Emphasis on the social, political, and economic aspects of these current problems; communication management systems in the technical communication workplace. Includes hypertext theory, interface design, and news articles. Offered: A.

T C 425 Technology Assessment (3) &S/Zereano The editor's role both as editor and as supervisor of technical communication majors. Required of technical communication majors. Prerequisite: T C 231. Offered: ASp.

T C 435 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, student inputs and outputs, instructional design and production, and producing CAI programs using authoring systems for computers. Offered: jointly with EDCI 436; A.

T C 437 Interactive Multimedia (3) &S/VLPA Farkas Study of concepts and design principles with an emphasis on communicating technical and workplace information. Included in hypermedia, interface design principles for computer and networked systems, and implementation of designs suitable for the portfolio. Offered: jointly with EDCI 437.

T C 438 Advanced Interactive Multimedia (3) The building of advanced multimedia systems to communicate technical and workplace information. Topics include effective interfaces, computer software, user interface elements for complex navigation, the special challenges of redesigning existing multimedia, and techniques for collaborative multimedia development. Implementation of designs suitable for the portfolio is required. Prerequisite: T C 437.

T C 440 Science and Engineering News Writing (3) Farkas, Williams Explores the science news publishing process, from researching topics and selecting sources to the structure of news articles and production. Writing assignments address the press release, news brief, and news articles. Offered: A.

T C 455 User Interface Design (3) 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 interfaces, and research methodology are discussed. Offered: jointly with IND 455; A.

T C 461 Reading in Technical Japanese I (3) &SP Williams Kato Students review and strengthen their knowledge of grammar, vocabulary, and kanji and apply this in reading authentic materials on technology-related topics. Skills to analyze sentence structures for accurate interpretation are taught. Prerequisite: JAPAN 423. Offered: A.

T C 462 Reading in Technical Japanese II (3) &SP Williams Kato Students improve skills for analyzing complex sentences, constructing and assessing vocabulary, and kanji for reading technology-related materials are introduced. Prerequisite: T C 461. Offered: W.

T C 463 Reading in Technical Japanese III (3) &SP Williams Kato Students further improve skills introduced in previous courses. Covers the skills for understanding inter-sentential and paragraph structure. Additional grammar, vocabulary, and kanji necessary for reading technology-related materials are introduced. Prerequisite: T C 462. Offered: Sp.

T C 471 Oral Communication in Japanese in Technical and Business Settings I (3) &SP Williams Kato Students review and strengthen their knowledge of grammar, vocabulary and apply this to basic technical and business communication situations. Covers the cultural concepts underlying these situations. Lab work is required for conversation practice and listening comprehension. Prerequisite: JAPAN 423. Offered: W.

T C 472 Oral Communication in Japanese in Technical and Business Settings II (3) &SP Williams Kato Students learn the functional and situational skills necessary to communicate in technical and business settings. Covers the cultural concepts underlying these situations. Lab work is required for conversation practice and listening comprehension. Prerequisite: T C 471. Offered: W.
T C 473 Oral Communication in Japanese in Technical and Business Settings III (3) VLPA Kato Students learn the functional and situational skills necessary to communicate in more complex technical and business settings. Covers the cultural concepts underlying these situations. Lab work is required for conversation practice and listening comprehension. Prerequisite: T C 472. 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 Supervision of students in professional practice 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 (1-3, 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. 10) 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.

Courses for Graduates Only

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: W.

T C 503 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: A.

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: Sp.

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.

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 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: 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 planning and managing technical communication. Roles, responsibilities, impact of technology. Offered: Sp.

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 525 Assessing Communications Technologies (4) Bereano Analysis of development, deployment of new communication technologies; emphasis on public policy issues they present (e.g., videotelephone, mobile telephoning, hypermedia, electronic message transfer, virtual reality). Impacts explored include access, privacy, civil liberties; power of elites; changes in social organization. Prerequisite: T C 425 or other background in policy analysis, technology, and society. Offered: Sp.

T C 540 SciTech Writing Practicum I (4) Illman An advanced experience in science and engineering writing for graduate students and upper division undergraduates. Participants serve as science writing interns on the staff of Northwest Science & Technology magazine and develop a portfolio of professional quality science/technology news articles which may be eligible for publication in the magazine. Prerequisite: T C 498 or permission of instructor. Offered: W.

T C 541 SciTech Writing Practicum II (4) Illman Advanced science writing, focusing on the narrative feature and other forms of creative non-fiction used to present technical content to general audiences. Participants develop a portfolio of professional quality science/technology news articles which may be eligible for publication in Northwest Science and Technology magazine. Prerequisite: T C 540 or permission of instructor. Offered: Sp.

T C 561 Advanced Japanese for Technical and Business Professionals I (3) Tsutsui Focuses on reading skills (e.g., sight reading, vocabulary, grasping main ideas) and familiarizes students with Japanese news media sites and Web reading tools. Students also develop the oral communication skills necessary for giving technical and business reports and the writing skills for business emails. Prerequisite: T C 463 and T C 473. Offered: A.

T C 562 Advanced Japanese for Technical and Business Professionals II (3) Tsutsui Focuses on developing reading speed. Students read more extensively, expand their technical/business vocabulary, and further improve skills for grasping main ideas quickly. Students also improve oral skills for report-giving and discussion and writing skills for business emails and reports. Prerequisite: either T C 561 or T C 463, and T C 473 and TC 601. Offered: W.

T C 563 Advanced Japanese for Technical and Business Professionals III (3) 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. Students participate as individual conferences with the instructor on readings and report drafts. Prerequisite: T C 562. Offered: Sp.

T C 564 Directed Research in Technical Communication (1-3, 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 567 Approaches to Teaching Technical Communication (1-2, max. 2) Plumb 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 568 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 advisor or committee chair. Offered: AWSpS.

T C 600 Independent Study or Research (*) Written report required. Prerequisite: permission of committee chair. Offered: AWSpS.

T C 601 Internship (2-10, max. 10) Written report required. Prerequisite: permission of committee chair. Offered: AWSpS.

T C 700 Master’s Thesis (*) Prerequisite: permission of thesis adviser. Offered: AWSpS.
College of Forest Resources

Dean
B. Bruce Bare
107 Anderson

Associate Dean for Infrastructure
Robert Edmonds
264 Bloedel

General Catalog Web page: www.washington.edu/student/gencat/academic/College_Forest_Res.html
College Web page: www.cf.washington.edu

Founded in 1907, when professional forestry education was in its infancy, 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 unique opportunities for field classes and research, experience in the management of forested lands for multiple uses, exposure to wood-based industries, and awareness of resource-use issues. Enrolled in the College are approximately 300 undergraduate and 180 graduate students, taught by more than 50 faculty members. Thus, students enjoy small classes and close association with faculty, as well as the diversity and superior facilities of a large research university.

The College of Forest Resources is dedicated to generating and disseminating knowledge for the stewardship of natural and managed environments and the sustainable use of their products and services. Its vision is to be internationally recognized as the source for solutions to environmental and natural resource issues.

The College’s goals are (1) to provide students with a premier educational and training experience in integrated natural resource management, utilization, environmental sciences, and stewardship; and (2) to develop and deliver the following to the public and the professions throughout the state, region, and world:

- educational information related to the College’s mission,
- findings from the College’s applied and basic research programs.

College Facilities
The College occupies three central campus buildings: Alfred H. Anderson Hall, the Hugo Winkenwerder Forest Sciences Laboratory, and Julius H. Bloedel Hall. In addition, the Center for Urban Horticulture is located in an east campus building complex. Overall, the College has excellent areas and equipment on the Seattle campus for scientific laboratories, classrooms, seminar rooms, special collections, and administrative offices.

The Forest Resources Library, a separate branch of the University of Washington Libraries, contains more than 50,000 books, reports, conference proceedings, and bound journal volumes, and subscribes to more than 1,100 active journals. Disciplines covered by the collection support the programs of the College, including forestry and silviculture, forest products, forest engineering, soils, wildlife, wildland conservation, paper sciences, and urban forestry. The Forest Resources Library provides a gateway to the larger University Libraries collection of more than five-million volumes through the systemwide electronic catalog, and provides access to numerous electronic and print indexes as well as Internet resources. The library is located in Bloedel Hall.

The Center for Urban Horticulture also maintains a library that serves students, faculty, landscape professionals, and the public. The Center’s herbarium supports forest resources students’ 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 Botany, is available for use by forest resources students.

The laboratory facilities of the College represent an extensive array of modern equipment for research. The many available research tools include optical equipment, electronic instrumentation for a wide variety of uses, gas chromatographs, spectrophotometers, and physical-test equipment. Specific laboratories are designed to study chemistry, biology, 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, horticultural physiology, and horticultural plant materials.

The College computing facilities include microcomputer systems dedicated to specific research areas, a microcomputer student laboratory, a geographical information systems (GIS) laboratory, and several servers offering access to the Internet and shared printers.

Office of Student Services
Director, Student Services
Michelle M. Trudeau
115 Anderson
cfadv@u.washington.edu

The Office of Student Services in the College of Forest Resources assists prospective undergraduate and graduate students with admission to the College and advises current students, including interpretation of College and University requirements and assistance in course registration to meet graduation requirements. Faculty advisers are available to assist students in choosing elective courses to help them build an appropriate academic background for their chosen professional specialty.

The Office of Student Services 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 year. Summer work may be available through federal and state agencies and in the numerous private companies associated with the wood-using industry of the region. Although field experience is not required for graduation, students are strongly urged to seek summer employment or field experience relevant to their major and career goals.

The College has a strong scholarship and financial assistance program. Through the generous donations of alumni and friends, the College has established scholarships, fellowships, and loan programs to assist students in paying for their tuition. The Washington Pulp and Paper Foundation provides scholarships for students enrolled in the Paper Science and Engineering curriculum. The foundation is supported by companies of the pulp and paper industry and by supplier companies. Information about paper science and engineering scholarships may be obtained from Professor William McKean, 318 Bloedel. Information on all College scholarships is available through the Office of Student Services, 115 Anderson.

Students seeking information about financial aid offered outside the College should contact the Office of Student Financial Aid, 105 Schmitz.

Institute of Forest Resources
The overall research program of the College is administered by the Institute of Forest Resources. Because of the size and complexity of this program, the Institute assumes a broad scope of responsibility and provides vital support to the College administration, faculty, staff, and students. Major functions include administering all research projects funded by federal, state, and private agencies, monitoring the McIntire-Stennis research program, ensuring College compliance with federal reporting requirements, and producing College publications and special research reports.

Institute staff coordinate and facilitate the submission of research proposals for the faculty with the University administration and numerous funding agencies. Students earn research and thesis credit toward advanced degrees by working on major forest resources problems supported by grants or contracts.

Areas of current and future research cover a broad array of topics including forest policy analysis, stand management, streamside and riparian zone management, forest ecosystem analysis, international trade in forest products, forest-products marketing, forest biotechnology, wildlife science, forest soils, urban horticulture, forest engineering, hydrology, and paper science and engineering. Research projects include studies by individual faculty, as well as interdisciplinary programs, which combine the interests of College faculty with those from other academic units of the University and other institutions.

The College also collaborates with Cooperative Extension of Washington State University to undertake and promote continuing education for citizens of the state, particularly in the nonindustrial forestry area.

The Institute Publications Office provides a wide range of services in producing College research publications: technical editing, desktop-publishing systems, format and layout design, computer graphics, printing/publishing coordination, and distribution. College publications are distributed to national and international institutions and libraries, as well as to forestry professionals, to organizations in the private sector, and to the general public.

Field Research Areas and Facilities
The College field facilities include two major forested areas covering more than 4,000 acres, an arboretum, a reserve, 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 general natural-science laboratory for the many disciplines in the College specifically related to, or concerned with, research and teaching of natural resources behavioral patterns and management.

The Charles Lathrop Pack Experimental Forest of approximately 4,200 acres is located 65 miles south of the University, near Eatonville. This forested property is the focal point for on-the-ground academic work in forest management, resource science, and forest engineering, both at the undergraduate and graduate levels. Broad forest and soil diversity has led to extensive biological, management, and engi-
neering research, much of which may be characterized as a pioneering effort. A full-time resident staff manages this 290-acre harmoniously to achieve public-education objectives with academic and research objectives. Rustic but comfortable facilities which provide housing and support to academic and research programs are also used extensively for conferences both within and outside the University.

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 Lee Memorial Forest, approximately 160 acres, is located about 22 miles northeast of the University, near Malott. 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 part-day trips and for long-term research and demonstration projects especially related to changing land uses.

The Allan H. 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 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, for research, teaching, and display, currently 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 classes in four different colleges 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 Hortorium is a herbarium dedicated to plants of urban horticultural significance. 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 Continuing and Public Education program. Cooperative programs are in place with Washington State University/King County Cooperative Extension, whose horticulture program is housed at the Center.

The Center's largest facility is the Washington Park Arboretum, a 230-acre collection of trees and shrubs growing in a naturalistic setting on the south shore of Lake Washington. Managed in cooperation with the City of Seattle Department of Parks and Recreation and the Arboretum Foundation, 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.

**Summer Opportunities**

During summer quarter, there are many internships and independent study courses in which a student may get credit for summer work.

In late summer, there is a four-week-intensive program that combines work and study in Pacific Northwest forests with the study of English as an international language for forestry. The College and the Department of English As A Second Language schedule the program.

For more information, contact Aaron Bidelspach, UW Educational Outreach, 206-543-2300.

**Ecosystem Sciences Division**

Chair

David Manuwal
104 Winkenwerder

Courses included in the Ecosystem Sciences Division cover basic and applied subject matters in forest biology, wildlife science, and urban horticulture. Urban horticulture is concerned with the selection, management, and role of plants and ecosystems in urban environments. Subjects covered include plant and animal ecology, wildlife biology and conservation, dendrology and autecology, soils, ecosystem analysis, environmental horticulture, public horticulture, and urban forestry.

Graduate programs leading to the Master of Science and Doctor of Philosophy degrees include ecosystem analysis (ecology, tree physiology and genetics, and soils and mineral cycling), wildlife science, and urban horticulture. A Master of Forest Resources degree in urban horticulture is also available.

**Management and Engineering Division**

Chair

Richard R. Gustafson
332 Bloedel

Courses for which the Management and Engineering Division is responsible deal with all the facets of the forest resources arena, from management of forests to the production and recycling of paper products. Multiple uses of forests including timber, water, wildlife habitat, and recreation are embraced in the forest management curriculum. Courses in the forest and ecological engineering curriculum emphasize the scientific and engineering design principles that enable graduates to find technical solutions to problems facing forest-related enterprises and rural communities. Paper science and engineering courses provide students with the skills to work as technical and management professionals in the paper and allied industries.

Graduate programs leading to the Master of Science and Doctor of Philosophy degrees are offered by this division and include social sciences, forest economics, forest engineering/hydrology, forest products marketing, silviculture and forest protection, quantitative resource management, and paper sciences and engineering. A practice-oriented degree leading to the Master of Forest Resources in the area of silviculture is also available.

**Graduate Programs**

Graduate Program Coordinator

115 Anderson, Box 352100

206-543-7081

cfradv@u.washington.edu

Graduate programs in forest resources are designed to accommodate a wide range of education and career opportunities. A student may concentrate on development of advanced professional skills and knowledge or on exploration of sciences basic to forest resources.

Graduate programs offered in forest resources lead to the degrees of Master of Forest Resources, Master of Science, and Doctor of Philosophy. Graduate students may center their graduate study in one of the special fields of study within the College divisions.

**Master of Forest Resources**

The Master of Forest Resources degree is a professional degree offered for students who wish to acquire a greater competence in a specific subject area of forest resources. This is a non-thesis option open to professionals who are returning to study and to obtain expertise in areas such as silviculture and urban horticulture. Interested persons should contact the graduate program coordinator to determine eligibility for this degree program.

**Master of Science**

The Master of Science degree is a learned degree, often precursory to the Doctor of Philosophy degree. Some areas of study allow non-thesis work while most areas of study require the completion of a thesis. The non-thesis program requires at least 6 credits of research; the thesis program requires a minimum of 9 credits of research. A foreign language is not required. Students must complete a set of core courses prescribed for the major area of study.

**Doctor of Philosophy**

The Doctor of Philosophy degree may be preceded by education in either forest resources or another discipline. The program comprises an appropriate selection of core courses in forest resources and in the related natural and social sciences. The program requires passage of the General Examination in forest resources; research, analysis, and interpretation; and completion of a dissertation. A minimum of two years of residence at the UW also is required. The time necessary to complete the degree requirements depends upon the thoroughness and applicability of prior course work. Reading proficiency in one foreign language may be required by the supervisory committee when the language is essential to the student's program of study.

**Mid-Career Education**

The College has established the National Resources Institute, a certificate program in natural resources to provide mid-career education for professionals. Participants in the mid-career program take courses to prepare themselves for new or broader responsibilities in their current career. In this certificate program, courses can be taught in a more flexible time arrangement to meet the specific career and scheduling needs of participants. Additionally, a variety of programs are offered to enhance professional education in natural resources. Interested natural resource professionals should contact the College of Forest Resources Continuing Education Office, 206-543-0867, fax 206-685-6705.
Graduate Areas
Graduate education is offered through the Division of Management and Engineering and the Division of Ecosystem Science, Horticulture and Conservation. Major areas of study and emphasis include paper science and engineering (wood chemistry, polymer and fiber science); forest engineering/hydrology; forest products marketing; forest economics; forest ecosystem analysis (forest ecosystems, forest ecology, forest genetics, biotechnology, streamside/riparian management, tree physiology, and forest soils); quantitative resources management (biometry, quantitative management, aerial photogrammetry/remote sensing); silviculture and forest protection (silviculture, forest entomology, fire management, forest pathology); social sciences (forest land use planning, forest policy and law, forest sociology and leisure studies); wildlife science; and urban horticulture (environmental horticulture, horticultural physiology, wetlands management).

In all areas of study, the College maintains a close working relationship with faculties of other colleges and schools throughout the University, including service on graduate committees. Faculty advisers assist graduate students in determining those courses in other departments on campus which will lend to students' intended areas of expertise.

Admission Qualifications, Background
A student who intends to work toward an advanced degree must apply for admission to the Graduate School and must meet the requirements set forth by the Graduate School and by the College of Forest Resources.

Basic requirements for admission to the Graduate School are a baccalaureate degree from an institution of recognized standing, a minimum GPA of 3.00 in the junior and senior years of college work, approval of the Dean of the Graduate School, and approval of the faculty of the College. An applicant may obtain a graduate admission form and supplemental information forms from the College of Forest Resources Office of Student Services, 115 Anderson, 206-543-7081, cfradv@u.washington.edu.

The Graduate Record Examination (GRE) general test is required by the College, and test scores must be submitted to the College by the applicant. Students interested in forest-products marketing may take the Graduate Management Admission Test (GMAT) or the GRE.

In addition, international students are required to take the Test of English as a Foreign Language (TOEFL). International students hoping to obtain teaching assistantships must also complete the Test of Spoken English (TSE). Please refer to the Graduate School section for minimum scores and exceptions.

Upon enrollment, the student is assigned a graduate program committee that is responsible for guidance in the early stages of the graduate program, to be followed by more formal committees as the student's program develops.

Applicants for the College are considered quarterly within the enrollment limitations for the College and the available faculty and workload limitations within the specific program area of study selected. Students with both undergraduate forestry degrees and other related fields are considered, although a prior forestry degree is normally expected of applicants for the professional Master of Forest Resources degree in silviculture.

Financial Aid
The College has available a limited number of appointments for teaching and research assistantships. Teaching and research responsibilities allow time to pursue a full academic load. Students may contact faculty about research assistantships or the Office of Student Services about teaching assistantships.

Fellowships and scholarships without teaching or research obligations are also available. Requests for financial aid must be submitted by February 1 for priority consideration for the following academic year. Applications are in the College's admissions packet which may be requested from the Office of Student Services.

Teaching and Research Centers
Center for International Trade in Forest Products
The Center for International Trade in Forest Products (CINTRAFOR) was established in 1984 to respond to opportunities and problems relating to the export and import of wood products. Through programs of research, education, and outreach, CINTRAFOR works to improve knowledge of export trade and to train professionals competent in the analysis and interpretation of trade problems, issues, and policies. The Center serves as a focal point for dissemination of information on world trade in forest products by means of seminars, conferences, workshops, and publications.

CINTRAFOR activities involve the cooperative effort of the forest-products industry, state and federal organizations, and other organizations at the University such as the School of Business Administration and the Northwest Policy Center. The research undertaken by CINTRAFOR includes country-market analyses; a global competitive-trade model; new product and market opportunities; and studies of the linkage between forest-products trade and environmental impacts, socioeconomic stability, and policy impact analyses.

Students interested in participating in specific research activities sponsored by CINTRAFOR may enroll for study in graduate programs in one of the College's two academic divisions or in programs offered by other academic divisions on campus.

Center for Streamside Studies
Director
Susan M. Bolton
244 Bloedel
The Center for Streamside Studies (CSS) was established in 1987 as a joint effort of the College of Forest Resources, the College of Ocean and Fishery Sciences, and the Center for Quantitative Science in Forestry, Fisheries, and Wildlife. CSS provides information for the resolution of management issues related to the production and protection of forest, fish, wildlife, and water resources associated with the streams and rivers in the Pacific Northwest.

The Center conducts research activities related to the understanding of ecological and physical processes and their relation to governmental regulations. Projects are solution-oriented, centering around biological, physical, and social aspects of management issues. Cooperative projects are undertaken with state and federal agencies, tribes, private industry, and national and international research institutions, and involve faculty and students of the College of Forest Resources, the College of Ocean and Fishery Sciences, the College of Engineering, and the College of Arts and Sciences.

To provide interdisciplinary training necessary to deal with the management of interacting resources, CSS conducts symposia, workshops, conferences, and seminar series as forums for resource-conflict discussion and resolution. Students interested in participating in specific research activities sponsored by CSS may enroll for study in graduate programs in one of the College of Forest Resources' two academic divisions or in programs offered by other academic units on campus.

Olympic Natural Resources Center
Director
John M. Calhoun
The mission of the Olympic Natural Resources Center (ONRC) is to conduct research and education on natural-resource-management practices that integrate ecological and economic values. Created by the Washington State Legislature in 1989, the Center conducts biological, physical, economic, and social science research in both terrestrial and coastal/marine systems, focusing on its strategic priorities. The Center's programs aimed at pragmatic management solutions span a spectrum from developing new knowledge through applied research to education and outreach.

Much of the Center's work is conducted cooperatively with other research institution state and federal agencies, resource owners, and interest groups. The Center is housed in facilities at Forks, Washington, on the Olympic Peninsula. It is well suited for education, research, and conference activities. The natural resources of the area are a major focus of the work of the Center. The Center is jointly administered by the College of Forest Resources and the College of Ocean and Fishery Sciences.

Center for Urban Horticulture
Director
Thomas Hinckley
The Center for Urban Horticulture is dedicated to research, teaching, and public service concerning the selection, management, and role of plants and of ecosystems in urban landscapes. Urban landscapes—landscapes that are subject to direct impacts of human activity—include city streets, urban parks, public gardens, residential areas, and natural (and naturalized) areas bounded by commercial and residential development. Urban horticulture concerns those landscapes as they are used for aesthetic amenity, for amelioration and control of the physical environment, for public and professional education, for conservation of biodiversity and of natural resources, and for public recreation.

Faculty in four colleges—Forest Resources, Arts and Sciences, Architecture and Urban Planning, and Engineering—are affiliated formally and informally with the Center, participating in urban horticultural research, teaching, and collections curation. The Center serves as a primary focus of the UW's curricula in urban environmental studies, which comprise the most comprehensive program in the United States.
Faculty

Professors

Agee, James K. * 1982; PhD, 1973, University of California (Berkeley); management of natural systems, forest ecology, fire ecology.

Allan, G. Graham * 1966; PhD, 1956, University of Glasgow (UK), DSc, 1971, University of Strathclyde (UK); creativity and innovation.

Amirat, Joseph F. * 1979, (Adjunct); MA, 1967, San Francisco State, PhD, 1972, University of Michigan; mycology, taxonomy and ecology of fungi.

Bare, B. Bruce * 1969; MS, 1965, University of Minnesota, PhD, 1969, Purdue University; forest land management and valuation, taxation, finance, management science.

Bradley, Gordon A. * 1972; MLA, 1972, University of California (Berkeley), PhD, 1986, University of Michigan; forest land use planning, Conservation area planning and design.

Briggs, David G. * 1973; PhD, 1980, University of Washington; operations research in forest products industries.

Brubaker, Linda B. * 1973; MS, 1967, PhD, 1973, University of Michigan; dendrochronology, forest ecology, quaternary paleocology.

Bryant, Benjamin S. * 1987, (Emeritus); DF, 1951, Yale University; wood utilization technology, wood gluing, plywood and board technology.

Cole, Dale W. * 1960, (Emeritus); MS, 1957, University of Wisconsin, PhD, 1963, University of Washington; forest soils, mineral cycling in forest ecosystems.

Conquest, Loveday L. * 1976, (Adjunct); PhD, 1975, University of Washington; statistics in forestry, fishery, and environmental pollution monitoring.

Dowdle, Barney A. * 1962, (Emeritus); PhD, 1962, Yale University; development of forest products industries, public forest land management.

Driver, Charles H. * 1965, (Emeritus); PhD, 1954, Louisiana State University; processes of wood decay, forest diseases, range ecology.

Edmonds, Robert L. * 1973; MS, 1968, PhD, 1971, University of Washington; forest soil microbiology, biology of forest diseases, aerobiology.

Erickson, Harvey D. 1977, (Emeritus); PhD, 1937, University of Minnesota; wood science and technology.

Ford, E. David * 1985; PhD, 1968, University College, London (UK); quantitative science, ecosystem analysis, forest productivity.

Franklin, Jerry F. * 1986; MS, 1961, Oregon State University, PhD, 1966, Washington State University; forest ecosystem analysis, vegetation patterns, tree mortality in natural landscapes.

Fridley, James A. * 1988; MS, 1981, University of Michigan, PhD, 1984, University of Washington; forest engineering systems design, interactive computer simulation.

Fritschen, Leo J. * 1966, (Emeritus); PhD, 1960, Iowa State University; biometeorology, micrometeorology, measurement and instrumentation of the environment.

Ganter, Mark R. * 1986, (Adjunct); PhD, 1985, University of Wisconsin; solid modeling, computer graphics and geometry, kinematics, rapid prototyping, manufacturing design.

Gara, Robert I. * 1968; MS, 1962, PhD, 1964, Oregon State University; bark beetle, forest insect ecology, forest insect behavior, international forestry.

Greulich, Francis E. * 1977; MS, 1967, PhD, 1976, University of California (Berkeley); forest engineering, statistics, operations research.

Gustafson, Richard Roy * 1986; PhD, 1982, University of Washington; process modeling and optimization, fiber composites.

Hamilton, Clement Wilson * 1985, (Affiliate); PhD, 1985, Washington University; higher plant systematic, environmental horticulture, Californian vegetation ecology.

Hanley, Donald P. * 1983; MS, 1973, University of Montana, PhD, 1981, University of Idaho; extension forestry, small-forest management, forestry continuing education.

Harrison, Robert B. * 1987; MS, 1981, University of New Hampshire, PhD, 1985, Auburn University; soil chemistry and fertility, mineral cycling, carbon sequestration, long-term forest productivity.

Hatheway, William H. * 1969, (Emeritus); PhD, 1956, Harvard University; quantitative ecology, physiological ecology, tropical forestry.

Hinckley, Thomas M. * 1980; PhD, 1971, University of Washington; forest tree physiology and autecology, subalpine ecosystems, water stress problems.

Hodgson, Kevin T. * 1991; MS, 1980, Millon University, PhD, 1986, University of Washington; surface and colloid science, papermaking chemistry, secondary fiber recycling.

Hrutikford, Bjorn F. * 1959, (Emeritus); PhD, 1959, University of North Carolina; wood extractive chemicals, air and water quality in forest products industries.

Johnson, Jay A. * 1983; 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.


Lee, Robert G. * 1978, MS, 1969, Yale University, PhD, 1973, University of California (Berkeley); natural resource sociology, multiresource management, development/changes of forest industries.

Leney, Lawrence * 1983, (Emeritus); PhD, 1960, State College of Forestry At Syracuse; wood anatomy, microtechniques, machining wood, photomicrography, seasoning and preservation of wood.

Lettenmaier, Dennis P. * 1973, (Adjunct); PhD, 1975, University of Washington; systems analysis and water resources planning.

Lippke, Bruce R. * 1990; MSE, 1959, New Mexico State University, MSE, 1966, University of California (Berkeley); international trade and environmental linkages, investment analysis, economics of forest industry.

Manuwal, David * 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.

McKean, William T. * 1979; PhD, 1968, University of Washington; pulp and paper science, chemical engineering.

Naíman, Robert J. * 1988; PhD, 1974, Arizona State University; forest stream ecosystems, aquatic landscape dynamics.

Peterson, David L. * 1989; PhD, 1980, University of Illinois; mountain ecology, subalpine forests, global climate change, forest ecology.

Pickford, Stewart G. * 1976, (Emeritus); PhD, 1972, University of Washington; forest fire science, wildland fire management.

Richey, Jeffrey E. * 1973; PhD, 1973, University of California (Davis); quantitative problems of aquatic ecosystems, primary Amazon River, limnology.

Ricker, Neil L. * 1978, (Adjunct); MS, 1972, PhD, 1978, University of California (Berkeley); process control and optimization.

Schaeffer, Walter H. 1976, (Emeritus); PhD, 1952, University of Washington; forestry.

Schisss, Peter * 1975; MS, 1968, Swiss Federal Institute of Technology. PhD, 1975, University of Washington; forest engineering, mechanized harvest and thinning operations, forest road design and construction.

Schreuder, Gerard Fritz * 1971; MS, 1967, University of North Carolina, PhD, 1968, Yale University; statistical analysis in resource economics, international forestry, trade, aerial photos.

Scott, David R. M. * 1955, (Emeritus); PhD, 1950, Yale University; silviculture, forest ecology.

Sharpe, Grant William * 1966, (Emeritus); PhD, 1956, University of Washington; wildland recreation, interpretation and management of recreation areas.

Skalski, John R. * 1987, (Adjunct); PhD, 1985, Cornell University; environmental sampling and effects assessment on wild populations, parameter estimation.

Sprugel, Douglas George * 1984; PhD, 1974, Yale University; forest ecology, tree ecophysiology, natural disturbance.

Stenzel, George 1949, (Emeritus); MF, 1939, Yale University; forest resources.

Stettler, Reinhard F. * 1995, (Emeritus); PhD, 1963, University of California (Berkeley); genetics of forest tree populations, biotechnology, biomass production.

Strand, Stuart E. * 1982; MS, 1975, Ohio State University, PhD, 1982, Pennsylvania State University; forest biotechnology; environmental pollution control.

Taber, Richard D. * 1968, (Emeritus); PhD, 1951, University of California (Berkeley); biology and conservation of free-living birds and mammals, wildlife and human culture.

Thomas, David P. 1950, (Emeritus); MA, 1948, University of Washington; economics and technology of utilizing forest crops.

Thorud, David B. * 1981, (Emeritus); MS, 1960, PhD, 1964, University of Minnesota; watershed management, international forest policy and development.

Tukey, Harold B. * 1969; MS, 1969, Michigan State University; urban horticulture, horticultural physiology.

Vogt, Kristina 2000; MS, 1974, PhD, 1976, New Mexico State University.

Wagar, John Alan * 1988; MF, 1956, PhD, 1961, University of Michigan; urban forestry, urban forest inventory and cost-effective management.
Waggener, Thomas R. * 1969, (Emeritus); PhD, 1969, University of Washington; forest policy and economics, international forestry development.

Wissmar, Robert C. * 1972; PhD, 1972, University of Idaho; ecology.

Wott, John A. * 1981; MS, 1966, PhD, 1968, Cornell University; public horticulture, horticultural education, public gardens and administration, urban horticulture.

Associate Professors

Booth, Derek B. * 1980, (Adjunct Research); PhD, 1984, University of Washington; environmental geology, particularly human influences on hillslopes, runoff, and rivers.

Bradshaw, Harvey D. * 1984; PhD, 1984, Louisiana State University; plant molecular genetics, evolutionary biology, genetic engineering of forest trees.

Chalker-Scott, Linda * 1997; MS, 1982, PhD, 1988, Oregon State University; environmental stress physiology of woody plants.

Eastin, Ivan * 1987; MS, 1989, PhD, 1992, University of Washington; marketing strategies and international trade of forest products.

Edwards, Richard T. * 1993, (Affiliate); PhD, 1985, University of Georgia; aquatic ecology, biogeochemistry.


Grue, Christian E. * 1989, (Adjunct); PhD, 1977, Texas A&M University; wildlife toxicology, wildlife and fisheries science.

Halpern, Charles L. * 1991; PhD, 1987, Oregon State University; plant community ecology, plant succession, effects of forest management on plant diversity.

Henry, Charles L. * 1982; MS, 1977, Oregon State University, PhD, 1989, University of Washington; ecological restoration, recycling organic wastes as soil amendments, sustainable resources.

Horner, Richard R. * 1981, (Adjunct Research); PhD, 1978, University of Washington; effects of human activities on water resources in urban areas.

Marzluff, John M. * 1997; MS, 1983, PhD, 1987, Northern Arizona University; behavior, ecology, and conservation of birds and mammals.

Paun, Dorothy Ann * 1993; PhD, 1993, University of Oregon; financial performance analyses; international countergoods trade; business-to-business relationships.


Raedeke, Kenneth J. * 1981; PhD, 1979, University of Washington; wildlife biology and conservation, population dynamics, ungulate ecology, international conservation.

Robertson, Iain M. * 1982, (Adjunct); MLA, 1975, University of Pennsylvania; designing with plants, planning and design of botanical gardens/arboreta.

Vanblaricom, Glenn R. * 1993, (Adjunct); PhD, 1978, University of California (San Diego); aquatic wildlife, ecology of marine communities, wildlife-fisheries interactions.

Vogt, Daniel 2000; MS, 1976, New Mexico State University, PhD, 1987, University of Washington; soil ecology, nutrient cycling, carbon sequestration, ecosystem biomass and productivity.

Wasser, Samuel K. * 1982, (Adjunct Research); PhD, 1981, University of Washington; behavioral ecology, endocrinology, conservation genetics and reproductive biology.

West, Stephen D. * 1979; MS, 1974, University of Alaska, PhD, 1979, University of California (Berkeley); vertebrate wildlife ecology and conservation.

Zabowski, Darlene * 1992; MS, 1983, PhD, 1988, University of Washington; forest soils and productivity, soil genesis and classification, biogeochemical cycling of soils.

Assistant Professors

Jacobs-Young, Chavonda J. * 1995; MS, 1992, PhD, 1998, North Carolina State University; integrating biotechnology and pulp processing to improve papermaking efficiency.


Northe, Robert A. * 1998; PhD, 1985, University of Washington; wood and pulping chemistry, bleaching.


Ryan, Clare * 1997; PhD, 1996, University of Michigan; natural resource policy and administration, environmental conflict management, water policy.

Turnblom, Eric * 1994; MSc, 1986, University of British Columbia (Canada), PhD, 1994, University of Minnesota; forest growth modeling, quantitative stand dynamics, biometrics and natural resources inventory.

Wolf, Kathleen L. 1994, (Research); PhD, 1993, University of Michigan; urban and community forestry, environment and behavior, urban landscape visual assessment.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.
vant to addressing issues in urban ecology. Write and orally present revised Objectives and Methods sections of interdisciplinary project and present a draft Results section. Prerequisites: CFR 574, 575. Offered: S.

CFR 580 Advanced Urban Ecology (5) Alberti, Bradley, Hill, Marzolf, 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 GEOG 588. Offered: AWSpS.

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 600 Independent Study or Research (*) Offered: AWSpS.

CFR 700 Master’s Thesis (*) Offered: AWSpS.

CFR 800 Doctoral Dissertation (*) Offered: AWSpS.

Ecosystem Science and Conservation

ESC 402 Forest Conservation Biology (5) NW Peterson Management strategies for conserving natural resources are examined in forest ecosystems of the Pacific Northwest and other North American bioregions. Alternative approaches to producing and restoring sustainable flows of wildlife habitat, water, fiber, and other resources are examined in the context of forest productivity, biophysical environment, disturbance, and public policy. Offered: Sp.

ESC 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: ESC 210. Offered: A; odd years.

ESC 411 Forest Soil Microbiology (4) NW Edmonds Soil organisms in forest ecosystems, decomposition, nutrient cycling, N transformation, mycorrhizae, effects of forest management. Recommended: ESC 210. Offered: even years; A.

ESC 412 Field Survey of Wildland Soils (3) NW Harrison, Henry, 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.

ESC 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: ESC 210. Offered: Sp.

ESC 414 Forest Soil Fertility and Chemistry (3) NW Harrison Tree growth depends, in part, on the interaction between chemical and biological activities within the forest soil. 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: ESC 210. Offered: Sp; odd years.

ESC 416 Introduction to Bioremediation (3) NW Brown Introduces bioremediation as a remediation strategy for contaminated soils and sediments, including in situ remediation with organic residuals, microbial degradation, and phytoengineering. Sources and fate of soil contaminants, conventional remediation strategies, and applications of strategies will be presented. Offered: W.

ESC 418 Compost and Organic Soil Amendments (5) NW Henry Introduction to the science of land application of organic soil amendments, including benefits, opportunities, and considerations for land application, management of nutrients and contaminants, and guidelines/regulations. Special focus on composting and organic amendments. Laboratory and field exercises construct tree-ring chronologies to study environmental histories of selected forest stands. Prerequisite: BOTANY 113. Offered: odd years; W.

ESC 421 Dendrochronology (4) NW Brubaker, Peterson Analysis of important physiological and environmental factors controlling annual tree-ring growth and a critical review of the applications of tree-ring analysis to study forest productivity, watershed hydrology, forest fires, insect epidemics in relation to yearly weather conditions. Laboratory and field exercises construct tree-ring chronologies to study environmental histories of selected forest stands. Prerequisite: BOTANY 113. Offered: odd years; W.

ESC 422 Forest Pathology (4) NW Edmonds Ecology and management of forest diseases. Abiotic diseases caused by air pollution, adverse weather, and biotic diseases caused by bacteria, fungi, viruses, parasitic plants, and nematodes. Forest health, Disease management including silvicultural, chemical, and biological control. Disease modeling. Offered: odd years; A.

ESC 440 Theory and Case Studies of Ecosystem Management (5) NW Franklin Applying ecological principles, ecosystem management, at stand and landscape levels based on observations of problems and practices during a 10-12 day field trip held prior to beginning of quarter. Students observe innovative forest management programs and experiments and present written and oral scientific analyses of specific topics. Offered: A.

ESC 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: ESC 326. Offered: W.

ESC 444 Ecology of Managed Forests (3) NW Ford Defines patterns of environmental change and habitat development occurring as forests are managed with different objectives. Particular attention is paid to changing microclimates and how they influence the physical environment and biodiversity. Worldwide occurrence of large-scale, man-made forests is described and their ecological significance. Offered: A.

ESC 450 Wildlife Ecology and Conservation (5) NW West 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: ESC 350. Offered: W.

ESC 451 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 180, BIOL 202, BIOL 203, or BIOL 220, any of which may be taken concurrently. Offered: odd years; A.

ESC 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 180, BIOL 202, BIOL 203, or BIOL 220, any of which may be taken concurrently. Offered: odd years; A.

ESC 453 Biology and Conservation of Mammals (3) NW Manuwal Introduction to mammals of the world: mammalian evolution, taxonomy, morphology, reproduction, population biology, ecology, and conservation. Prerequisite: ESC 350; recommended: concurrent registration in ESC 454. Offered: even years; A.

ESC 454 Biology and Conservation of Mammals Laboratory: Identifies natural history, structure and behavior of mammals of the Pacific Northwest. Laboratory work on morphology, taxonomy, and natural history; fieldwork on natural history and sampling methods. Two weekend field trips required; students share travel costs. Prerequisite: ESC 350; recommended: concurrent registration in ESC 453.

ESC 455 Wildlife Seminar (1, max. 4) NW Manuwal, West Discussion of current research and application in wildlife biology and conservation. Credit/no credit only. Prerequisite: ESC 350. Offered: AW.

ESC 456 Dynamics of Managed Wildlife Populations (3) NW Raedeke Advanced principles of managed wildlife populations dynamics. Application of harvest management models and regulations to ungulates, upland game birds, waterfowl, furbearers, carnivores. Topics include population models, compensatory mortality, predation role, sustained yield harvest models, measured populations characteristics, computer simulation models with emphasis on management issues. Prerequisite: ESC 350. Offered: W.

ESC 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.

ESC 458 Management of Endangered, Threatened, and Sensitive Species (5) NW Marzolf Biological underpinnings and political realities of endangered species management, including: legal issues, recovery teams, relocations, relocations, critical habitat designation, captive propagation, reintroduction, species endangered in the Pacific Northwest. Students revise endangered species recovery plans. Offered: A.

ESC 459 Wildlife Conservation in Northwest Ecosystems (3) NW Manuwal, West Extended field course. Wildlife conservation. Students participate in 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: ESC 350; may not be repeated. Offered: Sp.
ESC 460 Institutionalizing Sustainable Ecological Practices. (3) I&S/NW Lee The purpose of this course is to introduce students to how sustainable resource activities are put into practice. Case studies of successful institutional sustainable resource practices are presented, including curbing-sidewalk and biosolids recycling, ecological restoration, bioremediation, sustainable wood production, and material certification. Offered: jointly with ENVIR 460; W.

ESC 490 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: AWSp.

ESC 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: AWSp.

ESC 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: AWSp.

ESC 495 Senior Project in Conservation of Wildland Resources (5) Individual study of an ecosystem science and conservation problem under direction of a faculty member. Generally taken in last year of residence. Offered: AWSp.

ESC 496 Wildlife Senior Project Proposal (3) Selection of research topic, literature review, and preparation of a formal research proposal. Students select a faculty advisor or a faculty committee to assist them in the proposal writing process. Prerequisite: ESC 351; may not be repeated. Offered: AWSp.

ESC 499 Undergraduate Research (1-5, max. 15) Individual research supervised by a faculty member. For advanced students desiring to extend their educational experience. Credit/no credit only. Offered: AWSp.

Courses for Graduates Only

ESC 501 Forest Ecosystems-Community Ecology (5) Brubaker 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 succession theory. Prerequisite: basic ecology course or permission of instructor. Offered: A.

ESC 502 Forest Conservation Biology (5) Peterson Examines management strategies for conserving natural resources in forest ecosystems of the Pacific Northwest and other North American bioregions. Examines alternative approaches to producing and restoring sustainable flows of wildlife habitat, water, fiber, and other resources in the context of forest productivity, biophysical environmental, disturbance, and public policy. Offered: Sp.

ESC 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. Offered: W.

ESC 509 Review of Forest Autecology (4) Hinckley Review of concepts of soil formation, soil fertility, microbiology, hydrology, tree anatomy and morphology, physiology, water relations, mineral nutrition, and genetic and evolutionary mechanisms, as they relate to the adaptation and manipulation of forest-tree populations. For mid-career students only. Offered: A.

ESC 510 Graduate Studies in Forest Soils (1-5, max. 5) Offered: AWSpS.

ESC 511 Advanced Forest Soil Microbiology (5) Edmonds Detailed examination of microbial processes in forest ecosystems; types of organisms, biochemistry, decomposition and nutrient cycling, microbial transformations of N, impacts of management-clear cutting, fertilization, pesticide addition. Graduate project required. Prerequisite: general biology, basic soils or permission of instructor. Offered: A.

ESC 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: W.

ESC 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: Sp.

ESC 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: Sp; odd years.

ESC 515 Advanced Soil and Plant Analysis (3) Herwig, Strand Plants and soils must acquire nutrient elements from their environment. Quantifying the composition of samples is the first step in understanding the processes in natural and manmade systems. Sampling, handling, preparation, storage, and analysis stressed. Prerequisite: one botany or plant science course, instrumental analysis, soils. Offered: Sp.

ESC 517 Biotransformations of Hazardous Compounds (1) Strand Presentation and discussion of the current literature in biotransformation and biodegradation of organic and inorganic compounds, particularly in the microbial environment. Credit/no credit only. Offered: Asp.

ESC 518 Microbial Degradation of Toxic Contaminants (3) Heinig, Strand Detailed survey of current understanding of microbiology and degradation pathways of industrial organic compounds, pesticides, plastics, oils, and metals. Microbial requirements for bioremediation. Methods of scientific investigation of microbial transformations. Requires basic understanding of metabolism and organic chemistry. Prerequisite: biological science course. Offered: jointly with CEE 542/MICROM 518; W.

ESC 520 Graduate Studies in Ecosystem Science (1-5, max. 5) Offered: AWSpS.

ESC 521 Current Topics in Ecosystem Science (2, max. 6) Consideration of current literature and topics in forest ecosystems and tree physiology. Offered: AWSp.

ESC 529 Ecosystems Seminar (1) Sprugel Discussion by invited speakers on current research related to ecosystems. Credit/no credit only. Offered: A.

ESC 535 Fire Ecology (3) Agae 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. Prerequisite: permission of instructor. Offered: A.

ESC 538 Graduate Studies in Forest Pathology (1-5, max. 5) Offered: AWSpS.


ESC 548 Special Topics in Streamside Studies (2, max. 6) Contemporary problems and issues in forest ecosystems, and wildlife management in watersheds. Topics vary, yet focus on interactions of land and water resources in the forests of the Pacific Northwest. Prerequisite: permission of instructor. Offered: jointly with FISH 548; A-W.

ESC 554 Wildlife Seminar (1-2, max. 10) Manuwal, West Discussion of current research and application in wildlife biology and conservation. Prerequisite: permission of instructor. Offered: A-W.

ESC 555 Graduate Studies in Wildlife Science (1-5, max. 5) Offered: AWSpS.

ESC 557 Topics in Wildlife Science (2, max. 6) West Graduate seminar on applied and basic topics in wildlife ecology and conservation. Different topics selected each offering. Offered: AWSp.

ESC 591 Graduate Teaching Practicum (1-5, max. 5) Principles of teaching and learning applied to undergraduate instruction in Ecosystem Science and Conservation. Development, delivery, and evaluation of lectures and homework assignments. Graduate teaching experience for ESC students only. Credit/no credit only. Offered: AWSp.

ESC 601 Graduate Internship in Ecosystem Science and Conservation (3-9, max. 9) Credit/no credit only. Offered: AWSpS.

Environmental Horticultural and Urban Forestry

EHUF 401 Urban Forest Management (3) I&S Explores issues of urban forest benefits, planning, administration, public policy, and career opportunities, utilizing Urban Forestry faculty and leaders of city, county, and state agencies. Emphasizes the urban forest's diverse managers and constituents and their varied responsibilities, values, and resources. Offered: W.

EHUF 402 Curation and Education in Public Gardens (3) I&S/NW Wetts 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: W; odd years.
EHUF 411 Plant Propagation: Principles, and Practice (3) NW Wott Science and practice of plant propagation including sexual (seed) and vegetative (cutting, layering, grafting) propagation, includes discussion of physiological effects, methodology and laboratory exercises. Wide variety of plants covered. Recommended: 10 credits of introductory biology or botany, or equivalent. Offered: Sp.


EHUF 462 Restoration Ecology Capstone: Introduction (3) First of a three-course sequence in restoration ecology. Students review and assess project plans and installations. Class meets with members of previous capstone classes to review their projects.

EHUF 463 Restoration Ecology Capstone: Proposal and Plan (3) Student teams prepare proposals in response to requests for proposals from actual clients. Clients may be governments, non-profit organizations, and others. Upon acceptance of the proposal, teams prepare restoration plans. Prerequisite: EHUF 462.

EHUF 464 Restoration Ecology Capstone: Field Site Restoration (5) Teams take a restoration plan developed in EHUF 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: EHUF 463. Offered: jointly with BES 464/TESC 464. Sp.

EHUF 470 Urban Forest Landscapes (5) NW Bradley; Wagar, Wolf 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: SpS.

EHUF 471 Ecological Concepts and Urban Ecosystems (3) NW Ecological concepts introduced in an urban context. Emphasis on autecological relationships of plants in an urban environment. General framework for development of urban ecological concepts followed by case studies and exploring applications in new areas. Offered: W.

EHUF 473 Principles of Ecological Restoration (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 course that emphasizes applied scientific knowledge of ecosystems. Recommended: BIOL 472 or BOTANY 354 or BOTANY 371. Offered: W.

EHUF 475 Wetland Ecology and Management (5) NW Ewing, Harrison 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 EHUF 472, BOTANY 354, or BOTANY 371. Offered: A.

EHUF 477 Wetland Restoration (5) Ewing A Web-delivered, self-paced course covering wetland science, restoration ecology, freshwater restoration, coastal restoration, monitoring/ maintenance, and case histories. Completion of extensive readings, assignment and test required for each module. Prerequisite: either BIOL 102, BIOL 180, or BIOL 203, recommended: either EHUF 473, EHUF 475, BOTANY 354, BOTANY 456, or BIOL 472. Offered: AWsp.

EHUF 478 Horticultural Stress Physiology (3) NW Chalker-Scott Impact of environmental stresses (e.g., temperature, light, moisture, nutrients, allelopathy, salinity, ultraviolet) on the performance of horticulture plant species and their subsequent physiological responses. Particular emphasis is given to problems common in urban and restored environments (e.g., pollution, soil compaction, heat). Group and individual projects. Prerequisite: BOTANY 371. Offered: W.

EHUF 480 Selection and Management of Landscape Plant (5) NW Chalker-Scott Principles of plant selection and management in urban and modified environments. Site analysis and preparation; physiological basis for plant selection; techniques for successful plant installation and aftercare; plant performance evaluation; long-term management and plant health care. Group and individual projects. Prerequisite: ESC 210; recommended: BOTANY 110. Offered: A.

EHUF 481 Field Practicum in Plant Selection and Management (2) NW Chalker-Scott Practical application of plant selection and management in urban and modified environments. Site analysis and preparation; evaluation of nurseries; techniques for successful plant installation and aftercare; plant performance evaluation; plant health care assessment. Group project. Prerequisite: EHUF 480, which may be taken concurrently. Offered: A.

EHUF 482 Field Practicum in Plant Selection and Management (2) Chalker-Scott Practical application of plant selection and management in urban and modified environments. Site analysis and preparation; evaluation of nurseries; techniques for successful plant installation and aftercare; plant performance evaluation; plant health care assessment. Group project. Prerequisite: EHUF 480, which may be taken concurrently. Offered: Sp.

EHUF 490 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: AWsp.

EHUF 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: AWsp.

EHUF 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: AWsp.

EHUF 495 Senior Project in Urban Forestry (5) Individual study of an urban forestry problem under direction of a faculty member. Offered: AWsp.

EHUF 499 Undergraduate Research (1-5, max. 15) Individual research supervised by a faculty member. For advanced students desiring to extend their educational experience. Credit/no credit only. Offered: AWsp.

EHUF 502 Data Collection, Analysis, and Presentation (3) Ewing Design of scientific experiments, collection of data, and use of computers to store, analyze and present data. Limited by equipment availability to 8 students; UH students have priority. Offered: Sp.

EHUF 503 Current Issues in Urban Horticulture (1) 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.

EHUF 531 Seminar in Horticultural Taxonomy and Landscape Plant Selection (1-3, max. 12) Special topics in horticultural discussion of nomenclature and systematical evolution of cultivated plants, evolution of diverse genera and families, methods of analysis) and landscape plant selection (natural ecology and biogeography of landscape plants, plant exploration, introduction and testing). Offered: W.

EHUF 549 Urban Horticulture Seminar (1, max. 6) Discussion by invited speakers on current topics in urban horticulture. Credit/no credit only. Offered: A.

EHUF 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.

EHUF 572 Urban Ecosystem Management Seminar (1-3, max. 9) Ewing Graduate seminar in urban ecosystem management. Special topics of current importance in urban ecosystem management. Ecological aspects of ecosystem conservation, restoration, and management. Students participate in discussion and presentation of current work. Prerequisite: EHUF 471, EHUF 475. Offered: W.

EHUF 601 Internship in Urban Horticulture (1-9, max. 9) Credit/no credit only. Prerequisite: permission of graduate program adviser. Offered: AWsp.

Forest Engineering

F E 404 Forest Engineering Field Seminar (1, max. 6) I&S Bolton, Schiess Forest engineering activities examined and discussed during three all-day site visits. Opportunity for forest engineering practitioners, faculty, and students to interact in an informal, content-rich environment. Credit/no credit only. Offered: AWsp.

F E 423 Watershed Analysis (4) NW Schiess Inventory and historical analysis of the interactions between natural resources, climate, and forest management. Development of management objectives and design of forest management activities based on inventory and analysis. Includes the use of modeling and simulation in predicting the influence of forest management activities on other resources. Offered: W.

F E 425 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.

F E 430 Aerial Photos/Remote Sensing Natural Resources (3) NW Schreuder 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.

F E 444 Introduction to Forest Engineering Design (4) Schiess Design process and methodology; decision making; creativity; project planning and management; engineering economics; probabilistic and statistical aspects of forest engineering design; ethical and legal issues; presentation of design project results; presentation, laboratory, and design projects. Offered: W.

F E 445 Management Science in Forest Engineering (5) Management science methods used in data collection, analysis, and decision making examined within a systems framework. Statistical methods of point and interval estimation and regression.
sion analysis applied to logging and construction time studies and work sampling. Linear, non-linear, and dynamic programming optimization techniques are applied to forest engineering problems. Offered: W.

F E 450 Advanced Forest Engineering Design (5) Schiess Capstone design course emphasizes application of forest engineering design principles. State-of-the-art methods and technology used to craft an implementable natural resources development plan. Prerequisite: either 1.7 in F E 341 or 1.7 in F E 346, 1.7 in F E 444. Offered: Sp.

F E 451 GIS-based Landscape Modeling (5) I&S/NW Schiess Use of GIS to investigate forest operations at the landscape scale. Focus on transportation, land-use, and environmental issues. Problem definition, data collection, and data structuring strategies. As part of a design team, students develop an implementable, natural resources management plan for a client. Offered: Sp. Prerequisite: either F E 423 or F M 425.

F E 452 Stream-Road System Interactions (5) I&S/NW Schiess Design and evaluation of road systems and stream impacts. Road locations and decommissioning are addressed meeting management objectives and minimizing sediment delivery. Modeling and field verifications of road impacts. As part of a design team, students develop an implementable, natural resources management strategy for a client. Offered: Sp. Prerequisite: either F E 423 or F E 425.

F E 465 Introduction to Photogrammetry (2) NW Photogrammetric measurements from aerial photos. Aerial cameras and camera calibration. Interior orientation from ground control. Exterior orientation and derivation of ground coordinates. Ground control. Use of analytical equipment for stereoplottting. Offered: W.

F E 470 Wood Science and Forest Products Manufacturing (3) Fridley Breitsprecher Coverage of the physical and chemical properties of wood. Simplify the relationship to be used, followed by a discussion of the major manufacturing processes used to convert wood to products for society. Field trips are taken to representative processing plants. Offered: W.

F E 480 Silvicultural Engineering Systems (3) Fridley Engineering principles of systems for establishing, nurturing, and cultivating trees for eventual harvest and use as industrial feedstock. Lecture/discussion. Prerequisite: CSE 142; CEE 220; M E 230; IN D 250; F E 332; F E 368. Offered: A.

F E 490 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: AWSp.

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F E 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: AWSp.

F E 499 Undergraduate Research (1-5, max. 15) Individual research supervised by a faculty member. For advanced students desiring to extend their educational experience. Credit/no credit only. Offered: AWSp.

Courses for Graduates Only

F E 523 Advanced Watershed Analysis (4) Schiess Inventory and historical analysis of interactions between natural resources, climate, and forest management. Develop management objectives and design forest management activities based on inventory and analysis. Use of modeling and simulation for predicting influence of forest management activities on other resources. Site-specific mitigation design and remediation projects. Prerequisite: F E 425. Offered: W.

F E 524 Watershed Design (4) Fridley Study of the principles and processes related to forest engineering design of watershed scale systems. Prerequisite: F E 523 and graduate standing or permission of instructor. Offered: Sp.

F E 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.

F E 529 Current Topics in Wildland Hydrology (1) Bolton Students present detailed analysis of research papers on selected topics in wildland hydrology. Topics cover measurement techniques, experimental data, and theoretical models of hydrologic processes. Credit/no credit only. Prerequisite: senior or graduate standing and permission of instructor. Offered: AWSp.

F E 540 Graduate Studies in Forest Engineering (1-5, max. 5) Offered: AWSp.

F E 541 Advanced Forest Engineering (5) Fridley, Schiess Logging organization and management; logging cost analysis and budgeting. Offered: W.

F E 542 Advanced Logging Engineering (3) Detailed consideration of problems of logging planning and truck road engineering, including the preplanning and field layout of logging plans; computerization and design, and construction of forest roads. Offered: Sp.

F E 591 Graduate Teaching Practicum (*, max. 5) Principles of teaching and learning applied to undergraduate instruction in forest engineering. Development, delivery, and evaluation of actual lectures and homework assignments in the student's area of expertise are required. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSp.

Forest Management

F M 400 Forest Science Inquiry for Teachers (5) Lee Inquiry-based scientific methods for K-12 instruction; asking how and why questions; formulating hypotheses 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.

F M 402 Forest and Economic Development in the Developing World (3) 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.

F M 422 Marketing of Forest Products (3) I&S/NW Eastin Introduction to forest products marketing in North America. Examines products marketing, industry structure, and strategic management issues utilizing marketing concepts. Topics include product management, distribution channels, strategic industry analysis, and marketing research techniques. Case studies used to understand forest products industry marketing. Offered: AWSp.

F M 423 International Marketing of Forest Products (3) I&S/NW Eastin Introduction to international marketing concepts and their application to forest products. Analysis of forest products trade patterns, resource base changes, policy, industrial policies, and environmental concerns. Distinction of market distortion practices including log export bans and tariff and non-tariff barriers. Offered: Sp.

F M 424 Forest Stand Dynamics (3) NW Forest stand development and manipulation response. Forest stand dynamics and structure in pure and mixed species forests, response to minor and major disturbances, interactive changes with time, and patterns and response to manipulation. Offered: A.

F M 425 Ecosystem Management (3) NW Advanced concepts and practices in ecosystem management, integrating landscape management principles, inventory, planning, silviculture, objective/tradeoff/policy considerations, stand growth, adaptive management, and systems organization and management. Case study emphasizes integration. Prerequisite: F M 323. Offered: W.

F M 435 Forest Entomology (3) NW Gara Introduction to general entomology, characteristics, life histories, ecological relations, prevention, and control of forest insects. Offered: A.

F M 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.

F M 461 Forest Management and Economics II (4) I&S/NW Bare Basic concepts of timber harvesting scheduling, sustained-yield models, contemporary analytical techniques, timber supply, and forest product markets. Prerequisite: F M 360. Offered: W.

F M 464 Economics of Conservation (3) I&S/NW 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.

F M 466 Economics of Timber Production (3) I&S/NW Application of basic economic concepts to the production of timber as a commercial land use. Analysis of timber investments, alternative management programs, and regulation models. Prerequisite: F M 360.

F M 469 Forest Biometry (5) NW Turnblom Quantitative techniques commonly used in forecasting future forest conditions and developing volume equations: site quality assessment methods, development of site index equations, measurement of stand density and its effects on growth, growth and yield prediction, and familiarization with current computerized forest growth simulation models. Prerequisite: Q SCI 381. Offered: odd years; A.

F M 470 Natural Resource Policy Processes (5) I&S/NW 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.

F M 481 Management of Wildland Recreation and Amenities (3) NW Lee 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 recreation and recreational uses discussed along with role of private enterprise in recreation and amenities. Topics of current and local interest. Offered: W.

F M 490 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: AWSp.

F M 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: AWSp.

F M 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: AWSp.

F M 495 Senior Project in Forest Management (5) Individual study of a forest management problem under the direction of a faculty member. Students utilize knowledge gained in field studies and required course work to present possible solutions to a specific forest management problem. Prerequisite: F E 345; F M 323; F M 362. Offered: AWSp.

F M 496 Forest Management Case Studies (5) Focus on preparation and presentation of management plan for forested area. All aspects of multiple use and ecosystem health considered within multiplicity of economic, biological, legal, social, and political constraints. Case studies to familiarize students with complexities of modern decision making. Offered: Sp.

F M 499 Undergraduate Research (1-5, max. 15) Individual research supervised by a faculty member. For advanced students desiring to extend their educational experience. Credit/no credit only. Offered: AWSp.

Courses for Graduates Only

F M 503 Advanced Forest Stand Dynamics (3) Oliver Emphasizes current research and sources of knowledge about forest stand development and responses to disturbances. Development of pure and mixed species forests, even-aged and uneven-aged stands. Responses to disturbances, interactive changes with time, patterns and responses to manipulation, growth and yield quantification. Prerequisite: previous ecology courses. Offered: A.

F M 504 Research Processes in Forest Resources (4) Lee 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. Prerequisite: graduate standing. Offered: A.

F M 520 Fundamentals of Marketing and Management from a Forest Products Perspective (3) Paun Overview of business concepts as they relate to the following topics in the context of the forest products industry: launching a business and entrepreneurship; marketing; human resources management; and global business. Offered: A.

F M 521 Fundamentals of Finance and Accounting from a Forest Products Perspective (3) I&S/NW Paun Provides an overview of business concepts as they relate to the following topics in the context of the forest products industry: business economics; financial planning and management; securities and insurance; accounting; and operations management. Offered: W.

F M 522 Current Topics in Silviculture/Protection (2, max. 6) Edmonds Gara Detailed study of current issues, information, and literature in silviculture/protection. Offered: AWSp.

F M 528 International Silviculture (3) Gara Background of biological, social, and economic basis for silvicultural practices in different areas; case examples of silvicultural practices in different localities; consideration of selected international issues in silviculture. Prerequisite: permission of instructor. Offered: even years; W.

F M 530 Graduate Studies in Forest Fire Control (1-5, max. 5) Offered: AWSp.

F M 537 Graduate Studies in Forest Entomology (1-5, max. 5) Offered: AWSp.

F M 541 Readings in Silviculture (1-5, max. 6) Detailed study of national and international literature pertaining to silviculture. Offered: AWSp.

F M 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. Prerequisite: general biology, botany, zoology or permission of instructor. Offered: A.

F M 552 Seminar in Forest Products Marketing (3) Eastin, Paun Evaluate and discuss current research topics in marketing, marketing research, and international marketing of forest products. Presentation of a critical review of published research or administration of an empirical project. Offered: AWSp.

F M 553 Graduate Studies in Forest Product Marketing (1-5, max. 5) Independent study and research conducted on issues related to forest products marketing. Offered: AWSp.

F M 562 Advanced Forest Resources Management (3) Bare Overview of concepts and procedures involved in managing forested lands for the production of commodity and amenity values. Use of systems analysis techniques for evaluating alternative land-use programs and manipulations of the forest ecosystem. Prerequisite: graduate standing. Offered: A.

F M 563 Graduate Studies in Forest Mensuration (1-5, max. 5) Offered: AWSp.

F M 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.

F M 565 Graduate Studies in Forest Management (1-5, max. 5) Offered: AWSp.

F M 566 Graduate Studies in Forest Photogrammetry (1-5, max. 5) Offered: AWSp.

F M 568 Graduate Studies in Forest Economics (1-5, max. 5) Topical issues including log export controversy, capturing value added products, economics of environmentalism, sustainable forestry, and forest products certification. Offered: AWSp.

F M 570 Graduate Studies in Forest Policy Analysis (1-5, max. 5) Offered: AWSp.

F M 571 Policy Analysis Design (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.

F M 572 Graduate Studies in Forest Resource Planning (1-5, max. 5) Offered: AWSp.

F M 573 Forest Environmental Resource Planning (3) Bradley Origins and evolution of environmental planning in the forest environment. Discussion of the planning process and methodologies for environmental management and planning; selected case studies of environmental resource plans. Prerequisite: graduate standing. Offered: even years; A.

F M 575 Advanced Natural Resources Sociology (3) Lee Comparative study of institutional and organizational aspects of natural resources management, with special attention to forest resources. Development, persistence, and change of selected institutions in the context of pre-industrial, industrial, and advanced industrial societies. Implications for policy formulation, decision making, and technology transfer. Offered: even years; A.

F M 576 Current Topics in Forest Policy and Management (1-2, max. 2) Ryan Contemporary problems in forest policy and management. Topics vary but focus on the development of specific political or philosophical issues; empirical questions of concern to the forestry profession; or the development of new tools for management, planning, or policy analysis. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSp.


F M 579 Graduate Studies in Forest Sociology (1-5, max. 5) Offered: AWSp.

F M 587 Current Topics in International Forest Products Trade: Marketing Research (2, max. 6) Eastin Current research topics in marketing, market research, and technology related to the forest products sector. Presented by faculty and invited professionals, supplemented by student presentations. Offered: Sp.

F M 588 Current Topics in International Forest Products Trade (2, max. 6) Perez-Garcia Current research topics in a variety of business related areas, including international marketing of forest products, forest economics, international business and global trade modeling. Seminars by faculty and invited professionals, supplemented by student presentations. Credit/no credit only. Offered: A.

F M 589 Current Topics in International Forest Products Trade: Forest Economics (2, max. 6) Perez-Garcia Current research topics in forest economics as related to forest products sector. Presented by faculty and invited professionals, supplemented by student presentations. Credit/no credit only. Offered: W.

F M 591 Graduate Teaching Practicum (1-5, max. 5) Principles of teaching and learning applied to undergraduate instruction in Forest Management. Development, delivery, and evaluation of actual lectures and homework assignments are required in the student area of expertise. Credit/no credit only. Offered: AWSp.

F M 601 Graduate Internship in Forest Management (*) Credit/no credit only. Offered: AWSp.

Paper Science and Engineering

PSE 400 Wood Properties and Utilization (4) I&S/NW Breitkreuz, Briggs Relationship of physical and chemical properties of wood to its use. Role of silviculture and genetics in modifying wood products and value of products. Manufacturing processes of major wood products, examining material and energy balances and environmental effects. Comparison of wood with steel, concrete, plastics, and other materials. Offered: A.

PSE 401 Wood and Fiber Identification (2) NW Briggs Laboratory identification of wood fibers of
North American species. Use of microscope and image analyzer in obtaining wood and fiber measurements. Offered: A.


PSE 406 Wood Chemistry I (3) NW Chemistry of cellulose, hemicellulose, and lignin. Pulping and bleaching chemistry of wood. Prerequisite: either CHEM 237 or CHEM 335. Offered: A.

PSE 407 Wood Chemistry I Laboratory (2) NW Fundamental paper properties to end use requirements. Offered: A.

PSE 409 Wood Extractives Chemistry (2) NW Northey Nature, origin, and occurrence of the extraneous components of wood, their influence on pulp and paper preparation, and their utilization. Prerequisite: either CHEM 237 or CHEM 335. Offered: even years; Sp.


PSE 475 Microtechnique (3) Breitsprecher Covers the principles and the practice of specimen preparation for light and electron microscopy. Tailored to meet the research interests of the participants. Students prepare mounts by several techniques and examine them with the appropriate instrumentation. Offered: odd years; 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 478 Pulp and Paper Laboratory (2) Jacobs-Young 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) McKean 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) &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: W.

PSE 483 Paper Coating and Converting (3) Barlow Coatings and their preparation, rheology, process equipment, drying, and product evaluation. Prerequisite: PSE 477. Offered: A.


PSE 485 Undergraduate Research (1-, max. 3) Johnson Undergraduate research or independent study project under the supervision of the faculty; usually one credit per quarter. Offered: AWSp.

PSE 486 Environmental Management (3) &S/NW Effects of pollution and environmental regulations on industry and community. Sources, regulations, and control of air, water, solid waste emissions as generated by the paper science industry. Offered: W.

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. 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 490 Undergraduate Studies (1-, max. 5) Individual tutorial study of topics for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWSp.

PSE 491 Undergraduate Studies (1-, max. 5) Individual tutorial study of topics for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWSp.

PSE 492 Undergraduate Studies (1-, max. 5) Individual tutorial study of topics for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWSp.

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: AWSpS.

Courses for Graduates Only

PSE 502 Pulp and Paper Technology (4) Hodgson, Jacobs-Young Overview of the sources of fiber raw material and processes for pulp and papermaking (mechanical and chemical pulping, papermaking and bleaching processes). Laboratory study of converting raw materials to pulp and paper products. Offered: A.

PSE 505 Biotechnology in Pulp and Paper Industry (3) Jacobs-Young Explores biotechnology terminology and utilization of biological agents in pulp processes, and analytical testing methods, as well as the economic and environmental impacts of bioprocesses.

PSE 508 Advanced Wood Chemistry (3) Biogenesis of lignins and isotope labeling methods. Oxidative coupling phenols. Alkaline degradation of polysaccharides and oxygen-based bleaching chemistry. Prerequisite: PSE 406. Offered: odd years; A.

PSE 514 Pulp and Paper Process Simulation (3) Gustafson Presentation of process simulation techniques currently used in the pulp and paper industry. Large-scale simulations of pulp and paper unit operations developed and analyzed. Use of simulations for control, process optimization, and statistical quality control purposes. Offered: even years; A.

PSE 555 Surface and Colloid Science of Papermaking (3) Hodgson Introduction to principles of surface and colloid science, particularly as they pertain to the wet end of the papermaking process. Surface and colloidal properties of wet end additives. Examination of specific examples and case studies in papermaking situations. Prerequisite: PSE 477 or equivalent. Offered: odd years; A.

PSE 570 Graduate Studies in Forest Products (1-5, max. 5) Offered: AWSpS.

PSE 576 Microscopy and Photomicrography (3) Breitsprecher Principles of microscopy as well as the techniques of using microscopes and taking photographs with them. Darkroom practice for black and white photography included. Students take photographs, develop negatives, and make enlargements. Offered: even years; Sp.

PSE 577 Wood and Paper Science Seminar (1-6) Discussion of current topics in the science and technology of pulp and paper production, including wood and polymer chemistry. Offered: ASp.

PSE 579 Wood Properties and Utilization (4) Breitsprecher, Briggs Biotechnology of wood formation and basic properties of wood, processes that create wood products, performance attributes required of these products, understanding of linkages between biotechnology, silviculture, and product technology and performance. Offered: AW.

PSE 580 Field Studies in Wood Utilization (2) Briggs Five-day field trip visit a diverse mix of wood products industries in the Puget Sound region. Students observe manufacturing technologies for various products, learn about markets from these products, and discuss resource, market, and technical issues with management in these facilities. Offered: Sp.

PSE 589 Wood Biosynthesis (3) Breitsprecher, Briggs Synthesis of carbohydrates, phenolic and terpenoid compounds in forest trees, and biochemistry of wood degradation. Prerequisite: PSE 406. Offered: even years, Sp.

PSE 591 Graduate Teaching Practicum (*, max. 5) Principles of teaching and learning applied to undergraduate instruction in paper science and engineering. Development, delivery, and evaluation of actual lectures and homework assignments. Graduate teaching experience for PSE students only. Credit/no credit only. Offered: AWSp.
The Information School

Dean
Michael Eisenberg

Associate Dean
Harry Bruce
370 Mary Gates Hall

School Web page:
www.ischool.washington.edu

The Information School is dedicated to preparing individuals for professional careers and leadership roles in the information professions. As a broad-based information school, the School embraces a wide range of academic interests reflected in its main academic degree areas: information science, library science, information management, and informatics. Graduates of the School assume a variety of professional roles in the public and private sectors, with positions that span from information architects to children’s librarians, from taxonomists to Web developers.

The signature of the School is its human-centered approach to information studies and technology. This focus holds the human perspective as a critical and integral component in the study of information and technology; it encourages increasing understanding of human involvement with information and its social and technological ramifications.

Through its specific goals and objectives in instruction, research, service, and outreach, the School creates and continues to foster a dynamic learning environment dedicated to preparing our students for emerging opportunities and challenges of the 21st century.

Degrees Offered

The School offers degree programs leading to the Bachelor of Science in Informatics, the Master of Library and Information Science (MLIS), the Master of Science in Information Management (MSIM), and the Doctor of Philosophy in Information Science. The School also provides continuing education opportunities for professionals as well as service courses for undergraduates in information fluency, research strategies, and technology.

History

Originally established as the School of Librarianship in 1911, the Information School is the oldest library and information school west of the Mississippi. The School has been continuously accredited by the American Library Association since 1926 and offers the most extensive ALA-accredited library and information science degree program 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 and college in 2001.

Continuing its long tradition of excellence and innovation, the School continues 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.

The vision statement adopted by the School is "People and Knowledge: Building Information Connections." The faculty, staff, students, and alumni of the Information School believe that connecting people with knowledge is of fundamental individual and societal importance; further, we believe access to information is a basic human right. We commit ourselves to sustain this vision."

The Information School is actively committed to cultivating diversity in the School and in the information professions.

Graduate Programs

Graduate Program Coordinator
470 Mary Gates Hall, Box 352840
206-543-1794
info@ischool.washington.edu

The School offers graduate programs leading to the Master of Library and Information Science, the Master of Science in Information Management, and the Doctor of Philosophy in Information Science.

Admission Requirements:

Minimum requirements for admission to the graduate programs in the School are a baccalaureate degree from an accredited institution, a GPA of 3.00 in the last two years of college work, and approval of the School and the UW Graduate School. A master's degree is expected for applicants to the Ph.D. program. Students enter the School from varied disciplines.

A complete application file includes the copy of the UW Graduate School application for admission; official transcripts; Graduate Record Examination general test scores (GMAT scores are acceptable for MSIM applicants only); three letters of recommendation; a curriculum vitae or resume, and a personal statement.

International applicants, must also meet requirements outlined by the UW Graduate Admissions for international students, including requirements for the Test of English as a Foreign Language (TOEFL). For additional information, see www.grad.washington.edu/admissions/index.htm.

Deadlines for admissions vary by program. For more information and to request application materials, visit the School’s Web site at www.ischool.washington.edu.

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 Smitz Hall. Information on the FAFSA is also available online at www.fafsa.org.

Graduate Assistantships and Scholarships

Financial aid options for full-time students may include graduate assistantships and scholarships. Graduate assistants generally work 20 hours per week and receive a tuition waiver as well as a monthly stipend and medical benefits. To apply for a MLIS Graduate Assistantship, prospective students should submit a cover letter and resume along with their application to the MLIS program. Ph.D. students are automatically considered for graduate assistantships, upon request.

MLIS scholarships are awarded on a basis of financial need, based on information from the Free Application for Federal Student Aid (FAFSA) and academic merit.


Special Research Facilities

Located on the third and fourth floors of Mary Gates Hall, one of the University's flagship 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, Web page creation, Internet exploration and collaboration, and office productivity. Students also have access to a large number of bibliographic databases and commercial information services.

The TE Lab is a unique facility that includes twenty-four student stations and thirty-two servers on a "server wall." The lab is designed to promote exploration of a variety of technologies. Students can install alternative operating systems such as Linux, setup their own file, Web, or database server, and become the system administrator of their machine. Each machine includes a removable hard drive so that students can use either a "production setup" with all software previously installed and configured, or an "experimental setup" where students are free to do as they desire.

For more information, visit the School’s Web site at www.ischool.washington.edu/technology.

Continuing and Professional Education

The Information School works with UW Educational Outreach to offer classes, workshops, and certificate programs for continuing education and professional development. Current certificate programs include Web technology essentials; data resource management; electronic information and records management; Web administration; and small-business Webmaster. Those interested in continuing education or certificate programs should contact UW Educational Outreach, 5001 25th Avenue N.E., Box 354221, University of Washington, Seattle, WA 98105; phone 206-616-0783; or see www.extension.washington.edu.

Master of Library and Information Science

The MLIS program prepares graduates for an ever-expanding variety of information professions including information architecture, school library media, knowledge management, librarianhip, and other information-related positions.

The 63-credit MLIS degree includes three program options: full-time (day), part-time (evening), and the
The curriculum includes nine core courses, which cover theoretical and applied aspects of the information profession. The remaining 29 elective credits allow students to pursue their preferred areas of interest or emphasis. 

The Distance MLIS is a part-time program that generally requires three years to complete. The delivery of instruction is primarily Internet-based with brief, quarterly, on-campus residencies. Students attend course meetings in residence at the University of Washington in Seattle for two to five days each quarter, excluding summer quarter.

**Law Librarianship Program**

The law librarianship program is designed to prepare lawyers to serve as law librarians in courts, federal and state units of government, law firms, other organizations, and law firms. Attorneys enrolled in the program earn the Master of Library and Information Science degree after successful completion of 45 quarter credits. The highly structured law librarianship program includes seven MLIS core courses, five law librarian courses and a directed fieldwork experience.

Law MLIS applicants, who must hold a degree from an accredited U.S. law school or from a law program in one of the common-law countries, are encouraged to submit LSAT rather than GRE scores.

The law librarianship program begins in the autumn quarter and is sequential, ending with the following summer quarter. Please contact Professor Penny Hazeltin (206-624-4069; pennyh@u.washington.edu) for further information.

**School Library Media Specialist**

Requirements for the Washington State Library Media endorsement may be pursued concurrently with the MLIS degree. Individuals interested in earning a Library Media endorsement without pursuing the MLIS should contact UW Educational Outreach at 206-685-6404 or see www.extension.washington.edu. In Washington, Library Media Specialists working in public schools must hold a current state teaching certificate.

**Master of Science in Information Management**

The Master of Science in Information Management is a mid-career degree that combines information management and information technology with a focus on the user perspective. Prospective students are professionals in management, information technology and library and information science, from both the public and private sectors, who wish to deepen their understanding of information technology, further their education and advance professionally. The Friday evening and Saturday course scheduling enables students to maintain full-time workloads.

MSIM students must complete 47 credits of graduate coursework to obtain the degree. Degree requirements feature the foundation, core, integration, and elective coursework. Students generally take two courses each quarter during autumn, winter, and spring to graduate in two years. Summer attendance is not required, but the elective requirement can be satisfied during the summer.

**MSIM degree requirements include the following courses:**

Foundations (4 credits): Students begin with IMT 510, a signature course that introduces user-centered concerns. Basic concepts and core areas covered throughout the curriculum are introduced.

Information Management and Technology Core (35 credits): The core course work provides students with a concrete understanding of the relationship between the technical and organizational aspects of information management. Information Technology core courses: IMT 530, 540, 546, 548. Information Management core courses: IMT 551, 580, 581, 582, 598.

Integration (5 credits): The MSIM curriculum requires a capstone experience, IMT 595. The capstone addresses the increasing demand for the application of IT to the information needs of diverse user groups. Integration offers students the opportunity to synthesize the ideas presented earlier in the program and to help implement comprehensive information systems within an organization.

Electives (3 credits): MSIM students select electives from a broad range of academic disciplines in consultation with the Student Services Administrator or the program chair.

Admission to the MSIM program is for autumn quarter. The application deadline for autumn admission is May 15.

**Doctor of Philosophy in Information Science**

The Ph.D. in Information Science is a theoretical, research-based doctorate that focuses on creating and advancing new knowledge that makes a difference. The program provides research education and scholarly mentoring for doctoral students who have an interest in the issues and concerns that are central to the field of information science. Students are selected on their ability to engage in theoretical discourse and to conduct empirical investigation.

The areas of inquiry for doctoral research in the Information School are aimed at increasing our understanding of human involvement with information and its social and technological ramifications. It addresses those issues that affect the transfer and use of information by people in social, organizational and individual contexts. This may include areas such as information and technology literacy, access to information, human-computer interaction, information organization and knowledge management, information systems design, information retrieval, information policy, social aspects of information technology, and information behavior.

Many of these issues are associated with information and communication technologies and for this reason students are highly competent and creative users of technology.

Admission to the doctoral program is for autumn quarter only. The application deadline is February 1 for U.S. citizens and eligible residents. International applicants are strongly encouraged to submit their applications by November 1 for full consideration. A master’s degree is required, but this may be waived under exceptional circumstances evidenced by significant professional or research experiences. The program does not have a point of exit within the Ph.D. course work program to take a master’s award.

**Degree Requirements:** To be awarded a Ph.D. in information Science, the following requirements must be met:

1. Pass a Preliminary Examination determined by a school-based advisory committee at the end of the required first-year of full-time study.

2. Successfully complete (minimum cumulative GPA 3.25) all course requirements as stipulated by the School.

3. Complete the School’s requirement for teaching and research practica.

4. Pass the General Examination upon completion of course work and practica components to attain formal candidacy for the Ph.D. program (candidate’s certificate).

5. Successfully defend a dissertation proposal before a Supervisory Committee.

6. Successfully defend a dissertation before a Reading Committee (Final Exam).

For more information and to request application materials, visit the School’s Web site at www.ischool.washington.edu/phd/.

**Faculty**

**Professors**

Benne, Mae M. * 1971, (Emeritus); MS, 1965, University of Illinois; children’s literature, public library services for children.

Borning, Alan H. * 1980, (Adjunct); MS, 1974, PhD, 1979, Stanford University; human-computer interaction; constraint-based languages and systems.

Eisenberg, Michael B. * 1998; MLS, 1973, State University of New York (Albany), PhD, 1986, Syracuse University; information problem-solving; use of information and technology; information science.

Fuller, Sherrilynne S. * 1988; PhD, 1984, University of Southern California; analysis, representation and mapping of research findings (data mining).

Grudin, Jonathan T. 1999, (Affiliate); PhD, 1981, University of California (San Diego); computer-supported cooperative work, collaboration technologies, human-computer interaction.

Hazeltin, Penny A. * 1985, (Adjunct); JD, 1975, Lewis And Clark College, MLL, 1976, University of Washington; law librarianship, legal bibliography, computer-assisted legal research, law, Indian law.

Hiatt, Peter * 1974, (Emeritus); PhD, 1963, Rutgers University; adult services, special populations, library education, staff development, continuing education.

Levy, David M. * 2000; PhD, 1979, Stanford University; nature of documents and the tools and practices through which they are created and used.

Pejtersen, Anneline Mark 2002; PhD, 1971, University of Copenhagen (Denmark); human-work interaction, cognitive work analysis, collaborative information systems.

Shaw, Spencer G. * 1970, (Emeritus); BLS, 1941, University of Wisconsin; librarianship.

Wilson, Lizabeth A. 1992, (Affiliate); MLS, 1978, University of Illinois (Urbana-Champaign).

**Associate Professors**

Brooks, Terrence A. * 1986; PhD, 1981, University of Texas (Austin); interest scripting and programming, Web page design, post-alphabetic information designs.

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Bruce, Harry * 1998; PhD, 1996, University of New South Wales (Australia); human factors in information and communication technology.

Ethimadiis, Ethimis * 1997; PhD, 1992, City University, London (England); user-centered design and evaluation of information retrieval systems.

Friedman, Batya * 1999; PhD, 1988, University of California (Berkeley); value-sensitive design, social-cognitive and cultural aspects of information systems.

Johnson, Ronald A. 1986; MA, 1972, University of Chicago, MS, 1975, University of Southern California; information sciences.

Mignon, Edmond * 1970, (Emeritus); PhD, 1976, University of California (Berkeley); information retrieval, bibliographic organization, information studies, methods of research.

Skelley, Grant T. * 1969, (Emeritus); PhD, 1968, University of California (Berkeley); bibliography and reference, subject literature, history of the book.


Assistant Professors

Carlyle, Allynson * 1996; MLS, 1986, PhD, 1994, University of California (Los Angeles); online catalog use and design, conceptual foundations of descriptive cataloging.

Green, Maurice W. * 1998; PhD, 1999, State University of New York (Albany); information decision systems, leadership and analysis.

Nelson, Jerold A. * 1971, (Emeritus); PhD, 1971, University of California (Berkeley); interpersonal relations in libraries, intellectual freedom.

Petitgrew, Karen E. * 1999; MLS, 1991, PhD, 1998, Western Ontario University (Canada); information behavior.

Pratt, Wanda 2002; PhD, 1999, Stanford University; information retrieval, human-computer interaction, text mining, medical informatics.

Saxton, Matthew * 2000; MLS, 1994, PhD, 2000, University of California (Los Angeles); evaluation of information services, intermediation, collection management, information competencies.

Senior Lecturers

Barker, Scott F. 1999; MS, 1987, Syracuse University; computer networks, Internet applications, information management.

Jones, William P. 2000; PhD, 1982, Carnegie Mellon University; personal information management, human factors in information and communication technology.


Lecturers

Boiko, Robert B. 2000; MS, 1989, University of Utah; content management, sociology of information management, self-generating metadata systems.

Oyler, Mel R. 1993; MS, 1985, University of California (Davis), PhD, 1997, University of Washington; database systems, technology strategy, commercial applications of information science.

Whiteaker, Grace B. 2001; MLIS, 2000, University of Washington; database design, information literacy, socio-cultural effects of technology, technology in education.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsclst/.

Informatics

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 context of visualization. Prerequisite: CSE 143.

INFO 440 Information System Design (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 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, collaborative 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. Offered by visitors or resident faculty.

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 media industries. Prerequisite: INFO 311.

INFO 459 Special Topics in Information Policy (1-5, max. 10) Various topics in information policy. Offered by visitors or resident faculty.

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 infopreneurship. Teamwork to create and present plans for innovative informatics products and services. Prerequisite: either INFO 300, INFO 310, or INFO 311.

INFO 489 Special Topics in Information Management (1-5, max. 10) Various topics in information management, offered by visitors or resident faculty.

INFO 490 Design and Development of Interactive Systems (5-8) 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 381; INFO 440.

INFO 491 Research in Informatics (5-8) Provides hands-on experience conducting a research project related to information behavior and technology. This project may be carried out in a natural setting or in the laboratory by preparing students to carry out similar research projects in their professional work. Prerequisite: INFO 370.

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. Offered by visitors or resident faculty. Topics vary.
INFO 499 Independent Study (1-5, max. 15)
Readings, design projects, or research under faculty supervision.

Information Management and Technology
Courses for Graduates Only
IMT 510 Human Aspects of Information Systems (4)
Social, cognitive, behavioral and contextual aspects of information technology, including information behavior, interpersonal interaction, and social responses to information technology. Emphasis on harnessing well-being from information exchange as a communicative event. Exposure to experimental and interview methodologies.

IMT 530 Taxonomy, Classification, and Metadata (4)
Introduction to principles of taxonomy construction using classification theory. Examines conceptual foundations underlying a wide variety of indexing languages. Surveys the use of metadata and metadata standards for the management of information systems. Considers technological frameworks to support the implementation of metadata standards and taxonomies, such as XML and RDF.

IMT 540 Information Systems, Architectures, and Retrieval (5)
Introduction to user-centered information system development processes. Overview of Web-based, stand-alone, and distributed search engines, database management systems, architectures, and retrieval models. Prerequisite: IMT 510.

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 methodologies include social impact statements, future scenarios, mock-ups, rapid prototyping, and field-testing. Prerequisite: IMT 540.

IMT 551 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 560 Management of Information Systems (4)
Information technology context, planning, decision-making, unit organization, CIO leadership, unit controls related to managing information resources to achieve organizational goals. Topics include information technology management challenges, operational, strategic planning, decision-making, unit infrastructure, CIO competence, aligning information technology initiatives with organizational objectives.

IMT 581 Leadership and the Management of Change (4)
Recognizing the need for change, preparing for change initiatives, and institutionalizing change. Topics include vision development, shared vision and transforming the vision into reality. Prerequisite: IMT 510.

IMT 582 Strategic Planning and Evaluation (3)
Strategic planning, information system resources, information technology functions, and the chief information officer as critical components for leveraging information to achieve organizational goals. Topics include vision, mission and goals, strategic planning, information technology functions, chief information officer competence, and aligning information technology initiatives with organizational objectives. Prerequisite: IMT 510.

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 (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. Student-organized individual/team projects are encouraged. Credit/no credit only. Prerequisite: all MSIM core courses.

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 information, 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 (1-4, max. 12)
Supervised independent study or research. May be taken in as many as six consecutive quarters. Prerequisite: enrollment in the MSIM program.

Information Science Courses for Graduates Only
INSC 500 Theoretical Foundations of Human Information Behavior (5)
Study of constructs, concepts, models, and theories of human information behavior. 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 coding, methods of data collection and analysis, increasing the trustworthiness of data, minimizing observer effect, how to incorporate and build theory. Exposure to field research and data analysis. Prerequisite: INSC 570.

INSC 573 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 600 Independent Study or Research (*) Credit/no credit only.

INSC 800 Doctoral Dissertation (*) Credit/no credit only.

Library and Information Science
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. Credit/no credit only.

Courses for Graduates Only
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 use 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 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 transforma-
tion of recorded information within three broad spheres of human life: public communication, administrative and commercial operation, and personal communication.

LIS 510 Information Behavior (3) ~ Introduction to the user-centric 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 evaluation 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 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; others as determined by the specific topics covered.

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) ~ Government publications of the United States and foreign countries, their acquisition, organization, and use. 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 Information Access in Health Sciences (3) ~ Characteristics of users of health sciences information, environments including academic health sciences centers, hospitals, clinics, and public libraries, evaluation of information resources, types of uses of information management systems, health information policy, professional standards, education and certification of health professionals including health science librarians. Credit/no credit only. Prerequisite: LIS 520, LIS 521, or permission of instructor. 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; others as determined by the specific topic covered.

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-specific 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 classification 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.

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. Prerequisite: LIS 530.

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; others as determined by the specific topic covered.

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 (3) ~ Preliminary design of data bases for decision support systems. Introduces methods of collecting user requirements, requirement analysis, data dictionary, the entity-relationship model, methods for database integration, pre and data preparation for data collection, and evaluation. Credit/no credit only.

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 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 information retrieval systems are examined including: methods and tools for document analysis, retrieval techniques, search engines, interfaces, usability, evaluation.

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 elementar y 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, plus others as determined by topic.

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 professional values. Prerequisite: LIS 500, which may be taken concurrently.

LIS 551 Intellectual Freedom in Libraries (3) ~ Analysis of issues related to intellectual freedom, particularly in 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) ~ Analysis of current domestic 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 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 and others as determined by the specific topic covered.

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 ad 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 (5) Theories, process, and practical applications of information literacy. Development of information literacy programs for libraries, community agencies, business, education or other information settings. Intrinsic themes include the 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 and others as determined by the specific topic covered.

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; others as determined by specific topic covered.

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 environment, 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 583 Staffing Information and Information Technology Positions (3) Staffing and human resources related to information organizations and the information technology unit. Examination of demand for and supply of information and information technology workers, recruitment, training, and retention. Prerequisite: LIS 580.

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 freelance 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; others as determined by the specific topic covered.

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. May be taken in one quarter or as many as three consecutive quarters. May be repeated once in a different setting. 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 (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. Credit/no credit only. Prerequisite: LIS 591 or permission of instructor.

LIS 594 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 (1) 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. May be repeated for credit. Credit/no credit only. Prerequisite: determined by specific course.

LIS 600 Independent Study or Research (*) Credit/no credit only.

LIS 700 Master’s Thesis (*) Credit/no credit only.
Interdisciplinary Graduate Degree Programs

These programs are administered by interdisciplinary groups of the Graduate School. Certain courses carrying the particular program prefix appear below; other courses with the same prefix appear elsewhere as indicated. Other courses included in these programs are selected from many disciplines throughout the University and carry the prefix of the respective discipline.

Biology Teaching

General Catalog Web page: www.washington.edu/students/gencat/academic/Biology_Teaching.html

Program Web page: www.biology.washington.edu/teachers/

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.

Special Requirements
Prospective candidates for the degree should have an initial or continuing certificate for teaching biology at the secondary level, or be able to demonstrate professional commitment in the area of biology education.

Assistantships and fellowships are generally not provided under the aegis of this program.

Faculty
Chair
John M. Palka

Professors
Ammirati, Joseph F. * 1979; MA, 1967, San Francisco State, PhD, 1972, University of Michigan; mycology, taxonomy and ecology of fungi.

Armstrong, David A. * 1978, MS, 1974, Oregon State University, PhD, 1978, University of California (Davis); crustean ecology and fisheries, estuarine habitat protection, impacts on dragging, pesticides.

Boersma, P. Dee * 1974; PhD, 1974, Ohio State University, population, ecology.

Cleland, Robert E. * 1964, (Emeritus); PhD, 1957, California Institute of Technology; physiology of plant growth.

Deyrup-Olsen, Ingrith J. * 1964, (Emeritus); PhD, 1944, Columbia University; general physiology cell-membrane phenomena.

Edwards, John S. * 1967, (Emeritus); PhD, 1960, Cambridge University (UK); arthropod neurobiology, insect physiology and development, tundra and alpine biology.

Hille, Merrill B. * 1976; PhD, 1965, Rockefeller University; developmental biology, gastulation in sea urchin embryos, translational regulation during meiosis.

Laird, Charles D. * 1971; PhD, 1966, Stanford University; cell and developmental biology, human genetics.

Leopold, Estella B. * 1976, (Emeritus); PhD, 1955, Yale University; paleoecology, pollen and seed analysis, late Cenozoic environments and climate history.

Nester, Eugene W. * 1962; PhD, 1959, Case Western Reserve University; genetics and biochemistry, of bacterial-plant cell interactions.

Olson, Maynard V. 1992; PhD, 1970, Stanford University; methods and applications of large-scale DNA analysis.

Palka, John M. * 1969; PhD, 1965, University of California (Los Angeles); neurophysiology; sensory physiology, developmental neurobiology.

Van Volkenburgh, Elizabeth * 1982; PhD, 1980, University of Washington; leaf growth and development, photobiology and electrophysiology.

Wakimoto, Barbara T. * 1984; PhD, 1981, Indiana University; developmental genetics, gene expression and chromosome organization in eukaryotes.

Associate Professor
Windschitl, Mark A. * 1996; MS, 1993, PhD, 1995, Iowa State University; the impact of technology, constructivism, and epistemological beliefs on learning.

Conservation Biology Policy

274 Mary Gates Hall

General Catalog Web page: www.washington.edu/students/gencat/academic/cons_bio_pol.html

Program Web page: depts.washington.edu/consbio/

If present trends continue, the Earth may lose one-quarter of its species, much of its temperate forests and other critical habitats, along with many of the resources and services that biological systems provide to humanity. Civilization depends on living resources, but ongoing environmental degradation demonstrates the need for fundamental changes in the relationship between human society and biological resources.

The graduate certificate in conservation biology policy provides students with education and skills to assess impacts on biological diversity and to develop practical approaches to prevent species extinction. Conservation biology is a synthesis of many disciplines, including anthropology, biogeography, ecology, environmental studies, genetics, molecular biology, population biology, sociology, and taxonomy. By integrating ecology and natural science with studies in law, public policy, and social sciences, the program prepares students to balance competing interests in developing effective conservation programs.

Eligibility
Any matriculated graduate student at the University of Washington is eligible for the graduate certificate in conservation biology policy. Students must submit a statement of interest form with the proposed course sequence prior to being enrolled in the program.

Steering Committee
The Steering Committee for Conservation Biology Policy oversees the structure and content of the graduate certificate in conservation biology policy, and periodically reviews course requirements. The committee is assisted in these tasks by the graduate program coordinator. The committee is also responsible for admission policy. Advising is shared among the Steering Committee and the graduate program coordinator.

Graduate Program

Graduate Program Coordinator
274 Mary Gates Hall
Box 352802
206-221-6129
conbio@u.washington.edu

Program Requirements: One course in conservation biology; one course each in two of the following three core areas: law and policy, economics, and social ecology; one capstone course; and additional courses from the approved list to complete the required 21 credits.

The graduate certificate is awarded upon successful completion of all program and degree requirements.

Environmental Management

274 Mary Gates Hall

General Catalog Web page: www.washington.edu/students/gencat/academic/Env_Mang.html

Program Web page: depts.washington.edu/envismgt/

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 experience, students acquire the tools to solve real-world environmental problems via the three core areas of study: education, 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 352902
206-221-6129
enrmtg@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.

Program Requirements: Three core courses (10-12 credits); a capstone project completed as part of the core course in business; the spring quarter seminar series (1 or 2 credits); and 6 credits of electives. Award of the certificate is contingent on completion of the student's graduate degree. Further details on these requirements can be found by visiting the Environmental Management homepage.

Global Trade, Transportation, and Logistics Studies
2 Smith

General Catalog Web page: www.washington.edu/students/gencat/academic/Global_Trade.html

Program Web page: 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 land 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
2 Smith, Box 353585
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
The requirements consist of a minimum of 20 credits: two core courses (8 credits) and four elective courses (at least 12 credits).

The core courses—GTTL 501 and 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.

Faculty
Director
Thomas G. Schmitt
Associate Professor
Schmitt, Thomas G. * 1979; MBA, 1974, University of Cincinnati, DBA, 1979, Indiana University; management of service and manufacturing operations.

Lecturer
McKay, Mark 1992; MS, 1989, Clemson University, PhD, 1999, University of Washington.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

GTTL 501 Global Logistics Management (4)
Provides an overview of the concepts and substance of trade, transportation, and logistics. Deals with management of physical, documentation, and information flows within supply chains, including purchasing, distribution, intermodal transportation, ERP, e-commerce and e-fulfillment, financial transactions, and regulations. Prerequisite: permission of instructor.

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.

GTTL 599 Special Topics in Global Trade, Transportation, and Logistics Studies (1-5, max.

...
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 (*, max. 30) 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.

Health Services Administration

General Catalog Web page: www.washington.edu/students/gencat/academic/Health_Svc_Admin.html
Program Web page: depts.washington.edu/mhap/
Graduate Program Coordinator – In-Residence and Executive Programs H672 Health Sciences, Box 357660 206-616-2976 mhap@u.washington.edu

The Health Services Administration Group offers two programs of study leading to the Master of Health Administration (M.H.A.) degree: a two-year in-residence program and a three-year evening/weekend executive program. The M.H.A. degree is fully 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 vary according to the student’s academic interests and career objectives. In addition to academic work, students are required to participate in an internship experience in a health facility or agency under the preceptorship of the administrator or director of that organization.

Concurrent degree programs combining health administration with business administration, medicine, nursing, or public administration are also offered. These curricula (with the exception of the M.H.A./M.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.).

The Executive Master of Health Administration program, launched in January 1998, is an evening/weekend program designed primarily for mid-career physicians, other clinical practitioners, and experienced health services-oriented professionals 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. The 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.

Special Requirements

Applicants to the in-residence program must submit, in addition to Graduate School admission requirements, a narrative statement of objectives, a resume, at least three letters of recommendation, and scores from either the GRE or the GMAT. Interviews by members of the program faculty may also be requested. Relevant health services experience is preferred. Applicants are accepted only for autumn quarter of each year. The application deadline is February 15. Applications received after this date (U.S. and Canadian only) will be considered on a space-available basis.

Applicants to the executive program must submit, in addition to Graduate School admission requirements, a narrative statement of objectives, a resume, three letters of recommendation, and either GRE or GMAT scores (excluding applicants with doctoral-level degrees from U.S.-accredited institutions). Priority of admission is given to applicants with medical/clinical training and professional experience. Applicants are accepted only for autumn quarter of each year. Applications for autumn quarter 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 four to six weeks of submission. Those interested in applying should contact the program office as soon as possible to inquire about availability and the application process.

Financial Aid

Financial support for current M.H.A. students is available from several areas: loans, work study positions, internships, a limited number of competitive scholarships in the program, 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@uw.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.

Faculty

Director
William E. Welton

Professors
Grembowsk, David * 1981; MA, 1975, Washington State University, PhD, 1982, University of Washington; health services research, survey research, program evaluation, performance of health care systems.
Klastorin, Theodore * 1974; PhD, 1973, University of Texas (Austin); operations management, facility location, project management, waiting lines, logistics, inventory.

Kuszler, Patricia Carol * 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. * 1978; MA, 1972, Temple University, PhD, 1979, University of Washington; research methods, health services quality, use, and outcomes.
Ross, Austin, J. 1982, (Emeritus); MPH, 1955, University of California (Berkeley); ambulatory care, health care delivery systems.
Sundem, Gary L. * 1971; PhD, 1971, Stanford University; managerial accounting.
Watts, Carolyn A. * 1975; MA, 1974, Johns Hopkins University, PhD, 1976, Johns Hopkins University; health economics and policy.

Associate Professors
Klawitter, Marieka * 1990; MPP, 1982, University of Michigan, PhD, 1992, University of Wisconsin; family and employment policy, women’s studies, sexual orientation discrimination.
Kopjar, Branko 1997; PhD, 1996, University of Oslo (Norway); prevention effectiveness, outcomes research, health care reform, quality of care.
Richardson, Mary L. * 1977; MHA, 1978, PhD, 1984, University of Washington; organization, management, and analysis of policy relevant to health services.

Assistant Professors
Zierler, Brenda * 1988, (Adjunct); PhD, 1996, University of Washington; research in patient with venous thromboembolism; clinical outcomes, process outcomes.

Senior Lecturers
Cormick, Gerald W. 1975; PhD, 1971, University of Michigan; mediation and negotiation.
Katz, Aaron 1988; CFH, 1975, University of Toronto (Canada); health policy, public health, determinants of health.
Thompson, John (Jack) R. 1989; MSW, 1976, University of Washington, public health practice, health policy analysis, work force development.
**Lecturers**

Masuda, David 1997; (Adjunct); MD, 1980, University of North Dakota, MS, 1996, University of Wisconsin; biomedical and health informatics.


Stillman, Dennis 1987; MHA, 1979, University of Washington; health care financial management, management development.

**Molecular and Cellular Biology**

General Catalog Web page: www.washington.edu/students/gencat/academic/Molec_Cell_Biol.html

Program Web page: depts.washington.edu/mcb/

**Graduate Program**

Graduate Program Coordinator
T466 Health Sciences, Box 357275
206-543-0253
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.

Thirteen 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, Botany, Environmental Health, Genome Sciences, Immunology, Microbiology, Pathobiology, Pathology, Pharmacology, Physiology and Biophysics, and Zoology.

At the Fred Hutchinson Cancer Research Center (FHRC), the divisions of Basic Sciences and Molecular Medicine participate in the joint Molecular and Cellular Biology graduate program. Shared FHRC 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.

**Faculty**

**Professors**

Aderem, Alan A. * 1996; (Affiliate); PhD, 1979, University of Cape Town (South Africa); signal transduction and the cytoskeleton.

Bassingthwaighte, James * 1975; MD, 1955, University of Toronto (Canada); PhD, 1964, Mayo Medical School/Graduate School; computer analysis of transport mechanisms in blood and tissues.

Beavo, Joseph A. * 1977; PhD, 1970, Vanderbilt University; roles and molecular mechanisms of cyclic nucleotide phosphodiesterase regulation of cell function.

Bendich, Arnold J. * 1970; PhD, 1969, University of Washington; structure and replication of chromosomal DNA molecules in mitochondria, chloroplasts, and bacteria.

Berger, Albert J. * 1978; MA, 1965, PhD, 1967, Princeton University, PhD, 1976, University of California (San Francisco); neural and chemical control of respiration, neurobiology, synaptic transmission.

Bevan, Michael J. * 1990; PhD, 1972, National Institute for Medical Research (UK); T lymphocyte development and specificity.

Bomsztyk, Karol 1983; MD, 1977, University of Rochester; role of cytokine-induced protein kinases in the regulation of gene expression.

Bornstein, Paul * 1967; MD, 1958, New York University; structure and function of connective tissue macromolecules, wound healing.

Bothwell, Mark A. * 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology.

Bowen-Pope, Daniel * 1979; PhD, 1979, University of Colorado (Boulder); gene regulation, growth factors and receptors.

Byers, Breck E. * 1970; PhD, 1967, Harvard University; cell biology: mitosis and meiosis, mechanisms of nuclear division and crossing-over in yeast.

Byers, Peter H. * 1976; MD, 1969, Case Western Reserve University; extracellular matrix synthesis, genetic disorders of collagen metabolism, secretion, human genetics.

Campbell, Lee Ann * 1985; PhD, 1982, Pennsylvania State University; molecular biology and pathogenic mechanisms of chlamydiae.

Carlson, Steven S. * 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology of synaptic transmission.

Carter, William G. * 1981; PhD, 1974, University of California (Davis); elucidation of components in cell attachment and cell spreading in normal cells.

Catterall, William A. * 1977; PhD, 1972, Johns Hopkins University; molecular biology of ion channels, molecular pharmacology and biophysics.

Cattolico, Rose A. * 1975; PhD, 1973, State University of New York (Syracuse); signal transduction and calcium cycle processes in toxic marine algae.

Champoux, James J. * 1972; PhD, 1970, Stanford University; DNA replication, tumor virology.

Chavkin, Charles * 1984; PhD, 1982, Stanford University; cell and molecular mechanisms of psychoactive opiate drugs to understand normal and pathophysiology.

**Admission**

The Molecular and Cellular Biology Program is a highly competitive interdisciplinary program which receives applications from outstanding students nationwide. MCB Program information and requirements are listed at its Web site. Applications are due January 2 each year and are available on-line via a link from the program homepage (depts.washington.edu/mcb/). Applications can also be requested by email (mcb@u.washington.edu) or by calling 206-543-0253. Applicants may apply both to the MCB Program and to any of the thirteen participating UW departments. Since application requirements or deadlines may differ, applicants should contact the participating departments for information.

In addition to the Graduate School application requirements, prospective students must submit an MCB Program application form, a personal statement of research interests and career goals, three letters of recommendation, and Graduate Record Examination scores with a subject test.

**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.

**Ph.D. Requirements**

The program, which culminates in the Ph.D. degree, includes training in laboratory research, supervised teaching experience, lectures and seminars on current research topics, rigorous course work in molecular and cellular biology, and graduate-level electives in the student's area of interest. During the first year, students participate in research rotations in three laboratories. Lab rotations offer students an opportunity to learn basic research techniques and to become familiar with the various research areas in molecular and cellular biology of participating faculty members. First-year course work includes a three quarter series of modular courses in molecular and cellular biology and a three-quarter literature review course. Selection from a large list of elective courses is based on the student's background and interests. During the summer of the first year, students choose their permanent advisor and form their Doctoral Supervisory Committee. Students may also elect to participate in a summer biotechnology externship course during their first summer.

During the second year, students generally complete their supervised teaching experience and their elective course work. Autumn quarter of the third year, students take the General Examination. Formal course work is usually completed by this time, although students may take elective courses of interest. Students continue to participate in various department seminar courses and journal clubs.

After completing their course work and General Exam during autumn quarter of the third year, students work full-time on the dissertation research project. The final requirements for the Ph.D. degree include a written dissertation and an oral dissertation defense.

MCB Program students participate in a monthly seminar program which involves student and faculty presentations. The purpose of these seminars is to acquaint students with the research carried on in many laboratories involved in the program and to give students practical experience in making presentations before their peers. In addition, MCB Program students are invited to seminar programs in the participating departments and the Fred Hutchinson Cancer Research Center.
Clark, John I. * 1982; PhD, 1974, University of Washington; development and maintenance of lens transparency.

Collins, Steven J. * 1982; MD, 1973, Columbia University; retinoic acid receptors and the pathogenesis of malignancy.

Comai, Luca * 1989; PhD, 1980, University of California (Davis); chromatin and gene regulation, genetics of polyplody, functional genomics, plant transformation.

Cooper, Jonathan A. * 1987; PhD, 1976, University of Warwick (UK); regulation of cellular metabolism and proliferation by protein phosphorylation.

Corey, Lawrence * 1977; (Adjunct); MD, 1971, University of Michigan; DX, therapy and pathogenesis of viral infections, AIDS/herpes viruses.

Costa, Lucio Guido * 1983; PharmD, 1977, University of Milan (Italy); neurotoxicology; developmental and molecular mechanisms/biological markers of neurotoxicity.

Dale-Crunk, Beverly A. * 1972; PhD, 1968, University of Michigan; keratin biochemistry, epithelial differentiation, antimicrobial peptides.

Davie, Earl Warren * 1962; PhD, 1954, University of Washington; protein synthesis, mechanism of blood clotting, cloning of plasma proteins.

Davis, Trisha Nell * 1987; PhD, 1983, Yale University; control of the cell cycle, chromosome segregation, proteomics.

Detwiler, Peter B. * 1977; PhD, 1970, Georgetown University; physiology of photoreceptors.

Disteche, Christine M. * 1980; PhD, 1976, University of Liege (Belgium); molecular genetics of sex chromosomes, X inactivation, human and mouse cytogenetics.

Ebrey, Thomas 1997; PhD, 1968, University of Chicago; light energy transduction by retinal proteins, especially visual pigments and bacteriorhodopsin.

Eisenman, Robert M. * 1982; PhD, 1971, University of Chicago; viral oncology, oncogenes, retrovirus multiplication.

Eiken, Keith B. * 2001; MD, University of Witwatersrand (South Africa), MRCP, 1978, University of London; rheumatology.

Emerman, Michael 1994; PhD, 1986, University of Wisconsin; molecular biology of HIV.

Farr, Andrew G. * 1982; PhD, 1975, University of Chicago; cell interactions governing lymphocyte production and function.

Faustman, Elaine M. * 1981; PhD, 1980, Michigan State University; developmental toxicology, risk assessment methodologies; toxicity of N-nitroso compounds.

Fausto, Nelson * 1994; MD, 1960, Sao Paulo State University (Brazil); liver regeneration, tumor biology, carcinogenesis, growth factors.


Froehner, Stanley C. 2000; PhD, 1973, California Institute of Technology; molecular mechanisms of synapse formation and muscle disease.

Furlong, Clement E. * 1977; PhD, 1968, University of California (Davis); human biochemical genetics in biochemistry of membrane transport systems.

Galloway, Denise A. * 1982; (Research); PhD, 1976, City University of New York; viral pathogenesis and neoplasia.

Gell, Michael H. * 1985; PhD, 1982, Yale University; mechanistic enzymology, bioorganic and medicinal chemistry.

Gordon, Albert M. * 1964; (Emeritus); PhD, 1961, Cornell University; skeletal and cardiac muscle physiology/biophysics.

Gordon, Milton * 1959; PhD, 1953, University of Illinois; molecular basis of plant tumors, control of gene expression in plants.

Gottschling, Daniel E. * 1996; PhD, 1984, University of Colorado; dissection of telomere attributes and understanding telomerase in S. Cerevisiae.

Graubard, Katherine * 1979; PhD, 1973, University of Washington; cellular neurophysiology, neural basis of behavior.

Groudine, Mark * 1982; MD, 1975, PhD, 1976, University of Pennsylvania; chromatin structure and gene activity.

Hall, Benjamin D. * 1963; MA, 1956, PhD, 1959, Harvard University; the evolution of nuclear genes in plants and fungi.

Hauschka, Stephen D. * 1967; PhD, 1966, Johns Hopkins University; regulation of skeletal muscle differentiation, growth factor-receptor signaling mechanisms.

Hille, Bertil * 1968; PhD, 1967, Rockefeller University; receptors and ion channels of excitable membranes; cell signaling; intracellular calcium dynamics.

Hille, Merrill B. * 1976; PhD, 1965, Rockefeller University; developmental biology, gastrulation in sea urchin embryos, translational regulation during meiosis.

Hol, Willem G. J. * 1992; PhD, 1971, University of Groningen (Netherlands); protein crystallography, drug design, vaccine development, and protein engineering.

Hughes, Kelly T. * 1989; PhD, 1984, University of Utah; genetics, gene regulation, microbial physiology, and metabolism.

Hurley, James Bryant * 1985; PhD, 1979, University of Illinois; molecular basis of vision.

Katze, Michael Gerald * 1987; PhD, 1980, Harvard Medical College; regulation of viral gene expression at the translational level.

Kimelman, David * 1989; PhD, 1985, Harvard University; molecular biology of early development in the frog, Xenopus laevis, and the fish, Danio rerio.

King, Mary-Claire * 1995; PhD, 1973, University of California (Berkeley); genetic analysis of complex human phenotypes, human diversity and evolution.

Klevit, Rachel E. * 1983; DPhil, 1981, Oxford University (UK); protein structure and function; molecular recognition; protein NMR.

Laird, Charles D. * 1971; PhD, 1966, Stanford University; cell and developmental biology, human genetics.

Lemmon, Ake * 1988; MD, 1970, PhD, 1971, University of Umea; immunogenetics of organ-specific autoimmunity with emphasis on insulin-dependent diabetes.

Lidstrom, Mary E. * 1995; MS, 1975, PhD, 1977, University of Wisconsin; biophysical engineering, metabolic engineering, bioremediation.

Linial, Maxine L. * 1982; PhD, 1970, Tufts University; retroviral replication and genetics, retroviral transformation.

Loeb, Lawrence A. * 1978; MD, 1961, New York University, PhD, 1967, University of California (Berkeley); DNA replication, cancer and AIDS.

Lucht, Daniel L. * 1972; PhD, 1969, University of Washington; electron microscopy and cell biology, lung anatomy/pathophysiology, fiber toxicology.

Maizels, Nancy * 2000; PhD, 1974, Harvard University; recombination and repair in mammalian cells, especially activated B cells.

Manoil, Colin C. * 1986; PhD, 1979, Stanford University; molecular genetics, protein localization in bacteria.

Martin, George * 1957; MD, 1953, University of Washington; somatic cell genetics, pathobiology of aging, neurodegenerative disorders.

McElrath, Margaret Juliana * 1990; PhD, 1978, MD, 1980, Medical University of South Carolina; infectious diseases.

McKnight, G. Stanley * 1979; PhD, 1976, Stanford University; phosphorylation; gene expression and neuro/endocrine physiology in mice using genetic approaches.

Miller, Arthur D. * 1987; PhD, 1982, Stanford University; retrovirus biology, gene transfer, gene therapy.

Miller, Samuel I. * 1995; MD, 1979, Baylor University; salmonella pathogenesis and bacterial-eucaryotic cell interactions.


Moody, William J. * 1982; PhD, 1977, Stanford University; single cell electrophysiology, development of electrical properties in embryos.

Moon, Randall T. * 1985; PhD, 1982, University of Washington; embryonic development; signal transduction; cancer biology.

Morris, David R. * 1966; PhD, 1964, University of Illinois; regulation of growth in eukaryotes and prokaryotes, translational control.

Nathanson, Neil M. * 1979; PhD, 1975, Brandeis University; neurobiology; molecular analysis of neural signal transduction by muscarinic and neurokinine receptors.

Neiman, Paul E. * 1971; (Adjunct); MD, 1964, University of Washington; oncology.

Olson, Maynard V. 1992; PhD, 1970, Stanford University; methods and applications of large-scale DNA analysis.


Overbaugh, Julie Maureen * ; PhD, 1983, University of Colorado (Boulder); molecular mechanisms of virus-host cell interactions/retroviral pathogenesis/AIDS.

Palczewski, Krzysztof * 1992; MS, 1980, PhD, 1986, Technical University of Wrocław (Poland); visual transduction.

Palmiter, Richard D. * 1974; PhD, 1968, Stanford University; regulation of gene expression in transgenic mice.
Parsons, Marilyn * 1981; PhD, 1979, Stanford University; parasite cell biology.

Rabinovitch, Peter S. * 1980; MD, 1979, University of Washington, PhD, 1980, University of Washington; cellular aging, preneoplastic disease, cell cycle abnormalities, DNA change.

Reh, Thomas A. * 1989; PhD, 1981, University of Wisconsin; regeneration and development of central nervous system.

Reid, Brian J. * 1983; PhD, 1975, MD, 1980, University of Washington; genetic and cell cycle abnormalities in neoplastic progression in Barrett's esophagus.

Riddiford, Lynn M. * 1973; PhD, 1961, Cornell University; insect development and physiology, invertebrate endocrinology.


Roberts, Marilyn C. * 1981; PhD, 1978, University of Washington; antibiotic resistance genes, plasmids, sexually transmitted diseases, oral microbiology.

Rohrschneider, Larry R. * 1982; PhD, 1973, University of Wisconsin; control of growth, differentiation, transformation by the c-fms proto-oncogene.

Rosenfeld, Michael E. * 1992; PhD, 1981, University of Wisconsin; mechanisms of atherogenesis and macrophage gene expression.

Schubiger, Gerold A. * 1972; PhD, 1968, University of Zurich (Switzerland); developmental biology of insects, embryonic determination in Drosophila.

Schwartz, Stephen Mark * 1974; MD, 1967, Boston University, PhD, 1973, University of Washington; vascular biology, atherosclerosis, molecular basis of lineage, developmental biology, cell kinetics.

Sibley, Carol Hopkins * 1976; PhD, 1974, University of California (San Francisco); molecular parasitology and drug resistance.

Smith, Gerald R. * 1983; PhD, 1970, Massachusetts Institute of Technology; molecular biology of genetic recombination and regulation of gene expression.

Staley, James T. * 1971; PhD, 1967, University of California (Davis); freshwater bacteriology, microbial ecology, general microbiology.

Stamatoyannopoulos, George 1964, (Adjunct); MD, 1958, DrMedS, 1980, University of Athens (Greece); medical genetics.

Stayton, Patrick S. * 1992; PhD, 1989, University of Illinois; engineering proteins for biotechnology, biomaterials, and biomedical therapies/diagnostics.

Steiner, Robert A. * 1977; PhD, 1975, University of Oregon; neuroendocrinology, neuroscience, endocrinology.

Storm, Daniel R. * 1978; PhD, 1971, University of California (Berkeley); molecular basis of neoplasticity; cAMP and Ca2+ signal transduction systems in the CNS.

Stuart, Kenneth Daniel * 1985; PhD, 1969, University of Iowa; molecular biology of parasites.

Temple, Bruce L. 1988; PhD, 1983, Princeton University; molecular neurobiology/neuromotors, especially potassium channel gene structure and function.

Thomas, James H. * 1988; PhD, 1985, Massachusetts Institute of Technology; genetics of development and the nervous system in nematodes.

Trask, Barbara J. * 1992; PhD, 1985, University of Leiden (Netherlands); in situ hybridization, analytical cytogenetics, analysis of large-scale DNA polymorphism.

Truman, James W. * 1973; PhD, 1970, Harvard University; hormones and invertebrate behavior, insect physiology, circadian rhythms.

Van Volkenburgh, Elizabeth * 1982; PhD, 1980, University of Washington; leaf growth and development, photobiology and electrophysiology.

Van Voorhis, Wesley C. * 1986; PhD, 1983, Rockefeller University, MD, 1984, Cornell University; infectious diseases.

Varani, Gabriele * 2001; PhD, 1987, University of Milan (Italy); physical biophysics.

Wakimoto, Barbara T. * 1984; PhD, 1981, Indiana University, developmental genetics, gene expression and chromosome organization in eukaryotes.

Weiner, Alan * 2000; PhD, 1973, Harvard University; genome structure, function of small nuclear and cytoplasmic RNA species, CCA-adding enzyme.

Westrum, Lessie M. * 1966; MD, 1963, University of Washington, PhD, 1966, University College, London (UK); neuroanatomy, synaptology, plasticity, olfactory and trigeminal systems, dental pathways.

Wight, Thomas * 1978; PhD, 1972, University of New Hampshire; connective tissue biology and pathology, proteoglycans metabolism, atherosclerosis.

Willows, A. O. Dennis * 1969; PhD, 1967, University of Oregon; invertebrate neurophysiology, neural mechanisms underlying behavior.

Wilson, Christopher B. * 1980; MD, 1972, University of California (Los Angeles); immunology, infectious diseases.

Wolf, Norman S. * 1968; DVM, 1953, Kansas State University; hematopoietic stem cells and dynamics and transplantation in radiation biology.

Yablonka-Reuveni, Zipora * 1982; MSc, 1975, Weizmann Institute for Science (Israel); PhD, 1979, University of Windsor (Canada); myogenesis during development, myogenic specification of brain structure.

Yablonka-Reuveni, Zipora * 1982; MSc, 1975, Weizmann Institute for Science (Israel); PhD, 1979, University of Windsor (Canada); myogenesis during development, myogenic specification of brain structure.

Yablonka-Reuveni, Zipora * 1982; MSc, 1975, Weizmann Institute for Science (Israel); PhD, 1979, University of Windsor (Canada); myogenesis during development, myogenic specification of brain structure.

Yablonka-Reuveni, Zipora * 1982; MSc, 1975, Weizmann Institute for Science (Israel); PhD, 1979, University of Windsor (Canada); myogenesis during development, myogenic specification of brain structure.

Yablonka-Reuveni, Zipora * 1982; MSc, 1975, Weizmann Institute for Science (Israel); PhD, 1979, University of Windsor (Canada); myogenesis during development, myogenic specification of brain structure.

Yablonka-Reuveni, Zipora * 1982; MSc, 1975, Weizmann Institute for Science (Israel); PhD, 1979, University of Windsor (Canada); myogenesis during development, myogenic specification of brain structure.
Leigh, John A. * 1985; PhD, 1983, University of Illinois; bacterial physiology, biochemistry, genetics.

Mandoli, Dina F. * 1988; PhD, 1982, Stanford University; plant development and morphogenesis using genetics, molecular biology, physiology.

Moseley, Stephen L. * 1985; PhD, 1981, University of Washington; molecular basis of pathogenesis in E. coli diarrhea.

Mullins, James I. * 1994; PhD, 1978, University of Minnesota; retroviruses and AIDS, molecular virology.


Ostrand, Elaine A. * 1994; PhD, 1987, Oregon Health Sciences University; genetic mapping of simple and complex traits.


Porter, Peggy L. * 1987; MD, 1987, University of New Mexico; identifying/understanding the molecular events associated with the initiation/progression of cancer.

Priess, James R. * 1993; PhD, 1983, University of Colorado (Boulder); reliability models, fault trees.

Raible, David W. * 1995; PhD, 1989, University of Pennsylvania; zebrafish neural development.

Roelink, Henk * 1996; MSc, 1985, University of Groningen (Netherlands), PhD, 1991, University of Amsterdam (Netherlands); role of signaling molecules in mediating neural tissue differentiation during vertebrate development.

Rose, Timothy M. * 1991; PhD, 1981, University of Geneva (Switzerland); molecular biology of tumor viruses, cell growth, differentiation, and transformation.

Roth, Mark * 1994; PhD, 1988, University of Colorado (Boulder); nuclear proteins involved in the regulation of gene expression.

Rudensky, Alexander Y. * 1992; PhD, 1986, Gabrichevsky Institute for Epidemiology and Microbiology; antigen processing and presentation, T-cell recognition, T-cell development.

Ruohola-Baker, Hannele * 1993; PhD, 1989, Helsinki University (Finland); oogenesis, developmental genetics.

Soriano, Philippe 1994; PhD, 1978, University of Paris (France); vertebrate developmental genetics.

Stenkamp, Ronald E. * 1978; PhD, 1975, University of Washington; crystallography, metalloproteins, protein engineering, rhodopsin, G-protein coupled receptors.

Stoddard, Barry L. * 1994; PhD, 1990, Massachusetts Institute of Technology; physical and structural studies of biological macromolecules.

Swalla, Billie J. 1999; PhD, 1988, University of Iowa; how developmental and evolutionary processes influence animal body plans.


Thouless, Margaret E. * 1990; PhD, 1974, University of Birmingham (UK); retroviruses, herpes viruses, enteric viruses, immunodiagnosis, virus variability.

Traxler, Beth A. * 1992; PhD, 1987, Carnegie Mellon University; bacterial physiology, genetics, and membrane protein biochemistry.

Verlinde, Christophe L. M. J. * 1992; PhD, 1987, Catholic University of Leuven (Belgium); structure-based drug design and protein crystallography.

Vogel, Viola * 1990; Doct, 1987, Johann Wolfgang Goethe University (Germany); molecular assemblies and Langmuir-Blodgett films, liquid interfaces, non-linear optics, microscopy.

White, Theodore C. * 1996; PhD, 1984, University of Michigan; molecular mechanisms of virulence and drug resistance in pathogenic yeasts.

Wormer, Linda * 1994; PhD, 1988, University of California (Berkeley); mitosis and myofibril formation.

Wright, Robin L. * 1990; PhD, 1985, Carnegie Mellon University; membrane dynamics and regulation of sterol biosynthesis in yeast.

Xia, Zhengui * 1987; MS, 1985, Wuhan University (China), PhD, 1991, University of Washington; neuronal apoptosis, neuronal gene regulation.

Assistant Professors

Bajaliah, Sandra M. * 1995; PhD, 1989, University of Wisconsin; molecular neurobiology.

Biggins, Susan 2000; PhD, 1995, Princeton University.


Dong, Chen * 2000; PhD, 1996, University of Alabama; molecular mechanisms of immune and autoimmune responses.

Edgar, Bruce A. 1994; PhD, 1987, University of Washington; cell cycle control in Drosophila.

Ferre-D’Amare, Adrian Riu * 1999; PhD, 1994, Rockefeller University; structural biology of RNA, X-ray crystallography, biological catalysis.

Gordon, Sharona E. * 1993; PhD, 1994, Brown University; molecular mechanisms of ion channel gating in visual and olfactory transduction.

Kemp, Christopher James * 1996; PhD, 1989, University of Wisconsin; genetic and environmental influence on multistage cancer in the mouse.


Lagunoff, Michael * 2001; PhD, 1995, University of Chicago; molecular virology of Kaposi's sarcoma-associated herpesvirus.

Moens, Cecilia B. * 1998; PhD, 1993, University of Toronto; development of segmentation and segment identity in the vertebrate hindbrain.

Muchowski, Paul J. 2001; PhD, 1998, University of Washington; molecular chaperones, neurodegeneration.

Nelson, Peter S. * 1993; MD, 1986, University of Kansas; the study of human carcinogenesis using tools of genomics and bioinformatics.


Pallanck, Leo J. * 1997; PhD, 1992, Albert Einstein College of Medicine; genetic and molecular analysis of symptomatic transmission in Drosophila melanogaster.

Ramakrishnan, Lalita * 2001; MD, 1983, Baroda Medical College (India), PhD, 1990, Tufts University; contributions of mycobacteria and hosts to maintenance of chronic tuberculosis.

Rutherford, Suzanne L. 1999; PhD, 1995, University of California (San Diego); developmental canalization and the evolution of networks of signal transduction pathways.

Salama, Nina R. 2001; PhD, 1995, University of California (Berkeley).

Samudrala, Vaikunthath V. * 2001; PhD, 1997, Center for Advanced Research in Biotechnology; modeling the structure and function of whole genomes.

Sherman, David R. * 1998; PhD, 1987, Vanderbilt University; molecular genetics, microbiology and biochemistry of pathogenic mycobacteria.


Stella, Nephi * 1999; PhD, 1995, Ecole Polytechnique Federale De Lausanne; microgllia cells activation; involvement of endogenous cannabinoid ligands and their allied receptors.

Strong, Roland K. * 1994; PhD, 1990, Harvard University; structural immunology; analysis of the functions of proteins mediating immune responses.

Tori, Keiko * 1999; PhD, 1993, University of Tsukuba (Japan); Arabidopsis developmental genetics; receptor-mediated signal transduction in higher plants.

Tsukiyama, Toshio * 1999; PhD, 1991, University of Hiroshima (Japan).


Xu, Wenqing * 1999; PhD, 1995, Massachusetts Institute of Technology; structural studies of proteins involved in cancer, immune dysfunction and neuronal diseases.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

MCB 511 Cell Cycle Control (3) Breeden, Roberts, Edgar Studies recent advances in understanding cell-cycle control, arising from genetics and biochemical studies of fission and budding yeast, marine invertebrates, Drosophia, 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 514 Molecular and Cellular Biology Literature Review (2) Roelink, Stoddard 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) Roelink, Stoddard 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) Roelink, Stoddard 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 scientists, 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) Stoddard 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 used in embryogenesis and genetics, mosaic analysis, homologous recombination, somatic cell genetics, embryonic manipulations. Offered: W.

MCB 532 Human Pathogenic Viruses (3) Galloway, Linial 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 life 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: Sp.

MCB 542 Structural Molecular Biology (3) Strang, Stoddard Overview of structure/function studies and methods, and their application in key areas of molecular biology. Introduction to the methods of structural biology, with emphasis on how to read and assess a structural paper. Analysis and discussion of recently published studies of macromolecular structure/function relationships. Extensive, interactive computer modeling and graphics tutorials. Offered: A.

MCB 560 BiotechnologyExternship(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 (4, 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 (*) Offered: AWSpS.

MCB 700 Master’s Thesis (*) Offered: AWSpS.

MCB 800 Doctoral Dissertation (*)

Museology

General Catalog Web page: www.washington.edu/students/gencat/academic/museology.html

Program Web page: www.grad.washington.edu/inter/museo.htm

Graduate Program Coordinator
Burke Museum, Box 353010
206-543-9690

The Museology 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. Course work 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. Since admission to the program is highly selective, classes are small and students have close contact with faculty.

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 coordinating unit of the 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 graduate program in museology is designed to take two years to complete, consisting of six quarters of academic study and research. During the first year, students take a minimum set of four key courses in areas that emphasize either collection research and management, or museum administration and interpretation, and that 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 accepted until April 15, although consideration is not guaranteed if enrollment targets have been met.

Faculty

Director
James Nason

Professors

Failing, Patricia A. * 1982; MA, 1974, University of California (Berkeley); contemporary art and criticism.

Fidel, Raya * 1982; PhD, 1982, University of Maryland; information systems, systems analysis, user interaction, classification research.

Kahn, Miriam * 1986; PhD, 1980, Bryn Mawr College; museum exhibits, cultural representations, senses of place, tourism, Pacific Islands.

Kerr, Stephen T. * 1985; PhD, 1975, University of Washington; information technology and telecommunications.

Kingsbury, Martha 1968; MA, 1963, PhD, 1969, Harvard University; nineteenth- and twentieth-century art.
Lockard, Joan S. * 1971; PhD, 1963, University of Wisconsin; primat research, cultural behavior, animal behavior, sociobiology, human ethnology, neurobehavior.

Nason, James * 1970; PhD, 1970, University of Washington; sociocultural anthropology, museology, material culture, cultural heritage, Micronesia, North America.

Pietzch, Theodore W. * 1978; PhD, 1973, University of Southern California; systematic ichthyology, zoo- geography, behavior, functional morphology, biometric survey.

Stein, Julie K. * 1980; MA, 1976, PhD, 1980, University of Minnesota; New World archaeology, Northwest coast archaeology, geoarchaeology, shell middens.

Winn, William David * 1985; PhD, 1972, Indiana University; educational technology, instructional theory, instructional design, visual information processing.

Associate Professors

Minah, Galen F. * 1970; MArch, 1968, University of Pennsylvania; design process, design, color and light, professional practice.

Olmstead, Richard G. * 1986; PhD, 1988, University of Washington; plant molecular systematics and evolution.


Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the online course catalog at www.washington.edu/students/gencat/.

MUSEUM 480 Introduction to Museology (3) I&S Museum history, philosophy, and basic operations, including organization, income, collection management, conservation, exhibition, security, education, research, and ethics. Offered: jointly with ANTH 480.

MUSEUM 481 Museum Collection Management: Ethnology (3) I&S Lecture and work experience in museum collection management in the ethnology collections of the Burke Memorial Washington State Museum, including identification, cataloging, fumigation, storage, cleaning, inventory, and specimen preparation for exhibition of archival and nonarchival museum specimens from North America, the Pacific, and Pacific Rim areas. Offered: jointly with ANTH 481.

MUSEUM 482 Museum Conservation (3) 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. Offered: jointly with ANTH 482.

MUSEUM 483 Museum Operations Practicum (3, max. 9) Provides students with the opportunity to apply their general museological training in one or more areas of supervised museum operation areas, e.g., registration, education, or exhibition through project-oriented work in the Burke Museum.

MUSEUM 488 Special Topics in Museology (3-5) In-depth examination of selected current issues within the field of museology.

MUSEUM 490 Museum Curation Practicum (1-5, max. 15) Application of museological training in cura-

MUSEUM 491 Museum Curation Practicum: General Collections (1-5, max. 15) The application of museological training in the curation of art, botanical, geological, historic, zoological, or other collections. Work under the supervision of faculty curators ranges from fundamental collection documentation to preventive conservation or storage.

MUSEUM 498 Museum Internship (3-15, 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.

Courses for Graduate Students Only

MUSEUM 590 Seminar in Museum Theory (3) Fundamental theoretical issues involved in current museum administrative and operations work, including administrative structure, organizational conflicts, museum-community relations, and museum educational programming. Prerequisite: permission of instructor. Offered: jointly with ANTH 590.

MUSEUM 591 Seminar in Museum Operations (3) Designing hypothetical museums and creating a first year of operations. Design elements include architectural plan, staffing plan, initial and recurring budgets, security system, records systems, educational plan, and policy making. Recommended: 590. Offered: jointly with ANTH 591.

MUSEUM 592 Seminar in Museum Specimen Documentation (3) Seminar discussion of museum specimen documentation research approaches, including technological and raw material analyses, contextual studies, and esthetic studies. Documentation of a collection and reference work. Recommended: 590 and 591. Offered: jointly with ANTH 592.

MUSEUM 593 Museum Exhibition Seminar (3) Development of critical issues involved in planning, design, preparation, and installation of museum exhibits, including exhibit conservation, visitor-based design factors, ideological aspects of interpretation, and community relations. Readings and examination of exhibits are combined with case study work.

MUSEUM 594 Seminar in Museum Education (3) 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: 480.

MUSEUM 595 Museum Legal and Ethical Issues (3) Survey of legal and ethical issues regarding international and national museum operations, including the control and movement of cultural property, artistic and intellectual rights and copyright, concepts of provenance and issues of repatriation, as well as other relevant policies and regulations.

MUSEUM 600 Independent Study or Research (1-10, max. 10)

MUSEUM 700 Master's Thesis (1-10, max. 10)

MUSEUM 710 Master's Project (1-10, max. 10) Credit/no credit only.

Near and Middle Eastern Studies

General Catalog Web page: www.washington.edu/students/gencat/academic/Near_Middle_East.html

Program Web page: www.grad.washington.edu/inter/nme.htm

Graduate Program Coordinator

34A Communications Building, Box 353770

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; 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 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.

Faculty
Director
Ellis Goldberg

Professors
Bacharach, Jere L. * 1967, (Adjunct); MA, 1962, Harvard University, PhD, 1967, University of Michigan; history of the Near East.
Brame, Michael K. * 1970; PhD, 1970, Massachusetts Institute of Technology; syntax, phonology, structure of Arabic and English, cross-linguistic comparisons, poetics.
Bravmann, Rene A. 1972; MA, 1963, University of Wisconsin, PhD, 1971, Indiana University; African art.
Ciraitas, Ilse D. * 1968; PhD, 1958, University of Hamburg (Germany); Turkic languages and literatures.
Close, Angela E. * 1995; MA, 1974, PhD, 1976, Cambridge University (UK); archaeology; lithic analysis; prehistory of North Africa; human origins.
Heer, Nicholas L. * 1965, (Emeritus); PhD, 1955, Princeton University; Arabic language and literature, Islamic theology and philosophy.
Jaffee, Martin S. * 1987, (Adjunct); PhD, 1980, Brown University; Rabbinic religion and literature in late antiquity.
Kaisse, Ellen * 1976; PhD, 1977, Harvard University; phonology; historical linguistics, ancient and modern Greek/Spanish, syntax-phonology interface.
Karimi-Hakkak, Ahmad * 1985; PhD, 1979, Rutgers University; Persian language and literature; Iranian culture and civilization.
Kartsonis, Anna D. 1983; MA, 1968, PhD, 1982, New York University; Byzantine and medieval art.
Kasaba, Rejat * 1985; PhD, 1985, State University of New York (Binghamton); historical sociology, world systems, social change in the Middle East.
Mackay, Pierre A. * 1966, (Emeritus); PhD, 1964, University of California (Berkeley); Greek literature, post classical and Byzantine Greek literature, numismatics.
Migdal, Joel S. * 1980; MA, 1968, PhD, 1972, Harvard University; state and society in the Third World; Middle East politics.
Murray, James W. * 1973; PhD, 1973, Massachusetts Institute of Technology; marine geochemistry, aquatic chemistry.
Sokoloff, Naomi B. * 1985; PhD, 1980, Princeton University; Hebrew language and literature.
Wenke, Robert J. * 1975; PhD, 1975, University of Michigan; archaeology of Egypt, the Middle East, and quantitative methods.
Williams, Michael A. * 1976; PhD, 1977, Harvard University; early Christianity and religions of antiquity.
Ziadeh, Farhat J. * 1966; (Emeritus); LLB, 1940, University of London (UK); Arabic language and literature, Islamic law, Islamic institutions.
Zumbrunnen, Craig * 1977; PhD, 1973, University of California (Berkeley); resource analysis, Russia and NIS, environment, mathematical programming, urban ecology.

Associate Professors
Deyoung, Terri L. * 1991; PhD, 1988, University of California (Berkeley); Arabic language and literature.
Goldberg, Ellis * 1985; PhD, 1983, University of California (Berkeley); political economy of the Middle East, comparative politics.
Noegel, Scott B. * 1995; PhD, 1994, Cornell University; Ancient Near Eastern languages, literatures, cultures and history.
Schuyler, Philip D. 1999; MA, 1974, PhD, 1979, University of Washington; Near Eastern musics and cultures; contemporary music and art in the United States.
Waugh, Daniel Clarke * 1972; PhD, 1972, Harvard University; medieval Russian history.
Wheeler, Bramson M. * 1996; PhD, 1993, University of Chicago; Islamic studies, comparative religion, late antique, Jewish studies and legal studies.

Assistant Professors
Kuru, Selim Sini 1999; PhD, 2000, Harvard University; Ottoman, Turkish, Language, Literature.
McLaren, Brian 2001; MSc, 1986, Columbia University, PhD, 2001, Massachusetts Institute of Technology; architectural history, theory and design.
Walker, Joel T. 1997, (Adjunct); PhD, 1998, Princeton University; late antiquity, Byzantine, early Middle Ages.

Senior Lecturer
Green, James W. * 1975; PhD, 1972, University of Washington; cross cultural, mental health, comparative aging, religion, West Indies, Pakistan, Islam.
Salehi-Esfahani, Haideh 1990; PhD, 1985, University of Pennsylvania; international economics, economic development.

Neurobiology and Behavior
General Catalog Web page:
www.washington.edu/students/gencat/
academic/Neurobiology_Behavior.html
Program Web page:
dep.ts.washington.edu/behneuro/

Graduate Program
Graduate Program Coordinator
K546 Health Sciences, Box 357750
206-685-1647
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 emphasizing neuroscience research in many departments in both the School of Medicine and the
College of Arts and Sciences, and by establishing the interdisciplinary graduate program in Neurobiology and Behavior. The laboratories of more than 90 faculty members in 15 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 course work 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 a core of knowledge in the neurosciences, (2) quarterly first-year laboratory rotations and rotation talks attended by all students in the program, (3) a biweekly seminar series featuring both visiting and local scientists, (4) a biweekly journal club designed to provide students with an introduction to the subsequent week’s seminar, and (5) a program-wide retreat, combined with a campus-wide poster session where students and postdoctoral candidates can 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

Participating departments are located in the Health Sciences Center and in the College of Arts and Sciences. Because the program is interdisciplinary, 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 full 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.

Faculty

Directors
Thomas Reh
Michael Shadlen

Professors
Anderson, Marjorie E. * 1971; PhD, 1969, University of Washington, physiology of basal ganglia and thalamus; neural control of movement.
Baskin, Denis G. * 1979; PhD, 1969, University of California (Berkeley); neuroendocrinology, obesity; CNS regulation of body weight; histochemistry; expression of receptors.
Beavo, Joseph A. * 1977; PhD, 1970, Vanderbilt University; roles and molecular mechanisms of cyclic nucleotide phosphodiesterase regulation of cell function.
Berger, Albert J. * 1978; MA, 1965, PhD, 1967, Princeton University, PhD, 1976, University of California (San Francisco); neural and chemical control of respiration, neurobiology, synaptic transmission.
Bernstein, Ilene L. * 1974; MA, 1967, California Institute of Technology; molecular and cellular physiology.
Brenowitz, Eliot A. * 1987; PhD, 1982, Cornell University; animal behavior, neuroethology, neuroendocrinology, animal communication.
Buck, Steven L. * 1979; PhD, 1976, University of California (Berkeley); human visual psychophysics, color vision, animal learning.
Byers, Margaret R. * 1972, (Research), PhD, 1969, Harvard University; sensory neurobiology, neurochemistry, and neuropathologic reactions; neurotransmitter interactions.
Carlson, Steven S. * 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology of synaptic transmission.
Catterall, William A. * 1977; PhD, 1972, Johns Hopkins University; molecular biology of ion channels, molecular pharmacology, and neurobiology.
Chavkin, Charles * 1984; PhD, 1982, Stanford University; cell and molecular mechanisms of psychoactive opiate drugs to understand normal and pathological behavior.
Dacey, Dennis M. * 1986; PhD, 1983, University of Chicago; the neural basis of vision and the organization of primate retina.
Detwiler, Peter B. * 1977; PhD, 1970, Georgetown University; physiology of photoreceptors.
Diaz, Jaime * 1978; PhD, 1975, University of California (Los Angeles); psychological brain development, neurophysiology, developmental psychopharmacology, effects of drugs.
Fetz, Eberhard * 1975; PhD, 1966, Johns Hopkins University; oculomotor physiology, vision.
Graubard, Katherine * 1979; PhD, 1973, University of Washington; cellular neurophysiology, neural basis of behavior.
Hendrickson, Anita E. * 1969; PhD, 1964, University of Washington; neuroanatomy, morphology and development of primate visual system.
Hille, Berit * 1968; PhD, 1967, Rockefeller University; receptors and ion channels of excitable membranes; cell signaling, intracellular calcium dynamics.
Hurley, James Bryant * 1985; PhD, 1979, University of Illinois; molecular basis of vision.
Kuhl, Patricia K. * 1976; MA, 1971, University of Minnesota, PhD, 1973, University of Minnesota; speech perception.
Mackie, Kenneth P. * 1987; MD, 1984, Yale University; molecular and cellular biological studies of cannabinoid receptor signaling.
McKnight, G. Stanley * 1979; PhD, 1976, Stanford University; phosphorylation; gene expression and neuroendocrine physiology in mice using genetic approaches.
Moon, Randall T. * 1985; PhD, 1982, University of Washington; embryonic development; signal transduction; cancer biology.
Morrison, Richard S. * 1994; PhD, 1982, University of California (Los Angeles); genetic pathways regulating neuronal cell death in disease and injury.
Nathanson, Neil M. * 1979; PhD, 1975, Brandeis University; neurobiology; molecular analysis of neural signal transmission by muscarinic and neurokinin receptors.
Palczewski, Krzysztof * 1992. (Adjunct); MS, 1980, PhD, 1986, Technical University of Wroclaw (Poland); visual transduction.
Palminter, Richard D. * 1974; PhD, 1968, Stanford University; regulation of gene expression in transgenic mice.
Ransome, Bruce Robert * 1995; PhD, 1972, MD, 1972, Washington University; neurology, neuroscience research.
Reh, Thomas A. * 1989; PhD, 1981, University of Wisconsin; regeneration and development of central nervous system.
Riddiford, Lynn M. * 1973; PhD, 1961, Cornell University; insect development and physiology, invertebrate endocrinology.
Rubel, Edwin W. * 1986; PhD, 1969, Michigan State University; developmental neurobiology, with special
emphasize on vertebrate auditory system development.

Steiner, Robert A. * 1977; PhD, 1975, University of Oregon; neuroendocrinology, neuroscience, endocrinology.

Storm, Daniel R. * 1978; PhD, 1971, University of California (Berkeley); molecular basis of neuroplasticity; cAMP and Ca2+ signal transduction systems in the CNS.

Teller, Davida Y. * 1965; PhD, 1965, University of California (Berkeley); vision, psychophysics, development of vision.

Thomas, James H. * 1988; PhD, 1985, Massachusetts Institute of Technology; genetics of development and the nervous system in nematodes.

Truman, James W. * 1973; PhD, 1970, Harvard University; hormones and invertebrate behavior, insect physiology, circadian rhythms.


Willox, A. O. Dennis * 1969; PhD, 1967, University of Oregon; invertebrate neurophysiology, neural mechanisms underlying behavior.

Wingfield, John C. * 1985; PhD, 1973, University College of North Wales (UK); hormone-behavior interactions; environmental and hormonal control of life history cycles of vertebrate.


Zagotta, William N. * 1993; PhD, 1989, Stanford University; molecular mechanisms of ion channel function.

**Associate Professors**

Cooper, Mark S. * 1990; PhD, 1985, University of California (Berkeley); cellular physiology and cell motility in developing tissues.

Corina, David P. * 1993; PhD, 1991, University of California (San Diego); cognitive neuropsychology, psycholinguistics, computational modeling.

Covey, Ellen * 1996; MS, 1976, University of Houston, PhD, 1980, Duke University; structure and function of the central auditory system.

Dorio, Christopher J. * 1997; MS, 1984, California Institute of Technology; silicon learning chips, neural networks and learning algorithms.

Gingger, Edward Scott * 1973; PhD, 1979, Harvard University; neural development, mechanism of axon guidance, genetic specification of brain structure.

Hicks, Ramona R. * 1999; PhD, 1993, University of Connecticut; brain injury, neural plasticity, cell death and regeneration.

Mizumori, Sheri J. 2000; PhD, 1985, University of California (Berkeley); plasticity of neural and behavioral function during learning and memory.


Olavarria, Jaime F. * 1990; MD, 1974, State University of Chile, PhD, 1984, University of California (Berkeley); neurophysiological and neuroanatomical basis of vision.

Osterhout, Lee E. * 1991; PhD, 1990, Tufts University; psycholinguistics, cognitive psychophysiology.

Raiber, David W. * 1995; PhD, 1989, University of Pennsylvania; zebrarthral neural development.

Robinson, Farrel R. * 1986; PhD, 1982, Brown University; study of the cerebellum via monkey eye movements.

Roelink, Henk * 1996; MSc, 1985, University of Groningen (Netherlands), PhD, 1991, University of Amsterdam (Netherlands); role of signaling molecules in mediating neural tissue differentiation during vertebrate development.

Shadlen, Michael N. * 1995; PhD, 1985, University of California (Berkeley), MD, 1988, Brown University; neurobiology of vision and cognition.

Sherk, Helen * 1982; PhD, 1978, Massachusetts Institute of Technology; neural mechanisms underlying vision, especially visual guidance during locomotion.

Spain, William * 1981; MD, 1977, Columbia University; spine transduction in the central nervous system.

Terman, Gregory W. * 1987; MA, 1981, PhD, 1985, University of California (Los Angeles), MD, 1987, University of Miami (Florida).

**Assistant Professors**

Bajaljeh, Sandra M. * 1995; PhD, 1989, University of Wisconsin; molecular neurobiology.

Bosma, Martha * 1987; PhD, 1986, University of California (Los Angeles); electrophysiological and secretory development of central nervous system neurons.

Cramer, Steven C. 1997; MD, 1988, University of Southern California, MMSc, 1997, Harvard University; stroke, sensorimotor human brain mapping, in healthy and diseased subjects.


Gordon, Sharona E. * 1993; PhD, 1994, Brown University; molecular mechanisms of ion channel gating in vivo and olfactory transduction.

Horner, Philip J. 2001; PhD, 1995, Ohio State University; stem cells and regeneration of the central nervous system.

Jagadeesh, Bharathi * 1999; PhD, 1993, Northwestern University; neural basis of visual learning and memory.


Moeller, Thomas 2000, (Research); PhD, 1996, Freie University of Berlin (Germany); neurophysiology.

Moens, Cecilia B. * 1998; Affiliate); PhD, 1993, University of Toronto; development of segmentation and segment identity in the vertebrate hindbrain.

Muchowski, Paul J. 2001; PhD, 1998, University of Washington; molecular chaperones, neurodegeneration.

O’Donnell, Sean * 1996; PhD, 1993, University of Wisconsin; genotypic and endocrine effects on social organization and division of labor in insects.

Pallanck, Leo J. * 1997; PhD, 1992, Albert Einstein College of Medicine; genetic and molecular analysis of symptomatic transmission in Drosophila melanogaster.

Perkel, David J. 2000; PhD, 1992, University of California (San Francisco); neural mechanisms of learning; focus on vocal learning in songbirds.

Pham, Tony A. 2000; PhD, 1993, MD, 1993, Baylor University; development and plasticity of neural connections in the mammalian forebrain.

Rao, Rajesh P. N. 2000; MS, 1994, PhD, 1998, University of Rochester; neural computing, machine vision and learning, robotics, computational neuroscience.

Rieke, Frederick Martin * 1997; PhD, 1991, University of California (Berkeley); sensory signal processing and computation.

Stella, Nephi * 1999; PhD, 1995, Ecole Polytechnique Federale De Lausanne; microglia cells activation: involvement of endogenous cannabinoid ligands and their allied receptors.

Von Der Emde, Gerhard 2000; PhD, 1997, University of Erlangen (Germany); neurobiology, behavioral science, sensory physiology, sensory-motor integration, electroeception.

Xia, Zhengui * 1987; MS, 1985, Wuhan University (China), PhD, 1991, University of Washington; neuronal apoptosis, neuronal gene regulation.

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsclat/.

**NEUBEH 501 Introduction to Neurobiology (3)**  
Survey of all aspects of neuroscience, including molecular and cellular neurobiology. Lecture and laboratory discussion of original literature, observation of demonstrations, and examination of macroscopic and microscopic neural tissue. Offered: A.

**NEUBEH 502 Introduction to Neurobiology (4)**  
Survey of all aspects of neuroscience, including an introduction to neuroanatomy and modules on sensory and motor systems. Lecture and laboratory discussion of original literature, observation of demonstrations, and examination of macroscopic and microscopic neural tissue. Offered: W.

**NEUBEH 503 Introduction to Neurobiology (4)**  
Survey of all aspects of neuroscience, including a discussion of higher neural processes like learning, memory, and neuroendocrinology. Lecture and laboratory discussion of original literature, observation of demonstrations, and examination of macroscopic and microscopic neural tissue. 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: AWSp.

**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
Students pursuing courses in clinical nutrition work closely with the coordinator of clinical activities and are supervised by teaching assistants. The University of Washington has an extensive research environment. Research facilities in Raitt Hall include modern laboratories, computer facilities, and a vivarium. Students also have access to faculty mentors and research facilities through the Medical Center, the Fred Hutchinson CRC, the Clinical Research Center, and the Clinical Nutrition Research Unit. Additional clinical facilities include Harborview Medical Center, Northwest Kidney Center, Children’s Hospital and Medical Center, Pacific Medical Center, and the Center for Human Development and Disabilities. Among facilities for M.P.H. placements are Seattle King County Health Department. Students may enter the graduate degree program after completing a bachelor’s or a master’s degree in biological sciences. Background in chemistry, biochemistry, and human physiology is especially desirable. Students who wish to supplement their degree program with ADA-approved training leading to R.D. status must complete all didactic requirements before being admitted to the supervised dietetic internship. The internship specialty areas are clinical and community nutrition. Applicants should contact Program Director for detailed admission requirements.

Nutritional Sciences

General Catalog Web page: www.washington.edu/students/gencat/academic/Nutritional_Sc.html

Program Web page: depts.washington.edu/nutr/

Graduate Program Coordinator
305 Raitt, Box 353410
206-543-1730
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 best serves 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 with a community focus. 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. Ideally, M.S. and Ph.D. 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 are an integral part of the M.P.H. curriculum and generally follow required coursework.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

NUTR 300 Nutrition for Today (3) NW Bruemmer 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: W

NUTR 301 Nutrition and Nursing (3) NW Dong Basic principles of nutrition and their relationship to health problems. Normal nutrition needs of individuals at various age levels; environmental influences on nutrition; assessment of nutritional status; nutritional values of foods; dietary modifications as appropriate in the nutritional component of medical treatment. Recommended: CHEM 220; ZOOL 118. Offered: A

NUTR 441 Chemistry of Foods (3) Bruemmer 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: odd years; S

NUTR 445 Food Policy and Food Safety (3-5) Bruemmer Presentation of emerging issues in food safety; food policy, including food and nutrition regulatory and legal issues, labeling; sanitation; biotechnology; and consumer perception of nutritional risk. Lab element examines objectives of management in the delivery of safe food; receiving systems; inventory control, menu planning, and cost control. Recommended: microbiology. Offered: even years; S

NUTR 462 Medical Nutrition Therapy I (2) Bruemmer Intervention strategies, counseling skills, and diet modifications that pertain to chronic disease prevention and management. Co-requisite: NUTR 562

NUTR 463 Medical Nutrition Therapy II (2) Bruemmer 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; co-requisite: NUTR 563. Offered: Sp

NUTR 465 Nutritional Anthropology (3) I&S/NW Shell-Duncan 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) Drenowski, Rosenfeld Independent study and research supervised by a faculty member with appropriate academic interest. Offered: AWPsp.

Courses for Graduate Students Only

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: AWPsp.

NUTR 520 Protein and Carbohydrate Nutrition (4) Kirk, Rosenfeld Metabolic/physiologic concepts related to protein and carbohydrate nutrition. Areas addressed include composition of foods, requirements through the life cycle, quality of protein, vege
tarianism, protein deficiency, carbohydrates of physi
tological importance, low carbohydrate diets, glycemnic response to foods, carbohydrates and dental caries, interactions in carbohydrate and protein metabolism. Prerequisite: biochemistry. Offered: A.

NUTR 521 Lipid Nutrition (4) Kirk, Rosenfeld Normal lipid components of animal fluids and tissues, with review of their metabolism and physiological functions. Effect of diet and the normal development during the life span of these lipid metabolism. Changes of lipids with various types of disease states and means of nutritional modification of these changes. Prerequisite: biochemistry. Offered: W.

NUTR 522 Vitamin and Mineral Nutrition (4) Kirk, Rosenfeld Advanced study of biologically essential minerals and vitamins. To include absorption, transport, function, storage, excretion; imbalance, deficiency and toxicity; dietary sources; role of these nutrients in prevention diseases directly on indirectly (such as cancer, dental caries); role of modern food technology on availability of these nutrients in our food supply. Prerequisite: biochemistry. Offered: Sp.

NUTR 525 Evaluation of Nutritional Status (3) Monsen Dietary, clinical, and biochemical compo
nents in the assessment of nutritional status of individuals and groups. Relationships of nutritional changes to effects of varying levels of nutrient intake. Critical appraisal of nutritional status surveys. Experimental design and dietary methodology. Prerequisite: human nutrition and biochemistry. Offered: odd years; A.

NUTR 526 Maternal and Infant Nutrition (3) Johnson Influence of maternal and infant nutrition on the health of populations. Nutrition-related physiologic, 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 nour
ishment 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 nutrit
ional sciences or permission of instructor. Offered: even years; Sp.

NUTR 528 Nutrition in Aging (3) Drenowski, Monsen Physiological, psychological, social, cultur
al, and economic factors affecting nutrition in the middle and later years. Prerequisite: human nutrition and human physiology. Offered: odd years; Sp.

NUTR 529 Nutrition Research Design (3) Cheney Critical review of selected nutrition literature. Evaluation of experimental design, research protocols, statistical analyses, and application in nutritional sci
ence. Prerequisite: BIOST 511. Offered: even years; AWPsp.

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 indi
vidual care concepts are explored for children with a variety of chronic conditions. Offered: odd years; Sp.

NUTR 531 Community Nutrition (3) Johnson The functions of public health as applied to nutrition: monitoring and assessment, ensuring access to food and a safe food supply, and national nutrition policy. The practice of public health nutrition: the nutrition environment, program planning, implementation, and evaluation. Offered: W.

NUTR 532 Fieldwork in Public Health Nutrition (1-12, max. 12) Johnson 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: AWPsp.

NUTR 536 Nutrition Education Principles and Practice (3) Drenowski Integrated course designed to prepare students of the practical application of nutrition education theories and principles in diverse behavioral change settings for a variety of learner-population groups. Prerequisite: permission of instructor. Offered: even years; Sp.

NUTR 537 Laboratory Rotation (1-4, max. 6) Drenowski, Rosenfeld Exposure to research being conducted in the laboratories of the graduate nutrit
ion faculty. Provides hands-on experience in labora
tory techniques. Introduces the student to on-going research for preparation of dissertation topics. Prerequisite: permission of instructor. Offered: AWPsp.

NUTR 538 Nutritional Epidemiology (3) Beresford, Drenowski Application of epidemiological methods to current studies of diet, nutrition, and chronic dis
eas. A discussion of current issues and contro
versies enables students to plan studies in nutritional epi
demiology and disease prevention. Prerequisite: EPI 511 or EPI 512 and BIOST 511 or permission of instructors. Offered: jointly with EPI 538; A.

NUTR 539 Seminar in Nutrition (1-3, max. 9) Monsen Library seminar and research on selected topics in recent developments in the field of nutrition. Prerequisite: Advanced nutrition.

NUTR 551 Nutrition and Gene Expression (3) Rosenfeld Lectures, student presentations, and dis
cussions of current research on nutrient/gene inter
actions. Focus on how dietary factors act both direct
ly as transcriptional regulators or indirectly as induc
ers of signal transduction cascades leading to alter
ations in expression of proteins associated with cellu
lar nutrient metabolism. Prerequisite: NUTR 520, NUTR 521, NUTR 522, or permission of instructor. Offered: odd years; W.

NUTR 561 Dietetics Internship (10, max. 30) Leader 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 nutri
tion therapy or public health, depending on student’s career goals. Prerequisite: clinical students only. Offered: AWPsp.

NUTR 562 Nutrition and Chronic Disease (4-6) Bruemmer, Drenowski Epidemiology/pathophysiology of chronic disease related to nutrition (e.g., obesity, cardiovascular disease, osteoporosis, hyper
tension, diabetes). Examines nutritional risk/protection factors in relation to public health, individual nutrition, and clinical intervention. Lab focuses on medical nutrition therapy/application of nutrition interventions related to chronic disease prevention/management. Prerequisite: physiology, biochemistry. Offered: W.

NUTR 563 Nutrition in Acute Care (4-6) Bruemmer Assessment of the nutritional demands and hyper
metabolic response of trauma, surgery, organ failure, burns, AIDS, and neoplastic disease. Examines spe
cialized nutritional support and substrate require
ments in the acute care setting. Lab explores med
ical nutrition therapy and application of nutrition inter
ventions related to acute care. Prerequisite: NUTR 562, or permission of instructor. Offered: Sp.

NUTR 564 Management of Nutrition Services (4) Bruemmer, Monsen Policy and administrative issues that impact delivery of nutrition services in health care environments. Topics include organization behavior, productivity, financial environments, clinical manage
ment, and human resources. Offered: S.

NUTR 600 Independent Study or Research (*) Offered: AWPsp.

NUTR 700 Master’s Thesis (*) Offered: AWPsp.

NUTR 800 Doctoral Dissertation (*) Credit/no credit only. Prerequisite: permission of program advisor. Offered: AWPsp.

Quantitative Ecology and Resource Management

General Catalog Web page: www.washington.edu/students/gencat/
academic/Quant_Ecology.html

Program Web page: depts.washington.edu/qerm/

Graduate Program Coordinator 304 Low Hall, Box 352182 206-616-9571 qerm@u.washington.edu

The graduate program offered by the Quantitative Ecology and Resource Management (QERM) interdiscipli
ary group provides a unique opportunity for students to study the application of statistical, mathemati
cal, and decision sciences to a broad array of terrestrial and marine ecology, natural resource manage
ment, and biometrical and mathematical biology problems. The QERM program of study leads to Master of Science and Doctor of Philosophy degrees, and is designed to attract mathematically trained students interested in working on contemporary ecolog
cal or resource-management problems from a quan
titative perspective.

Faculty associated with this interdisciplinary program come from thirteen campus units, including Statistics, Applied Mathematics, Forest Resources, Aquatic and Fishery Sciences, Zoology, Biostatistics, and Marine Affairs. This pool of faculty talent is available to enrich the academic experience of all QERM students.

Degree Requirements

Students entering the QERM program are expected to have either a strong mathematical or biological (ecological) background. Master of Science course-work requirements include two courses in statistical
theory; one course in optimization; one applied statistical methods course; two courses in either applied quantitative ecology or quantitative resource management, a seminar in quantitative ecology, plus approved electives. All master’s degree holders must pass a first-year qualifying statistical theory and ecological modeling examinations, prepare and defend a thesis, take a total of at least 18 graded quarter credits, and satisfy all Graduate School requirements.

Students passing the first-year qualifying examinations at the Ph.D. level are eligible to enter the doctoral program of study. Course requirements equivalent to the master’s program also must be completed. Doctor of Philosophy degree requirements include a minimum of 18 credits of graded course work beyond the master’s; a minimum of 27 credits of dissertation research; and satisfaction of all Graduate School requirements. The 18 credits of course work must be taken from an approved list of courses.

Admission Requirements

Students entering this graduate program are expected to perform well on the quantitative and analytical sections of the Graduate Record Examination. Background in a biological or ecological field is also highly desirable. To enter the Ph.D. program, students must pass the first-year qualifying examination at the Ph.D. level. In addition, all course requirements equivalent to the master’s program must be completed. At least three letters of recommendation and a brief narrative statement of objectives must accompany each application for admission. Applications are accepted only for autumn quarter. The application deadline is February 1.

Financial Aid

Fellowships, teaching assistantships, and research assistantships are available each year. These come from either the Graduate School or one of the campus units contributing faculty to the QERM program. They generally cover the nine-month academic year, although provisions can be made for summer support. Tuition is normally included as part of the financial package. Funding decisions are made yearly, but attempts are made to continue support for students making satisfactory progress.

Faculty

Director
Loveday L. Conquest

Professors
Bare, B. Bruce * 1969; MS, 1965, University of Minnesota, PhD, 1969. Purdue University; forest land management and valuation, taxation, finance, management science.

Bassingthwaighte, James * 1975; MD, 1955, University of Toronto (Canada), PhD, 1964, Mayo Medical School/graduate School; computer analysis of transport mechanisms in blood and tissues.

Briggs, David G. * 1973; PhD, 1980, University of Washington; operations research in forest products industries.

Brown, Gardner * 1965, (Emeritus); PhD, 1964, University of California (Berkeley); resource economics.

Conquest, Loveday L. * 1976; PhD, 1975, University of Washington; statistics in forestry, fisheries, and environmental pollution monitoring.

Ford, E. David * 1985, PhD, 1968, University College, London (UK); quantitative science, ecosystem analysis, forest productivity.

Francis, Robert C. * 1983; PhD, 1970, University of Washington; fisheries management, marine ecosystem dynamics, fisheries oceanography and global climate change.

Gallucci, Vincent * 1976, PhD, 1971, North Carolina State University; stock assessment, fisheries management.

Greulich, Francis E. * 1977; MS, 1967, PhD, 1976, University of California (Berkeley); forest engineering, statistics, operations research.

Guttorp, Peter * 1980; PhD, 1980, University of California (Berkeley); point processes, stochastic models, applications to hydrology, environmental and atmospheric science.

Hilborn, Ray * 1987; PhD, 1974, University of British Columbia (Canada); stock assessment, population dynamics, fisheries policy.

Johnson, Jay A. * 1983; 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.

Sampson, Paul D. * 1981; PhD, 1979, University of Michigan; spatial statistics, environmetrics; morphometrics, multivariate analysis; statistical consulting.

Schreuder, Gerard Fritz * 1971; MS, 1967, University of North Carolina, PhD, 1968, Yale University; statistical analysis in resource economics, international forestry, trade, aerial photos.

Skalski, John R. * 1987; PhD, 1985, Cornell University; population estimation, environmental statistics and sampling, effects assessment.

Swartzman, Gordon Leni * 1973, (Research); PhD, 1969, University of Michigan; ecological modeling, quantitative natural resources management.

Zeh, Judith * 1982; PhD, 1979, University of Washington; estimation of population size and dynamics; robust methods, computing in infectious disease research.

Associate Professors
Anderson, James J. * 1981; PhD, 1977, University of Washington; biomathematics, ecology, fisheries oceanography, toxicology, fish protection at power plants.

Cullen, Alison * 1995; DSc, 1992, Harvard University; environmental policy, environmental health risk assessment, decision analysis, information and uncertainty analysis.

Kot, Mark * 1989; PhD, 1987, University of Arizona; mathematical ecology, nonlinear dynamics, and population biology.

Leschne, Thomas M. * 1983; PhD, 1975, University of Pittsburgh; marine pollution management, ocean policy studies.

Punt, Andre * 2001, (Research); PhD, 1991, University of Cape Town (South Africa); methods for assessing and managing marine renewable resource populations, Bayesian assessment.

Assistant Professors
Horne, John K. * 2000, (Research); PhD, 1995, Memorial University of Newfoundland (Canada); spatial ecology, predator-prey interactions, fisheries acoustics.

Turnblom, Eric * 1994; MSc, 1986, University of British Columbia (Canada), PhD, 1994, University of Minnesota; forest growth modeling, quantitative stand dynamics, biometrics and natural resources inventory.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

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 BIOST 514, BIOST 516, or equivalents, and permission of instructor. Offered W.

QERM 514 Analysis of Ecological and Environmental Data I (4) 
Conquest Factors affecting optimal growth of individuals in their habitat. Estimation of growth and mortality parameters. Response of organisms to changes in environment (bioassay, environmental monitoring). Stochastic modeling, optimization. Research design issues for ecological or environmental studies. Analysis of unwieldy data sets. Prerequisite: calculus and either STAT 341, STAT 342 or STAT 512. Offered: S.

QERM 521 Scientific Method in Resource Management (4) 
Ford Describes process of scientific discovery and strategies used for problems in ecological and natural resources management. Relationships between growth and use of objective knowledge in natural resources management is explored through case studies.

QERM 550 Applied Ecological Modeling (5) 
Ford Methods of applied ecological modeling at individual community and ecosystem levels. Analysis of ecological problems suitable for modeling and assessment of models. Students construct a model of their own. Offered: W.

QERM 551 Modeling Organism Dynamics (3) 
Anderson Application of techniques of stochastic differential equations, time series analysis, and simulating dynamic processes to plant and animal growth.

QERM 552 Spatial Processes in Ecology (3) 
Ford Spatial distribution of organisms, the mechanisms that produce different distributions, and how they may be described mathematically and modeled. Spatial distribution of communities, how this arises, and what its consequences are. Prerequisite: QERM 482, QERM 483, QERM 550.

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 (1, 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 Research Center

19 Johnson

General Catalog Web page: www.washington.edu/students/gencat/academic/Quaternary.html

Program Web page: 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 interdisciplin ary 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 Pleistocene events.
2. To serve as an effective catalyst in fostering interdisciplin ary 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.

Periglacial Laboratory. The laboratory contains cold rooms equipped for manipulating and studying the freezing and thawing of soils, rocks, and building materials. A large, unique tilt table permits the study of soils under controlled conditions of slope, temperature, and moisture. Research stress is placed on frost action in arctic and alpine environments.

Quaternary Palynology and Paleoenvironment Laboratory. These facilities foster studies of the biotic environment through time and of the uses of plant and animal fossils in Quaternary environmental and ecological reconstruction. Studies of vegetational changes are supported by an extensive modern

Faculty

Director
Bernard Hallet

Professors
Atwater, Brian F. * 1986, (Affiliate); MS, 1974, Stanford University, PhD, 1980, University of Delaware; Quaternary geology, earthquake hazards.
Brubaker, Linda B. * 1973, (Adjunct); MS, 1967, PhD, 1973, University of Michigan; dendrochronology, forest ecology, Quaternary paleoecology.
Close, Angela E. * 1995, (Adjunct); MA, 1974, PhD, 1976, Cambridge University (UK); archaeology; lithic analysis; prehistory of North Africa, human origins.
Gillespie, Alan R. * 1985; MS, 1977, PhD, 1982, California Institute of Technology; Quaternary geology, glacial geomorphology, remote sensing.
Grayson, Donald K. * 1975, (Adjunct); PhD, 1973, University of Oregon; North American prehistory, paleoecology, vertebrate faunal analysis, history of archaeology.
Hallet, Bernard * 1980; PhD, 1975, University of California (Los Angeles); glacial and periglacial geomorphology (alpine and Arctic).
Hartmann, Dennis L. * 1977, (Adjunct); PhD, 1975, Princeton University; climate change, dynamic meteorology, radiation and remote sensing.
Heath, G. Ross * 1984, (Adjunct); PhD, 1968, University of California (San Diego); geochemistry and mineralogy of deep-sea sediments.
Montgomery, David R. * 1991, (Adjunct); PhD, 1991, University of California (Berkeley); geomorphology (fluvial and hillslope).
Nitrourer, Charles * 1998, (Adjunct); PhD, 1978, University of Washington; geological oceanography, continental-margin sedimentation.
Porter, Stephen C. * 1962, (Adjunct); MS, 1958, PhD, 1962, Yale University; Quaternary stratigraphy; geochronology, paleoclimatology.
Quay, Paul D. * 1977; PhD, 1977, Columbia University; chemical oceanography, stable isotope geochemistry, ocean tracers and mixing.
Raymond, Charles F. * 1969, (Adjunct); PhD, 1969, California Institute of Technology; glaciology, ice sheet dynamics.
Richey, Jeffrey E. * 1973, (Adjunct); PhD, 1973, University of California (Davis); quantitative problems of aquatic ecosystems, primary Amazon River, limnology.
Shreve, Ronald L. 2000, (Research Adjunct); PhD, 1959, California Institute of Technology; geology, geomorphology, glaciology, geological physics, and geophysics.
Stein, Julie K. * 1980, (Adjunct); MA, 1976, PhD, 1980, University of Minnesota; New World archaeology, Northwest coast archaeology, geochronology, shell middens.
Waddington, Edwin D. * 1984, (Adjunct); MS, 1973, University of Alberta (Canada), PhD, 1981, University of British Columbia (Canada); glacier and ice sheet dynamics, paleoclimatology.

Associate Professors
Anderson, Patricia M. * 1982; MA, 1976, PhD, 1982, Brown University; paleoecology, paleoclimatology, Quaternary environments (Arctic).
Bourgeois, Joanne * 1980, (Adjunct); PhD, 1980, University of Wisconsin; stratigraphy, sedimentology, Quaternary paleoecology.
Eck, Gerald G. * 1974, (Adjunct); PhD, 1977, University of California (Berkeley); primate paleontology, especially African Pliocene-Pleistocene monkeys and hominids.

Assistant Professors
Brown, Tom 1999, (Affiliate); MSc, 1985, Simon Fraser University (Canada), PhD, 1994, University of Washington.
Fitzhugh, J. Ben * 1997, (Adjunct); PhD, 1996, University of Michigan; archaeology, anthropology, evolutionary ecology, complex hunter-gatherers, social evolution, settlement.
Putkonen, Jaakko K. 2001, (Adjunct Research); MS, 1990, Helsinki University (Finland), PhD, 1997, University of Washington; Quaternary geology, frozen ground research, cosmogenic isotope dating.
Sletten, Ronald S. * 1997, (Research Adjunct); MS, 1987, PhD, 1995, University of Washington; soils, environmental chemistry.
Stone, John O. H. * 1998; PhD, 1986, Cambridge University (UK); cosmogenic isotope geochemistry.

Senior Lecturer
Swanson, Terry W. 1988, (Adjunct); MA, 1989, University of California (Davis), PhD, 1994, University of Washington; Quaternary geology, geochronology.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs/cat/.

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.

Courses for Graduate Students Only
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 prob-

lem-oriented case study concurrently under faculty

attends sessions of QUAT 501 and pursues a prob-

lem-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 per-

spective on scale of modern and man-made environ-

mental changes, including those of climate, in con-

text of recent earth history. Credit/no credit only. Prerequisite: background courses in earth sciences and ecology.

Urban Design and Planning

General Catalog Web page: www.washington.edu/students/gencat/ academic/Urban_Design.html

Program Web page: www.grad.washington.edu/inter/ urbdpindex.htm

Graduate Program Coordinator

34A Communications Building, Box 353770

206-543-6398

The Interdisciplinary Group for Urban Design and Planning offers the Doctor of Philosophy degree. 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 the laboratory provided by the Seattle metropolitan region and the Pacific Northwest. The program emphasizes the edu-

cational values of interdisciplinarity, intellectual leader-

ship 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 physi-

cal, social, economic, and natural environment. The program envisions its graduates becoming leaders in the international community of researchers, practi-

tioners and educators who focus on improving the quality of life and environment in metropolitan regions.

The intellectual focus of the Ph.D. program is unique in bringing together interdisciplinary perspectives from the social and natural sciences, humanities, and design and planning disciplines, and applying them to the formation and evaluation of urban and environ-

mental plans and policies. It seeks to explore interac-

tions among built urban form; urban markets for re-

al estate, labor, public services and infrastructure; urban social and political institutions and processes; and urban ecological patterns and processes. Study of these interactions draws on the disciplines of eco-

nomics, geography, history, sociology, political sci-

cence, and ecology, among others. The program of study is divided into three phases.

Phase one—the core curriculum—defines the intel-

lectual foundation of the program. While the program retains considerable flexibility in defining a research agenda within the broad umbrella of urban and envi-

ronmental planning and policy, it provides a common foundation for all students to build upon. The core curriculum consists of required courses and a quali-

fying examination.

Upon passing the qualifying examination, the student forms a supervisory committee to oversee progress through the rest of the academic program. The com-

mittee must consist of at least three faculty members in the interdisciplinary group representing at least two academic departments. Students develop with their supervisory committee a description of their pro-

posed areas of study. These define an area of schol-

arship that must demonstrate an interdisciplinary research approach to an application within urban and environmental planning and policy.

Phase three focuses on original work which is pre-

sented as a dissertation.

Admission Criteria

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. Further, to ensure the highest level of fac-

culty support and proper level of faculty guidance, the program accepts those students whose research interests match areas of specialized faculty compe-

tence. Students are encouraged to identify faculty whose interests coincide with theirs in their statement of purpose.

Applicants typically have a master’s degree in fields ranging from planning and public affairs to natural and social sciences. In some cases, students can be admitted to the program on the condition that certain master’s-level core courses are completed during the first year of study. Students interested in a profession-

dal degree in urban design and planning should apply to the master’s program in Urban Design and Planning (www.caup.washington.edu/html/URBDP) or (cbrooks@u.washington.edu). The application deadline is February 1, for entry into the program

quarter autumn.

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 pro-

gram, and actively engages and energizes faculty to improve the program and to bring research funding to support students.

Faculty

Director

Paul Waddell

Professors

Beyers, William B. * 1962; PhD, 1967, University of Washington; regional science, economic geography, location theory, regional analysis.

Borning, Alan H. * 1980; MS, 1974, PhD, 1979, Stanford University; human-computer interaction; constraint-based languages and systems.

Bradley, Gordon A. * 1972; MLA, 1972, University of California (Berkeley), PhD, 1986, University of
**Associate Professors**

Alberti, Marina * 1996; PhD, 1992, Massachusetts Institute of Technology; environmental planning, urban ecology, impact assessment, geographic information systems.

Blanco, Hilda J. * 1996; MRP, 1984, PhD, 1989, University of California (Berkeley); factors influencing urban sprawl; the implications of cognitive science and evolutionary theory.

Chang, Kuei-Sheng * 1966, (Emeritus); PhD, 1955, University of Michigan; economic geography of China, historical geography of exploration, Third World development.

Dubrow, Gail Lee * 1989; MA, 1979, University of Oregon, PhD, 1991, University of California (Los Angeles); the social history of the built environment; historic preservation; issues of race, class and gender.

Gross, Mark D. * 1999; PhD, 1986, Massachusetts Institute of Technology; design and planning methods, architecture, computational models, human computer interaction.

Hill, Kristina * 1997; MLA, 1990, PhD, 1997, Harvard University; human dimensions of landscape change; urban ecology; urban design; urban hydrology.

Marzluff, John M. * 1997; MS, 1983, PhD, 1987, Northern Arizona University; behavior, ecology, and conservation of birds and mammals.

Prakash, Vikramaditya * 1996; MA, 1989, PhD, 1994, Cornell University; Non-western, Asian, Indian Architecture; cultural and postcolonial studies; LeCorbusier; modernism.

Waddell, Paul A. * 1997; PhD, 1989, University of Texas (Dallas); urban policy, regional planning, growth management, land use, transportation, GIS.

**Assistant Professors**

Bae, Christine * 1996; MRP, 1986, State University of New York (Albany), PhD, 1994, University of Southern California; transportation; environmental planning; land use; planning methodologies.

Do, Yi-Luen Ellen * 1999; MDes, 1991, Harvard University, PhD, 1998, Georgia Institute of Technology; diagramming and freehand sketching, creativity, computer-aided design, cognitive studies.

Kleit, Rachel G. 1999; PhD, 1999, University of North Carolina; urban politics, public housing, urban planning.

Layton, David F. 2001; PhD, 1995, University of Washington; environmental and natural resource policy.

Ryan, Clare * 1997; PhD, 1996, University of Michigan; natural resource policy and administration, environmental conflict management, water policy.

Shankar, Venkataraman * 1999; PhD, 1997, University of Washington; modeling of transportation infrastructure and civil engineering systems.

Withers, Suzanne D. * 1997; PhD, 1992, University of California (Los Angeles); urban housing, residential mobility and migration, longitudinal methods, life-course dynamics.
Bioengineering

309 Harris Hydraulics Laboratory

General Catalog Web page: www.washington.edu/students/gencat/academic/Bioengineering.html

Department Web page: 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 one of the finest 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.

The Department is home to the University of Washington Engineered Biomaterials ERC funded by NSF, the Center for Nanotechnology, the National Simulation Resource, the Resource Facility for Population Kinetics, the Cell Systems Initiative, the Image Computing Systems Laboratory, and the National ESCA and Surface Analysis Center for Nanotechnology, large-scale DNA mapping and sequencing, and the Cell Systems Initiative, the Simulation Resource, the Resource Facility for Nanotechnology, engineered biomaterials and tissue engineering, medical imaging and image-guided therapy, and computational bioengineering.

The Department is home to the University of Washington Engineered Biomaterials ERC funded by NSF, the Center for Nanotechnology, the National Simulation Resource, the Resource Facility for Population Kinetics, the Cell Systems Initiative, the Image Computing Systems Laboratory, and the National ESCA and Surface Analysis Center for Nanotechnology, large-scale DNA mapping and sequencing, and the Cell Systems Initiative, the Simulation Resource, the Resource Facility for Nanotechnology, engineered biomaterials and tissue engineering, medical imaging and image-guided therapy, and computational bioengineering.

Research Facilities

Offices and laboratories are located in the College of Engineering and the School of Medicine. Students have access to the University of Washington Medical Center, Vivarium, Primate Center, Computer Center, and libraries, as well as to all engineering and health sciences departments and facilities. A wide range of technologies and virtually all aspects of biomedical science are available.

Admission Requirements

Applicants for the M.S. or Ph.D. should have a baccalaureate degree in engineering, biological science, or a related field. Preparation for both programs must include ordinary differential equations, linear algebra, instrumentation, signal processing, engineering systems analysis, thermodynamics or physical chemistry, and cellular and molecular biology. Strong students who are missing some of these background courses can be admitted but will be expected to take the appropriate courses as part of their graduate program. Admission to graduate study in bioengineering is highly selective. Successful applicants have strong academic credentials, research experience, and demonstrated potential for advanced study. The application form and further information can be found on the department’s Web page.

Financial Aid

Financial aid 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 Academic Counselor.

Graduate Program

Graduate Program Coordinator
Box 357962
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 will prepare students for careers in academic, industrial, or hospital environments. A thesis is required.

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 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.

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.

Contact the MSTP office at 206-685-0762.

The University of Washington Medical Center, Vivarium, Primate Center, Computer Center, and libraries, as well as all engineering and health sciences departments and facilities. A wide range of technologies and virtually all aspects of biomedical science are available.

Research Facilities

Offices and laboratories are located in the College of Engineering and the School of Medicine. Students have access to the University of Washington Medical Center, Vivarium, Primate Center, Computer Center, and libraries, as well as all engineering and health sciences departments and facilities. A wide range of technologies and virtually all aspects of biomedical science are available.

Admission Requirements

Applicants for the M.S. or Ph.D. should have a baccalaureate degree in engineering, biological science, or a related field. Preparation for both programs must include ordinary differential equations, linear algebra, instrumentation, signal processing, engineering systems analysis, thermodynamics or physical chemistry, and cellular and molecular biology. Strong students who are missing some of these background courses can be admitted but will be expected to take the appropriate courses as part of their graduate program. Admission to graduate study in bioengineering is highly selective. Successful applicants have strong academic credentials, research experience, and demonstrated potential for advanced study. The application form and further information can be found on the department’s Web page.

Financial Aid

Financial aid 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 Academic Counselor.

Faculty

Chair
Yongmin Kim

Professors

Afromowitz, Martin * 1975, (Adjunct); MS, 1966, PhD, 1969, Columbia University; microtechnology, solid-state and fiber-optics sensors, biomedical instrumentation.

Auth, David C. * 1969, (Affiliate); PhD, 1969, Georgetown University; lasers and electro-optical system design, electrophysics, medical instrumentation.

Bangey, Francois * 1992, (Adjunct); PhD, 1991, University of Texas (Austin); biotechnology, protein technology, biochemical engineering.

Bashein, Gerard * 1974, (Adjunct); PhD, 1969, Carnegie Mellon University, MD, 1974, University of New Mexico; automation techniques in anesthesia, transesophageal ultrasound cardiac assessment.

Bassingthwaighte, James * 1975; MD, 1955, University of Toronto (Canada), PhD, 1964, Mayo Medical School/graduate School; computer analysis of transport mechanisms in blood and tissues.

Beach, Kirk Watson * 1976, (Adjunct Research); MSCE, 1968, PhD, 1971, University of California (Berkeley), MD, 1976, University of Washington; arterial disease in diabetes, blood flow studies with ultrasound Doppler.

Burke, James V. * 1985, (Adjunct); PhD, 1983, University of Illinois; optimization, nonsmooth analysis.

Caldwell, James H. 1983, (Adjunct); MD, 1970, University of Missouri; positron emission tomography imaging of myocardial oxygenation, metabolism and sympathetic function.

Callis, James B. * 1973, (Adjunct); PhD, 1970, University of Washington; instrumentation development, process analytical chemistry, non-invasive clinical chemistry.

Conley, Kevin E. * 1988, (Adjunct); PhD, 1983, University of Wisconsin; muscle metabolism and energetics in vivo.

Crum, Lawrence A. * 1992; PhD, 1967, Ohio University; physical acoustics, underwater acoustics, medical ultrasound, acoustic cavitation, sonoluminescence.

Dager, Stephen R. * 1979, (Adjunct); MD, 1978, University of Nebraska; application of functional brain imaging techniques to investigate neuropsychiatric disorders.

Feijen, Jan 1990, (Affiliate); PhD, 1970, University of Groningen (Netherlands).

Foster, David M. * 1980, (Research Emeritus); PhD, 1969, University of British Columbia (Canada).

Guy, Arthur W. * 1955, (Emeritus); PhD, 1966, University of Washington; biological effects and medical applications of electromagnetic fields.

Hannahford, Blake * 1989, (Adjunct); MS, 1982, PhD, 1985, University of California (Berkeley); haptic interfaces, robotics, biomechanics, bioengineering, controls, human-machine interaction.

Haynor, David R. * 1979, (Adjunct); PhD, 1971, University of California (Berkeley), MD, 1979, Harvard University; medical image processing and segmentation, image deformation, functional MRI; expression arrays.

Hlaštová, Michael P. * 1972, (Adjunct); PhD, 1969, State University of New York (Buffalo); respiratory physiology, inert gas analysis of respiratory function.

Hoffman, Allan S. * 1970; DSc, 1957, Massachusetts Institute of Technology; synthesis, characterization, and biological interaction of biomaterials, mechanics of natural tissue.

Hol, Wilhelmus G. J. * 1992, (Adjunct); PhD, 1971, University of Groningen (Netherlands); protein crystallography, drug design, vaccine development, and protein engineering.

Hood, Leroy E. * 1992, (Affiliate); PhD, 1968, California Institute of Technology; molecular immunology, large-scale DNA mapping and sequencing, molecular evolution.

Horbett, Thomas A. * 1973; PhD, 1970, University of Washington; interfacial proteins, cell interactions, foreign body reaction, nonfoiling surfaces.
Huntsman, Lee L. * 1968; PhD, 1968, University of Pennsylvania; mechanics of heart and heart muscle, cardiovascular system assessment, new measurement techniques.

Kim, Yongmin * 1982; MS, 1979, PhD, 1982, University of Wisconsin; computer architecture, imaging systems, medical imaging, computer graphics, multimedia.

Lai, Henry C. 1981, (Research); PhD, 1978, University of Washington; cellular effects of electromagnetic fields.

Lidstrom, Mary E. * 1995, (Adjunct); MS, 1975, PhD, 1977, University of Wisconsin; biomolecular engineering, metabolic engineering, bioremediation.

Matsen, Frederick A., III * 1973, (Adjunct); MD, 1968, Baylor University; orthopaedics, bone and joint research, robotics.

Meldrum, Deirdre R. * 1992, (Adjunct); MS, 1985, Rensselaer Polytechnic Institute, PhD, 1993, Stanford University; laboratory automation systems, genome analysis, modeling and control of dynamic systems, robots.

Pollack, Gerald H. * 1968; PhD, 1968, University of Pennsylvania; muscular contraction.

Rainier, Buddy D. * 1972; PhD, 1972, Polytechnic Institute of Brooklyn; synthesis and characterization of polymeric biomaterials.

Richards, Todd L. * 1985, (Adjunct); PhD, 1984, University of California (Berkeley); nuclear magnetic resonance imaging, spectroscopy of the brain in demyelinating diseases.

Schurr, J. Michael * 1966, (Adjunct); PhD, 1965, University of California (Berkeley); physical chemistry of DNA and other biopolymers, photon correlation techniques.

Schwartz, Stephen Mark * 1974, (Adjunct); MD, 1967, Boston University, PhD, 1973, University of Washington; vascular biology, atherosclerosis, molecular basis of lineage, developmental biology, cell kinetics.

Soma, Mani * 1982, (Adjunct); MS, 1977, PhD, 1980, Stanford University; computer-aided design, device modeling, I.C. technology and design, bioengineering.

Spelman, Francis A. * 1961, (Emeritus); PhD, 1975, University of Washington; biophysics of implanted cochleae, bioinstrumentation for primate research.

Stayton, Patrick S. * 1992; PhD, 1989, University of Illinois; engineering proteins for biotechnology, biomaterials, and biomedical therapies/diagnostics.

Stewart, Brent K. * 1993, (Adjunct); PhD, 1988, University of California (Los Angeles); biomedical physics, biomedical image processing, medical imaging, medical information systems, robots.

Trask, Barbara J. * 1992, (Adjunct); PhD, 1985, University of Leiden (Netherlands); in situ hybridization, analytical cytogenetics, analysis of large-scale DNA polymorphism.

Verdugo, Pedro * 1974; MD, 1965, State University of Chile; microstructure and materials science, polymer gel physics, laser spectroscopy, cell biology.

Viney, Christopher * 1987, (Affiliate); PhD, 1983, Cambridge University (UK); phase transformations and microstructure/property relationships in polymers and liquid crystals.

Yager, Paul * 1987; PhD, 1980, University of Oregon; physical chemistry, biophysics of biomembranes, biosensors, microfluidics.

Yuan, Chun 1991, (Adjunct); PhD, 1988, University of Utah; magnetic resonance imaging in medical application.

**Associate Professors**

Baker, David * 1993, (Adjunct); PhD, 1989, University of California (Berkeley); protein folding, genomics.

Barrett, P. Hugh R. * 1988, (Affiliate); PhD, 1989, University of Adelaide (Australia); biocomputational modeling, and modeling methodology, simulation analyses, lipid and lipoprotein metabolism.

Bonadio, Jeffrey 2000; MD, 1979, Medical College of Wisconsin.

Burns, David H. 1984, (Affiliate); PhD, 1984, University of Washington.

Castner, David G. * 1986, (Research); PhD, 1979, University of California (Berkeley); polymer surfaces, metal-organic interfaces, catalytic materials.

Ching, Randal Preston * 1992, (Adjunct); PhD, 1992, University of Washington; orthopaedic biomechanics related to injury prevention, injury mechanisms and injury repair.

Giacchelli, Cecilia * 1982; PhD, 1987, University of Washington; adhesion molecules and vascular biology processes.

Gross, Ted S. 2000, (Adjunct); PhD, 1993, State University of New York (Stony Brook); biomechanics.

Kalet, Ira J. * 1980, (Adjunct); PhD, 1968, Princeton University; computer simulation of radiation therapy, artificial intelligence, computer graphics.

Kunzelman, Karyn S. * 1991, (Affiliate); PhD, 1991, University of Texas (Dallas); biomedical engineering - cardiac; anatomy and physiology.

Linker, David T. 1993, (Adjunct); MD, 1976, Stanford University; diagnostic ultrasound in cardiology and cardiovascular pathophysiology.

Martyn, Donald A. * 1978; PhD, 1975, University of Southern California; basic mechanisms of contractile regulation in skeletal and cardiac muscle.


Nelson, Alan C. * 1986, (Affiliate); PhD, 1980, University of California (Berkeley); biomedical imaging using image analysis for tissue and tumor studies.

Nickerson, Deborah A. * 1992; (Adjunct); PhD, 1978, University of Tennessee; automating the analysis of single nucleotide polymorphisms, human genetics, DNA diagnostics.

Sanders, Joan Elizabeth * 1985; PhD, 1991, University of Washington; soft tissue biomechanics and tissue adaptation to mechanical stress.

Vogel, Viola * 1990; Doct, 1987, Johann Wolfgang Goethe University (Germany); molecular assemblies and Langmuir-Blodgett films, liquid interfaces, non-linear optics, microscopy.

**Assistant Professors**


Ching, Randal Preston * 1992, (Adjunct); PhD, 1992, University of Washington; vascular biology, atherosclerosis.

Kim, 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.


Li, Xingde 2001; PhD, 1998, University of Pennsylvania.

Qian, Hong 1997, (Adjunct); PhD, 1989, Washington University; mathematical, physical chemistry and biology, statistical physics, stochastic mathematics.

Regnier, Michael * 1995, (Research); PhD, 1991, University of Southern California; mechanics, kinetics and computational modeling of cardiac/skeletal muscle contraction.

Schenkman, Kenneth A. 1990, (Adjunct); MD, 1986, Indiana University; pediatric anesthesia.

Singh, Narenda Pal 1993, (Research); MBBS, 1972, King George's Medical College (India).

Vahey, Shahram * 1983, (Research); PhD, 1991, University of Washington; therapeutic ultrasound, image-guided therapy, three dimensional visualization and computation.

Vinci, Paolo 1996; PhD, 1996, Polytechnic of Milan (Italy).

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

**BIOEN 420 Medical Imaging** (4) Kim, 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 436 Medical Instrumentation** (4) Introduction to 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 juniors, seniors, and first-year graduate students who are preparing for careers in bioengineering, both research and industrial. Offered: jointly with E E 436; Sp.

**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 457 Advanced Molecular Bioengineering** (4) Stayton Fundamentals of molecular recognition: thermodynamics, forces, kinetics. Manipulation of recognition processes for current molecular bioengi-
neering research and development. Fundamental physical chemistry of molecular recognition in the context of biomedicine. Therapeutics based on cells. Prerequisite: BIOEN 357; BIO 405. Offered: Sp.

BIOEN 467 Biochemical Engineering (3) Baneyx Application of biochemical 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 bioreactors 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; W.

BIOEN 470 Systems Engineering and Electronic Medicine (4) Kim Provides students with understanding and hands-on experience in systems engineering, healthcare information systems, and core technologies for electronic medicine, including how large-scale engineering systems are defined, architected, built, and tested. Focus is on current and future medical systems. Prerequisite: BIOEN 303; MAT 308. Offered: W.

BIOEN 480 Bioengineering Research/Capstone Design (2-6, max. 12) Students formulate a problem, develop a detailed experimental or design plan, and report results of their work in written and oral form. Prerequisite: BIOEN303, BIOEN 357. Offered: AWSP.

BIOEN 485 Computational Bioengineering (4) 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 genetics and systems. Prerequisite: CSE 143; BIOEN 305; MAT 308. Offered: W.

BIOEN 490 Engineering Materials for Biomedical Applications (3) Bonadio, 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, and bioseparations. Offered: jointly with CHEM E 490; Sp.

BIOEN 491 Controlled-Release Systems: Principles and Applications (3) Hoffman 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; even years; W.

BIOEN 492 Surface Analysis (3) Ratner Understanding of solid surfaces for research and development in microelectronics, catalysis, adhesion, biomaterials, surface 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; W.

BIOEN 499 Special Projects (2-6, max. 6) Individual undergraduate bioengineering projects under the supervision of an instructor. In addition, classes on selected topics of current interests as announced. Offered: AWSPs.

Courses for Graduates Only

BIOEN 510- Bioengineering Seminars (3) Topics of current bioengineering interests presented by resident and visiting faculty members and students. Graduate students actively involved in bioengineering research are eligible to enroll for credit and can be expected to attend regularly, participate in discussions, and make presentations. Offered: A.

BIOEN 511 Biomaterials Seminar (1) Hoffman, Horbett, Ratner Presentation of student research results in the areas of biomedical implants and tissue substitutes. Offered: jointly with CHEM E 511; AWSp.

BIOEN 520 Orthopedic Biomechanics (4) Ching Mechanical engineering applied to musculoskeletal systems with emphasis on techniques in orthopedic surgery. Measurement of mechanical properties of tissues. Mechanics of bone, soft tissue, and muscle. Analysis of upper extremity, spine, and lower extremity. Engineering in surgery, gait analysis, joint replacement, fracture fixation. Prerequisite: M E 556 and M E 557 or permission of instructor. Offered: odd years; W.

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-tracer models, pharmacokinetics, pharmacodynamics. Models to test hypotheses. Hands-on computer experience. Prerequisite: Ordinary differential equations, introduc- tory statistics, or permission of instructor. Offered: even years; A.

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. Offered: even years; A.

BIOEN 545 Fractals in Biology and Medicine (3) Bassingthwaighte Introduction to fractal and chaos. Conceptual approaches to using fractals for characterizing structures and growth processes; describing heterogeneities, and evaluating properties of tissues. The behavior of non-linear systems, often chaotic, describes physiological homeodynamics, regulation without set points in feedback control.

BIOEN 550 Mass Transport and Exchange in Biological Systems (3) Bassingthwaighte Review of basic mechanisms of transport; transport through vascular system and blood-tissue exchange process- es in organs; integrated system analysis of closed systems and applications to physiological regulation, medical imaging, and pharmacokinetics. Prerequisite: calculus, introduction to differential equations, computer programming. Network analysis or systems analysis, chemical engineering transport. Offered: Sp.

BIOEN 555 Introduction to Biomechanics (3) Pollack Mechanical properties of biological tissues, with emphasis on the underlying histological bases. Bones, joints, cartilage, blood vessels, connective tissue, muscle, heart. Many laboratory sessions. Offered: odd years; W.

BIOEN 560 Ultrasound in Bioengineering (4) Vaezy Fundamentals of ultrasonic generation, formation, reception, and treatment of absorption, scattering, and transmission. Conventional and new methodolo- gies. (A, B, T-M mode, imaging, Doppler, tissue character- istics, and non-linear effects.) Prerequisite: E E M 525 for nonbioengineering students or permission of instructor. Offered: odd years; Sp.

BIOEN 561 Biomedical Optics (4) Advanced theo- ries of optical and spectroscopic measurement with emphasis on biomedical laser applications. Laser principles, instrumentation, and current practice in various biomedical uses including such areas as medicine, surgery, and biology. Prerequisite: BIOEN 302 or equivalent, or permission of instructor. Offered: even years; Sp.

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; odd years; W.

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; Sp.


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 circum- stances sensors can be useful, and the applicability of sensors to biomedical sensing. Prerequisite: BIOEN 436 or permission of instructor. Offered: odd years; A.

BIOEN 575 Molecular Modeling Methods (4) Beard Introduction to theory and practice of computer sim- ulation studies of molecules with emphasis on appli- cations to biological molecules and complexes. Discussion of background theory, implementation details, capabilities and practical limitations of these methods. Prerequisite: previous coursework in bio- chemistry and physical chemistry or permission of instructor. Offered: jointly with CHEM 575; A.

BIOEN 576 Laboratory Techniques in Protein Engineering (4) Stayton Practical introduction to fun- damentals of recombinant DNA technology and pro- tein engineering. Gene design, bacterial molecular biology, genetic engineering strategy. Laboratory project focused on making site-directed protein muta- tions. Techniques include the Polymerase Chain Reaction, DNA sequencing, DNA cutting/splicing, protein expression. Prerequisite: background in bio- chemistry or molecular biology or consent of instruc- tor. Offered: W.

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 adsorp- tion, mammalian cell adhesion, and cell receptor biol- ogy, and of methods used to study these phenomena. Surface properties of materials discussed in con- text of the course. Prerequisite: permission of instruc- tor. Offered: even years; A.

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
Program on the Environment

Course Descriptions

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ENVIR 415 Sustainability and Design for Environment (3) Cooper Analysis and design of technology systems within the context of the environment, management, 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/ME 415; S.

ENVIR 429 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.

ENVIR 450 Special Topics in Environmental Studies (1-5, max. 15) Format may range from seminars or research project. May be taken in a single quarter or distributed over two or three quarters of the student’s final year. Recommended: ENVIR 490 and 15 credits. Offered: jointly with FISH 491.

ENVIR 460 Institutionalizing Sustainable Ecological Practices. (3) I&S/NW Lee The purpose of this course is to introduce how sustainable resource practices are put into practice. Case studies of successful institutional sustainable resource practices are presented, including curb-side and biosolids recycling, ecological restoration, bioenergy, and sustainable wood production. Offered: jointly with CHEM 550.

ENVIR 470 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 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 477 Marine Conservation (3) NW Parrish Theoretically 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. Offered: jointly with BIOL 477.

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 490 Capstone Experience I (1) Preparation for ENVIR 491. Students attend presentations and critiques given by students who are taking or have completed 492 and will make arrangements for their own capstone experience (internship, group or individual project). Credit/no credit only. Recommended: 15 credits of ENVIR 201/202/203. Offered: A/WSp.

ENVIR 491 Capstone Experience II (2-8, max. 8) Internship, group project, or individualized project in Environmental Studies. May be taken in a single quarter or distributed over two or three quarters of the student’s final year. Recommended: ENVIR 490 and 15 credits ENVIR 201/202/203. Credit/no credit only. Offered: A/WSp.

ENVIR 492 Capstone Experience III (2) Critique and discussion of projects undertaken in 491. May be taken concurrently with the final quarter of 491. Credit/no credit only. Prerequisite: ENVIR 491. Offered: A/WSp.

ENVIR 498 Independent Study (1-3, max. 5) Independent reading and/or research. Limited to majors and minors in Environmental Studies.

Courses for Graduates Only

ENVIR 500 Graduate Seminar in Environmental Studies (1-5, max. 15) Exploration of multidisciplinary themes in environmental studies. Topics vary.

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 PHY 535/PHY 501/ZOOL 525.
Quantitative Science

Course Descriptions

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Q SCI 456 Introduction to Quantitative Fishery Science (5) NW Conveys fundamental concepts of fish population dynamics and fishery management within context of real-world fisheries problems. Lectures discuss notation, terminology, mathematical models, fisheries principles, and case studies. Laboratory time devoted to practical applications, problems. Recommended: either MATH 125, MATH 135, or Q SCI 292; Q SCI 381. Offered: jointly with FISH 456; A.

Q SCI 457 Methods of Abundance Estimation (4) NW Methods of estimating fish abundance by direct sampling and indirectly from tagging, catch, and effort analysis. Confidence limits and bias adjustments. Design of marine fishery surveys using statistical sampling principles. Laboratory work with real fishery data and data collected during trawl sampling surveys. Recommended: Q SCI 292; Q SCI 381; Q SCI 456 or FISH 456. Offered: jointly with FISH 457.

Q SCI 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, 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 477 Quantitative Wildlife Assessment (5) NW Skalski Focuses on wildlife sampling techniques for estimating animal abundance, home range, and survival rates in terrestrial populations. The design of wildlife investigations for the purposes of impact assessment, research, and resource management is integrated with estimation schemes and demographic models in a quantitative framework. Prerequisite: Q SCI 292; Q SCI 482.

Q SCI 480 Sampling Theory for Biologists (3) NW Galluccio; Lustig 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 populations, sampling distributions, estimation of parameters and statistical treatment of data. Prerequisite: Q SCI 482; recommendedor: Q SCI 483. Offered: jointly with STAT 480; even years.

Q SCI 482 Statistical Inference in Applied Research (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: AWS.

Q SCI 483 Statistical Inference in Applied Research (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 Q SCI 381 or Q SCI 482. Offered: WSp.

Q SCI 486 Experimental Design (3) NW Topics in analysis of variance and experimental design: 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.

Q SCI 499 Undergraduate Research (1-5, max. 5) 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.

University Joint Courses

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

Each of the following courses is administered by two or more schools or colleges within the University. No degree program is offered.

UCONJ 411 Psychology of Aging (3) Kyjak 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 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, gender and ethnic factors that influence the elderly in contemporary society; the effects of ethnic and sex differences in sociocultural aging. Open to upper-division undergraduate and beginning graduate students interested in gerontology.

UCONJ 443 Interdisciplinary Seminar on Aging (1-6, max. 15) Borgata Interdisciplinary examination of the contemporary theoretical literature on gerontology and long-term care. For upper-division 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 a collaborative interdisciplinary group within the 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 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 drawing from functional roles as well as health sciences, social work schools. Credit/no credit only.

Courses for Graduates Only

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. Seminar emphasizes interprofessional collaborative practice, interpersonal understanding, interpersonal group process skills, organizational savvy, community awareness, and sociocultural sensitivity. Graduate School of Public Affairs. Offered: AWSp.

UCONJ 501 International Health (1) Hunt 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 502 International Health (1) Hunt 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 503 International Health (1) Hunt 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 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 513 Dynamics of Patient Management: Diabetes Mellitus II (2) Analysis of advanced knowledge and skills required in interdisciplinary management of diabetic patients. 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 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)** Rabie, Reh, Roelink, Rubel
Survey of contemporary issues in developmental neurobiology, including neurogenesis and differentiation; electrophysiological, morphological, and biochemical 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 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 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.
School of Law

Dean
Roland L. Hjorth
326 Condon

Associate Dean
Richard O. Kummert
306 Condon

Assistant Deans
Michael Kingan
412 Condon
Paula Littlewood
414 Condon
Sandra E. Madrid
338 Condon

General Catalog Web page:
www.washington.edu/students/gencat/academic/School_Law.html

School Web page:
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 is housed in Condon Hall, adjacent to the University’s main campus. It is equipped with classroom, library, lounge, and office facilities. The Marian Gould Gallagher Law Library is one of the finest law libraries in the country. Its collection, among the largest university law collections on the West Coast, 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. Law graduate programs and serves as a federal depository for selected United States government documents. An experienced audiovisual staff directs the use of video equipment in the trial advocacy and moot court programs.

Student Aid (FAFSA) by February 28. FAFSAs are processed with classroom, library, lounge, and office facilities. The Marian Gould Gallagher Law Library is one of the finest law libraries in the country. Its collection, among the largest university law collections on the West Coast, 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. Law graduate programs and serves as a federal depository for selected United States government documents. An experienced audiovisual staff directs the use of video equipment in the trial advocacy and moot court programs. 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.

The 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.

Admission

New students may enter the School of Law only in the fall entrance for first-year students a few days earlier than the time set for upper-class students. Beginning students must have completed 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, 633 W. Adams St., Chicago, IL 60661-2566. LSDAS reports are sent to 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 to this school 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 has been a 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 1.

Applications are considered only if vacancies exist. Selection of the applicants 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 laws 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, 1154 S. Schilling, Philadelphia, PA 19104, or by visiting the website of the University of Pennsylvania. Applicants for financial aid 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 with regard to certain awards. Inquiries concerning School of Law aid should be addressed to Financial Aid Coordinator, School of Law, Condon Hall, Box 354600, University of Washington, Seattle, WA 98195-4600; uwlawaid@u.washington.edu.

Inquiries

A more detailed statement on admission policy and application procedure is available in the School of Law. Requests for application materials and the University law school bulletin should be addressed to Law School Admissions, Condon Hall, Box 354600, University of Washington, Seattle, WA 98195-4617; admissions@law.washington.edu; 206-543-4078.

Graduate Program Coordinator
721 Condon, Box 354600
206-543-4937
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 law and marine affairs, Asian and comparative law, the law of sustainable international development, and taxation. The School of Law offers the Doctor of Philosophy (Ph.D.) degree in Asian and comparative law only. The requirements for each program are as follows:

Asian Law Program

The Master of Laws degree program in Asian and comparative law is designed for students with career and research interests in one or more of the legal systems of East Asia, with particular emphasis on that of Japan, as well as for lawyers from East Asia seeking advanced comparative study of American law. The Asian law program is structured around extensive course offerings involving comparative study of basic areas of United States and East Asian law and tutorials in areas of special interest to each student.

Admission to the LL.M. degree program in Asian and comparative law is limited to language-qualified applicants who have received the first degree in law and who have a record of superior academic achievement. Graduates of American law schools must have a degree from an ABA-accredited institution. The applicant must be competent in an East Asian language (or, in the case of foreign students, in English). Students without the required competence may be admitted to the program, but must successfully complete an approved program of intensive study of an East Asian language before beginning their studies. The program contemplates one year in residence, at least 36 credits, and an acceptable major research undertaking.

Admission to the Ph.D. program in law is limited to exceptional scholar-lawyers who are fluent in English and in either Japanese, Chinese, or Korean. Prospective Ph.D. students must normally complete the LL.M. program before being accepted as Ph.D. students. The core of the program is a major creative research project using Asian-language sources as well as English-language sources. At least two, and usually three, years in residence are necessary in order to accomplish the work that must be done in order to pass the General Examination that precedes candidacy for the doctoral degree. An acceptable dissertation must thereafter be submitted to complete the requirements for the degree. The Candidate
may spend a year abroad while working on the dissertation but must be in residence during the quarter in which the degree is to be conferred.

**Law and Marine Affairs Emphasis**

Students who have acquired a first degree in law can become prospective candidates for the LL.M. degree in law and marine affairs. Graduates of American law schools must have a degree from an ABA-accredited school. Particular emphasis is placed on interdisciplinary aspects of marine affairs and coastal zone management. Attainment of the LL.M. degree with specialization in law and marine affairs requires satisfactory completion of 40 credits of course and research work, at least 15 of which must be in the School of Law. In the School of Law, courses include U.S. Coastal and Ocean Law, International Law of the Sea, Marine Law and Policy, and Admiralty and Maritime Law. Pertinent courses are also offered in the Schools of Aquatic and Fishery Sciences, Marine Affairs, and Oceanography, the Graduate School of Public Affairs, the College of Engineering, and the Departments of Economics and Geography.

**Law of Sustainable International Development Emphasis**

Students may earn an LL.M. degree in the law of sustainable international development. This LL.M. degree option is open to students with a first degree in law. Graduates of American law schools must have a degree from an ABA-accredited school. Emphasis is placed on the interdisciplinary study of sustainable international development, and students may earn more than half their credits in courses outside the School of Law, including courses offered by the Schools of International Studies and Public Health, and the Departments of Economics, Political Science, and Sociology. In the School of Law, courses offered include Legal Problems of Economic Development (required); International Environmental Law (required); Public Land Law; International Commercial Law; and Land, American Culture, and the Law. Attainment of the LL.M. degree with specialization in the law of sustainable international development requires satisfactory completion of 40 credits of course and research work, at least 15 of which must be in the School of Law, and the taking of courses in at least three of the departments other than law. As part of their work, students must write one substantial paper.

**Taxation**

Students may earn an LL.M. degree in taxation. This LL.M. degree option is open to students with a first degree in law. Graduates of American law schools must have a degree from an ABA-accredited school. International students must have a first degree in law or equivalent and may be admitted by the permission of the director. A candidate for the LL.M. degree must successfully complete 36 quarter hours of course work. Students who qualify may be enrolled either on a full-time or a part-time basis. Full-time students may complete the course of study within one nine-month academic year, while those participating on a part-time basis are allowed six academic years to complete the degree. Generally all courses must be taken from the Graduate Tax curriculum, although candidates for the LL.M. may, with the permission of the director, take up to 6 credits of course work in the School’s J.D. curriculum. Certain core courses are required: Federal Tax Controversies and Procedure, Taxation of Corporations and Shareholders, Tax Accounting, Property Dispositions and Transactions, and Taxation of Partners and Partnerships. The remainder of the curriculum is elective.

**Financial Aid**

Scholarship funds for graduate students in law are quite limited. Inquiries should be made to Law School Graduate Admissions, Condon Hall, Box 354600, 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, Condon Hall, Box 354600, University of Washington, Seattle, WA 98195; gradlaw@u.washington.edu.

Requests for applications and program brochures for the LL.M. in taxation should be addressed to Gloria Strickland, Law School Graduate Tax Admissions, Condon Hall, Box 354600, University of Washington, Seattle, WA 98195; gradlaw@u.washington.edu.

**Faculty**

**Professors**


Andersen, William * 1964; LLB, 1956, University of Colorado (Denver), LLM, 1958, Yale University; administrative law, regulated industries, urban government.


aronson, Robert H. * 1975; JD, 1973, University of Pennsylvania; evidence, criminal law, professional responsibility, law and literature.

clarke, Donald C. * 1988; JD, 1987, Harvard University; China, modern Chinese law, corporations and business associations, international trade law.

Emory, Meade 1995; LLB, 1958, George Washington University, LLM, 1962, Boston University; federal taxation.

Fitzpatrick, Joan M. * 1983; JD, 1975, Harvard University; international human rights and civil rights, federal courts, contracts.

Fletcher, Robert L. * 1956, (Emeritus); LLB, 1947, Stanford University; property.

Hardisty, James * 1970; LLB, 1966, Harvard University; criminal law, psychiatry and law, juvenile courts, torts.

Hazelton, Penny A. * 1985; JD, 1975, Lewis And Clark College, MLL, 1976, University of Washington; law librarianship, legal bibliography, computer-assisted legal research, law, Indian law.

Hershman, Marc * 1976, (Adjunct); JD, 1967, Temple University, LLM, 1970, University of Miami (Florida); coastal zone management law.

Hicks, Gregory A. 1984; JD, 1978, University of Texas (Austin); property, environmental law, water law, public lands.

Hjorth, Roland L. * 1964; LLB, 1961, New York University; transnational tax, Common Market, federal taxation.

Hume, Linda S. * 1972; JD, 1970, University of California (Los Angeles); commercial transactions, property, equal rights.


Jay, Stewart M. * 1980; JD, 1976, Harvard University; constitutional law, legal history, legal philosophy, federal courts.


Junker, John M. * 1964; JD, 1962, University of Chicago; criminal law and procedure.

Knight, W. H., Jr. 2001; JD, 1979, Columbia University.

Kummert, Richard O. * 1964; MBA, 1955, Northwestern University, LLB, 1961, Stanford University; business planning; corporations, federal tax.

Kusztler, Patricia Carol * 1994; MD, 1978, Mayo Medical School/graduated School, JD, 1991, Yale University; law and medicine; health-care finance and regulation, medical malpractice, biotechnology and law.

Loftus, Elizabeth F. * 1973, (Adjunct); PhD, 1970, Stanford University; cognition, memory, eye-witness testimony, psychology and law.

McCann, Michael W. * 1982, (Adjunct); MA, 1976, PhD, 1983, University of California (Berkeley); American government and politics, public law, political theory.

Morris, Arval * 1955, (Emeritus); JD, 1955, University of Colorado (Boulder), LLM, 1958, Yale University, LLB, 1972, Colorado College; constitutional law, jurisprudence.

Olswang, Steven G. * 1975, (Adjunct); JD, 1971, University of Illinois, PhD, 1977, University of Washington; law and education.

Peck, Cornelius J. * 1954, (Emeritus); LLB, 1949, Harvard University; administrative law, labor law, torts.

Prosterman, Roy L. * 1965; LLB, 1958, Harvard University; international law.

Rieke, Luvern V. * 1949, (Emeritus); LLB, 1949, University of Washington, LLM, 1953, University of Chicago, LLD, 1959, Pacific Lutheran University; contracts, domestic relations.

Rodgers, William H. * 1979; LLB, 1965, Columbia University; legislation, environmental law, resource management, property.

Romberg, Sandor D. * 1960, (Emeritus); LLB, 1950, University of Washington; creditor and debtor, personal property.

Schnapper, Eric 1995; MA, 1963, Johns Hopkins University, LLB, 1968, Yale University; constitutional law, civil procedure, civil rights, employment discrimination.

Smith, Charles Z. * 1973, (Emeritus); JD, 1955, University of Washington, evidence, judicial administration.


Vaughn, Lea B. * 1984; JD, 1978, University of Michigan; labor law, alternate dispute resolution, civil procedure.

Welcher, Louis E. * 1986; JD, 1973, Harvard University; contracts, critical legal studies, torts, remedies, philosophy of law.

Zerbe, Richard O. * 1975, (Adjunct); PhD, 1969, Duke University; law and economics, cost-benefit analysis, economic history, environmental regulation.

Associate Professors


Kirtley, Alan * 1984; JD, 1972, Indiana University; negotiation, mediation, alternative dispute resolution generally, and criminal legal education.

Maranville, Deborah 1989; JD, 1975, Harvard University; civil clinic, unemployment law, feminist legal theory.

O’Neill, Kathleen M. 1993; JD, 1980, Columbia University; legal research, writing, and analysis.


Townsend, Michael E. *; MA, 1978, PhD, 1982, University of Michigan, JD, 1989, Yale University; law and science; intellectual property; use of quantitative methods.

Wiehl, Lis W. * 1993; MA, 1985, University of Queensland (Australia), JD, 1987, Harvard University; criminal law, especially federal prosecution; legal ethics; evidence; trial advocacy.

Assistant Professors


Ramasasy, Anita G. 1996; MA, 1989, University of Sydney (Australia), JD, 1992, Harvard University; commercial law, legal history, contracts, non-profit organizations.

Walsh, Walter J. 1996; LLM, 1989, Yale University; torts, legal history, European community, constitutional law.

Senior Lecturers

Anderson, Helen A. 1994; JD, 1984, University of Washington; legal research, writing, and analysis.

Gold, Julia Ann 1995; JD, 1983, University of South Carolina; alternative dispute resolution, mediation.

Hotchkiss, Mary A. 1995; JD, 1983, LLM, 1985, George Washington University; legal research, writing, and analysis.

McGinnis, Kathleen M. 1994; JD, 1984, University of California (Berkeley); legal research, writing and analysis.

McMurtrie, Jacqueline 1989; JD, 1983, University of Michigan; criminal law and practice.

Lecturers

Berry, Melissa M. 2000; JD, 1993, Northwestern University; legal research, writing and analysis, administrative law.


Victoria, Maria de Lourdes 1999; JD, 1992, University of Washington.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For current course descriptions, visit the online course catalog at www.washington.edu/students/crsCat/.

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 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, proprietary rights (copyrights, domain names), emerging law, leading policy debates, as well as fundamental Internet technical skills. Offered: S.

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.”

First-Year Courses

The courses below are intended for law students; other students are admitted only rarely with special permission of the dean. Only the course titles are given. For complete course descriptions, see the School of Law Bulletin.

LAW A 501- Contracts [(2-8), max. 8]
LAW A 502- Civil Procedure I [(2-6), max. 6]
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<td>LAW A 557</td>
<td>Foreign Affairs and the Constitution (3)</td>
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<tr>
<td>LAW A 558</td>
<td>Jurisprudence and Legal Philosophy (2-4), max. 4</td>
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<tr>
<td>LAW A 561</td>
<td>Law and Economics (4) Offered: jointly with PB AF 519.</td>
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<tr>
<td>LAW A 562</td>
<td>Employment Law (3/4)</td>
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<td>LAW A 563</td>
<td>Urban Government (3)</td>
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<td>LAW A 564</td>
<td>Legal History (1-4, max. 4)</td>
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<td>LAW A 565</td>
<td>American Indian Law (4)</td>
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<td>LAW A 566</td>
<td>Theories of Justice (2-4), max. 4</td>
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<tr>
<td>LAW A 567</td>
<td>Disability Law (3)</td>
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<td>LAW A 568</td>
<td>Washington Constitutional Law Seminar (1-4), max. 4</td>
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<td>LAW A 569</td>
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<td>LAW A 570</td>
<td>Scholarship (1-4), max. 4</td>
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<td>LAW A 580</td>
<td>Family Law (4-5)</td>
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<td>LAW A 581</td>
<td>Washington Constitutional Law Seminar (1-4), max. 4</td>
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<td>LAW A 582</td>
<td>Insurance Law (4)</td>
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<td>LAW A 584</td>
<td>American Public School Law (3)</td>
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<td>LAW A 585</td>
<td>Admiralty (4)</td>
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<td>LAW A 586</td>
<td>Secured Transactions IV (4)</td>
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<td>LAW A 587</td>
<td>International Commercial Law (2-4), max. 4</td>
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<tr>
<td>LAW A 589</td>
<td>Constitutional Law: Equal Protection, Fundamental Rights, and Due Process of Law (4)</td>
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<td>LAW A 591</td>
<td>Constitutional Law: Freedom of Expression (4)</td>
</tr>
<tr>
<td>LAW A 592</td>
<td>Constitutional Law II: The Fourteenth and First Amendments—Equal Protection, Fundamental Rights, Due Process of Law, Freedom of Expression and Religion (2-4), max. 8</td>
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<tr>
<td>LAW A 594</td>
<td>International and Comparative Intellectual Property Law (2)</td>
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<tr>
<td>LAW A 596</td>
<td>Law, Medicine, and Health Care Delivery (1-4), max. 4</td>
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<tr>
<td>LAW A 597</td>
<td>Fundamentals of Health Law (4)</td>
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<tr>
<td>LAW A 598</td>
<td>Legal Research I (3) Offered: jointly with LIS 592.</td>
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<tr>
<td>LAW A 599</td>
<td>Legal Research II (4) Offered: jointly with LIS 592.</td>
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<tr>
<td>LAW B 500</td>
<td>Civil Procedure II (3)</td>
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<tr>
<td>LAW B 503</td>
<td>Evidence (2-6), max. 6</td>
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<tr>
<td>LAW B 504</td>
<td>Law, Medicine, and Ethics in the Context of Pain Management (2)</td>
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<tr>
<td>LAW B 505</td>
<td>Medical Malpractice (3)</td>
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<tr>
<td>LAW B 506</td>
<td>Conflicts of Laws (2-6), max. 6</td>
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<tr>
<td>LAW B 507</td>
<td>Federal Courts and the Federal System (3/4)</td>
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<tr>
<td>LAW B 510</td>
<td>Problems of Professional Responsibility (2-4, max. 4)</td>
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<tr>
<td>LAW B 511</td>
<td>Seminar on Problems in International Environmental Law (1-4), max. 4</td>
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<tr>
<td>LAW B 513</td>
<td>Evidence IV (4)</td>
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<tr>
<td>LAW B 514</td>
<td>Street Law (1-8), max. 8</td>
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<tr>
<td>LAW B 515</td>
<td>Criminal Procedure (5)</td>
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<tr>
<td>LAW B 516</td>
<td>International Contracting: Negotiations and Drafting (2-4), max. 4 Credit/no credit only.</td>
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<tr>
<td>LAW B 517</td>
<td>Juvenile Justice Seminar (1-6), max. 6</td>
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<td>LAW B 519</td>
<td>Pre-Trial Practice (3)</td>
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<tr>
<td>LAW B 520</td>
<td>Trial Advocacy (2-6), max. 6 Credit/no credit only.</td>
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<td>LAW B 521</td>
<td>Appellate Advocacy (1-3), max. 3 Credit/no credit only.</td>
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<tr>
<td>LAW B 522</td>
<td>Mediation of Disputes (3) Credit/no credit only.</td>
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<tr>
<td>LAW B 523</td>
<td>Negotiation (4) Credit/no credit only.</td>
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<td>LAW B 525</td>
<td>Alternative Dispute Resolution (3) Credit/no credit only.</td>
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<td>LAW B 526</td>
<td>Mediation Clinic (1-7, max. 7) Credit/no credit only.</td>
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<td>LAW B 527</td>
<td>Criminal Law Clinic (8) Credit/no credit only.</td>
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<tr>
<td>LAW B 528</td>
<td>Unemployment Clinic (2-8, max. 8) Credit/no credit only.</td>
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<tr>
<td>LAW B 529</td>
<td>Advanced Environmental Law and Practice (1-4, max. 4)</td>
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<td>LAW B 530</td>
<td>Judicial Externship (1-15, max. 15)</td>
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<td>LAW B 531</td>
<td>Immigration Law Clinic (1-8), max. 8 Credit/no credit only.</td>
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<tr>
<td>LAW B 532</td>
<td>Supervised Analytic Writing (1-3), max. 3</td>
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<tr>
<td>LAW B 533</td>
<td>Interviewing and Counseling for Lawyers (2/3) Credit/no credit only.</td>
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<tr>
<td>LAW B 534</td>
<td>Affordable Housing Development Clinic (1-12), max. 12</td>
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<tr>
<td>LAW B 535</td>
<td>Legislative Externship (1-15, max. 15) Credit/no credit only.</td>
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<tr>
<td>LAW B 536</td>
<td>Drafting Basic Business Documents (1-3, max. 3)</td>
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<td>LAW B 537</td>
<td>Refugee Advocacy Clinic (1-12), max. 12 Credit/no credit only.</td>
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<tr>
<td>LAW B 538</td>
<td>Agency Externships (1-15, max. 15) Credit/no credit only.</td>
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<tr>
<td>LAW B 539</td>
<td>Public Interest Law Externship (1-15), max. 15 Credit/no credit only.</td>
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<tr>
<td>LAW B 545</td>
<td>Survey of American Law and Practice (6) Credit/no credit only.</td>
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<td>LAW B 560</td>
<td>Criminal Justice Externship (1-15, max. 15) Credit/no credit only.</td>
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<td>LAW B 593</td>
<td>Natural Resources Commons Property (3)</td>
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<td>LAW E 500</td>
<td>Advanced Writing Project (1-3, max. 3)</td>
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<td>LAW E 502</td>
<td>White Collar Crime (4)</td>
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<td>Analytic Writing (3)</td>
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<td>LAW E 506</td>
<td>Asian Contract Law and Practice (3)</td>
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<td>LAW E 507</td>
<td>Access to Justice Seminar (2) Credit/no credit only.</td>
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<td>LAW E 509</td>
<td>European Union Law (3)</td>
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<tr>
<td>LAW E 512</td>
<td>Law, Globalization, and Multinational Corporations (3) Offered: jointly with SIS 562.</td>
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<tr>
<td>LAW E 514</td>
<td>The Law of Nonprofit Organizations (4)</td>
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<td>LAW E 515</td>
<td>Criminal Justice (3)</td>
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<td>LAW E 516</td>
<td>Advanced Criminal Procedure (5)</td>
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<tr>
<td>LAW E 517</td>
<td>Foreign Trade and Investment Law of the People’s Republic of China (1-4, max. 4) Offered: jointly with SISEA 517.</td>
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<tr>
<td>LAW E 519</td>
<td>Philosophy of Law (4)</td>
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<td>LAW E 521</td>
<td>Advanced Trial Advocacy (3)</td>
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<td>LAW E 523</td>
<td>Intellectual Property Law Clinic (3)</td>
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<td>LAW E 524</td>
<td>Child Advocacy Clinic (6-12), max. 12 Credit/no credit only.</td>
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<td>LAW E 525</td>
<td>Poverty Law (4)</td>
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<td>LAW E 527</td>
<td>Driving While License Suspended Impoundment Clinic (3)</td>
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<tr>
<td>LAW E 528</td>
<td>Appellate Advocacy Clinic (2-, max. 4)</td>
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<td>LAW E 531</td>
<td>Basic Income Tax Concepts (3)</td>
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<tr>
<td>LAW E 536</td>
<td>Practical and Professional Responsibility Issues in the Small or Solo Law Practice (2) Credit/no credit only.</td>
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<td>LAW E 537</td>
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<td>LAW E 540</td>
<td>Legal Issues of Internet Law (3)</td>
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<td>LAW E 541</td>
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<td>LAW E 560</td>
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<td>LAW E 563</td>
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<td>LAW E 564</td>
<td>Genetics and the Law (2) Kuszler Offered: jointly with PHG 523.</td>
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<td>LAW E 565</td>
<td>Health and Human Rights (2)</td>
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<td>LAW E 568</td>
<td>Indian Law Clinic (4, max. 12)</td>
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<td>LAW E 570</td>
<td>Biotechnology and the Law (3)</td>
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<td>LAW E 575</td>
<td>Telecommunications Law and Policy (2)</td>
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<td>LAW E 577</td>
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LAW E 579 International and Foreign Law Research (2)

LAW E 582 Information Policy: Domestic and Global (5)

Asian and Comparative Law

LAW B 540 Law in East Asia: Japan (4) Offered: jointly with SISEA 540.

LAW B 541 Law in East Asia: China (3) Offered: jointly with SISEA 543.

LAW B 542 Law in East Asia: Korea and Southeast Asia (3)

LAW B 543 Intellectual Property Law in East Asia (3)

LAW B 544 Transnational Litigation: United States-Japan ([2-4]-, max. 4)

LAW B 546 United States-Japanese Corporate Relations ([2-4]-, max. 4)

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 555 Roman Law (3)

LAW B 556 Islamic Law (3) Offered: jointly with NEAR E 524.

LAW B 559 Comparative Law: Europe, Latin America, and East Asia (4)

Law and Marine Affairs

LAW B 561 International Law of the Sea (4) Offered: jointly with SMA 506.

LAW B 562 Quantitative Methods (4)

LAW B 563 Ocean Policy and Resources Seminar ([3-]

LAW B 565 U.S. Coastal and Ocean Law (4) Allen Offered: jointly with SMA 515.

Seminars

LAW B 567 General Externship Perspectives Seminar (2) Credit/no credit only.

LAW B 577 Law, Literature and Film ([2-4]-, max. 4)

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 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 596 International Protection of Human Rights Seminar ([2-6], max. 6)

LAW B 597 History of the Formation of the United States Constitution Seminar ([2-6]-, max. 6)

LAW B 598 Advanced Research and Writing in Property Seminar ([1-4]-, max. 4)

LAW B 599 Special Topics (1-12, max. 12)

LAW 600 Independent Study or Research (*)

LAW 800 Doctoral Dissertation (*)
School of Medicine

General Catalog Web page: www.washington.edu/students/gencat/academic/School_Medicine.html
School Web page: www.washington.edu/medical/som/

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C314 Health Sciences

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Philip D. Cleveland, Spokane, Washington
Michael B. Laskowski, University of Idaho and Washington State University
Sylvia J. Moore, University of Wyoming
Dwight E. Phillips, Montana State University (interim)

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 baccalaurate 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 specified requirements, and (4) have discharged all indebtedness to the University.

MEDEX Northwest Certificate Program

MEDEX Northwest is a program designed to train physician assistants. It provides primary-care, midlevel practitioners by training medical personnel with prior clinical experience. The program is accredited by ARC-PA, the Accreditation Review Commission on Education for the Physician Assistant. MEDEX Northwest places 70 to 75 students annually in a variety of sites in Alaska, Idaho, Montana, Nevada, Oregon, Washington, and Wyoming.

Successful completion of the program culminates in the award of a Bachelor of Clinical Health Services degree (see description in the undergraduate program volume) and a certificate.

MEDEX Northwest is an eight-quarter program. The first four quarters consist of intense clinical and didactic instruction at one of three training locations: Seattle, Spokane, or Yakima. The final four quarters are spent in clinical experiences throughout the WWAMI region. The first five months are spent in a variety of inpatient and outpatient clinical rotations, and the last five months are spent in a family-practice preceptorship. The preceptorship is an on-the-job experience tailored to the practice of individual primary-care physicians and emphasizes diagnosis and treatment. At the completion of the program, students are eligible to sit for the national certifying examination for physician assistants.

Special Requirements

Applicants must have a minimum of two years of recent, full-time, hands-on experience in the direct delivery of medical care to patients, or current professional credentials and at least two years of recent experience in an allied health field. Applicants must have completed two college-level English courses (at least one must be in composition), human anatomy and physiology course work totaling at least 10 quarter-credit hours, and at least one science course in a discipline relevant to medicine, such as biology or chemistry. English prerequisite courses must have been taken in a college or university in the United States, Canada, the United Kingdom, Australia, New Zealand, or Ireland. All academic prerequisites must have been completed with college-level credit with grades of 2.7 (B-) or better.

For additional information, contact MEDEX Northwest Physician Assistant Program, Box 354725, 206-598-2600. Web site: www.washington.edu/medical/som/depts/medex/. Email: medex@u.washington.edu.

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 and the treatment and management of conditions. Information concerning admission to the physical therapy program appears under Rehabilitation Medicine in this catalog.

Master of Physical Therapy

The Department of Rehabilitation Medicine offers graduate degrees in physical therapy. The curriculum provides professional education in the health 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 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 systems 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, information concerning the exam may be obtained from the Admissions Committee, the GRE may be considered during the admissions process; however, if accepted, the appli-
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, organic, 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.

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.

In the field of biochemistry/molecular biology, applicants should know the chemical nature of DNA, RNA, genes, and in general, the structure of the genes and how they are organized in chromosomes; understand the nature of eukaryotic DNA replication; be familiar with transcription of genes and intron splicing; have an overview of the mechanism of protein synthesis; understand principles of recombinant DNA technology (e.g., restriction endonucleases, PCR, southern blots, transformation); understand pH, pKa, and buffers; understand how proteins fold and how ligand binding and enzymatic activity depend upon three-dimensional folding; understand principles of enzyme kinetics (Vmax, competitive inhibition, allosteroy, and regulation by phosphorylation); understand principles of energetics (e.g., free energy change, equilibrium constants, concentration gradients, and redox potentials); understand glycolysis, the TCA cycle, and how ATP is produced by oxidative phosphorylation; be familiar with how fatty acids are oxidized and synthesized; be familiar with patterns of amino acid catabolism and the urea cycle, understand the nature of phospholipids, lipid bilayers, and membranes; and have an overview of nucleotide biosynthesis. All of this is generally covered in a beginning biochemistry course.

Those students who entered in the fall of 2001 had a mean GPA of 3.64 and the following mean MCAT scores: Verbal, 10.0; Physical Science, 10.5; Biological Science, 10.7; and a median Writing Sample of 4.

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. 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 the month.

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 in 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 Confidential Report for 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 18 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 certificates from their respective state certifying offices. Proof of legal residence may also 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 Washington, 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. 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.

**Office of Multicultural Affairs**

The Office of Multicultural Affairs assists students from minority or 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 actively recruits 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 Minority Medical Education Program (MMMP) 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 1264
Box 357470
Seattle WA 98195-7470
206-685-0742
mstp@pathology.washington.edu
www.pathology.washington.edu/mstp/

Financial Information
Fees and Other Charges
All fees and extra service charges are payable in U.S. dollars and due at the time specified for such fees and charges. The University reserves the right to change any of its fees and charges without notice. Resident tuition for 2001-2002 is $3,381 per quarter; nonresident tuition is $8,556 per quarter.

Financial Assistance
Financial aid awards are based on the demonstrated need of the students. All applicants for aid must submit a data for an analysis of need using the Free Application for Federal Student Aid (FAFSA). This requires disclosure of financial information from the applicant 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. Loans are also available from the School of Medicine provided students meet the need requirement that is based on both the student’s and parents’ financial information. Limited amounts of grant funds are available to Washington state residents who meet specific funding criteria.

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 30 due date.

Financial aid information is distributed to all accept- ed applicants. The FAFSA form may be obtained at www.fafsa.ed.gov or from the UW Office of Student Financial Aid or the School of Medicine Financial Aid Office. The deadline for receipt of the financial-aid application by the processor is February 28. Applicants must meet the 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 stud- ent is enrolled in medical-school course work.

Medical Curriculum
Basic Science Curriculum (124 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 sciences basic to medicine: courses in the sciences basic to medicine, organ systems courses taught by basic and clinical disciplines, and introduction to clinical medicine. The basic phase is designed to provide the background and basic disciplines required for the organ-system courses. In the second phase, the student is concerned with learning the normal and pathophysiologic properties of several human organ systems. Emphasis is placed upon correlating these properties with clinical manifestations of diseases, 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 physical examinations.

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
Microscopic Anatomy (Histology)
Gross Anatomy and Embryology
Mechanisms in Cell Physiology
Biochemistry
Systems of Human Behavior I
Cell and Tissue Response to Injury
Microbiology and Infectious Disease
Introduction to Immunology
Head, Neck, Ear, Nose, and Throat
Nervous System
Critical Reading and Evaluation of Medical Literature
Introduction to Clinical Medicine

Second Year
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). Four clinical areas including clerkships in rehabilitation medicine/chronic care, emergency care/trauma, neurology, and surgery electives. Additional clinical or non-clinical electives (a minimum of 32 credits or 16 weeks) are also required.

Education in the clinical curriculum utilizes the case-study method. Students gain clinical knowledge and gradually increase their clinical problem-solving abilities beginning as junior members of the medicine clerkship team. Each team is headed by a faculty clinician working in one of the medical-school-affiliated hospi- tals or practice units.

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 written paper. The purpose of this requirement is for the student to gain an understanding of the philosophy and methods of science.

WWAMI Program
The WWAMI Program was initiated in 1971 as an effort to de-centralize 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, 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 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 possibility of assignment to Washington State University during the first year. Students from Wyoming, Alaska, Montana, and Idaho attend their home-state institutions. While at one of these institutions, they enroll in prescribed one-year medical school basic-science courses taught by the 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 the 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 and selective clerkships are described above. As part of the clinical training, stu- dents 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 pro- vide 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

Research opportunities are offered to UW medical students interested in gaining valuable experience from training in medical research. The purpose of the program is to encourage students to participate in a research project as part of their medical education. 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 a special fund from the School of Medicine. The project is twelve 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.

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 oath that all students take at the time of graduation. As such, student evaluation is based upon the faculty’s observation 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. 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 prescribes the ranking of students in class standing by a grade-point average.

The School of Medicine reserves the right to revise or modify the curriculum, system of evaluation, or graduation requirements.

Honors

A charter as Alpha of Washington was granted to the School of Medicine in 1950 by Alpha Omega Alpha, the honorary medical society. Members are elected by the membership of Alpha Omega Alpha on the basis of high scholarship and good moral character.

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 WWAMI region. Postdoctoral research fellowship opportunities in the basic sciences are also offered.

Continuing Medical Education

The Office of Continuing Medical Education, School of Medicine, offers a wide variety of courses for physicians and 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 WWAMI region. Information on offerings is available from its Web site at www.uwcmce.org.

All physicians also are invited to participate in continuing medical education programs offered by clinical departments, such as grand rounds and regular conference series. The University of Washington School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians. All programs sponsored by the Office of Continuing Medical Education are applicable to physician relicensure requirements of the Washington Board of Medical Examiners and for Category I credit of the Physician’s Recognition Award of the American Medical Association. Prescribed credit for the American Academy of Family Physicians and other types of credit are included in the program offerings when appropriate. Brochures and calendars for courses are available for more detailed information. For information concerning Continuing Medical Education programs, contact: University of Washington School of Medicine Office of Continuing Medical Education Box 358220 1325 4th Avenue, Suite 2000 Seattle, Washington 98101-8220 Telephone: 206-543-1050 or 1-800-869-2633 Email: cmel@u.washington.edu Web site: www.uwcmce.org

Anesthesiology

BB1459 Health Sciences

General Catalog Web page: www.washington.edu/students/academic/Anesthesiology.html

Department Web page: 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-clsck-room 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. Other training questions may be directed to the Residency Coordinator at 206-543-2773 or lfg@u.washington.edu.
**Faculty**

**Chair**
Frederick W. Cheney

**Professors**
Artru, Alan A. 1980; MD, 1975, Medical College of Wisconsin.
Bashein, Gerard * 1974; PhD, 1969, Carnegie Mellon University, MD, 1974, University of New Mexico; automation techniques in anesthesia, transesophageal ultrasonic cardiac assessment.
Bernards, Christopher M. 1988; MD, 1984, Oregon Health Sciences University.
Bishop, Michael J. 1979; MD, 1974, University of California (San Diego).
Byers, Margaret R. * 1972, (Research); PhD, 1969, Harvard University; sensory neurobiology, neurochemistry, and neuropathologic reactions; neuroimmune interactions.
Cheney, Frederick W. 1967; MD, 1960, Tufts University.
Cullen, Bruce F. 1984; MD, 1966, University of California (Los Angeles).
Domino, Karen B. 1978, (Adjunct); MD, 1970, University of California (San Diego).
Freund, Felix G. 1963, (Emeritus); MD, 1948, University of Buenos Aires (Argentina).
Freund, Peter 1980; MA, 1971, Brown University, MD, 1975, Columbia University; temperature regulation, vasomotor control, physiology/biophysics.
Hornbein, Thomas F. * 1963; MD, 1956, Washington University; physiology, biophysics.
Kharasch, Evan D. * 1984; PhD, 1983, MD, 1984, Northwestern University; clinical pharmacology of anesthetic agents, drug metabolism, and drug interactions.
Lam, Arthur M. 1986; MD, 1974, Western Ontario University (Canada); neuroanesthesia.
Lynn, Anne 1981; MD, 1975, Stanford University; pediatric anesthesiology.
Mackie, Kenneth P. * 1987; MD, 1984, Yale University; molecular and cell biological studies of cannabinoid receptor signaling.
Martin, Roy W. * 1971, (Research); PhD, 1975, University of Washington; bioinstrumentation, ultrasonic Doppler, echo, tissue characterization, signal processing.
Otto, Catherine M. 1982, (Adjunct); MD, 1979, University of Washington; cardiology.
Pearlman, Alan S. 1978, (Adjunct); MD, 1970, Harvard University; cardiology.
Su, Judy Y. 1976; PhD, 1968, University of Washington; cardiovascular pharmacology.
Turk, Dennis C. 1996; PhD, 1978, University of Waterloo (Canada); pain control/psychology.
Ward, Richard J. 1963, (Emeritus); MD, 1949, St Louis University.
Zimmerman, Jerry J. 1998; PhD, 1975, MD, 1979, University of Wisconsin; critical-care medicine.

**Associate Professors**

Buckley, F. Peter 1977; MMBS, 1968, St Bartholomew’s Hospital Medicine School (UK).
Chadwick, Heathcliff S. 1980; MD, 1976, University of Oregon.
Chudler, Eric H. 1991; PhD, 1986, University of Washington; nervous system behavior.
Colley, Peter S. 1973; MD, 1967, University of Vermont.
Edwards, William T. 1990; PhD, 1969, Massachusetts Institute of Technology, MD, 1975, University of Massachusetts; pain management.
Everett, Lucinda 1998; MD, 1982, University of Connecticut; pediatric anesthesiology.
Geiduschek, Jeremy M. 1983; MD, 1983, Vanderbilt University; pediatric anesthesiology.
Jardine, David 1987; MD, 1980, Johns Hopkins University; pediatric anesthesiology.
Jonmarker, Christer S. R. 1989; MD, 1975, University of Lund (Sweden).
Karl, Helen W. 1990; MD, 1976, University of Virginia; pediatric anesthesiology.
Orr, Rosemary J. 1975; MBChB, 1967, Queen's University of Belfast (Ireland); pediatric anesthesiology.
Oxorn, Donald C. 1998; MD, 1978, McGill University (Canada).
Pavlin, D. Janet 1975; MD, 1969, University of Manitoba (Canada).
Posner, Karen L. 1990; (Research); PhD, 1990; PhD, 1990, University of Washington; heath systems research.
Souter, Michael J. 2001; MBChB, 1984, University of Edinburgh (UK).
Terman, Gregory W. * 1987; MA, 1981, PhD, 1985, University of California (Los Angeles), MD, 1987, University of Miami (Florida).

**Assistant Professors**

Boddu, Krishna 2001; MBBS, 1983, University of Waltar (India).
Martay, Kenneth 1999; MD, 1987, University of Freiburg (Germany).
Schenkman, Kenneth A. 1990; MD, 1986, Indiana University; pediatric anesthesia.
Vater, Youl R. 1999; MD, 1977, Riga High Medical School (Latvia).
Vavilala, Monica S. 1994; MD, 1991, University of Texas (Houston).

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations. For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

**ANEST 498 Undergraduate Thesis (1) Geiduschek**
By special arrangement. Time and credit to be arranged. Offered: AWSpS.

**ANEST 499 Undergraduate Research (1) Geiduschek**
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) Geiduschek**
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) Geiduschek**
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) Geiduschek**
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.

ANESTHESIOLOGY Special Electives (*, max. 24) Geiduschek 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.

**Biochemistry**

J405 Health Sciences

**General Catalog Web page:**
[www.washington.edu/students/gencat/academic/Biochemistry.html](http://www.washington.edu/students/gencat/academic/Biochemistry.html)

**Department Web page:**
[depts.washington.edu/biowww/](http://depts.washington.edu/biowww/)

**Graduate Program Coordinator**
J405 Health Sciences, Box 357350
biocgrad@uw.washington.edu

Modern biochemistry involves the study of biological processes at a molecular level. Specific research projects may entail study in such diverse fields as molecular biology, molecular biophysics, genetics, microbiology, immunology, developmental biology, organic chemistry, pharmacology, and physiology. Graduate students enrolled in the Department of Biochemistry engage in studies and research that prepare them for the challenging opportunities open to the professional biochemist/molecular biologist in colleges and universities, research institutes, medical schools and hospitals, government laboratories, and the laboratories of chemical, biotechnology, and pharmaceutical industries.

The course of advanced study is designed to give each student a firm foundation upon which to base further professional progress. In the first year of academic work, students attend courses in biochemistry and molecular biology, and in related fields such as chemistry, biophysics, genetics, cell biology, and microbiology. In the second and succeeding years, an increasing amount of time is devoted to research and independent study. For the Ph.D. degree, each student is required to gain teaching experience, usually during the second year of the graduate program.

An accredited major in biology, chemistry, or biochemistry fulfills admission prerequisites. Students with other majors are required to have completed the following undergraduate courses: two years of chemistry, mathematics through calculus, one year of physics, and at least one year of biology. Experience in a research laboratory during or following baccalaureate study is highly desirable. Applicants must also meet the general admission requirements of the Graduate School.

Normally, all graduate students admitted to the Department of Biochemistry are provided with financial assistance.

Research facilities for the department are housed in the Biochemistry-Genetics Building, which provides approximately 52,000 square feet of excellent 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 whom the department has common research interests. The laboratories are equipped with modern research equipment and are supported by external, centralized research facilities, which include a modern computer center, the Marine Biology Laboratory at Friday Harbor, and the Health Sciences Library. An emphasis on biomedical research is facilitated by the location of the department within the School of Medicine.

**Faculty**

**Chair**
Alan Weiner

**Professors**
Bornstein, Paul * 1967; MD, 1958, New York University; structure and function of connective tissu macromolecules, wound healing.

Cooper, Jonathan A. * 1987; (Affiliate); PhD, 1976, University of Warwick (UK); regulation of cellular metabolism and proliferation by protein phosphorylation.

Dale-Crunk, Beverly A. * 1972; (Adjunct); PhD, 1968, University of Michigan; keratin biochemistry, epimidal differentiation, antimicrobial peptides.

Davis, Earl Warren * 1962; PhD, 1954, University of Washington; protein synthesis, mechanism of blood clotting, cloning of plasma proteins.

Davis, Trisha Neil * 1987; PhD, 1983, Yale University; control of the cell cycle, chromosome segregation, proteomics.

Eisenman, Robert M. * 1982; (Affiliate); PhD, 1971, University of Chicago; viral oncology, oncogenes, retrovirus multiplication.

Eyre, David R. * 1985, (Adjunct); PhD, 1969, University of Leeds (UK); connective tissue biology, collagen chemistry, bone and cartilage metabolism.

Fischer, Edmond H. * 1953, (Emeritus); PhD, 1947, University of Geneva (Switzerland); relationship of protein structure to enzyme activity, hormonal regulation of metabolic processes.

Geib, Michael H. * 1985, (Adjunct); PhD, 1982, Yale University; mechanistic enzymology, biogenic and medicinal chemistry.

Glomset, John A. * 1977; MD, 1960, University of Uppsala (Sweden); membrane structure and function.

Gordon, Milton * 1959; PhD, 1953, University of Illinois; molecular basis of plant tumors, control of gene expression in plants.

Hauschka, Stephen D. * 1967; PhD, 1966, Johns Hopkins University; regulation of skeletal muscle differentiation, growth factor-receptor signaling mechanisms.

Hol, Willem H. G. J. * 1992; PhD, 1971, University of Groningen (Netherlands); protein crystallography, drug design, vaccine development, and protein engineering.

Hurlay, James Bryant * 1985; PhD, 1979, University of Illinois; molecular basis of vision.

Jensen, Lyle H. * 1949, (Emeritus); PhD, 1943, University of Washington; molecular structure, x-ray diffraction.

Kimelman, David * 1989; PhD, 1985, Harvard University; molecular biology of early development in the frog, Xenopus laevis, and the fish, Danio rerio.

Klevit, Rachel E. * 1983; DPhil, 1981, Oxford University (UK); protein structure and function; molecular recognition; protein NMR.

Krebs, Edwin G. * 1977, (Emeritus); MD, 1943, Washington University; intracellular signaling mechanisms involving protein phosphorylation.

Loeb, Lawrence A. * 1978; MD, 1961, New York University, PhD, 1967, University of California (Berkeley); DNA replication, cancer and AIDS.

Maizels, Nancy * 2000; PhD, 1974, Harvard University; recombinant and repair in mammalian cells, especially activated B cells.

Morris, David R. * 1966; PhD, 1964, University of Illinois; regulation of growth in eukaryotes and prokaryotes, translational control.

Neurath, Hans * 1982, (Emeritus); PhD, 1933, University of Vienna (Austria); structure and functions of proteolytic enzymes, zymogen activation, evolution of proteins.

Palmeter, Richard D. * 1974; PhD, 1968, Stanford University; regulation of gene expression in transgenic mice.

Parson, William W. * 1967; PhD, 1965, Case Western Reserve University; bioenergetics, with particular emphasis on photosynthesis, picosecond spectroscopy.

Reid, Brian R. * 1980; PhD, 1965, University of California (Berkeley); biophysical chemistry, NMR of DNA and RNA.

Roberts, James Michael * 1989; (Affiliate); PhD, 1984, MD, 1984, Columbia University; regulation of DNA replication by cyclin-kinase complexes.

Saari, John C. * 1974; PhD, 1970, University of Washington; retinal biochemistry.

Teller, David C. * 1965; PhD, 1965, University of California (Berkeley); physical chemistry of macromolecules, protein interactions, X-ray crystallography.

Varani, Gabriele * 2001; PhD, 1987, University of Milan (Italy); physical biophysical.

Walsh, Kenneth A. * 1958, (Emeritus); PhD, 1959, University of Toronto (Canada); structure and functions of proteins, zymogens, and proteases.

Weiner, Alan * 2000; PhD, 1973, Harvard University; genome structure, function of small nuclear and cytoplasmic RNA species, CCA-adding enzyme.

Young, Elton * 1969, PhD, 1967, California Institute of Technology; regulation of gene activity in the yeast Saccharomyces cerevisiae.

**Associate Professors**

Baker, David * 1993; PhD, 1989, University of California (Berkeley); protein folding, genomics.

Daggett, Valerie D. * 1993, (Adjunct); PhD, 1990, University of California (San Francisco); molecular modelling studies of peptides and proteins.

Hahn, Steven M. * 1994; (Affiliate); PhD, 1984, Brandeis University; transcription initiation in yeast.

Merritt, Ethan A. * 1989; PhD, 1980, University of Wisconsin; x-ray crystallography, structure-based drug design, and structural genomics.

Muller, Eric D. * 1988; PhD, 1981, Yale University; proteomics and cell biology in yeast.
For complete undergraduate course descriptions, visit the online course catalog at www.washington.edu/students/crscat/.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

BIOC 405 Introduction to Biochemistry (3) NW
Hurley, Petra Survey of basic principles of biochemistry and molecular biology, emphasizing broad understanding of chemical events in living systems in terms of metabolism and structure-function relationships of biologically important molecules. Suitable for pre-majors, for students interested in careers in medicine, dentistry, pharmacy, medical technology. Prerequisite: BIOL 200; either 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, Petra Survey of basic principles of biochemistry and molecular biology, emphasizing broad understanding of chemical events in living systems in terms of metabolism and structure-function relationships of biologically important molecules. Suitable for pre-majors, for students interested in careers in medicine, dentistry, pharmacy, medical technology. Prerequisite: BIOL 200; either BIOL 201 or both BIOL 101 and GENET 371; either CHEM 223, CHEM 237, or CHEM 335. Offered: A.

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
Davis, Kleivit 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 2.0 in BIOL 201 or both 2.0 in BIOL 180 and 2.0 in BIOL 200; either CHEM 224, CHEM 239, or CHEM 337. Offered: A.

BIOC 441 Biochemistry (4) NW
Gordon, 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: 1.7 in BIOC 440. Offered: W.

BIOC 442 Biochemistry (4) NW
Kimelman, Pamlter 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 1.7 in BIOC 406 or 1.7 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. Prerequisite: either BIOC 396 or CHEM 396. Offered: jointly with CHEM 496; Sp.

BIOC 498 Undergraduate Thesis (*) For senior medical students. Offered: AWSpS.

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 Advanced Biochemistry (3) Baker, Giselb, Hol, Kleivit, 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) Daum, Davie, Fischer 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) Parson Emphasis on methods used to study macro-molecular 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 BMED 540 A.

BIOC 541 Literature Review (2) Palmter 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: W.

BIOC 546-548 (For description, see listing for "Current Literature Conferences" at the end of this section.)

BIOC 554-559 (For description, see listing for "Current Literature Conferences" at the end of this section.)

BIOC 565-569 (For description, see listing for "Current Literature Conferences" at the end of this section.)

BIOC 575-579 (For description, see listing for "Current Literature 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.

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) Bornstein Offered: AWSpS.

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. 30) Gordon 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. Offered: AWSpS.

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.
Bioengineering

309 Harris Hydraulics Laboratory

**Bioengineering**

309 Harris Hydraulics Laboratory

*General Catalog Web page:*

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

*Department Web page:

deps.washington.edu/bioe/

Bioengineering encompasses a wide range of activities in which the disciplines of engineering and biological or medical science intercede. 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 one of the finest bioengineering programs in the world. Programs of study lead to the Bachelor of Science, Master of Science, and Doctor of Philosophy degrees. 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. Detailed information on Bioengineering appears in the Interschool or Intercollage Programs section of this catalog.

**Biological Structure**

**General Catalog Web page:**

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

**Department Web page:**

www.biost.washington.edu/

Graduate Program Coordinator

G514 Health Sciences, Box 357420

206-543-5474

The Department of Biological Structure offers graduate programs of study leading to the Master of Science and Doctor of Philosophy degrees. The department promotes an understanding of biological processes through the study and analysis of structures and 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'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 subdivisions: human anatomy, neuroanatomy/neurobiology, histology, embryology/developmental biology, cell biology, and macromolecular structure.

**Special Requirements**

Applicants should have completed an undergraduate major in an appropriate field, such as anthropological, biochemistry, biology, chemistry, physics, psychology, or zoology.

The department is currently recruiting students into its labs and graduate program principally through the basic-science interdisciplinary programs. Students interested in working with particular departmental faculty members should apply for admission through one of the following programs: Molecular and Cellular Biology, Neurobiology and Behavior, Biomolecular Structure and Design, or the Medical Scientist Training Program. Alternatively, some faculty sponsor students for application to the departmental program. For further information, contact the graduate program coordinator.

**Financial Aid**

The department offers financial support through training-grant positions and from research funds.

**Faculty**

**Acting Chair**

John I. Clark

**Professors**

Baskin, Denis G. * 1979; PhD, 1969, University of California (Berkeley); neuroendocrinology; obesity; CNS regulation of body weight; histochemistry; expression of receptors.

Brinkley, James F., III * 1988; MD, 1974, University of Washington, PhD, 1984, Stanford University; computer applications in medicine and biology; structural informatics.

Byers, Margaret R. * 1972; (Research), PhD, 1969, Harvard University; sensory neurobiology, neurocytochemistry, and neuropathologic reactions; immunomune interactions.

Clark, John I. * 1982; PhD, 1974, University of Washington; development and maintenance of lens transparency.

Dacey, Dennis M. * 1986; PhD, 1983, University of Chicago; the neural basis of vision and the organization of primate retina.

Farr, Andrew G. * 1982; PhD, 1975, University of Chicago; cell interactions governing lymphocyte production and function.

Gehrig, John D. * 1954, (Emeritus); DDS, 1946, MSD, 1951, University of Minnesota; oral and maxillofacial surgery, biological structure.

Graney, Daniel O. * 1966; PhD, 1965, University of California (San Francisco); gross anatomy, electron microscopy, intestinal absorption.

Hendrickson, Anita E. * 1969, PhD, 1964, University of Washington; neuroanatomy, morphology and development of primate visual system.

Herring, Susan W. * 1990, (Adjunct), PhD, 1971, University of Chicago; vertebrate functional morphology, relations between muscular function and skull growth.

Hol, Wilhelmus G. J. *; PhD, 1971, University of Groningen (Netherlands); protein crystallography, drug design, vaccine development, and protein engineering.

Jensen, Lyle H. * 1949, (Emeritus); PhD, 1943, University of Washington; molecular structure, x-ray diffraction.

Koehler, James K. * 1963, (Emeritus); PhD, 1961, University of California (Berkeley); electron microscopy, cryobiology, reproductive biology.

Patton, Dorothy L. * 1981, (Adjunct); PhD, 1981, University of Washington; infectious disease.

Press, Oliver W. * 1982, (Adjunct); PhD, 1977, MD, 1979, University of Washington; treatment of hematologic malignancies with monoclonal antibody immunoclonogues.
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) Hol A discussion of macro-
molecular structures related to specific areas of bio-
logical research. Emphasis on discussion of relevant research papers and use of computer graphics to visualize the molecular structures. Offered: AWSp.

CONJ 520 Anatomy and Autopsy (1/2, max. 2)
Flagler See Conjoint Courses.

B STR 520 Structure Based Design of Drugs and Vaccines (3) Hol Lecture and discussion on research papers illustrating protein structure based design of new drugs and vaccines. Review of methods of structure-based drug design and problem of drug resistance. Discussion on importance of adjuvants, protein engineering methods, and immune evasion methods in vaccine design. Offered: even years; W.

B STR 521 Advanced Biomacromolecular Crystallography (3) Hol, Merritt, Stenkamp Aspects of protein crystallography ranging from crystal growth, phase determination methods, density averaging to refinement, fiber diffraction of DNA and pro-
teins. Offered: odd years; W.

CONJ 524 Structural Basis of Neural Transduction (1.5) See Conjoint Courses.

UCONJ 524 Developmental Neurobiology (3)
Raible, Reh, Roelink, Rube1 See University Conjoint Courses.

B STR 530 P-Gross Anatomy and Embryology for Dental Students (7) Broderson, Clark Normal anato-
my of the thorax, abdomen, pelvis, and perineum are dis-
cussed 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 dis-
cussed. 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: AWSp.

B STR 541 P-Microscopic Anatomy for Dental Students (4) Lecture and laboratory work in micro-
scopic 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 550 P-Head and Neck Anatomy for Dental Students (4) Broderson, Clark, Graney Normal anatomy of the head is discussed and dissected, employing human cadavers. The fundamentals of diagnostic anatomy are also discussed. Restricted to first-year dental students. Prerequisite: B STR 530. Offered: Sp.

B STR 555 Laboratory Rotation in Biological Structure (1, 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: AWSp.

B STR 557 Biomolecular Structure Seminar (1) Hol Literature review of key research in Biomolecular Structure in the form of short presentations by partic-

Assistant Professors
Broderson, Stevan H. * 1967; PhD, 1967, State University of New York (Buffalo); computer graphics.

Fan, Erkang * 1996, (Research); PhD, 1993, University of Pittsburgh; organic and combinatorial chemistry, structure-based drug design, molecular recognition.

Moens, Cecilia B. * 1998, (Affiliate), PhD, 1993, University of Toronto; development of segmentation and segment identity in the vertebrate hindbrain.

Xu, Wenqing * 1999; PhD, 1995, Massachusetts Institute of Technology; structural studies of proteins involved in cancer, immune dysfunction and neuronal diseases.

Senior Lecturer
Mulligan, Kathleen A. 1987; PhD, 1985, University of New South Wales (Australia); neurobiology, gross anatomy, teaching innovations, technical communi-

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/

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 instruc-
tor. For senior medical students. Offered: AWSp.

B STR 499 Undergraduate Research (*) Individual research projects in cellular and developmental bi-
ology, experimental immunology, reproductive biology, neurobiology, molecular structure, morphometrics, computer modeling, and related fields under the supervision of an instructor. Offered: AWSp.

B STR 501 Gross Anatomy (1-10, max. 10) 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 503 Gross Anatomy (1-5, max. 5) Graney Lecture and laboratory dissection course in regional human anatomy: head and neck. Prerequisite: permission of instructor. Offered: Sp.

B STR 510 Seminar in Anatomy (1) Graney Scientific and historical basis of selected studies in biological structure, anatomy, and human develop-
ment. Original literature used as basis for textbook descriptions is reviewed. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSp.

B STR 512 Human Microanatomy (4) Lectures and laboratory treating the specialized tissues and organs of the body from the microscopic and ultramicro-
scopic points of view. Prerequisite: permission of instructor. Offered: A.

Associate Professors
Cunningham, Michael L. * 1988, (Adjunct); MD, 1988, University of Vermont, PhD, 1996, University of Washington; molecular, developmental, craniofacial, malformation, human, mouse, craniosynostosis, birth defects.

Gaddum-Rosse, Penelope * 1969, (Emeritus); PhD, 1965, University of Liverpool (UK); reproductive biol-

Landau, Barbara R. 1962, (Emeritus); MS, 1949, PhD, 1956, University of Wisconsin.

Merritt, Ethan A. * 1989; PhD, 1980, University of Wisconsin; x-ray crystallography, structure-based drug design, and structural genomics.

Roelink, Henk * 1996; MSC, 1985, University of Groningen (Netherlands), PhD, 1991, University of Amsterdam (Netherlands); role of signaling mole-
cules in mediating neural tissue differentiation during vertebrate development.

Stenkamp, Ronald E. * 1978; PhD, 1975, University of Washington; crystallography, metalloproteins, protein engineering, rhodopsin, G-protein coupled recep-
tors.

Assistant Professors
Broderson, Stevan H. * 1967; PhD, 1967, State University of New York (Buffalo); computer graphics.
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 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.


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.

Faculty
Chair
Melvin B. Dennis

Professors
Dennis, Melvin B. * 1971; DVM, 1961, Washington State University; comparative medicine, including animal models and experimental surgery.


Johnsen, Dennis O. 1997, (Clinical); DVM, 1961; University of California (Davis), MS, 1965, Ohio State University; comparative medicine including nonhuman primate medicine, international health.


Liggitt, H. Denny * 1989; DVM, 1972, PhD, 1979, Colorado State University; using in vivo models to evaluate novel approaches for gene delivery, transgenic models.


Rausch, Robert L. * 1978, (Emeritus); DVM, 1945, Ohio State University, PhD, 1949, University of Wisconsin; parasitology, helminthic zoonoses.

Van Hoosier, Gerald * 1975; DVM, 1957, Texas A&M University; laboratory animal medicine with emphasis on effects of intercurrent infection on mouse phenotypes.

Whitney, Robert A. 1997, (Affiliate); DVM, 1959, Oklahoma State University, MS, 1965, Ohio State University.

Wolf, Norman S. * 1968, (Adjunct); DVM, 1953, Kansas State University, PhD, 1960, Northwestern University; hematopoietic stem cell dynamics and transplantation in radiation biology.

Associate Professors
Grossmann, Angelika * 1985, (Affiliate); DVM, 1978, PhD, 1982, Free University of Berlin (Germany); immunosenescence in humans and mice; immunotoxicology; transmembrane signaling in T-lymphocytes.


Price, Lillian M. * 1984; DVM, 1972, PhD, 1983, University of Pennsylvania; t-cell development in the thymus, immunotoxicology, thymus development, retinoid acid embryopathy.

Thouless, Margaret E. * 1980, (Adjunct); PhD, 1974, University of Birmingham (UK); retroviruses, herpes viruses, enteric viruses, immunodiagnosis, virus variability.

Waggie, Kimberly S. 1997, (Affiliate); DVM, 1980, Iowa State University, MS, 1984, University of Missouri.

Weigler, Benjamin J. * 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.

Assistant Professors
Anderson, David 1996, (Clinical); DVM, 1989, Washington State University; development and application of nonhuman primate animal models.

Iritani, Brian M. 1992; DVM, 1988, Washington State University, PhD, 1997, University of Washington; developmental immunology, cell signaling, oncogene function.

Pekow, Cynthia A. 1989, (Clinical); DVM, 1984, University of Illinois; comparative medicine, instruction of research staff and technicians in animal care and use.

Ware, Carol B. 1995, (Research); PhD, 1986, University College (Ireland); multi-systemic LIF receptor function in developing and adult mice.
Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs Cat/.

C MED 507 Principles of Animal Experimentation (3) Dennis, VanHoosier Focus on biology and care of experimental animals, animal models of human disease, ethical use of animals in biomedical research and teaching, techniques of aseptic surgery. Includes lectures and animal-use laboratories. For graduate and advanced undergraduate students. Prerequisite: permission of instructor. Offered: A.

C MED 499 Undergraduate Laboratory Research (1-6, max. 6) Van Hoosier Specific problems in comparative medicine. Credit/no credit only. Offered: AWSpS.

C MED 512 Introduction to the Anatomical Analysis of Animal Disease (5, max. 10) Liggitt 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) Liggitt Focus on histopathology of naturally occurring and experimentally induced lesions of pri mates, 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) VanHoosier Critical evaluation of recent articles on laboratory animal medicine and science. Emphasis on literature dealing with spontaneous diseases of laboratory animals, biology and husbandry, zoological 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 zoozotic 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 (2) Pekow, VanHoosier 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: AS.

C MED 521 Biology of Laboratory Animals (2) Pekow, VanHoosier 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: AS.

C MED 526 Epidemiology of Diseases Communicable from Nature (3) DiGiacomo, Rausch 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; S.

C MED 530- Diseases of Laboratory Animals (3-) VanHoosier Analysis of etiology, pathogenesis, pathology, and disease processes in rodents, lago morphs, carnivores, and nonhuman primates. Prerequisite: permission of instructor. Offered: AS.

C MED 531- Diseases of Laboratory Animals (3-) VanHoosier Analysis of etiology, pathogenesis, pathology, and disease processes in rodents, lago morphs, carnivores, and nonhuman primates. Prerequisite: permission of instructor. Offered: AS.

C MED 540 Animal Models (1) Dennis 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 categor ical disease (e.g., cancer, atherosclerosis, gerontol ogy) discussed. Prerequisite: permission of instruc tor. Offered: SpS.

C MED 590 Selected Topics in Animal Medicine (2) Dennis, VanHoosier Radiation biology, genetics, anesthesiology and experimental surgery, preventive medicine, and ethical aspects of use of animals in biomedicine. Topics vary from year to year, depending on the expertise of the annual visiting professor. Prerequisite: permission of instructor. Offered: SpS.

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.

Conjoint Courses

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs Cat/.

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. O fers by special permission of instructors. Prerequisite: CONJ 401. Offered: W.


CONJ 480 Neuroscience for Rehabilitation Professionals (5) Anderson, Mulligan, Sloppey Survey of the structure and function of the central nervous system, emphasizing sensorimotor systems and higher integrative functions, coupled with clinical cor relations. Required for occupational therapy, physical therapy, and prosthetic/orthotic students. Others by permission.

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 an inpatient or outpatient setting at University of Washington Medical Center; associated readings. Prerequisite: first- or second-year medical student standing. Coordinator: Pain Center.

CONJ 515 Interdisciplinary Health and Human Services Delivery in Rural Communities (1) House Provides opportunities for students in health and human services to explore the trends and issues of service delivery in rural communities. Demographic, 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 520 Anatomy and Autopsy (1/2, max. 2) Fichter Students attend and assist at WMC 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 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 531 Signaling Mechanisms in Excitable Cells (1.5) Hilli 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. 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. Genetics, biochemistry, 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’Amare, 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) Wakimoto, Wright, Hille. Cooper 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 ZOOL 541; W.

CONJ 537 Mechanism of Transcriptional Regulation (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. Offered: W.

CONJ 538 Genetic Instability and Cancer (1/1.5) Foote, Neiman, Kemp, Zarbi Lecture/discussion on cellular and molecular mechanisms underlying phenotypes associated with cancer, including genetic predisposition, DNA repair and instability, and the mechanisms 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: W.

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 543 Problems in Genetic Analysis (1.5) Enerman, Edgar, Ostrander Introduction to the course in problems of genetic analysis using a variety of organisms. Focuses on the use of classical and modern genetic methods to understand developmental problems in biology and medicine. Presents several widely used genetic approaches in detail. Offered: Sp.

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, protein-protein interactions, and post-translational regulation. Prerequisite: introductory biochemistry and cell biology.

CONJ 545 Molecular Interactions and Medicine (1.5) Verinde 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 chromoviruses and the cells they infect, with emphasis on evolutionary battles that occurs between the invading virus and its host. Examines new technologies being used to molecularly dissect virus-host interactions. Offered: 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. Prerequisite: HUBIO 521 or permission of coordinator, Department of Medicine. Offered: W.

CONJ 558 Surgical Anatomy (1-3, max. 12) Graney Guided dissection of selected regions, supplement ed by conferences. Offered conjointly by the departments of Biological Structure and Surgery. Prerequisite: permission of department coordinator, Department of Biological Structure.

CONJ 577 P-Clinical Allergy and Immunology (*, max. 12) Cañafan (Baylor 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 Alcohoholism and Drug Abuse (*, 16) Reoux Introduction to alcohol-toxic modification 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.

Family Medicine

C408 Health Sciences

General Catalog Web page: www.washington.edu/students/gencat/ academic/Family_Medicine.html

Department Web page: www.fammed.washington.edu

Family medicine is the discipline concerned with the continuing and comprehensive care of individuals and their families. 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 open to all medical students. A graduate residency program in family practice 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.

Faculty

Chair
Alfred O. Berg

Professors

Carline, Jan D. * 1977, (Adjunct); MED, 1976, PhD, 1979, University of Washington; assessment of physician performance, evaluation of medical education programs.

Chrisman, Noel J. * 1973, (Adjunct); PhD, 1966, University of California (Berkeley); health beliefs and
practices, social networks and social support; clinically applied anthropology.

Coombs, John B. 1983; MD, 1972, Cornell University; health care outcomes, rural health policy, healthcare workforce issues and applied nutrition.

Ellsworth, Allan J. 1981; PharmD, 1977, Philadelphia College of Pharmacy and Science; primary care, family medicine.

Geyman, John P. 1976, (Emeritus); MD, 1960, University of California (San Francisco); family medicine.

Gloyd, Stephen J. * 1985, (Adjunct); MD, 1973, University of Chicago; family medicine, medically vulnerable populations, mental health/primary care integration.

Groner, Jonathan D. * 1977, (Adjunct); MD, 1976, University of Pennsylvania; depression, panic disorder, somatization, adherence.

Mayer, John G. 1983; MD, 1978, University of Washington; depression, panic disorder, somatization, adherence.

Norris, Thomas E. 1988; MD, 1973, University of Texas (Galveston); clinical applications, health policy and health workforce needs.

Rosenblatt, Roger A. * 1977; MPH, 1971, MD, 1967, Harvard University; research into the organization and delivery of health services, rural health policy.

Schneeweiss, Ronald 1977; MBChB, 1964, University of Cape Town (South Africa); family medicine.

Taplin, Stephen H. 1983; MD, 1978, University of California (Davis), MPH, 1985, University of Washington; family medicine.


Associate Professors

Baldwin, Laura M. 1984; MD, 1980, University of Southern California, MPH, 1986, University of Washington; family medicine.

Church, Lili Lucille 1992; MD, 1985, University of Iowa; family medicine.


Dobie, Sharon A. 1987; MCP, 1971, University of California (Berkeley), MD, 1979, University of California (San Francisco); family medicine.


Farber, Stuart J. 1995, (Clinical); MD, 1974, University of Washington; family medicine, end of life/palliative care research/education, patient/relationship-centered care.


Greer, H. Thomas 1977; MD, 1974, University of Mississippi, MPH, 1979, University of Washington; family medicine.

Leversee, John H. 1973, (Emeritus); MD, 1952, University of Minnesota; family medicine.

Losh, David Paul 1992; MD, 1974, University of Kansas; family medicine.

Mauksch, Larry B. 1985, (Clinical); MEd, 1982, University of Washington; physician/patient communication, underprivileged populations, mental health/primary care integration.

Norris, Thomas E. 1988; MD, 1973, University of Texas (Galveston); clinical applications, health policy and health workforce needs.

O’Kane, John 1993, (Adjunct); MD, 1993, University of Washington; family medicine, medically vulnerable populations, primary care research.

Robins, Lynne S. * 1999, (Adjunct); PhD, 1990, University of Michigan; cultural competence, physician-patient communication, qualitative research assessment, ethnography.


Taylor, Thomas R. 1979; MBChB, 1957, PhD, 1972, University of Glasgow (UK); family medicine.

Wright, George 1997; MA, 1964, PhD, 1977, University of Michigan; health economics emphasizing primary care, physician competition, rural health.

Assistant Professors

Doescher, Mark 1996; MD, 1989, University of California (San Francisco); family medicine, medically vulnerable populations, primary care research.

Huntington, Jane 1991; MD, 1994, University of Washington; family medicine.

Kim, Sara 1995; MA, 1990, George Washington University, PhD, 1999, University of Washington; educational technology.

Lynge, Dana C. 1993, (Adjunct); MD, 1985, McGill University (Canada); general surgery.

O’Kane, John 1993, (Adjunct); MD, 1993, University of Vermont; family medicine, sports medicine, team care.

Paluska, Scott A. 2001; MD, 1995, University of Michigan; family medicine, sports medicine.


Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

FAMED 499 Undergraduate Research (*) Research activities arranged with University-based or community 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.

FAMED 546 Preclinical Hospice Volunteer Training Elective (3) Using lectures, small groups, role play, and readings, covers the basics of hospice 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 Medicine (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.

FAMED 555 P-Wilderness Medicine (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. Prerequisite: permission of course coordinator.

FAMED 556 Spanish for Health Professionals (1) Instruction in interviewing Spanish-speaking patient. Credit/no credit only. Prerequisite: health professions student.

FAMED 560 P-Indian Health Problem-Based Learning Cases (1) For second-year medical students. Presents common Indian health problems via problem-based learning cases over two to three days per case. Offered: A.

FAMED 630 P-WRITE Family Medicine Clinical Clerkship (*, max. 24) Basic clinical clerkship for students enrolled in the WRITE Program.

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/residency site. Participates in care of assigned patients, using 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
Supplemental experience in Family Medicine for late junior or senior medical students, permission of course coordinator. Offered: AWSpS.

FAMED 681 P-Indian Health Care Clerkship (*, max. 12) Individually designed learning experience allows student to choose training opportunities, including Indian Health Service, Tribal IHS, community health centers, and other organizations. Prerequisite: completion of required third-year clerkship, UCONJ 530 or permission of instructor. Offered: AWRSpS.

FAMED 682 P-Traditional Indian Medicine (*, max. 24) For students seeking an understanding of the history, culture, and medical practices of traditional Indian medicine. Prerequisite: completion of required third-year clerkship, UCONJ 530 or permission of instructor. Offered: AWRSpS.

FAMED 683 P-Clinical Clerkship in Family Medicine—Anacortes (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 684 P-Clinical Clerkship in Family Medicine—Renton Valley (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 685 P-Clinical Clerkship in Family Medicine—Fort Lewis (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 686 P-Clinical Clerkship in Family Medicine—Tukwila (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 687 P-Clinical Clerkship in Family Medicine—Whitefish (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 688 P-Clinical Clerkship in Family Medicine—Spokane Valley (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 689 P-Clinical Clerkship in Family Medicine—Whitefish (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 690 P-Clinical Clerkship in Family Medicine—Omak (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 691 P-Clinical Clerkship in Family Medicine—Anacortes (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 692 P-Clinical Clerkship in Family Medicine—Omak (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 693 P-Clinical Clerkship in Family Medicine—Whitefish (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 694 P-Clinical Clerkship in Family Medicine—Okanogan (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 695 P-Clinical Clerkship in Family Medicine—Skagit Valley (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 696 P-Clinical Clerkship in Family Medicine—Anacortes (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 697 P-Clinical Clerkship in Family Medicine—Okanogan (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 698 P-Clinical Clerkship in Family Medicine—Skagit Valley (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 699 P-Clinical Clerkship in Family Medicine—Anacortes (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 700 P-Clinical Clerkship in Family Medicine—Okanogan (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 701 P-Clinical Clerkship in Family Medicine—Skagit Valley (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 702 P-Clinical Clerkship in Family Medicine—Bremerton (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 703 P-Advanced Preceptorship at WWAMI Clinical Centers (*, max. 12) Supplemental experience in Family Medicine for late junior or senior medical students at selected WWAMI clinical centers. Prerequisite: completion of basic 6-week clerkship in Family Medicine. Offered: AWRSpS.

FAMED 704 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 705 P-Clinical Clerkship in Family Medicine—Providence (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 706 P-Clinical Clerkship in Family Medicine—Pocatello (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 707 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 708 P-Clinical Clerkship in Family Medicine—Bremerton (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 709 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 710 P-Clinical Clerkship in Family Medicine—Providence (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 711 P-Clinical Clerkship in Family Medicine—Bremerton (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 712 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 713 P-Clinical Clerkship in Family Medicine—Providence (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 714 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 715 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 716 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 717 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 718 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 719 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 720 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 721 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 722 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 723 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 724 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 725 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 726 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 727 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 728 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 729 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 730 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 731 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 732 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 733 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.

FAMED 734 P-Clinical Clerkship in Family Medicine—Converse (12) For description and prerequisites, see 640. Offered: AWRSpS.
forms, available from the MBT Web site or through the
three letters of recommendation with evaluation vitae, if available; (7) TOEFL scores, if applicable; (5) a statement of objective; (6) a curriculum test, as well as the results of an advanced-subject Graduate Record Examination scores for the general official school transcripts; (4) official copies of
7730: (1) the admissions form, available through the
or better, and to have taken and received high scores
States or its equivalent in a foreign country. Students
from an accredited college or university in the United
prospective student hold a baccalaureate degree
Admission Requirements

Doctor of Philosophy

The molecular biotechnology graduate program is designed to educate and stimulate students at the interface of biological, physical, and computational sciences. Students are trained to focus on the develop-
ment and/or application of new tools to challenging biological problems. These tools include the development of new chemistries, instruments, and computer hardware or software for the analysis of DNA, proteins, or cells. The goal of the program is to provide students with a sound background in molecular and cellular biology, and a broad access to research expertise in disciplines outside biology. Accordingly, the faculty brings together skills in applied mathematics, biology, chemistry, computer sciences, physics, and instrument design. Particular areas of expertise include immunology, protein chem-
istry, nucleic-acid chemistry, analytical cytogenetics, large-scale DNA mapping and sequencing (genomics), and computational biology.

Research Facilities

The department is currently housed in the H-, J-, and K-wings in the Health Sciences Complex. Students in the department are assigned space in the laborato-
ries of faculty members with whom they do their rota-
tions 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 also available to stu-
dents.

Admission Requirements

Admission to the Graduate School requires that a prospective student hold a baccalaureate degree from an accredited college or university in the United States or its equivalent in a foreign country. Students are required to have a cumulative GPA of 3.00 (“B”) or better, and to have taken and received high scores on the Graduate Record Examination (generally in the 80th percentile or higher).

In addition to completing the application require-
ments for the Graduate School, an applicant should also forward the following items to Graduate Student Services, Department of Genome Sciences, Box 357730, University of Washington, Seattle, WA 98195-7730: (1) the admissions form, available through the department Web site or through the program office; (2) a copy of the Graduate School Application; (3) official school transcripts; (4) official copies of Graduate Record Examination scores for the general test, as well as the results of an advanced-subject test; (5) a statement of objective; (6) a curriculum vita, if available; (7) TOEFL scores, if applicable; and (8) three letters of recommendation with evaluation forms, available from the MBT Web site or through the program office. Students are admitted for autumn quarter only. The application deadline is January 15.

Faculty

Chair
Robert H. Waterson

Professors

Aebi, Roland * 1964, MD, 1984, Yale University; protein biochemical investigation of signal transduction pathways.

Bendich, Arnold J. * 1970, (Adjunct); PhD, 1969, University of Washington; structure and replication of chromosomal DNA molecules in mitochondria, chloroplasts, and bacteria.

Byers, Breck E. * 1970; PhD, 1967, Harvard University; cell biology: mitosis and meiosis, mecha-

nisms of nuclear division and crossing-over in yeast.

Deeb, Safir S. * 1983, (Adjunct Research); PhD, 1964, University of Illinois; genetic factors predisposing to hyperlipidemia and coronary artery disease.

Eisen, Harvey * 1986, (Affiliate); PhD, 1967, University of Toronto (Canada); host-parasite interactions, gen-
eration of genetic diversity.

Fangman, Walton L. * 1967, (Emeritus); PhD, 1965, Purdue University; molecular genetics; control of replication of yeast chromosomes, plasmid and mito-
ochondrial DNA.

Felsenstein, Joseph * 1968; PhD, 1968, University of Chicago; estimation of evolutionary trees, models of long-term evolutionary processes.


Furlong, Clement A. * 1977; PhD, 1968, University of California (Davis); human biochemical genetics in biochemistry of membrane transport systems.

Gallant, Jonathan A. * 1961; PhD, 1961, Johns Hopkins University; molecular genetics, control mechanisms in bacteria, accuracy of translation.

Gartler, Stanley M. * 1957, (Emeritus); PhD, 1952, University of California (Berkeley); mammalian somat-
ic cell genetics with emphasis on the mechanism of x-chromosome inactivation.

Gottschling, Daniel E. * 1996, (Affiliate); PhD, 1984, University of Colorado; dissection of telomere attributes and understanding telomerase in S. Cerevisiae.

Green, Philip * 1994; PhD, 1976, University of California (Berkeley); mathematical and computer methods for genome analysis.

Hall, Benjamin D. * 1963; MA, 1956, PhD, 1959, Harvard University; the evolution of nuclear genes in plants and fungi.

Hartwell, Leland H. * 1968; PhD, 1964, Massachusetts Institute of Technology; genetic analy-

sis of chromosome transmission and of the control of division by hormones in yeast.

Hawthorne, Donald C. * 1980, (Emeritus); PhD, 1955, University of Washington; yeast genetics, chromo-
some mapping, suppressors.

Hood, Leroy E. * 1992, (Affiliate); PhD, 1968, California Institute of Technology; molecular immunol-
ogy, large-scale DNA mapping and sequencing, molecular evolution.

King, Mary-Claire * 1995, (Adjunct); PhD, 1973, University of California (Berkeley); genetic analysis of complex human phenotypes, human diversity and evolution.

Laird, Charles D. * 1971, (Adjunct); PhD, 1966, Stanford University; cell and developmental biology, human genetics.

Manoil, Colin C. * 1986; PhD, 1979, Stanford University; molecular genetics, protein localization in bacteria.

Martin, George * 1957, (Adjunct); MD, 1953, University of Washington; somatic cell genetics, pathobiology of aging, neurodegenerative disorders.

Mottuky, Arno G. * 1953, (Emeritus); MD, 1947, University of Illinois; medical genetics.

Olson, Maynard V. 1992, PhD, 1970, Stanford University; methods and applications of large-scale DNA analysis.

Reid, Brian J. * 1983, (Adjunct); PhD, 1975, MD, 1980, University of Washington; genetic and cell cycle abnormalities in neoplastic progression in Barrett’s esophagus.

Schubiger, Gerold A. * 1972, (Adjunct); PhD, 1968, University of Zurich (Switzerland); developmental biology of insects, embryonic determination in Drosophila.

Sibley, Carol Hopkins * 1976; PhD, 1974, University of California (San Francisco); molecular parasitology and drug resistance.


Stadler, David R. *, (Emeritus); PhD, 1952, Princeton University.

Stamatyannopoulos, George 1964; MD, 1958, DrMedS, 1960, University of Athens (Greece); med-
ical genetics.

Thomas, James H. * 1988, PhD, 1985, Massachusetts Institute of Technology; genetics of development and the nervous system in nematodes.

Thompson, Elizabeth A. * 1985, (Adjunct); PhD, 1974, Cambridge University (UK); statistical analysis of human genetic data, population genetics, conserva-
tion and computational biology.

Trask, Barbara J. * 1992; PhD, 1985, University of Leiden (Netherlands); in situ hybridization, analytical cytogenetics, analysis of large-scale DNA polymorph-
ism.

Wakitomo, Barbara T. * 1984, (Adjunct); PhD, 1981, Indiana University; developmental genetics, gene expression and chromosome organization in eukary-
ocites.

Young, Elton * 1969, (Adjunct); PhD, 1967, California Institute of Technology; regulation of gene activity in the yeast Saccharomyces cerevisiae.

Associate Professors

Berg, Celeste A. * 1990; PhD, 1986, Yale University; Drosophila developmental genetics; Cell communica-
tion and cell migration during oogenesis.

Braun, Robert Elmer * 1986; PhD, 1985, Tufts University; mammalian genetics, germ cell develop-
ment and reproduction.

Goverman, Joan M. * 1992, (Adjunct); PhD, 1981, University of California (Los Angeles); immune recogni-
tion and tolerance, autoimmunity, T cell development, activation, antibody diversity.
Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsclstf/.

Genetics

GENET 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.

GENET 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 GENET 371 or GENET 372.

GENET 454 The Origins of Genetics (4) NW Discovery and eventual triumph of Mendelism in the early twentieth century. Concept 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 GENET 351, GENET 371, or GENET 372. Offered: A.

GENET 465 Advanced Human Genetics (4) NW King, Olson 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 their genealogical or molecular level; relevance of to other species to analysis of human genes. Prerequisite: GENET 371; either GENET 372 or BIOC 440. Offered: W.

GENET 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 GENET 371 or GENET 372. Offered: Sp.

GENET 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: A/WSp.

GENET 499 Undergraduate Research (*, max. 30) Credit/no credit only. Offered: A/WSp.

GENET 501 Introduction to Research Materials (3, max. 9) 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 Genetics or permission of graduate program coordinator. Offered: A/WSp.

GENET 520 Seminar (1, max. 15) Credit/no credit only. Prerequisite: graduate standing in the Department of Genetics or permission of graduate program coordinator. Offered: A/W.

GENET 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: A/W.

GENET 531 Human Genetics (3) Modern approaches to the identification of human disease genes permitted by their isolation. Functional conservation of proteins throughout eukaryotic evolution as an approach to their function in model systems such as somatic cell culture, transgenic mice, nematodes, Drosophila, and yeast. Prerequisite: second-year graduate student. Offered: alternate years.

GENET 540 Introduction to Computational Molecular Biology: Genome and Protein Sequence Analysis (3) 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: jointly with MBT 540; W.

GENET 541 Introduction to Computational Molecular Biology: Molecular Evolution (3) 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: permission of instructor. Offered: jointly with MBT 541; Sp.

GENET 550 Methods and Logic in Genetics (3) Critical thinking and debate in genetics-related scientific research papers. Material emphasizes methodological and logical themes of importance in modern genetics, for example: origin of mutants, genetic epistasis, pulse labelling, and in vivo gene function. Prerequisite: first-year genetics graduate students only. Offered: A.

GENET 551 Basics of Genetic Analysis (3) First course in a three-quarter sequence in formal, molecular, and microbial genetics. Offered: A.

GENET 552 Nature and Consequences of Mutation (3) Origin of mutations and their analysis in human and other genomes. Prerequisite: GENET 551 or permission of instructor. Offered: W.

GENET 553 Chromosome Structure and Mechanics (3) Chromosome structure and DNA replication; molecular basis of recombination and transposition. Prerequisite: GENET 552 or permission of instructor. Offered: Sp.

GENET 562 Population Genetics (4) Feldstein 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: Sp.

GENET 570 Phylogenetic Inference (3) Feldstein 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; Sp.


GENET 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: A/W.

GENET 582 Seminar in Mouse Genetics (1) Braun Discussion of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of mammalian development, with utilization of transgenic techniques. Credit/no credit only. Offered: A/W.

GENET 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: A/W.

GENET 584 Seminar in DNA Replication (1) Brower, 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: A/W.

GENET 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: A/W.

GENET 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: AWSp.

GENET 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.

GENET 590 Population Genetics Seminar (1) Felsenstein Weekly presentation by participants of current literature and ongoing research in evolution, molecular evolutionary genetics of natural populations, human population genetics, and quantitative genetics applied to animal and plant breeding. Credit/no credit only. Prerequisite: GENET 562 or permission of instructor.

GENET 600 Independent Study or Research (*) Credit/no credit only. Offered: AWSp.


**Molecular Biotechnology**

MBT 450 Introduction to Molecular Biotechnology (2) Highlights of the current research interests of Molecular Biotechnology faculty. Topics cover the interface between biology and technology for DNA and protein analysis. Credit/no credit only. Offered: A.

MBT 499 Undergraduate Research (1-5, max. 12) Individual research projects in Molecular Biotechnology related to: human genetics, cytogenetics, large-scale sequencing and mapping, protein structure and function, and computational analysis of protein and DNA sequences. Offered: AWSp.

MBT 501 Introduction to Research (1-9, max. 15) Laboratory rotations for first-year graduate students. Research projects in faculty labs covering various laboratory methods. Prerequisite: graduate student in MBT. Offered: AWSp.

MBT 510 Technologies for Genome Analysis (3) 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.

MBT 520 Technologies for Protein Analysis (3) Discussion of current and newly-emerging technologies in protein analysis with regard to applications in biology and medicine and to potential advantages and limitations. Prerequisite: permission of instructor. Offered: W.

MBT 530 Advanced Instrumentation for Genome Analysis (3) Presentation of principles and use of instruments for genome analysis. Discussion of limitations of present instruments and potential improvements. Theory of electrophoretic and fluorescence-based DNA analysis techniques. Prerequisite: permission of instructor. Offered: Sp.

MBT 540 Introduction to Computational Molecular Biology: Genome and Protein Sequence Analysis (3) 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: jointly with GENET 540; W.

MBT 541 Introduction to Computational Molecular Biology: Molecular Evolution (3) 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: permission of instructor. Offered: jointly with GENET 541; Sp.

MBT 550 Seminar in Molecular Biotechnology (1, max. 12) Presentation of independent research by invited outside speakers and members of the Department of Molecular Biotechnology. Emphasis on new and original contributions to the field of molecular biotechnology. Credit/no credit only. Offered: AWSp.

MBT 551 Seminars in Computational Biology (1) Presentation and discussion of current topics in computational biology by guest speakers. Prerequisites: permission of instructor. Offered: AWSp.

MBT 560 Molecular Biotechnology Literature Conference (1, max. 12) A weekly presentation and discussion by faculty, postdoctorates, and graduate students on state-of-the-art research in molecular biotechnology. Journal Club sessions, during which results gleaned from current literature are discussed and critically analyzed, alternated with Research in Progress sessions, during which students and post-doctorates present their own research work. Prerequisite: permission of instructor. Credit/no credit only. Offered: AWSp.

**Human Biology**

**Course Descriptions**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsclat/.

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 (3) 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 (7) 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) Crnl Physiology of the cell membrane, including ionic and electrical, chemical, and physical, energy transport; active transport, excitability, and action potentials; biophysics of sensory receptors; neuromuscular transmission; muscle energetics and contractility; spinal reflexes and central sympathetic transmission; autonomic nervous system; energy metabolism and temperature regulation; epithelial transport; gastrointestinal motility and secretions. Offered: A.

HUBIO 513- P-Introduction to Clinical Medicine (1-) 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-) Walker Patterns of behavioral factors in major manageable mental 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-Cell and Tissue Response to Injury (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 521- P-Microbiology and Infectious Disease I-A (4-) Moseley Pathogenesis and immunity of infectious diseases, natural barriers. Microbiology, epidemiology, clinical manifestations and control of representative bacterial, fungal, parasitic, and viral infectious diseases. Chemotherapeutics and principles of chemotherapy. Sterilization, principles of asepsis, nosocomial and iatrogenic infections and their prevention. Offered: W.

HUBIO 522- P-Introduction to Clinical Medicine (4-) Goldstein Introduction to clinical medicine; history taking, physical examination, 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, autoimmune, blood transfusion, and transplantation). Offered: W.

HUBIO -524 P-Biochemistry I-B (3) 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 (1) Walker Effects of behavioral factors in major management problems facing the health care provider, including 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-Epidemiology (2) Wald 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 532 P-Nervous System (6) Dacey Integrated approach to normal structure and function of the nervous system, including the eye. Neuropathological examples, as well as clinical manifestations of neurological disease are presented. 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 (5.5) Feigl Interdisciplinary approach to cardiovascular medicine, including pathology, 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 (2.5) 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 (4) Vincenzl 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 (2.5) Weigle 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 (2) 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 (3-5) 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) Gernsheimer Familiarizes students with the basic pathophysiological 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 (4.5) Teitz 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 (2.5) 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) Lafferty 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 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-Systems of Human Behavior II (3) Paschall Major psychiatric disorders are defined and described, and a systematic approach to differential diagnosis is presented. Conceptual approaches to etiology, 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 introduction to therapeutic and adverse effects. Offered: Sp.

HUBIO 565 P-Reproduction (3.5) 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 disease evaluation, including physical examination and illustrating examples of inflammatory, vascular, immunological (including drug hypersensitivity), and neoplastic diseases. Offered: A.

HUBIO 568 P-Nutrition for Physicians (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-Introduction to Critical Reading and Evaluation of the Medical Literature (1) Wolf An introduction to methods for identifying and retrieving Web-based high quality, relevant evidence, and to methods for describing and applying rigorous criteria when reading primary research studies or reviews of primary studies that report on the effectiveness of therapeutic or preventive interventions. Prerequisite: first-year medical student standing. Offered: W.

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.
tists, 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, immunotolerance, 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 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 L 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.

Elkon, Keith B. * 2001; MD, University of Witwatersrand (South Africa), MRCP, 1978, University of London; rheumatology.

Greenberg, Philip D. * 1978; MD, 1971, State University of New York (Downstate Medical Center); molecular, cellular, viral, and tumor immunology.

Lemnark, Ake * 1988, (Adjunct); MD, 1970, PhD, 1971, University of Umea; immunogenetics of organ-specific autoimmunity with emphasis on insulin-dependent diabetes.

Maizels, Nancy * 2000; PhD, 1974, Harvard University; recombination and repair in mammalian cells, especially activated B cells.


Wilson, Christopher B. * 1980; MD, 1972, University of California (Los Angeles); immunology, infectious diseases.

Associate Professors
Concannon, Patrick J. * 1989, (Affiliate); PhD, 1984, University of California (Los Angeles); development of the human T cell receptor repertoire, genetics of diabetes and ataxia-telangiectasia.

Farr, Andrew G. * 1982, (Adjunct); PhD, 1975, University of Chicago; cell interactions governing lymphocyte production and function.

Fink, Pamela J. * 1990; PhD, 1981, Massachusetts Institute of Technology; T cell differentiation, tolerance induction, molecular and cellular immunology.

Foote, Jefferson * 1994, (Affiliate); PhD, 1985, University of California (Berkeley); biophysics of immune maturation, antibody engineering and immunotherapy, x-ray crystallography.

Goverman, Joan M. * 1992; PhD, 1981, University of California (Los Angeles); immune recognition and tolerance, autoimmunity, T cell development, activation, antibody diversity.

Hockenbery, David M. * 1994, (Adjunct); MD, 1982, Washington University; gastroenterology.

Rawlings, David J. * 2001; MD, 1984, University of North Carolina; immunology and rheumatology.

Rudensky, Alexander Y. * 1992; PhD, 1986, Garbrievsky Institute for Epidemiology and Microbiology; antigen processing and presentation, T-cell recognition, T cell development.

Wilderford, Dennis M. * 1996, (Adjunct); MD, 1995, Washington University; hematology.

Ziegler, Steven F. * 1988, (Affiliate); PhD, 1984, University of California (Los Angeles); genetic and molecular analysis of immune system function.

Assistant Professors
Beeson, Craig G. * 1996, (Adjunct); PhD, 1993, University of California (Irvine); the chemistry and biochemistry of the immune system, regulation of energy metabolism.

Bix, Mark * 1999; PhD, 1993, Massachusetts Institute of Technology; regulation of cytokine gene expression during effector T cell development.

Dong, Chen * 2000; PhD, 1996, University of Alabama; molecular mechanisms of immune and autoimmune responses.

Gu, Yansong * 2001, (Adjunct); PhD, 1994, Thomas Jefferson University; DNA damage signaling and repair pathways.

Kaja, Murali Krishna * 2001; PhD, 1995, Indian Institute of Technology (India); generation and maintenance of immune memory.

Lagounoff, Michael * 2001, (Adjunct); PhD, 1995, University of Chicago; molecular virology of Kaposi’s sarcoma-associated herpesvirus.

Nelson, Bradley H. * 1997, (Affiliate); PhD, 1991, University of California (Berkeley); molecular regulation of T lymphocyte proliferation by the interleukin-2 receptor.

Scharenberg, Andrew M. 2000, (Adjunct); MD, 1990, University of North Carolina; immunology.


Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs_catalog/.

IMMUN 441 Introduction to Immunology (4) NW
General properties of immune responses; cells and tissues of immune system; lymphocyte activation and specificity; effector mechanisms; immunity to microbes; immunodeficiency and AIDS; autoimmune diseases; transplantation. Prerequisite: BIOL 202; may not be repeated; recommended: GENET 371, GENET 372, BIOC 405, or BIOC 440. Offered: jointly with MICROM 441; A.

IMMUN 447 Immunity, Disease, and Society (2) NW
Immunology, infectious diseases; transplantation. Prerequisite: permission of instructor. Offered: A/WSpS.

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: A/WSpS.

IMMUN 532 Advanced Immunology (4)
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: hematoopoiesis, antigen receptor structure, lymphocyte development, antigen presentation, and cytokines. Offered: W.

IMMUN 533 Host Defense to Cancer and Infection (3) NW
Clark Addresses the immune response to cancer, immunity to infection that complicates cancer, and the mechanisms of cellular homeostasis need to prevent cancer of the immune system. Offered: Sp; every even year.

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.
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: permission of instructor. Offered: AWSpS.

IMMUN 551 Regulation of T Cell-Dependent B Cell Maturation (1, max. 30) Clark Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

IMMUN 552 Immunogenetics and Autoimmunity (1, max. 30) Cannon Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

IMMUN 553 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: permission of instructor. Offered: AWSpS.

IMMUN 554 Immunogenetic Aspects of Human Autoimmunity (1, max. 30) Nepom Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

IMMUN 555 Model of Autoimmune Disease and Their Regulation (1, max. 30) Governan Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

IMMUN 557 Thymic Environment (1, max. 30) Farr Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

IMMUN 559 Genetics of Diabetes (1, max. 30) Foote Credit/no credit only. Prerequisite: firm background in immunology, permission of instructor. Offered: AWSpS.

IMMUN 560 Progress in T Cell Research (1, max. 30) Bevan, Fink, Rudensky Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

IMMUN 563 Macrophage Biology: Signaling and Phagocytosis (1, max. 30) Aderem Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

IMMUN 564 Cellular/Molecular Regulation of T Cell Responses (1, max. 30) Greenberg Credit/no credit only. Prerequisite: graduate standing in Immunology. Offered: AWSpS.

IMMUN 565 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. Students may register for more than one conference each quarter. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

IMMUN 570 Cytokine Signaling in Lymphocytes (1, max. 30) Wilson Credit/no credit only. Prerequisite: graduate standing in Immunology.

IMMUN 573 Immunology Seminar Series (1, max. 30) Bevan, Fink, Rudensky 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: firm background in immunology, permission of instructor. Offered: AWSpS.

IMMUN 577 Immunological Responses (1-7, max. 7) Current problems in immunological research. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

IMMUN 599 Introduction to Immunology Research (1, max. 30) Current problems in immunological research. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSpS.

IMMUN 600 Independent Study or Research (*) Credit/no credit only. Offered: AWSpS.

IMMUN 700 Master’s Thesis (*) Credit/no credit only. Offered: AWSpS.

IMMUN 800 Doctoral Dissertation (*) Credit/no credit only. Offered: AWSpS.

Laboratory Medicine
NW120 University of Washington Medical Center

General Catalog Web page: www.washington.edu/students/gencat/academic/Laboratory_Med.html

Department Web page: www.labmed.washington.edu

The Department of Laboratory Medicine provides services in clinical and research areas. The major divisions include clinical chemistry, hematology, immunology, microbiology, coagulation, immunology, genetics, molecular diagnostics, virology, and medical informatics. In addition to courses for medical students, the department offers a Master of Science degree program. The department provides residency training in clinical pathology for graduate physicians and postdoctoral training in several subspecialty areas of laboratory medicine.

Graduate Program
Graduate Program Director
NW120 University of Washington Medical Center, Box 357110
206-598-6131
lmedgrad@u.washington.edu

The Department of Laboratory Medicine offers a graduate program leading to the Master of Science degree. Each student in the program selects one of the major areas of concentration (chemistry, coagulation, hematology, immunology, microbiology, or virology). The chemistry option is approved by the Commission on Accreditation in Clinical Chemistry.

Admission Requirements
Applicants must have a B.S. or B.A. degree in a field appropriate to the graduate study (medical technology, biochemistry, biology, chemistry, or microbiology) and meet the Graduate School requirements for admission. The applicant must also be certified as a medical technologist-clinical laboratory scientist, or as a specialist in a particular area of laboratory medicine by one of the national certifying agencies. In addition, applicants must take the Graduate Record Examination aptitude test.

Financial Aid
Research assistantships may be available for second-year students. Opportunities for part-time employment in departmental laboratories may be available, and applications will be considered.

Research Facilities
Each division in the department is equipped with modern facilities for research in its specialty area.

Residency Training Program
The program provides residency training in clinical pathology (laboratory medicine) for graduate physicians in cooperation with the Department of Pathology. Persons who complete the program are eligible for certification by the American Board of Pathology. For additional information, contact the Resident Program Director, Department of Laboratory Medicine, Box 357110.

Faculty
Chair
James S. Fine

Professors
Ashley, Rhoda L. * 1981; PhD, 1977, University of California (Davis); pathogenesis of viral infections, immune response to herpes, rapid diagnosis.

Bauer, Larry * 1980, (Adjunct); PharmD, 1980, University of California (Davis); pathogenesis of viral infections, rapid diagnosis.

Chandler, Wayne L. * 1982; MD, 1982, St Louis University; clinical chemistry, clinical coagulation, hematology.

Chattrian, Gian E. 1981, (Emeritus); MD, 1951, University of Naples (Italy); electroencephalography and clinical neurophysiology.
Corey, Lawrence * 1977; MD, 1971, University of Michigan; DX, therapy and pathogenesis of viral infections, AIDS/herpes viruses.

Coyle, Marie B. * 1973, (Emeritus); PhD, 1965, Kansas State University; DNA probes and GLC for rapid identification of Mycobacteria and Corynebacteria.

Dettet, James C. * 1970, (Emeritus); MD, 1962, University of Kansas; laboratory diagnosis of genetic disorders, red-cell disorders and laboratory instrumentation.


Gilliland, Bruce C. * 1970; MD, 1960, Northwestern University; hematology.

Kaplan, Alex 1960, (Emeritus); PhD, 1936, University of California (Berkeley); clinical chemistry.

Kenny, Margaret * 1970, (Emeritus); PhD, 1968, University of Illinois; clinical chemistry, new technologies for in vivo clinical biochemical analysis.

Labbé, Robert F. * 1957, (Emeritus); PhD, 1951, Oregon State University; porphyrin disorders, nutritional biochemistry.

McElrath, Margaret Juliana * 1990, (Adjunct); PhD, 1978, MD, 1980, Medical University of South Carolina; infectious diseases.

Mullins, James I. * 1994, (Adjunct); PhD, 1978, University of Minnesota; retroviruses and AIDS, molecular virology.

Plorde, James J. * 1982, (Emeritus); MD, 1959, University of Minnesota; infectious diseases, antibiotic-resistant nosocomial infections.

Raghu, Ganesh 1981, (Adjunct); MD, 1974, University of Mysore (India); respiratory disease.

Rainey, Petrie M. * 2000; PhD, 1973, University of California (Berkeley), MD, 1980, University of North Carolina; clinical chemistry, medical toxicology, pharmacology of antiviral and antiparasitic drugs.

Raisys, Vidmantas A. * 1971, (Emeritus); PhD, 1969, State University of New York (Buffalo); clinical toxicology, therapeutic drug monitoring.


Schmer, Gottfried * 1970, (Emeritus); MD, 1956, University of Vienna (Austria); tropical medicine and public health, clinical parasitology, preventive medicine.

Zeh, Judith * 1982, (Adjunct Research); PhD, 1979, University of Washington; estimation of population size and dynamics; robust methods, computing in infectious disease research.

Associate Professors


Chou, David * 1998; MD, 1974, University of Pittsburgh, MS, 1979, University of Minnesota; medical informatics, instrument automation, clinical chemistry.

Clayson, Kathleen J. * 1969, (Emeritus); MS, 1968, University of Minnesota; enzymology in clinical chemistry.


Coombs, Robert W. * 1985; PhD, 1977, MD, 1981, Dalhousie University (Canada); diagnosis and pathogenesis of HIV infection.

Delaney, Collene J. * 1982; PhD, 1972, University of Illinois; clinical chemistry, the study of diabetes and alcoholism.

Fine, James * 1977; MD, 1972, MS, 1977, University of Minnesota; enzymology, medical informatics.

Fligner, Corrine L. 1983, (Adjunct); MD, 1976, University of New Mexico; autopsy and forensic pathology, fetal and perinatal pathology, forensic toxicology.

Frenkel, Lisa M. 1994; MD, 1987, University of Kansas; infectious disease.

Fritsche, Thomas R. * 1981; PhD, 1984, University of Minnesota; systemsatics and ecology of animal parasites, medical microbiology.

Gretch, David R. * 1990; PhD, 1990, University of Iowa, MD, 1990, University of Iowa; research and diagnostics related to viral hepatitis.

Hackman, Robert C. 1982; MD, 1971, Stanford University; infectious and pulmonary complications in immunocompromised patients.

Lampe, Mary F. * 1988; MS, 1976, University of Washington; clinical chemistry, medical toxicology.

Posavad, Christine 2001, (Research); PhD, 1993, McMaster University (Canada); virology, hepatitis C, virus-host interactions.

Zhu, Tuifu 2002; MD, 1984, Jiangxi University (China), PhD, 1990, Peking Union Medical School (China).

Lecturer

Goodyear, Nancy 2000; PhD, 1997, Catholic University of America; clinical microbiology and education.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs/cat/.

LAB M 418 Topics in Clinical Chemistry (5) Rainey 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) Behrens 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) Rainey Lecture and laboratory covering urinalysis testing procedures and associated disease entities. Analysis of other body fluids. Methods of microscopic examination by use of bright-field, phase, and polarizing microscopy. Offered: S.

LAB M 421 Medical Microbiology (1/6, max. 6) Goodyear 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) Rainey Clinical testing using automated and manual methods. Measurement of pancreatic function and intestinal absorption, renal and liver function, enzymes,
electrolytes, blood gases, lipids, toxicology, urinaly-

LAB M 424- Clinical Microbiology (*, max. 24)
Goodyear Techniques used in the diagnostic micro-
biology laboratory, including quality control, speci-
cimen evaluation, identification of pathogenic microor-
ganisms, and antimicrobial susceptibility testing. Offered: A/WSp.

LAB M 425- Clinical Hematology (*, max. 24)
Behrens Clinical study of techniques used in the diag-
nostic evaluation of blood cells, including production,
proliferation, survival, morphologic, and functional
features. Assays of proteins and cells important in
hemostasis included. Quality control and quality
assurance issues considered. Biomolecular tech-
niques appropriate for evaluation of the hematologic

LAB M 426 Clinical Immunohematology (7)
Behrens Lecture and laboratory covering theory of
transfusion medicine and serological procedures
used in the evaluation of cell and cellular antigens.
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 consid-
ered. Offered: W.

LAB M 427- Selected Studies in Laboratory
Medicine (*, max. 24) Behrens, Goodyear Lampa,
Rainey Selected clinical study in the major scientific
disciplines of laboratory medicine, to include molec-
ular diagnostics, or pursuance of a clinical research
study. Credit/no credit only. Offered: A/WSp.

LAB M 499 Undergraduate Research (*) Specific
project in clinical laboratory investigation. Offered:
A/WSp.

LAB M 502 Laboratory Medicine Grand Rounds (1, 
max. 6) Gilliland Grand rounds are concerned with
current topics in the field of laboratory medicine.
Credit/no credit only. Offered: A/WSp.

LAB M 510 Laboratory Medicine Research
Conference (1, max. 6) Taft Presentation and disus-
sion 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. Prereq-

LAB M 520 Seminar in Organization and
Management in Laboratory Medicine, Chandler
Core course for the Master of Science degree in lab-
oratory 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 hemato-
logy with emphasis on clinical-pathological correla-
tion. For laboratory medicine graduate students with
special interest in diagnostic clinical hematology.
Prerequisite: graduate standing and permission of

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. Clinopathologic correlation.
Offered: jointly with PATH 522; even years; W.

LAB M 590 P-Research Projects in Laboratory
Medicine (*) Tall Opportunity for laboratory experi-
ence on a research problem related to laboratory
medicine. Stipends are available to students with
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: A/WSp.

LAB M 596 Clinical Chemistry Seminar (2) Rainey
Theory and practice of clinical chemistry. For post-
doctoral and graduate students in clinical chemistry.
Prerequisite: permission of instructor. Offered: A/WSp.

LAB M 601 Internship (3-9, max. 9) Credit/no credit
only. Prerequisite: graduate standing in laboratory

LAB M 680 P-Clinical Laboratory Testing: Methods
and Interpretation (*) Wiener Provides the third-
and fourth-year medical student with the opportunity
to evaluate clinical laboratory data in the clinical labora-
tory setting. One-on-one teaching using case materi-

LAB M 685 P-Laboratory Case Studies for Clinical
Diagnosis (4) Rulelidge Clinical case presentations
and discussions aimed at test selection, disease
induced alterations, efficient algorithms, factors con-
erning 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: A/WSp.

Medical Education and Biomedical Informatics
E312 Health Sciences

General Catalog Web page:
www.washington.edu/students/genca-
ca/academic/Medical_Ed.html

Department Web page:
www.dme.washington.edu

The Department of Medical Education and
Biomedical Informatics is comprised of three divi-
sions: General Medical Education, Biomedical
and Health Informatics, and MEDEX Northwest. The
Division of General Medical Education serves the
medical school and medical education community
through program support, evaluation, and research
in the field of medical education. The Division of
Biomedical and Health Informatics contributes to the
conceptualization and development of innovative
clinical, academic, and educational information sys-
tems, services, and tools for application within the
Academic Medical Center, the University, regionally,
and nationally. For more information, visit the
Biomedical and Informatics Web site
(www.dbhi.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.
For more information, visit the MEDEX Web site
(www.washington.edu/medical/son/depts/medex/).

The Department of Medical Education and
Biomedical Informatics offers courses in the area of
and application of medical education and biomed-
ical and health informatics. Courses are designed for
faculty, graduate and undergraduate students, post-

graduates and fellows in the health sciences who
desire further training in the methods, issues,
research, and technology of medical education and
biomedical informatics. MEDEX Northwest, a physi-
cian assistant training program, offers a program of
study leading to a certificate with an optional degree
available (a Bachelor of Clinical Health Services).

For the most up-to-date program information, see the
Department of Medical Education and Biomedical
Informatics’ Web site or contact the department, E312
Health Sciences, Box 357240, 206-543-2259.

Faculty

Chair
Fredric M. Wolf

Professors
Brinkley, James F., III * 1988; MD, 1974, University of
Washington, PhD, 1984, Stanford University; comput-
er applications in medicine and biology; structural
informatics.

Carline, Jan D. * 1977; MEd, 1976, PhD, 1979,
University of Washington; assessment of physician
performance, evaluation of medical education pro-
grams.

Dohner, Charles W. * 1967, (Emeritus); PhD, 1966,
Ohio State University; program evaluation, adminis-
tration, faculty development.

Fuller, Sherrilynne S. * 1988; PhD, 1984, University of
Southern California; analysis, representation and
mapping of research findings (data mining).

Gordon, Michael J. * 1973, (Emeritus); PhD, 1973,
Michigan State University, family medicine.

Irby, David M. * 1972, (Affiliate); PhD, 1977, University
of Washington; the evaluation and improvement of
clinical teaching in medicine.

Norris, Thomas E. 1988, (Adjunct); MD, 1973,
University of Texas (Galveston); clinical applications,
health policy and health workforce needs.

Scott, Craig S. * 1979; MEd. 1970, California State
University, Sacramento, PhD, 1973, University of
Iowa; performance-based teaching and evaluation;
informatics fluency, medical education outcomes.

Shapiro, Linda G. 1986, (Adjunct); MS, 1972, PhD,
1974, University of Iowa; computer vision, multimedia
information systems, medical informatics, pattern
recognition.

Stewart, Brent K. * 1993, (Adjunct); PhD, 1988,
University of California (Los Angeles); biomedical
physics, biomedical image processing, medical imaging,
medical information systems.

Wolf, Fredric M. * 1997; MEd. 1977, PhD, 1980, Kent
State University; clinical decision making, evaluation
of new technology, evidence-based health care.

Associate Professors
Aston, Michael L. * 1991, (Adjunct); PhD, 1989, MD,
1989, University of Pennsylvania; multi media com-
puter-aided tutorials, immunology.

Chou, David * 1998, (Adjunct); MD, 1974, University
of Pittsburgh, MS, 1979, University of Minnesota;
moidal informatics, instrument automation, clinical
chemistry.

Dewitt, Dawn E. 1990, (Adjunct); MD, 1990, Harvard
University; general internal medicine.
SCHOOL OF MEDICINE / MEDICAL EDUCATION AND BIOMEDICAL INFORMATICS

Lecturers
Ambroz, Donna M. 1995; MA, 1994, Eastern Michigan University; PhD, 1998, University of Washington; standardized patients, teaching methodology.
Flynn, Barbara G. 1994; BA, 1977, Seattle Pacific University; physician assistant education.
Gianola, Fred J. 1987; PA-C, 1975, University of Washington; physician assistant education.
MacLaren, Carol F. 1989; MS, 1980, PhD, 1985, University of Pennsylvania; educational research.
Masuda, David 1997; MD, 1980, North Dakota, MS, 1996, University of Wisconsin; biomedical and health informatics.
Plummer, William T. 1992; BS, 1974, University of Nebraska; physician assistant education.
Scott, Terry B. 1983; BS, 1993; physician assistant education, underserved and minority population health care.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

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MEDED 499 Undergraduate Research (*, max. 12) Investigative research or directed readings in medical education and in biomedical and health informatics. Prerequisite: permission of instructor.

MEDED 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: A/Wsp.

MEDED 511 Current Issues in Medical Education (2) Donher, Robins, Scott, Wolf 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.

MEDED 512 Leadership in Academic Medicine (1) Donher, Robins, Scott, Wolf 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.

MEDED 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.

MEDED 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: 520. Offered: Sp.

MEDED 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, inclusion principles, client-server, network implementation, data management, analysis, and write-up. Assessment and critical reading of related literature stressed. Offered: A.

MEDED 530 Medical Informatics (3) Masuda 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.

MEDED 531 Computing Concepts for Medical Informatics (3) Kalet Introduction to computing concepts underlying the solution of problems in medical information management, medical problem solving and medical informatics research. Algorithms, data structures, programming languages, object-oriented programming. Prerequisite: some prior experience with computer programming and application computers in medical care. Offered: A.

MEDED 532 Computing Concepts for Medical Informatics II (3) Kalet Continuation of topics begun in MEDED 531: multiprogramming and operating system principles, client-server, network programming with sockets, macros, higher level languages, software engineering. Prerequisite: MEDED 531 or equivalent. Offered: W.

MEDED 534 Biology for Informaticists (4) Yaritz 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.

MEDED 535 Clinical Topics for Informaticists (3) Karras Builds on knowledge of informatics 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. Prerequisites: MEDED 530, MEDED 531, MEDED 534. Offered: W.

MEDED 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 access and interrogation. Prerequisite, background in molecular biology and permission of instructor. Offered: jointly with PABIO 536; W.

MEDED 537 Informatics Research and Evaluation Methods (4) Carline, Brock Introduces the many facets of evaluation and research for Biomedical and Health Informatics projects. Focuses on formal studies of the application of information technology in medicine, conducted while an information resource
is under development and after the resource is in routine service. Offered: W.

MEDED 540 Critically Appraising and Applying Evidence in Health Care (2) Pinkys, 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.

MEDED 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: Sp.

MEDED 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: A.

MEDED 570 Information Access in Health Sciences (3) Fuller. Characteristics of users of health sciences information, environments including academic health sciences centers, hospitals, clinics, and public libraries, evaluation of information resources, types of uses of information management systems, health information policy, professional standards, education and certification of health professionals including health science librarians. Prerequisite: LIS 520, LIS 521, or permission of instructor. Offered: jointly with LIS 528.

MEDED 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: jointly with HSGMT 526: AWSp.

MEDED 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: AWSp.

MEDED 599 Independent Study or Research (*) (1, max. 12) Individual readings or study, including independent study in preparation for doctoral examination, research, etc. Prerequisite: permission of instructor.

MEDED 700 Master's Thesis (1-15, max. 15) Prerequisite: permission of instructor. Offered: AWSp.

Medical History and Ethics
A204 Health Sciences Building
General Catalog Web page: www.washington.edu/students/academic/History_Ethics.html
Department Web page: depts.washington.edu/mhedept/

Graduate Program
Graduate Program Coordinator
A204 Health Sciences, Box 357120
206-543-5145
mheinfo@u.washington.edu

The Department of Medical History and Ethics offers a program of study leading to a Master of Arts in Bioethics which provides competencies in ethical theory, clinical ethics, and research ethics and methods, along with the historical foundations of bioethics. Students develop skills in research, writing, and public speaking about bioethics, as well as the ability to communicate about and frame ethical issues in health care and biomedical research from a multidisciplinary perspective.

The Master of Arts program brings together students from diverse backgrounds: those with a bachelor of arts in philosophy, or equivalent, who plan to pursue a Ph.D. in bioethics or a related humanities discipline, and those with a professional or master’s degree in a health care or health policy field who wish to incorporate bioethics into their professional activities. Applicants with a B.A. must take the GRE. The GRE is not required of applicants with a professional or master’s degree.

The program of study includes 45 to 56 credits, comprised of required courses, elective courses that enhance multidisciplinary understanding of ethical issues, and practicum experiences in the University’s affiliated hospitals, ethics committees, and institutional review boards. All students complete a master’s project in an area of personal scholarly interest.

While the program is designed to be completed in two years (six quarters), a very focused student might complete the program in five quarters. Options of earning a concurrent M.A. in bioethics are available for students enrolled in M.D. or J.D. programs at the University of Washington.

Faculty
Chair
Wylie Burke

Professors

Berrigan, Jack W. * 1975; MS, 1971, MA, 1974, University of Massachusetts, Ph.D, 1976, University of Maryland; history of exercise, sports medicine, and health behavior/philosophy.


Jonsen, Albert R. * 1987, Emeritus); MA, 1956, Gonzaga University, PhD, 1967, Yale University; philosophical, historical values affecting practice and delivery of health care.

Kuszler, Patricia Carol * 1994, (Adjunct); MD, 1978, Mayo Medical School/graduate School, JD, 1991, Yale University; law and medicine: health-care finance and regulation, medical malpractice, biotechnology and law.

Pearlman, Robert A. * 1981, (Adjunct); MD, 1975, Boston University; gerontology.

Whorton, James C. * 1970; Ph.D, 1969, University of Wisconsin; history of American medicine, public health, alternative healing.

Associate Professors
Back, Anthony L. 1984, (Adjunct); MD, 1984, Harvard University; oncology.

Braddock, Clarence H. * 1993, (Adjunct); MD, 1981, University of Chicago; doctor-patient communication, informed consent, bioethics education.


Shannon, Sarah E. 1984, (Adjunct); PhD, 1992, MSN, 1992, University of Washington; clinical ethics; decision-making surrounding use of life-sustaining therapies.

Sullivan, Mark D. 1985, (Adjunct); PhD, 1982, MD, 1984, Vanderbilt University; depression and chronic medical illness, chronic pain, ethics, quality of life.

Assistant Professors
Dudzinski, Denise M. 2001; MTS, 1993, Ph.D, 2001, Vanderbilt University; biomedical ethics, clinical ethics, philosophical and theological foundations of values.


Tonelli, Mark R. 1993, (Adjunct); MD, 1989, University of Colorado (Boulder); pulmonary and critical care medicine.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsctal/.

MHE 401 History of Modern Medicine (3) I&S Whorton Survey of evolution of medical theory, practice, and institutions in European and American society from the late 18th century present. Medical back-
ground not required. Recommended: prior courses in sciences and/or history.

MHE 402 Ethical Theory (5) I&S Jecker Review of principal theories for normative ethical discourse, such as utilitarianism and deontology, and major metatheatrical commentary on those theories. Illustrated by classical and modern authors. Recommended: one basic course in ethics.

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.

MHE 411 Introduction to Bioethics (3) I&S 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 413 History of Alternative Healing (3) I&S Benson Analysis of historical development of alternative healing in American society over last two centuries. Emphasis on evolution of theory, practice, and professional institutions for major alternative systems and interactions of alternative modalities with conventional medicine. Medical background not required.

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 424 Modern Biology in Historical Perspective (5) I&S Benson Two diverse traditions of biology, natural history, and physiology, in their nineteenth-century development and their subsequent merging after Darwin's evolution theory. Emergence of specialty areas in biology after the beginning of the twentieth century.

MHE 440 Philosophy of Medicine (5) I&S Jecker Facilitates study by 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 philosophical and practical health promotion. Emphasis on the influence of both medicine and popular culture in shaping of attitudes toward diet, exercise, dress, sex, and other health behavior.


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) Whorton 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 (2) Methods for identifying a biomedicine research question and developing a systematic approach to investigating it, including utilization of bibliographic sources in biomedicine, philosophy, history. Prerequisite: permission of instructor.

MHE 506 Professional Seminar II (1) (Capstone course for M.A. in Bioethics. Includes conducting original 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 underlying 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 issues that medical practitioners confront: 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 Ethics (3) Kurowski, Mastroiani Equips the student to anticipate and assess potential legal, ethical, and social barriers complicating the incorporation 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/LAW E 562.

MHE 516 Ethical Frameworks for Public Health Genetics (3) Mastroiani 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 ethical 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 hospice volunteers participate as hospice volunteers as part of their field experience. Offered: jointly with FAMED 546; WSp.

MHE 518 Spirituality in Medicine (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.

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 535 Medical Ethics and Jurisprudence (3) Jonsen Relationship between bioethics and law. Review of basic concepts of both disciplines; their theoretical and practical connections. Analysis of principal legal cases and statutes illustrating such issues as informed consent to treatment, foregone consent, torture, life support, research with human subjects, confidentiality, allocation of health care resources. For graduate and professional students.

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 548 Introduction to Clinical Ethics (5) Burke Introduction to history, practice, and research methods in clinical ethics. Case-based examination of methods including principalism, 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.

MHE 550 Current Topics in Clinical Ethics II (3) Fryer-Edwards Analysis of complex ethical cases from UWSPM clinical departments, literature, and

MHE 595- Ethics Practicum (3-6, max. 6) Students participate in clinical ethics rounds, case discussions, review of research protocols, or other professional activities related to bioethics. For majors only.

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 600 Independent Study or Research ("")

**Medicine**

RR512 University of Washington Medical Center

General Catalog Web page: [www.washington.edu/students/gencat/academic/Medicine_Prog.html](http://www.washington.edu/students/gencat/academic/Medicine_Prog.html)

Department Web page: [depts.washington.edu/medweb/](http://depts.washington.edu/medweb/)

domchair@u.washington.edu

Active programs in teaching, research, and patient care are carried on at the University of Washington Medical Center, Seattle Veterans Affairs Medical Center, 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.

**Faculty**

**Chair**

William J. Bremner

**Professors**


Abrass, Christine K. 1984; MD, 1973, Case Western Reserve University; nephrology.

Abrass, Itamar B. 1983; MD, 1966, University of California (San Francisco); gerontology.

Adzem, Alan A. * 1996, (Affiliate); PhD, 1979, University of Capetown (South Africa); signal transduction and the cytoskeleton.

Albers, John J. * 1971; MS, 1967, PhD, 1969, University of Illinois; lipoprotein metabolism and pathophysiology.


Altman, Leonard * 1974, (Clinical); MD, 1969, Harvard University; mechanisms of tissue injury produced by bacteria, leukocytes, or toxins.

Anasetti, Claudio 1985; MD, 1980, University of Perugia (Italy); oncology.

Andress, Dennis 1982; MD, 1978, University of Oklahoma; nephrology.

Appelbaum, Frederick R. 1978; MD, 1972, Tufts University; oncology.

Argenyi, Zsolt B. 2001; MD, 1978, Semmelweis Medical University (Hungary); dermatopathology.

Austin, Melissa A. * 1988, (Adjunct); PhD, 1985, University of California (Berkeley); genetic epidemiology of chronic diseases and public health genetics.

Baskin, Denis G. * 1979; PhD, 1969, University of California (Berkeley); neuroendocrinology; obesity; CNS regulation of body weight; histochemistry; expression of receptors.

Beeson, Paul B. 1982, (Emeritus); MD, 1933, McGill University (Canada).


Bird, Thomas D. 1976; MD, 1968, Cornell University; neurology, neurogenetics.

Bishop, Michael J. 1979, (Adjunct); MD, 1974, University of California (San Diego).

Blagg, Christopher R. 1966, (Emeritus); MD, 1954, MBChB, 1954, University of Leeds (UK); nephrology.

Bomsztyk, Karol 1983; MD, 1977, University of Rochester; role of cytokine-induced protein kinases in the regulation of gene expression.

Bornstein, Paul * 1967; MD, 1968, New York University; structure and function of connective tissue macromolecules, wound healing.


Bremmer, William J. 1982; MD, 1969, University of Washington, PhD, 1977, Monash University (Australia); endocrinology.

Broudy, Virginia C. 1985, MD, 1980, University of California (San Francisco); hematology.


Bruce, Robert A. 1987, (Emeritus); MD, 1943, University of Rochester; cardiology.


Buchwald, Dedra S. 1987, MD, 1981, University of California (San Diego); internal medicine.

Burke, Wylie 1984, (Adjunct); PhD, 1974, MD, 1978, University of Washington; ethical and policy implications of genetic information.

Byers, Peter H. * 1976; MD, 1969, Case Western Reserve University; extracellular matrix synthesis, genetic disorders of collagen metabolism, secretion, human genetics.

Caldwell, James H. 1983; MD, 1970, University of Missouri; positron emission tomography imaging of myocardial oxygenation, metabolism and sympathet-ic function.


Chait, Alan * 1977; MBChB, 1967, MD, 1974, University of Capetown (South Africa); clinical nutrition with special emphasis on lipid metabolism.


Chesnut, Charles * 1974; MD, 1966, University of Florida; nuclear medicine.

Clark, Joan G. 1985; MD, 1974, Washington University; pulmonary and respiratory disease.

Cobb, Leonard A. 1957, (Emeritus); MD, 1952, University of Minnesota; cardiology.


Collins, Steven J. * 1982; MD, 1973, Columbia University; retinoic acid receptors and the pathogenesis of malignancy.

Copass, Michael K. 1971; MA, 1964, MD, 1964, Northwestern University; neurology/emergency services.

Corey, Lawrence * 1977; MD, 1971, University of Michigan; DX, therapy and pathogenesis of viral infections, AIDS/herpes viruses.


Dale, David C. 1974; MD, 1966, Harvard University; internal medicine.

Dale-Crunk, Beverly A. * 1972, (Adjunct); PhD, 1968, University of Michigan; keratin biochemistry, epithelial differentiation, antimicrobial peptides.

Dean, Larry S. 2000; MD, 1980, University of Alabama; cardiology.

Deeb, Samir S. * 1983; PhD, 1964, University of Illinois; genetic factors predisposing to hyperlipi-demia and coronary artery disease.

Deeg, H. Joachim 1994; DrMed, 1972, University of Bonn (Germany); oncology.

Dennis, Melvin B. * 1971, (Adjunct); DVM, 1961, Washington State University; comparative medicine, including animal models and experimental surgery.

Deyo, Richard A. * 1986; MD, 1975, Pennsylvania State University; health status measurement and evaluation of common medical practices.

Dichek, David A. 2001; MD, 1984, University of California (Los Angeles); cardiology.

DISTCHETER, ChristiNE M. * 1980, (Adjunct); PhD, 1976, University of Liege (Belgium); molecular genetics of sex chromosomes, X inactivation, human and mouse cytogenetics.

Drewowski, Adam * 1998, (Adjunct); PhD, 1977, Rockefeller University; taste and psychology of food choice in disease prevention.

Eisenberg, Mickey * 1978; MD, 1971, Case Western Reserve University, PhD, 1978, University of Washington; sudden cardiac arrest and acute myocardial infarction.

Elie, Leonard P. 1985, (Emeritus); MD, 1940, Harvard University; metabolism and endocrinology.

Elkon, Keith B. * 2001; MD, University of Witwatersrand (South Africa), MRCP, 1978, University of London; rheumatology.

Ensink, John W. * 1961, (Emeritus); MDCM, 1956, McGill University (Canada); the role of GI hormones in fuel homeostasis.
Fefer, Alexander 1968; MD, 1964, Stanford University; oncology.


Figley, Melvin M. 1958, (Emeritus); MD, 1944, Harvard University; thoracic and pulmonary radiology.

Fihn, Stephan * 1982; MD, 1977, St Louis University, MPH, 1981, University of Washington; internal medicine.

Finch, Clement A. 1949, (Emeritus); MD, 1941, University of Rochester; hematology.


Fujimoto, Wilfred Y. * 1969, (Emeritus); MD, 1965, Johns Hopkins University; metabolism, endocrinology, nutrition.

Furlong, Clement E. * 1977; PhD, 1968, University of California (Davis); human biochemical genetics in biochemistry of membrane transport systems.

Gartler, Stanley M. * 1957, (Emeritus); PhD, 1952, University of California (Berkeley); mammalian somatic cell genetics with emphasis on the mechanism of X-chromosome inactivation.

Gilliland, Bruce C. * 1970; MD, 1960, Northwestern University; hematology.

Glomset, John A. * 1977; MD, 1960, University of Uppsala (Sweden); membrane structure and function.

Goodner, Charles J. * 1962, (Emeritus); MD, 1955, University of Utah; metabolism and endocrinology.

Greenberg, Philip D. * 1978; MD, 1971, State University of New York (Downstate Medical Center); molecular, cellular, viral, and tumor immunology.

Handsfeld, Hunter 1979; MD, 1968, Columbia University; infectious diseases.

Hansen, John A. 1977; MD, 1960, Stanford University; oncology.

Harlan, John M. * 1978; MD, 1973, University of Chicago; vascular biology with emphasis on leukocyte-endothelial adhesion.

Hartwell, Leland H. * 1968, (Adjunct); PhD, 1964, Massachusetts Institute of Technology; genetic analysis of chromosome transmission and of the control of division by hormones in yeast.

Hazzard, William R. 2000; MD, 1962, Cornell University; gerontology and geriatric medicine.

Heitkemper, Margaret M. * 1981, (Adjunct); MN, 1975, University of Washington, PhD, 1981, University of Illinois; gastroenterology, enteral nutrition, gerontology.

Henderson, Maureen M. * 1975, (Emeritus); MBBS, 1949, DPH, 1956, University of Durham (UK); epidemiology of chronic diseases, dietary prevention of disease.

Henderson, William R. 1979; MD, 1973, University of California (San Francisco); allergy and infectious disease.

Hildebrandt, Jacob * 1966; PhD, 1966, University of Washington; respiratory physiology.


Hirschmann, Jan V. 1976; MD, 1970, University of Washington; internal medicine.

Hiastala, Michael P. * 1972; PhD, 1969, State University of New York (Buffalo); respiratory physiologist, inert gas analysis of respiratory function.

Holmes, King K. * 1967; MD, 1963, Cornell University, PhD, 1967, University of Hawai; clinical epidemiology and pathogenesis of infectious diseases.

Hooton, Thomas M. 1982; MD, 1973, University of Texas (Dallas); internal medicine.


Kahn, Steven Emanuel 1986; MBChB, 1978, University of Capetown (South Africa); metabolism and endocrinology.

Kaushansky, Kenneth * 1979; MD, 1979, University of California (Los Angeles); blood cell development, its cellular and molecular components.

Kennedy, J. Ward 1966; MD, 1959, University of Rochester; cardiology.


Kimmey, Michael 1979; MD, 1979, Washington University; gastroenterology/endoscopy.

King, Mary-Claire * 1995; PhD, 1973, University of California (Berkeley); genetic analysis of complex human phenotypes, human diversity and evolution.

Kiviat, Nancy C. * 1979, (Adjunct); MA, 1970, 1975, University of Washington; epidemiologic and molecular biologic studies of the relationship between HIV, HIV, and neoplasia.

Klebanoff, Seymour * 1962; (Emeritus), MD, 1951, University of Toronto (Canada), PhD, 1954, University of London (UK); infectious disease.

Knopf, Robert H. * 1974; MD, 1964, Cornell University; metabolism and endocrinology.

Koopsell, Thomas D. * 1979, (Adjunct); MD, 1972, Harvard University, MPH, 1979, University of Washington; injuries, neuroepidemiology, veterans health, epidemiologic methods, program and policy evaluation.

Koerker, Donna J. * 1982; PhD, 1970, University of Michigan; endocrinology, intermediate metabolism of carbohydrates.


Kudenchuk, Peter J. 1986; MD, 1979, University of Washington; cardiology.

Kudaminarayan, S., 1977; MBBS, 1965, All-India Institute of Medical Sciences; pulmonary medicine.

Larson, Eric B. * 1977; MD, 1973, Harvard University; internal medicine.

Leboeuf, Renee C. * 1987, (Adjunct); PhD, 1985, Harvard University, MD, 1987, University of Massachusetts; genetic and nutritional regulation of proteins involved in lipid transport.

Lee, Sum Ping 1986; MD, 1970, University of Hong Kong, PhD, 1978, University of Auckland (New Zealand); gastroenterology.

Lemmel, Ake * 1988; MD, 1970, PhD, 1971, University of Umea; immunogenetics of organ-specific autoimmunity with emphasis on insulin-dependent diabetes.

Lipsky, Benjamin A. 1982; MD, 1973, Cornell University; internal medicine.

Livingston, Robert B. 1982; MD, 1967, University of Oklahoma; oncology.


Lukehart, Sheila A. * 1980; PhD, 1978, University of California (Los Angeles); immunology of infectious diseases, microbiology, sexually transmitted diseases.

Lukehart, Sheila A. * 1980; PhD, 1978, University of California (Los Angeles); immunology of infectious diseases, microbiology, sexually transmitted diseases.

Mannik, Mart * 1966, (Emeritus); MD, 1959, Case Western Reserve University; rheumatology.

Martin, Paul J. 1978; MD, 1974, University of Pennsylvania; oncology.


Matsumoto, Alvin M. 1982; MD, 1975, University of Washington; metabolism and endocrinology.


McElrath, Margaret Juliana * 1990; PhD, 1978, MD, 1980, Medical University of South Carolina; infectious diseases.


Miller, Samuel I. * 1995; MD, 1979, Baylor University; salmonella pathogenesis and bacterial-eucaryotic cell interactions.

Monsen, Elaine R. * 1969, (Adjunct); MS, 1959, PhD, 1961, University of California (Berkeley); nutrition, dietetics.

Motulsky, Arno G. * 1953, (Emeritus); MD, 1947, University of Illinois; medical genetics.

Mullins, James I. * 1994; PhD, 1978, University of Minnesota; retroviruses and AIDS, molecular virology.

Neiman, Paul E. * 1971; MD, 1964, University of Washington; oncology.

Nelp, Wil B. 1962, (Emeritus); MD, 1955, Johns Hopkins University; nuclear medicine.

Nelson, Judith Lee 1981; MD, 1977, University of California (Davis); rheumatology.

Norris, Thomas E. 1988, (Adjunct); MD, 1973, University of Texas (Galveston); clinical applications, health policy and health workforce needs.

Oliver, John E. 1975; MD, 1971, University of Washington; dermatology.

Olson, Maynard V. 1992; PhD, 1970, Stanford University; methods and applications of large-scale DNA analysis.
Oram, John Fisher * 1975; PhD, 1972, Pennsylvania State University; cellular lipid transport and metabolism; lipoprotein interactions.

Otto, Catherine M. 1982; MD, 1979, University of Washington; cardiology.

Pauw, Douglas 1985; MD, 1979, University of Washington; general internal medicine.

Pagon, Robert A. 1979, (Adjunct); MD, 1972, Harvard University; medical genetics.

Palmer, Jerry P. 1973; MD, 1970, State University of New York (Upstate Medical Center); metabolism and endocrinology; diabetes.

Papayannopoulou, Thalia 1974; MD, 1961, DrMedS, 1964, University of Athens (Greece); hematology.

Paulsen, C. Alvin 1958, (Emeritus); MD, 1952, University of Oregon; metabolism and endocrinology.


Pearlman, Robert A. * 1981; MD, 1975, Boston University; gerontology.


Piers, John David 1976; MD, 1969, Johns Hopkins University; respiratory diseases.

Plorde, James J. * 1982, (Emeritus); MD, 1959, University of Minnesota; infectious diseases, antibiotic-resistant nosocomial infections.

Pope, Charles E. 1964, (Emeritus); MD, 1957, Case Western Reserve University; gastroenterology.

Porte, Daniel, Jr. 1982, (Emeritus); MD, 1957, University of Chicago; metabolism and endocrinology.

Press, Oliver W. * 1982; PhD, 1977, MD, 1979, University of Washington; treatment of hematologic malignancies with monoclonal antibody immunocjugates.


Probstfield, Jeffrey L. 1993; MD, 1967, University of Washington; cardiology.

Psaty, Bruce M. * 1984; PhD, 1979, MD, 1981, Indiana University; cardiovascular disease, coronary heart disease, hypertension, pharmacoepidemiology.

Raghu, Ganes 1981; MD, 1974, University of Mysore (India); respiratory disease.

Ramsey, Paul G. 1980; MD, 1975, Harvard University; infectious diseases, internal medicine.

Reid, Brian J. * 1983; PhD, 1975, MD, 1960, University of Washington; genetic and cell cycle abnormalities in neoplastic progression in Barrett’s esophagus.

Riddell, Stanley R. 1985; MD, 1979, University of Manitoba (Canada); oncology.


Rosen, Henry 1977; MD, 1972, University of Rochester; allergy and infectious diseases.

Roth, Gerald J. 1984; MD, 1967, Harvard University; hematology.

Rubin, Cyrus E. 1954, (Emeritus); MD, 1945, Harvard University; gastroenterology.

Saunders, David R. * 1969, (Emeritus); MD, 1957, McGill University (Canada); intestinal absorption, effect of drugs on GI mucosa.


Schuffler, Michael D. 1973; MD, 1966, University of Illinois; gastroenterology.


Schwartz, Robert S. * 1979, (Affiliate); MD, 1974, Ohio State University; internal medicine and geriatrics.

Scott, C. Ronald * 1965; (Adjunct); MD, 1959, University of Washington; diagnosis and nutritional management of genetic disorders of children.

Scribner, Belding H. 1957, (Emeritus); MD, 1945, Stanford University, MS, 1951, University of Minnesota; nephrology.

Sellers, Donald J. 1968; MD, 1960, University of Washington; nephrology.

Simkin, Peter A. 1969; MD, 1961, University of Pennsylvania; rheumatology.

Siscovick, David S. * 1987; MD, 1976, University of Maryland; epidemiology.


Spence, Alexander M. 1974, (Adjunct); MD, 1965, University of Chicago; neurology, neuro-oncology.

Stamatoyannopoulos, George 1964; MD, 1958, DrMedS, 1960, University of Athens (Greece); medical genetics.

Stamm, Walter E. * 1979; MD, 1971, Harvard University; infectious disease.


Stevens, Dennis L. 1982; PhD, 1967, Montana State University, MD, 1971, University of Utah; infectious diseases.

Stewart, Douglas 1972; MD, 1965, Harvard University; cardiology.

Stewart, Forrest Mark 2000; MD, 1997, Indiana University; oncology.

Storb, Rainer F. ; MD, 1960, University of Freiburg (Germany).

Stratton, John R. 1982; MD, 1973, Yale University; cardiology.

Sullivan, Sean * 1992, (Adjunct); PhD, 1992, University of California (Berkeley); health economics, pharmaceutical outcomes research and health policy.

Surawicz, Christina M. 1981; MD, 1973, University of Kentucky; gastroenterology.

Swanson, Philip D. 1964, (Adjunct); MD, 1958, Johns Hopkins University, PhD, 1964, University of London (UK); movement disorders, neurology.

Swenson, Erik R. 1983; MD, 1979, University of California (San Diego); pulmonary medicine.

Sybert, Virginia 1979; MD, 1974, State University of New York (Buffalo); genetics and dermatology.

Temple, Bruce L. 1988, (Adjunct); PhD, 1983, Princeton University; molecular neurobiology/neurogenetics, especially potassium channel gene structure and function.

Thomas, E. Donnall 1963, (Emeritus); MA, 1943, University of Texas (Austin), MD, 1946, Harvard University; oncology.


Turck, Marvin 1964; MD, 1959, University of Illinois; infectious diseases.

Van Citters, Robert L. * 1962, (Emeritus); MD, 1953, University of Kansas; cardiovascular physiology.

Van Voorhis, Wesley C. * 1986, PhD, 1983, Rockefeller University, MD, 1984, Cornell University; infectious diseases.

Verdugo, Pedro * 1974, (Adjunct); MD, 1965, State University of Chile; microrheology, biomechanics, polymer gel physics, laser spectroscopy, cell biology.

Volwiler, Wade 1949, (Emeritus); MD, 1943, Harvard University; gastroenterology.

Wallace, James F. 1968; MD, 1961, Washington University; internal medicine.

Watkins, Sandra L. 1981, (Adjunct); MD, 1981, University of Texas (Houston); nephrology.

Wijers, Ellen M. 1987, PhD, 1981, University of Wisconsin; human quantitative and population genetics.


Associate Professors

Ahmad, Suhail 1979; MBBS, 1968, University of Allahabad (India); nephrology.

Aitken, Moira L. 1982; MBChB, 1978, University of Edinburgh (UK); respiratory disease.

Anawalt, Bradley D. 1969; MD, 1989, University of California (Davis); general internal medicine.


Barnhart, Scott * 1979; MD, 1979, George Washington University; occupationally related lung disease.

Belcher, Donald W. * 1976, (Emeritus); MD, 1962, University of Pennsylvania; ambulatory medicine.

Benditt, Joshua O. 1994; MD, 1982, University of Washington; pulmonary and critical care medicine.

Benedetti, Jacqueline K. * 1980, (Adjunct); PhD, 1974, University of Washington; statistical methodology in infectious disease research, cancer clinical trials.

Berg, Daniel 1997; MD, 1985, University of Toronto (Canada); dermatological surgery.

Blau, Carl A. 1989; MD, 1986, Ohio State University; hematology.

Fleet, Wendell P. 1972; MD, 1965, Creighton University; general internal medicine.

Brodkin, Carl * 1989; MD, 1983, University of Colorado (Denver); hepatic effects of occupational solvent exposure; ventilatory decline in asbestos-exposed workers.

Bronner, Mary P. 1993, (Adjunct); MD, 1989, University of Pennsylvania; gastrointestinal and hepatic pathology, neoplastic progression and transplantation pathology.

Buchter, Carol M. 2001; MD, 1978, Case Western Reserve University; cardiology.

Carvalho, Paula G. 1984; MD, 1984, University of Washington; pulmonary and critical care medicine.

Celem, Connie L. 1987; MD, 1984, University of California (San Francisco); infectious diseases.


Cheng, Edith Y. 1995, (Adjunct); MS, 1979, Sarah Lawrence College, MD, 1987, University of Washington; genetics, perinatal medicine.

Childs, Marian T. * 1978, (Emeritus); PhD, 1950, University of California (Berkeley); nutrition.

Coombs, Robert W. * 1985; PhD, 1980, Dalhousie University (Canada); diagnosis and pathogenesis of HIV infection.


Culver, Bruce H. 1974; MD, 1969, University of Washington; respiratory diseases.


Cusack, Barry J. 1982; MD, 1980, University College of Dublin (Ireland); gerontology.

Davidson, Robert C. 1968, (Emeritus); MD, 1953, University of Washington; nephrology.

Davis, Connie 1991; MD, 1980, University of Washington; nephrology.

Deem, Steven A. 1992, (Adjunct); MD, 1984, Southern Illinois University; critical care.

Dewitt, Dawn E. 1990; MD, 1990, Harvard University; general internal medicine.

Disis, Mary L. 1990; MS, 1986, MD, 1986, University of Nebraska; oncology.

Doney, Kristine 1981; MD, 1972, University of Michigan; hematology/oncology.

Dugdale, David C. 1991; MD, 1982, University of Pennsylvania; general internal medicine.


Ellis, Georgiana K. 1982; MD, 1982, University of Washington; oncology.


Fleet, Wendell P. 1972; MD, 1965, Creighton University; internal medicine.
O’Donnell, Paul V. 2001; PhD, 1973, Cornell University, MD, 1992, Johns Hopkins University; oncology.

Olson, Carin M. 1994; MD, 1978, Ohio State University; general internal medicine.

Ott, Susan M. 1980; MD, 1974, University of Washington; nephrology.

Oxorn, Donald C. 1998, (Adjunct); MD, 1978, McGill University (Canada).

Petersdorf, Effie Wang 1982; MD, 1982, McGill University (Canada); oncology.


Pinisky, Linda E. 1989; MD, 1989, University of Washington; general internal medicine.

Poole, Jeanne E. 1981; MD, 1980, University of Washington; cardiology.

Presland, Richard B. * 1994, (Adjunct Research); PhD, 1987, University of Adelaide (Australia); epithelial-epidermal differentiation, genetic diseases, regulation of development.

Quinn, Lebris S. * 1980; PhD, 1982, University of Washington; control of muscle precursor cell proliferation and differentiation; muscle growth.

Radich, Jerald P. 1983, MS, 1979, Harvard University, MD, 1983, University of California (Davis); oncology.

Ralph, David D. 1981; MD, 1972, Stanford University; respiratory diseases.

Ramsey, Scott D. * 1990; MD, 1990, University of Iowa, Ph.D, 1994, University of Pennsylvania; economics in medicine.


Raugi, Gregory J. 1980; PhD, 1975, Duke University, MD, 1975, Duke University; dermatology.

Reed, May J. 1990; MD, 1986, Harvard University; geriatric medicine and gerontology.

Reilly, Dominic F. 1991; MD, 1988, University of Washington; general internal medicine.

Russell, David W. 1991, PhD, 1988, Rockefeller University, MD, 1989, Cornell University; hematology.


Sandmaier, Brenda M. 1987; MD, 1983, University of Alberta (Canada); oncology.

Sasso, Eric H. 1984; MD, 1980, University of California (San Diego); rheumatology.

Schmidt, Rodney 1984, (Adjunct); PhD, 1984, MD, 1984, University of Washington; surgical pathology, pulmonary pathology, sarcomas, image analysis, electron microscopy.


Schubach, William H. 1994; PhD, 1971, University of California (Santa Cruz); MD, 1974, Columbia University; oncology.

Shankland, Stuart J. 1994; MBChB, 1983, University of Capetown (South Africa); nephrology.

Sheffield, John V. L. 1989; MD, 1989, Harvard University; general internal medicine.


Smith, Curtis Scott 1987; MD, 1980, University of Washington; general internal medicine.


Stadlau, Michael L. 1993; MD, 1978, University of Oregon; cardiology.


Steinbach, Gideon 2001; PhD, 1975, City University of New York, MD, 1981, Albert Einstein College of Medicine; gastroenterology.

Steinberg, Kenneth P. 1989; MD, 1985, New York Medical College; pulmonary and critical care medicine.

Stephens, Karen G. * 1989, (Research); PhD, 1982, Indiana University; neurofibromatosis, tumorgenesis, gene mapping and regulation, human genetics.

Stern, Eric J. 1992, (Adjunct); MD, 1985, University of Medicine and Dentistry of New Jersey; chest radiology.


Sugg, Nancy K. 1983; MD, 1983, University of Maryland; internal medicine.


Thompson, John A. 1979; MD, 1979, University of Alabama; oncology.


Wener, Mark H. * 1980, (Adjunct); MD, 1974, Washington University; diabetes management.


Wilson, Richard 1973; MD, 1962, University of Minnesota; gastroenterology.

Wipf, Joyce E. 1984; MD, 1984, University of Minnesota; general internal medicine.


Wood, Robert W. 1977; MD, 1970, University of Rochester; internal medicine.

Yeung, Raymond S. 1997, (Adjunct); MD, 1982, University of Toronto (Canada); general and surgical oncology.

Ziskind, Andrew A. 1999; MD, 1984, University of Pennsylvania; clinical programs.

**Assistant Professors**

Armoy, John K. 1997; MD, 1994, University of California (San Francisco); endocrinology.

Ayub, Kamran 2001; MBBS, 1983, University of Peshawar (Pakistan), MRCP, 1989, Royal College of Physicians (UK); gastroenterology.

Baas, Arnold S. 1994; MD, 1989, University of Texas (Southwestern); cardiology.

Boeckh, Michael J. J. 1994; MD, 1985, Freie University of Berlin (Germany); allergy and infectious diseases.


Bridge, Janis D. 1991; MPH, 1983, University of California (Los Angeles), MD, 1984, University of Washington; general internal medicine.

Brodkin, Kayla I. 1989; MD, 1982, State University of New York (Stony Brook); geriatrics and geriatric medicine.

Buckner, Frederick S. 1992; MD, 1988, University of Washington; infectious diseases.


Colvin, Roy M. 1987; MD, 1987, University of Washington; dermatology.

Cook, David G. * 1998, (Research); PhD, 1991, Yale University; molecular mechanisms of Alzheimer’s disease.

Cummings, David E. * 1987; MD, 1987, Harvard University; genetic determinants of obesity; interplay between body weight and reproduction.


Drachman, Jonathan G. 1898; MD, 1989, Harvard University; hematology.

Duchin, Jeffrey S. 1995; MD, 1985, Rutgers University; infectious diseases and epidemiology.

Evans, Timothy C. 1980; MD, 1974, PhD, 1976, University of Michigan; diabetes management.

Faro, Matthew L. 1993; MD, 1990, University of California (Irvine); oncology.

Fitzgibbon, Dermot R. 1992, (Adjunct); MBBC, 1983, Cork Regional Hospital; pain management.

Flowers, Mary E. 1994; MD, 1977, Centro de Ciencias da Saude da Universidade Federal do Rio Grande do Norte Brazil (Brazil); oncology.

Frank, Leonard R. 1997; MD, 1988, Albany Medical College; emergency medicine.

Fredericks, David N. 2001; MD, 1990, Case Western Reserve University; allergy and infectious diseases.

Freeman, Rosario 2001; MD, 1995, Loyola University; cardiology.

Gaster, Barak 1993; MD, 1993, University of California (San Francisco); general internal medicine.

Georges, George E. 1994; MD, 1990, University of California (San Francisco); oncology.

Gernsheimer, Terry B. 1984; MD, 1979, State University of New York (Stony Brook); hematology.


Goss, Christopher 1993; MD, 1987, Oregon Health Sciences University, MPH, 1995, University of Washington; internal medicine.
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 submit a packet of didactic materials. Prerequisite: MED 665, SURG 665, and OB-GYN 665. Offered: AWSp.

MED 650 P-Advanced Medical Genetics (*, max. 5) Jarvik, Howitz, Stamatsyannopoulos 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 institutionalization; work with attending physicians to 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 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 attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSp.

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 that given in the hospital, as well as by other community health services, is emphasized. Prerequisite: MED 665. (Six weeks, full time. Limit: six students.) Offered: AWSp.

MED 678 P-Clinical Dermatology (8) Olerud Participation in dermatology clinical and inpatient consultations at University of Washington Medical Center; Harborview Medical Center; Children’s Hospital Medical Center; Seattle VA Hospital; Meridian, Idaho; Caspter, 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: AWSp.

MED 679 P-Clinical Gastroenterology (8) Lee, Novan (Sacred Heart Spokane) Participation in consultation ward rounds, procedures, conferences, and selected clinics with full-time divisional staff at University and Veterans Administration hospitals, and at PacMed and Harborview medical centers. Full directed tutorial work. Prerequisite: MED 665. (Four weeks, full-time.) Offered: AWSp.

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, one half-day in the method of instruction. Prerequisite: MED 665. Offered: AWSp.

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 VA Hospital), Consor (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: AWSp.

MED 683 P-Clinical Respiratory Disease and Critical Care Medicine (8) Lakshminarayana (Seattle VA Hospital), Pierson (Harborview Medical Center), Roth (Madigan) Thompson (Boise Veterans Administration Medical Center), Torrell (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: AWSp.

MED 684 P-Clinical Hematology/Oncology (8) Abbowitz (University of Washington Medical Center), Broudy (Harborview Medical Center), Collins (Boise Veterans Administration Medical Center), Roth (Seattle VA 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: AWSp.

MED 685 P-Clinical Genetics (*, max. 24) Bird, Byers, Motulsky, Stamatsyannopoulos 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: AWSp.

MED 686 P-Ward Medicine Subinternship (*, max. 24) Harvey (Anchorage), R. Jones (Madigan Hospital Medical Center), McGee (Veterans Administration Medical Center), Pauw (University of Washington Medical Center), Schoone (Providence), Sheffield (Harborview Medical Center) Students act in the capacity of the consulting service’s subspecialists. They attend all regular medicine rounds and conferences as their schedules permit. Prerequisite: MED 665. (Four or six weeks.) Offered: AWSp.

MED 689 P-Clinical Infectious Diseases (8) Stamm (University of Washington Medical Center) Students participate in the consulting service to the hospital, attend daily plate rounds, conferences, and seminars. (Four weeks.) Corey (Fred Hutchinson Cancer Research Center), Holmes (Harborview
MEDEX Northwest

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs Cait.

MEDEX 450 Basic Science in Clinical Medicine for PAs (6) Evans. Stoll/Intensive review course on important basic science concepts relevant to clinical medicine at the physician assistant level. Topics covered include cell biology, microbiology, genetics and immunity. Prerequisite: admission to the MEDEX Program. Offered: S.

MEDEX 451 Anatomy and Physiology for the MEDEX Practitioner (6) Cauldwell, Landel 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 Basic Clinical Pathology for the MEDEX Practitioner (6) Stoll 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 for the MEDEX Practitioner (6) Cupp Provides the student with mastery of a screening history and physical examination and thoroughness in data-collection skills. Branching examinations of major organ systems and medical record-keeping and verbal presentation skills by the problem-oriented method are taught. Offered: A.

MEDEX 454 Adult Medicine I (7) Cupp, Evans 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 455 Adult Medicine II (7) Cupp, Evans Continuation of MEDEX 454. Offered: Sp.

MEDEX 456 Maternal and Child Health for the MEDEX Practitioner I (3) Dale Designed to acquaint students with principles of prenatal care and primary-care pediatrics. Offered: W.

MEDEX 457 Behavioral Science Skills for the MEDEX Practitioner I (2) Lurie Process skills and interpersonal skills needed for primary-care practice, assessment skills needed for the diagnosis of emotional problems, and management skills used in primary-care practice to deal with these situations. Offered: A.

MEDEX 458 Behavioral Science Skills for the MEDEX Practitioner I (2) Lurie In-depth coverage of common emotional problems seen in primary care. Offered: W.


MEDEX 460 Principles of Patient Management for the MEDEX Practitioner I (3) Stoll Systematic approach to patient management applicable to a primary-care setting. Majority of course is devoted to drug therapy and its administration. The other half includes health maintenance, risk factor identification, and nonpharmacological models of therapy. Offered: W.

MEDEX 461 Principles of Patient Management for the MEDEX Practitioner II (3) Stoll Continuation of 460. Offered: Sp.


MEDEX 463 Clinical Clerkships for the MEDEX Practitioner II (19) Scott Full-time clinical clerkship spent in institution-based or specialty practice settings, such as occupational health, surgery, emergency medicine, psychiatry, or geriatrics. Credit/no credit only. Offered: AWSpS.

MEDEX 465 Clinical Clerkships for the MEDEX Practitioner II (19) Plummer Continuation of clinical clerkships spent in institution-based or specialty practice settings, with emphasis on inpatient medicine. Credit/no credit only. Offered: AWSpS.

MEDEX 466 Family Practice Clerkship for the MEDEX Practitioner II (19) Ballweg Family practice spent 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) Flynn 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 (3) Landel Approach to the diagnosis and management of common emergency conditions for primary care physician assistants. Organ system approach. Offered: W.


MEDEX 470 PA Role Course I (1) Ballweg Introduction to the history, current status and future development of the PA profession. Description and discussion of state medical practice acts and reimbursement status. Other course topics are the roles of physicians and nurse practitioners. Offered: A.

MEDEX 471 PA Role Course II (1) Ballweg Continuation of MEDEX 470. Health access issues, health care politics and managed care issues. Offered: W.

MEDEX 472 PA Role Course III (1) Ballweg Continuation of MEDEX 471. Focuses on health care issues for specific underserved populations. Cross-cultural simulations introduce course concepts. Students work in small groups and present their findings to fellow students. Offered: Sp.

MEDEX 499 Special Field Projects/Independent Study (1-12, max. 12) Clinical clerkships and independent study activities for students enrolled in the MEDEX Northwest Physician Assistant Program. Credit/no credit only. Offered: AWSpS.
Microbiology
G315 Health Sciences

Faculty
Chair
James I. Mullins

Professors
Aebbersold, Rudolf Hans * 1993, (Affiliate); MD, 1984, Yale University; protein biochemical investigation of signal transduction pathways.
Champoux, James J. * 1972; PhD, 1970, Stanford University; DNA replication, tumor virology.
Clark, Edward A. * 1984; PhD, 1977, University of California (Los Angeles); lymphocyte surface molecules, lymphocyte activation and cell communication.
Corey, Lawrence * 1977, (Adjunct); MD, 1971, University of Michigan; DX, therapy and pathogenesis of viral infections, AIDS/sheres viruses.
Coyle, Marie B. * 1973, (Emeritus); PhD, 1965, Kansas State University; DNA probes and GLC for rapid identification of mycobacteria and corynebacteria.
Evans, Charles A. 1946, (Emeritus); MD, 1937, PhD, 1943, University of Minnesota; microbial flora of human skin, medical virology.
Galloway, Denise A. * 1982; PhD, 1976, City University of New York; viral pathogenesis and neoplasia.
Gilliland, Bruce C. * 1970, (Adjunct); MD, 1960, Northwestern University; hematology.
Gordon, Milton * 1959, (Adjunct); PhD, 1953, University of Illinois; molecular basis of plant tumors, control of gene expression in plants.
Greenberg, Philip D. * 1978, (Adjunct); MD, 1971, State University of New York (Downstate Medical Center); molecular, cellular, viral, and tumor immunology.
Hakomori, Sen-Itiroh * 1967; MD, 1951, DrMedS, 1956, Tohoku Imperial University (Japan); membrane biochemistry and glycoproteins.
Holmes, King K. * 1967, (Adjunct); MD, 1963, Cornell University, PhD, 1967, University of Hawaii; clinical epidemiology and pathogenesis of infectious diseases.
Hu, Shiu-Lok 1988; PhD, 1978, University of Wisconsin; virus-host interactions, AIDS vaccines and pathogenesis of primate lentivirus infection.
Hughes, Kelly T. * 1989; PhD, 1984, University of Utah; genetics, gene regulation, microbial physiology, and metabolism.
Katze, Michael Gerald * 1987; PhD, 1980, Hahnemann Medical College; regulation of viral gene expression at the translational level.
Kenny, George E. * 1961, (Adjunct); PhD, 1961, University of Minnesota; antigenic structure.
Lamont, Richard J. * 1988, (Adjunct); PhD, 1985, University of Aberdeen (UK); pathogenic mechanisms of oral bacteria, host pathogen interactions, biofilms, gene regulation.
Lidstrom, Mary E. * 1995; MS, 1975, PhD, 1977, University of Wisconsin; biomolecular engineering, metabolic engineering, bioremediation.
Linial, Maxine L. * 1982; PhD, 1970, Tufts University; retroviral replication and genetics, retroviral transfection.
Lory, Stephen * 1984, (Affiliate); PhD, 1980, University of California (Los Angeles); biochemistry, genetics of microbial virulence factors.
Lukehart, Sheila A. * 1980, (Adjunct Research); PhD, 1978, University of California (Los Angeles); immunology of infectious diseases, microbiology, sexually transmitted diseases.
Miller, Samuel I. * 1995; MD, 1979, Baylor University; salmonella pathogenesis and bacterial-eucaryotic cell interactions.
Mullins, James I. * 1994; PhD, 1978, University of Minnesota; retroviruses and AIDS, molecular virology.

Graduate Program Coordinator
G315 Health Sciences, Box 357242
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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.

The choice of an adviser and research problem are matters of mutual consent between the student and a faculty member. The course work taken by a graduate student depends to a certain extent upon the student’s background and chosen area of specialization, but in general, courses are chosen from the fields of microbiology, immunology, biochemistry, genetics, and cell biology. A master’s degree program either with or without thesis is available on a very limited basis. An M.S. degree is not necessarily a prerequisite for the Ph.D. degree.

Applicants are evaluated by a committee that considers the student’s grades, scores on the Graduate Record Examination, research experience, letters of recommendation, and any other data that might provide an indication of the student’s capabilities for success in a career in science.

Students are normally admitted into the graduate program only in autumn quarter, and all application materials should be received by the department no later than the preceding December 31. Graduate Record Examination aptitude scores are required as part of the application, and the examination should be taken no later than October. Three letters of recommendation must also be sent directly to the department.

Students with a variety of academic backgrounds are accepted for graduate study in microbiology, but it is highly desirable that their undergraduate preparation include at least a year of general chemistry and a year of college physics, courses in organic chemistry and quantitative analysis, calculus, one year of biology, and courses in genetics, biochemistry, and microbiology.

Students in the Ph.D. program are usually supported by funds from training grants, research grants, or teaching assistantships.
Leigh, John A. * 1985; PhD, 1983, University of Illinois; bacterial physiology, biochemistry, genetics.

Moseley, Stephen L. * 1985; PhD, 1981, University of Washington; molecular basis of pathogenesis in E. coli diarrhea.

Rose, Timothy M. * 1991; (Adjunct); PhD, 1981, University of Geneva (Switzerland); molecular biology of tumor viruses, cell growth, differentiation, and transformation.

Traxler, Beth A. * 1992; PhD, 1987, Carnegie Mellon University; bacterial physiology, genetics, and membrane protein biochemistry.

Assistant Professors


Freitag, Nancy E. 2000; (Adjunct); PhD, 1989, University of California (Los Angeles); bacterial pathogenesis and regulation of gene expression.

Lagunoff, Michael * 2001; PhD, 1995, University of Chicago; molecular virology of Kaposi's sarcoma-associated herpesvirus.

Mittler, John E. * 1999; PhD, 1992, University of California (Irvine); microbial population biology, mathematical modeling of dynamical systems, HIV pathogenesis.

Ramakrishnan, Lalita * 2001; MD, 1983, Baroda Medical College (India); PhD, 1990, Tufts University; contributions of mycobacteria and hosts to maintenance of chronic tuberculosis.

Senior Lecturers

Anderson, Denise G. 1982; MS, 1985, University of Washington; microbiology laboratory teaching.

Fulton, Janis R. 1983; MS, 1977, Montana State University; microbiology laboratory teaching.

Lecturers

Barnes, Glover W. * 1969; MA, 1955, PhD, 1961, State University of New York (Buffalo); tissue, organ immunology.

Chandler, Mark S. 1998; PhD, 1998, University of Illinois; microbiology laboratory teaching.

Gray, Kendall M. 2000; PhD, 1989, University of Southern California; microbiology laboratory teaching.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crschat.

MICROM 402 Fundamental 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 Larson, 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, Hughes; Manipulation 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 GENET 411; W.

MICROM 412 Fundamentals of General Microbiology III (3) NW Leight, 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 in recombinant DNA research employing bacteria and their viruses. Topics and experiments/demonstrations include genomic and plasmid DNA isolation, restriction mapping, cloning, transposition 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: BIOL 202; recommended: either GENET 371, GENET 372, BIOL 405, or BIOL 440. Offered: jointly with IMMUN 441; A.

MICROM 442 Medical Bacteriology (3) NW Cookson, Lampe; 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 442 coordinates. Prerequisite: either BIOL 200 or BIOL 201; recommended: MICROM 410; MICROM 441. Offered: W.

MICROM 443 Medical Microbiology Laboratory (3) NW Anderson, Chandler, Fritsche, 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, Fritsche, Fulton, Novicki; 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, Mullins; Thouless; 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; recommended: MICROM 441. Offered: jointly with PABIO 445; Sp.

MICROM 447 Immunity, Disease and Society (2) Clark; Impact and controversies associated with breakthroughs in immunology and infectious diseases. Topics include vaccines, complementary medicine (herbal boosts of the immune system), the mind and the immune system, allergies (asthma), cancer immunotherapy, genetic screening and autoimmune disease and natural history of infectious disease. Prerequisite: MICROM 441. Offered: jointly with IMMUN 447.

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 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) Traxler; Topics of current interest concerning the molecular biology and physiology of bacteria. Prerequisite: MICROM 410 and BIOL 440, 441, and 442, or permission of instructor. Offered: odd years; W.

MICROM 518 Microbial Degradation of Toxic Contaminants (3) Henwig; Strand; Detailed survey of current understanding of microbiology and degradation pathways of industrial organic compounds, pesticides, plastics, oils, and metals. Microbial requirements for bioremediation. Methods and scientific investigation of microbial transformations. Requires basic understanding of metabolism and organic chemistry. Prerequisite: biological science course. Offered: jointly with CEE 542/EESC 518; W.

MICROM 520 Seminar (1) Leigh; Credit/no credit only. Offered: AWSp.
Newell, David W. 1989; MD, 1982, Case Western Reserve University; clinical neurosurgery and neurovascular mechanizing of cerebral ischemia.

Ojemann, George A. 1966; MD, 1959, University of Iowa; neurophysiology, organization of higher functions in brain, language, memory.

Pitkethly, David T. 1983, (Clinical); MD, 1961, Duke University; clinical neurosurgery.

Reh, Thomas A. 1989, (Adjunct); PhD, 1981, University of Wisconsin; regeneration and development of central nervous system.


Rubel, Edwin W. 1986; PhD, 1969, Michigan State University; developmental neurobiology, with special emphasis on vertebrate auditory system development.

Spence, Alexander M. 1974, (Adjunct); MD, 1965, University of Chicago; neurology, neuro-oncology.


Associate Professors

Chapman, Jens R. 1990; MD, 1983, Technical University of Munich (Germany); orthopaedics, spine trauma/reconstruction.

Dalley, Robert W. 1987; MD, 1982, University of Utah; neuroradiology.


Geyer, Jeffrey R. 1984; MD, 1977, Wayne State University; hematology/oncology.

Goodkin, Robert 1987; MD, 1964, Chicago Medical School; neurological surgery.

Hicks, Ramona R. 1999, (Adjunct); PhD, 1993, University of Connecticut; brain injury, neural plasticity, cell death and regeneration.

Jarvik, Jeffrey G. 1993; MD, 1987, University of California (San Diego); cerebral ischemia, mechanism of ischemic damage.

Kliot, Michel 1990; MD, 1984, Yale University; peripheral nerve injury and diseases, nerve injury/regeneration.

Mirza, Sohail K. 1989; MD, 1989, University of Colorado (Denver); spinal surgery/spine biomechanics.

Ojemann, Linda M. 1974, (Emeritus); MD, 1960, University of Illinois; neurology, treatment of epilepsy.

Shaffrey, Christopher I. 1999; MD, 1986, University of Virginia; spinal disorders including fractures, tumors, spinal deformity, and degenerative conditions.

Silber, John R. 1990, (Research); PhD, 1977, University of Florida; neuro-oncology.

Silberfeld, Daniel L. 1984; MD, 1984, University of Cincinnati; brain tumors, epilepsy.

Temkin, Nancy R. 1977; PhD, 1976, State University of New York (Buffalo); clinical trials, recovery models, statistical modeling of epileptic phenomena, survival analysis.

Troster, Alexander I. 2000, (Adjunct); PhD, 1991, University of California (San Diego), San Diego State University; neuropsychology of movement disorders, cognitive and quality of life outcomes.

Welansky, Alan J. 1975; MD, 1967, Western Ontario University (Canada), PhD, 1973, University of Toronto (Canada); neurology, treatment of epilepsy, testing and use of anticonvulsants.

Assistant Professors


Bobola, Michael S. 1997, (Research); PhD, 1991, University of New Hampshire; pediatric neuro-oncology.

D’Ambrosio, Raimondo 1995, (Research); PhD, 1995, University of Milan (Italy); glial cells and traumatic brain injury.


Emmi, Adriana 1997, (Research); MD, 1992, PhD, 1996, University of Palermo (Italy); epilepsy and basic mechanism of ischemic damage.

Horner, Philip J. 2001; PhD, 1995, Ohio State University; stem cells and regeneration of the central nervous system.

Nelson, Peter S. 1993, (Adjunct); MD, 1986, University of Kansas; the study of human carcinogenesis using tools of genomics and bioinformatics.

Park, Jongsoo 2000, (Clinical); MD, 1993, University of Rochester; clinical neurosurgery.


Samii, Ali 1998; MD, 1989, McGill University (Canada); movement disorders.

West, G. Alexander 1988; PhD, 1984, 1989, University of Virginia; vascular disease, epilepsy, brain and spinal cord trauma.

Lecturer

Kinoshita, Yoshito 1990; PhD, 1982, Tohoku University (Japan); neuronal cell death.

SCHOOL OF MEDICINE / NEUROLOGY 357

Course Descriptions

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.


NEUR S 499 Undergraduate Research (*) Bobola, D’Ambrosio, Horner, 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) Ellenbogen, Goodkin, Kliot, Newell, Ojemann, Rostomily, Shaffney, Silberfeld, West, Winn Opportunity for first- and second-year medical students to observe the research, teaching, and patient-care activities of academic neurosurgeons. Prerequisite: permission of instructor. Offered: AWSps.

NEUR S 542 Clinical and Basic Research Correlates of Epilepsy (2) Ojemann, Westrum Clinical symptoms and treatment of epilepsy; relationship of basic research in neuroanatomy, neuropathology, 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) Newell, Silberfeld 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) By special arrangement for qualified students, special clerkships, externship, or research opportunities may 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) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

Neurology RR650 University of Washington Medical Center

General Catalog Web page: www.washington.edu/students/gencat/ academic/Neurology.html

Department Web page: depts.washington.edu/neurolog/

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.
Faculty

Chair
Bruce R. Ransom

Professors
Bird, Thomas D. 1976; MD, 1968, Cornell University; neurology, neurogenetics.

Chamberlain, Jeffrey S. 2000; PhD, 1985, University of Washington; neurogenetics, Duchenne's muscular dystrophy.

Chance, Phillip F. 1998; MD, 1978, University of Tennessee; pediatric neurology and genetics.

Copass, Michael K. 1971; MA, 1964, MD, 1964, Northwestern University; neurology/emergency services.

Crill, Wayne E. * 1967; MD, 1962, University of Washington; properties of spinal and cortical neurons, mechanisms of repetitive firing of CNS neurons.

Doddrl, Carl B. 1987. (Emeritus); MS, 1967, PhD, 1970, Purdue University; neuroepidemiology of epilepsy.

Farrell, Donald F. 1971; MD, 1965, George Washington University; neurology, clinical neurophysiology including intraoperative monitoring, evoked potentials.

Franklin, Gary M. * 1988, (Adjunct Research); MD, 1969, George Washington University, MPH, 1982, University of California (Berkeley); occupational injury, neurological epidemiology, public health nutrition.

Fraser, Robert T. 1976; PhD, 1976, University of Wisconsin; psychology.


Kraft, George Howard * 1969, (Adjunct); MD, 1963, Ohio State University; psychiatry.


Miller, John W. 1999; MD, 1977, PhD, 1981, University of Illinois; epilepsy and clinical neurophysiology.

Ransom, Bruce Robert * 1995; PhD, 1972, MD, 1972, Washington University; neurology, neuroscience research.

Spence, Alexander M. 1974; MD, 1965, University of Chicago; neurology, neuro-oncology.

Stahl, William L. * 1976; PhD, 1963, University of Pittsburgh; neurochemistry of brain ATPase systems.

Sumi, Shuzo Mark 1966, (Emeritus); MD, 1956, University of Toronto (Canada); neuropathology, neuromuscular disease, neurodegenerative diseases.

Swanson, Phillip D. 1964; MD, 1958, Johns Hopkins University, PhD, 1964, University of London (UK); movement disorders, neurology.

Associate Professors
Marra, Christina M. 1984; MS, 1979, Oregon State University, MD, 1984, University of Oregon; neurology, infectious diseases.

Miletstein, Jerrold M. 1980; MD, 1964, University of Minnesota; pediatric neurology.

Shadlen, Michael N. * 1995, (Adjunct); PhD, 1985, University of California (Berkeley), MD, 1988, Brown University; neurobiology of vision and cognition.


Van Bredereode, Johannes 1987; PhD, 1987, Medical College of Wisconsin; neurophysiology of epilepsy.

Wilensky, Alan J. 1975; MD, 1967, Western Ontario University (Canada), PhD, 1973, University of Toronto (Canada); neurology, treatment of epilepsy; testing and use of anticonvulsants.

Assistant Professors


Brown, Angus M. 1999, (Research); PhD, 1990, University of Manchester (UK); neuroscience research.

Cramer, Steven C. 1997; MD, 1988, University of Southern California, MMSc, 1997, Harvard University; stroke, sensorimotor human brain mapping, in healthy and diseased subjects.

Drane, Daniel L. 2001; MS, 1989, Georgia State University, PhD, 1994, Fuller Graduate School of Psychology; neuropsychology.


Kuratai, John D. 1999; MD, 1990, Tulane University; pediatric epilepsy, EEG.


Meoller, Thomas 2000, (Research); PhD, 1996, Freie University of Berlin (Germany); neurophysiology.

Nichter, Charles A. 2001; MD, 1976, Temple University; pediatric movement disorders.

Pinter, Joseph D. 1990; MD, 1990, University of California (Los Angeles); pediatric neurology.


Samii, Ali 1998; MD, 1989, McGill University (Canada); movement disorders.

Saneto, Russell P. 2001; PhD, 1981, University of Texas; DS, 1994, Des Moines University; pediatric epilepsy.

Sotero De Menezes, Marcio 1996; MD, 1984, Rio De Janeiro State University Medical School (Brazil); pediatriatric neurology; epilepsy, EEG.


Weiss, Michael D. 2001; MD, 1991, Albert Einstein College of Medicine; EMG, EEG, neuropathology and neuromuscular disorders.

Yang, Claire C. 1993, (Adjunct); MD, 1988, Vanderbilt University; neurourology and electrophysiology testing.


Instructors


Meekins, Gregg D. 2000; MD, 1993, Tulane University; neurophysiology, EMG.

Watson, Nathaniel F. 2000; MD, 1996, University of North Carolina (Chapel Hill); clinical neurophysiology, sleep disorders.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCAT/.

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 510 Pathophysiology of Neurological Disease (2) FamAnalysis of the clinical features of a number of the major neurological diseases, integrated with a state-of-the-art overview of the cellular, molecular, and whole-system research pertaining to the disease.

NEURL 536 Topics in Clinical Neurology (1) Spain Lectures on epilepsy, stroke, coma, drug overdose, dementia, headache, myelopathies, infectious disease. Offered: S.


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 688 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
Obstetrics and Gynecology

BB617 Health Sciences Building

General Catalog Web page: www.washington.edu/students/gencat/academic/Obstetrics.html

Department Web page: 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.

Faculty

Chair
David A. Eschenbach

Professors
Benedetti, Thomas J. * 1979; MD, 1973, University of Washington; perinatal medicine.
Bremner, William J. 1982, (Adjunct); MD, 1969, University of Washington, PhD, 1977, Monash University (Australia); endocrinology.
Clifton, Donald K. 1981; PhD, 1979, University of California (Los Angeles); reproductive physiology.
Eschenbach, David A. 1976; MD, 1968, University of Wisconsin; gynecology and infectious disease.
Greer, Benjamin E. 1980; MD, 1966, University of Pennsylvania; gynecologic oncology.
Knopp, Robert H. * 1974, (Adjunct); MD, 1964, Cornell University; metabolism and endocrinology.
Merriam, George R. 1991, (Adjunct); MD, 1976, Harvard University; metabolism and endocrinology.
Patton, Dorothy L. 1981; PhD, 1981, University of Washington; infectious disease.
Shy, Kirkwood K. * 1979; MD, 1973, Wayne State University; epidemiologic applications to problems in obstetrics and gynecology.
Soules, Michael R. 1980; MD, 1972, University of California (Los Angeles); reproductive endocrinology.
Spadoni, Leon R. 1963, (Emeritus); MD, 1957, University of Washington; reproductive endocrinology.
Steiner, Robert A. * 1977; PhD, 1975, University of Oregon; neuroendocrinology, neuroscience, endocrinology.
Stencever, Morton A. 1977, (Emeritus); MD, 1956, State University of New York (Buffalo); gynecology, reproductive genetics, medical education.
Tamimi, Hisham K. 1977, MD, 1969, Cairo University (Egypt); gynecologic oncology.
Walker, Edward A. 1983; MD, 1983, University of Washington; consultation-liaison psychiatry; medically unexplained physical symptoms.

Associate Professors
Dubinsky, Theodore J. 1997, (Adjunct); MD, 1983, University of Maryland; ultrasound, computed tomography, body imaging.
Goff, Barbara A. 1993; MD, 1986, University of Pennsylvania; gynecologic oncology.
Klein, Nancy A. 1993; MD, 1985, Vanderbilt University; reproductive aging in women, assisted reproductive technology.
Koh, Wui-Jin 1984, (Adjunct); MD, 1984, Loma Linda University; therapeutic radiology.
Moore, Donald E. 1977; MD, 1967, Case Western Reserve University; reproductive endocrinology.
Shields, Laurence E. 1993; MD, 1987, University of Texas (San Antonio); perinatal medicine.
Wasser, Samuel K. 1982, (Adjunct Research); PhD, 1981, University of Washington; behavioral ecology, endocrinology, conservation genetics and reproductive biology.

Assistant Professors
Eckert, Linda O. 1992; MD, 1987, University of California (San Diego); gynecology.
Mendrattia, Vicki 1998; MD, 1994, Ohio State University.
Reed, Susan D. 1991; MS, 1979, Sarah Lawrence College, MD, 1986, Stanford University; gynecology, evidence-based medicine and clinical outcomes studies, hormone replacement therapy.
Swisher, Elizabeth M. 1996; MD, 1992, University of California (San Diego).
Van Blaricom, Amy Lee 1998; MD, 1994, University of Florida; general obstetrics and gynecology.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs/cat/.

OB GYN 498 Undergraduate Thesis (*) Vontver By arrangement.

OB GYN 499 Undergraduate Research (*) Vontver

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 579 P-Obstetric and Gynecologic Investigation (*) Vontver 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 665 P-Introduction to Obstetrics and Gynecology (12) Vontver 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: six students.)

OB GYN 666 P-Introduction to Obstetrics and Gynecology, Boise (12) Vontver Clerkship equivalent to 665 offered at Boise, Idaho (WWAMI). Includes experience in several private physician offices. Prerequisite: HUBIO 565. (Six weeks. Limit: two students. Not offered summer quarter.)

OB GYN 667 P-Introduction to Obstetrics and Gynecology, Spokane (12) Vontver Clerkship equivalent to 665 offered at Spokane (WWAMI). Includes experience in several private physicians' offices.
Ophthalmology

OB GYN 684 P-Endocrinology of Reproduction (*, max. 12) Vontver The biochemistry of steroids. Spermatogenesis as a model for clinical problems. Diagnosis and treatment of endocrine disorders. Case studies with special emphasis on modern methods of investigation and assisted reproductive technology. (Limit: one student each four weeks.)

OB GYN 685 P-Obstetrics/Gynecology Preceptorship (*, max. 8) Vontver Close working relationship with physician in private practice of obstetrics and gynecology, including: hospital rounds, surgery, deliveries, and office and business aspects of private practice as individually arranged. Forty hours minimum can be arranged to fit schedule not to exceed 8 credits. Prerequisite: OB GYN 665 or equivalent and permission of instructor. (Limit: two students.)

OB GYN 689 P-WWAMI Obstetrics and Gynecology Special Electives (*, max. 24) Vontver 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 instructor.

OB GYN 699 P-Introduction to Obstetrics and Gynecology, Away (*, max. 12) Vontver Clerkship equivalent to 665 at sites being evaluated as permanent WWAMI sites (currently includes Silverdale, Tacoma (St. Joseph), Evergreen, Lewiston, Cheyenne, and Billings). By arrangement. Subject to Dean's Office approval. Department evaluates student performance. Prerequisite: HUBIO 565; permission of instructor.

Ophthalmology

General Catalog Web page: www.washington.edu/students/gencat/academic/Ophthalmology.html

Department Web page: depts.washington.edu/ophthweb/

The Department of Ophthalmology is responsible for the instructional and research programs in diseases of the eye and its adnexae as well as the visual system.

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, a one-year refractive surgery/cornea fellowship, a one-year pediatric and strabismus 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 Lynn DeJessea at lsd@u.washington.edu. For more information on medical student clerkships, contact Dorrie Quirante at dorrieq@u.washington.edu.

Faculty

Chair
Steven E. Wilson

Professors
Clark, John I. * 1982, (Adjunct); PhD, 1974, University of Washington; development and maintenance of lens transparency.

Hendrickson, Anita E. * 1969, (Adjunct); PhD, 1964, University of Washington; neuroanatomy, morphological development and visual system.

Kalina, Robert E. 1967; MD, 1960, University of Minnesota; vitreoretinal diseases.

Kinyoun, James L. 1978; MD, 1971, University of Nebraska; vitreoretinal diseases.

Milam, Ann H. 1971, (Emeritus); PhD, 1967, University of Texas (Southwestern); electron microscopy, ophthalmic pathology, retinitis pigmentosa, retinal cell biology.

Orcutt, James C. 1982; PhD, 1976, MD, 1977, University of Colorado (Denver); orbit, oculoplastic, neuro-ophthalmology.

Pagon, Roberta A. 1979, (Adjunct); MD, 1972, Harvard University; medical genetics.

Patton, Dorothy L. 1981, (Adjunct); PhD, 1981, University of Washington; infectious disease.

Reh, Thomas A. * 1989, (Adjunct); PhD, 1981, University of Wisconsin; regeneration and development of central nervous system.

Rodieck, Robert W. 1978, (Emeritus); PhD, 1964, University of Sydney (Australia); neuro-ophthalmology.

Saari, John C. * 1974; PhD, 1970, University of Washington; retinal biochemistry.

Wilson, Steven E. 1998; MD, 1984, University of California (San Diego); wound healing, apoptosis, growth factors, receptors.

Associate Professors
Chen, Philip P. 1996; MD, 1991, Yale University; glaucoma.

Chuang, Elaine L. 1993; MD, 1979, University of Texas (San Antonio); vitreoretinal diseases, ocular inflammation.


Greenwald, Mark J. 2001; MD, 1976, Harvard University; pediatric ophthalmology, strabismus.

Sires, Bryan S. 1995; PhD, 1986, MD, 1990, Northwestern University; plastic and reconstructive surgery.
Jeffrey D. Weiss, Avery H. 1991; MD, 1974, Miami University (Ohio); pediatric ophthalmology, strabismus.

Assistant Professors

Bhandari, Anuja 1996; MD, 1986, Madras University (India); glaucoma.

Gordon, Sharona E. * 1993; PhD, 1994, Brown University; molecular mechanisms of ion channel gating in visual and olfactory transduction.

Harrison, Devin A. 1997; MD, 1989, St Louis University; cornea and external disease.

Kim, Jeehee 1997; MD, 1992, University of Chicago; cornea and external disease.

Mudumbai, Raghu 2000; MD, 1994, State University of New York (Brooklyn); neuro-ophthalmology, glaucoma.

Pham, Tony A. 2000, (Adjunct); PhD, 1993, MD, 1993, Baylor University; development and plasticity of neural connections in the mammalian forebrain.

Rausch, Michael W. 1997; MD, 1997, University of Colorado (Denver); cataracts.

Rieke, Frederick Martin * 1997, (Adjunct); PhD, 1991, University of California (Berkeley); sensory signal processing and computation.

Saperstein, David A. 2000; MD, 1987, Pennsylvania State University; vitreoretinal diseases, macular degeneration.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/gencat/.

OPHTH 498 Undergraduate Thesis (*) Kinyoun (University of Washington Medical Center) Thesis-based research in vision and ophthalmology. Elective. Offered: AWPSS.

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: AWPSS.

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: AWPSS.

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: AWPSS.

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: AWPSS.

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: AWPSS.

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: AWPSS.

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 fundoscopy. Patient seen three day/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: AWPSS.

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: AWPSS.

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: AWPSS.

Orthopaedics

BB1043 University of Washington Medical Center

General Catalog Web page: www.washington.edu/students/gencat/academic/Orthopaedics.html

Department Web page: www.orthop.washington.edu

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.
Staheli, Lynn T. 1975, (Emeritus); MD, 1959, University of Utah; pediatric orthopaedics.

Teitz, Carol Claire 1974; MD, 1974, Yale University; orthopaedics, arthroscopy, sports medicine.

Tencer, Allan Fred  * 1988; PhD, 1981, McGill University (Canada); biomechanics of joints, orthopaedic trauma implants.

Trumble, Thomas E. 1989; MD, 1979, Yale University; orthopaedics, hand and microsurgical surgery.

Wilson, Anthony J. 1994, (Adjunct); MBChb, 1972, Otago University (New Zealand); orthopaedic trauma imaging, teleradiology, digital radiography, MRI/CT.

Associate Professors

Belza, Basia  * 1991, (Adjunct); MN, 1982, University of Virginia, PhD, 1991, University of California (San Francisco); chronic illness, gerontology, fatigue prevention and management in rheumatic diseases.

Bruckner, James 1990; MD, 1984, Creighton University; orthopaedics, tumors and bone transplantation.

Chapman, Jens R. 1990; MD, 1983, Technical University of Munich (Germany); orthopaedics, spine trauma/reconstruction.

Ching, Randall Preston  * 1992; PhD, 1992, University of Washington; orthopaedic biomechanisms related to injury prevention, injury mechanisms and injury repair.

Clark, John M. Jr. 1982; PhD, 1975, MD, 1976, University of Chicago; orthopaedics, hip and knee arthritis.

Gardner, Gregory C. 1989, (Adjunct); MD, 1984, Baylor University; rheumatology.

Gillespy, Thurman 1990, (Adjunct); MD, 1980, Thomas Jefferson University; musculoskeletal radiology, orthopaedics.

Graney, Daniel O.  * 1966, (Adjunct); PhD, 1965, University of California (San Francisco); gross anatomy, electron microscopy, intestinal absorption.

Greenlee, Theodore K. 1971; MD, 1959, Northwestern University; general orthopaedics.

Gross, Ted S. 2000; PhD, 1993, State University of New York (Stony Brook); biomechanics.

Henley, Michael Bradford 1988; MD, 1979, University of Washington; orthopaedics, trauma, post-traumatic reconstruction, spine trauma.

Hunter, John C. 1992, (Adjunct); MD, 1970, University of Illinois; musculoskeletal radiology, MRI.


Mirza, Sohail K. 1989; MD, 1989, University of Colorado (Denver); spinal surgery/spine biomechanics.

Mosca, Vincent S. 1985; MD, 1978, University of Rochester; pediatric orthopaedics, the child's foot, limb length discrepancies.

Ott, Susan M. 1980, (Adjunct); MD, 1974, University of Washington; nephrology.


Routt, Milton L. 1988; MD, 1983, University of Texas (Galveston); orthopaedics, traumatology.

Shaffrey, Christopher I. 1999, (Adjunct); MD, 1986, University of Virginia; spinal disorders including fractures, tumors, spinal deformity, and degenerative conditions.

Simonian, Peter Todd 1992; MD, 1991, University of Southern California; orthopaedics, general, sports medicine.

Smith, Douglas G. 1989; MD, 1984, University of Chicago; orthopaedics, traumatology, foot, ankle, amputations.

Song, Kit M. 1995; MD, 1985, University of Iowa; pediatric orthopaedics, spinal deformities of children.

Vedder, Nicholas 1990; MD, 1981, Case Western Reserve University; case history, plastic and reconstructive surgery.

Assistant Professors

Allan, Christopher H. 1998; MD, 1992, Northwestern University; hand and microvascular surgery.

Barei, David P. 1999; MD, 1991, University of Ottawa (Canada); traumatology.

Bellabarba, Carlo 1999; MD, 1992, McGill University (Canada); spine trauma and reconstruction, orthopaedic trauma.


Diab, Mohammad 1990; MD, 1980, Stanford University; pediatric orthopaedics.

Escobedo, Eva M. 1992, (Adjunct); MD, 1985, Stanford University; musculoskeletal trauma radiology.

Kadel, Nancy J. 1999; MD, 1988, University of Washington; orthopedic surgery, foot/ankle.

Mills, William J. 1998; MS, 1985, University of Minnesota, MD, 1989, University of Colorado (Denver); traumatology, knee ligament injury.

Nork, Sean E. 1997; MD, 1992, University of California (San Diego); traumatology.

O'Kane, John 1993; MD, 1993, University of Vermont; family medicine, sports medicine, team care.


Smith, Kevin L. 1995; MD, 1990, Southern Illinois University; shoulder and elbow orthopaedics.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

ORTH 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.

ORTH 499 Undergraduate Research (*) Eyre Investigation of pertinent musculoskeletal problems in the orthopaedic laboratories as part of the research group. Offered: AWSpS.

ORTH 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.

ORTH 565 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.

ORTH 675 P-Preceptorship in Orthopaedics (*, max. 4) Simonian Student spends full time with the preceptor during all or his/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.

ORTH 676 P-Pediatric Orthopaedics (*, max. 8) Diab, Mosca, Song 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.

ORTH 677 P-Musculoskeletal Trauma (*, max. 8) Benirschke, Chapman, Hanel, Hansen, Henley, Mills, Mirza, Nork, Rount, Sangeorzan, Smith Habitat 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 core anatomy and pathology. Prerequisite: SURG 665, HUBIO 553. (Four weeks, full-time.) Offered: AWSpS.

ORTH 678 P-Musculoskeletal Oncology (8/12) Conrad 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.

ORTH 680 P-General Orthopaedic Clerkship (*, max. 8) 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.

ORTH 681 P-University of Washington Medical Center Orthopaedics (8) Allan, Bigos, Bruckner, Clark, Conrad, Larson, Matsen, Mirza, Simonian, Smith, Teitz, Trumble Orthopaedic sub-specialty 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.

ORTH 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...
ORTH 697 P-Orthopaedic External Elective (*, max. 12) 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.

ORTH 699 P-WWAMI Orthopedics Special Electives (*, max. 24) 

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.

Faculty 

Chair 

Ernest A. Weymuller, Jr. 

Professors 

Coltura, Marc Dante 1986; MD, 1981, Yale University; otolaryngology/head and neck surgery.

Donaldson, James A. 1965, (Emeritus); MD, 1954, University of Minnesota; otology.

Duckert, Larry Gene 1978; MD, 1972, PhD, 1977, University of Minnesota; otology/neurotology.

Epstein, Joel B. 1983, (Adjunct); DMD, 1976, University of Saskatchewan (Canada); MS, 1979, University of Washington.

Fuchs, Albert F. * 1969, (Adjunct); MD, 1966, Harvard University; otolaryngology/head and neck surgery.

Inglis, Andrew F, Jr. 1983; MD, 1981, Medical College of Pennsylvania; pediatric otolaryngology/head and neck surgery.

Kuhl, Patricia K. * 1976, (Adjunct); MA, 1971, PhD, 1973, University of Minnesota; speech perception.

Manning, Scott C. 1995; MD, 1980, Tulane University; pediatric otolaryngology/head and neck surgery.

Norton, Susan J. * 1991; PhD, 1982, University of Washington; normal and non-normal hearing, specifically cochlear mechanics, in humans and animals.


Rees, Thomas 1971; MA, 1969, University of Redlands, PhD, 1972, University of Washington; audiology.


Sires, Bryan S. 1995, (Adjunct); PhD, 1986, MD, 1990, Northwestern University; plastic and reconstructive surgery.

Temple, Bruce L. 1988, PhD, 1983, Princeton University; molecular neurobiology/neurogenetics, especially potassium channel gene structure and function.

Venkat, Y. 1987; MD, 1981, Tulane University; laryngology, sleep apnea.

Assistent Professors 

Farwell, Donald Gregory 1995; MD, 1994, Washington University (St. Louis); trauma.

Kuhl, Patricia K. * 1976, (Adjunct); MA, 1971, PhD, 1973, University of Minnesota; speech perception.

Manning, Scott C. 1995; MD, 1980, Tulane University; pediatric otolaryngology/head and neck surgery.

Norton, Susan J. * 1991; PhD, 1982, University of Washington; normal and non-normal hearing, specifically cochlear mechanics, in humans and animals.


Weaver, Edward M. 1998; MD, 1993, Yale University; otolaryngology/head and neck surgery, sleep apnea, snoring.


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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, Stanley 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 P-Introduction to Clinical Otolaryngology—Head and Neck Surgery (4/8, max. 24) Hillel, Makielski, Manning, Weymuller Introduction to surgical subspecialty of otolaryngology—head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students must see patients in clinic, join inpatient rounds, have opportunity to go to operating room. Rotations at UWMC, VAH, HMC, CHMC, Swedish. Prerequisite: human and health sciences. Recommended: MED 665 or SURG 665. Offered: AWSpS.

OTOHN 683 P-Otolaryngology—Head and Neck Surgery Externship (*, max. 8) (Madigan Army Medical Center) Individual externship training at 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: Medical and Surgical Aspects (*, max. 12) 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 Special Electives (*, max. 24) Weymuller By specific arrangement. Special clerkship, externship, or research opportunities can at times be made available at institutions other than the University of
Students in the program are expected to fulfill course-work requirements during the first two years. In line with the diversity of faculty members' interests within the department, course requirements are kept to a minimum to provide students with maximum flexibility.

The Ph.D. program in experimental pathology is designed to prepare students for careers as practicing scientists in biomedical research. The emphasis of the program 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.

Special Requirements
Prospective candidates are expected to have had undergraduate experience in biology, physics, chemistry, and mathematics, and acceptable scores on the Graduate Record Examination, including advanced biology or chemistry. 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.

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.

Faculty
Chair
Nelson Fausto
Professors
Albers, John J. * 1971, (Adjunct Research); MS, 1967, PhD, 1969, University of Illinois; lipoprotein metabolism and pathophysiology.

Alvord, Ellsworth C. * 1960; MD, 1946, Cornell University; neuropathology, experimental allergic encephalitis.
Argyeni, Zsolt B. 2001; MD, 1978, Semmelweis Medical University (Hungary); dermatopathology.
Bowen-Pope, Daniel * 1979; PhD, 1979, University of California (Berkeley); gene regulation, growth factors and receptors.
Byers, Peter H. * 1976; MD, 1969, Case Western Reserve University; extracellular matrix synthesis, genetic disorders of collagen metabolism, secretion, human genetics.
Chi, Emil Y. * 1972, (Research); PhD, 1971, University of California (Santa Barbara); lung structures and function, mast cell secretion and inflammation.
Cloves, Alexander W. * 1980, (Adjunct); MD, 1972, Harvard University; vascular smooth muscle cell growth control arterial injury and repair.
Collins, Steven J. * 1982, (Adjunct); MD, 1973, Columbia University; retinoic acid receptors and the pathogenesis of malignancy.
Disteche, Christine M. * 1980; PhD, 1976, University of Liege (Belgium); molecular genetics of sex chromosomes, X inactivation, human and mouse cytogenetics.
Eary, Janet F. 1980, (Adjunct); MD, 1980, Michigan State University; nuclear medicine.
Eisen, Harvey * 1986, (Affiliate); PhD, 1967, University of Toronto (Canada); host-parasite interactions, generation of genetic diversity.
Fausto, Nelson * 1994; MD, 1960, Sao Paulo State University (Brazil); liver regeneration, tumor biology, carcinogenesis, growth factors.
Galloway, Denise A. * 1982, (Adjunct Research); PhD, 1976, City University of New York; viral pathogenesis and neoplasia.
Gelinas, Richard * 1985, (Affiliate); PhD, 1974, Harvard University.
Groudie, Mark * 1982, (Adjunct); MD, 1975, PhD, 1976, University of Pennsylvania; chromatin structure and gene activity.
Harlan, John M. * 1978; (Adjunct); MD, 1973, University of Chicago; vascular biology with emphasis on leukocyte-endothelial adhesion.
Hellstrom, Inggered * 1966, (Affiliate); Dr.Med, 1966, Karolinska Institute (Sweden); tumor immunology.
Kiviat, Nancy C. * 1979; MA, 1970, MD, 1975, University of Washington; epidemiologic and molecular biologic studies of the relationship between HPV, HIV, and neoplasia.
Loeb, Lawrence A. * 1978; MD, 1961, New York University, PhD, 1967, University of California (Berkeley); DNA replication, cancer and AIDS.
Martin, George * 1957; MD, 1953, University of Washington; somatic cell genetics, pathobiology of aging, neurodegenerative disorders.
McDougall, James K. * 1982; PhD, 1971, University of Birmingham (UK); cell cycle, genetic instability and neoplasia.
Miller, Arthur D. * 1987, (Affiliate); PhD, 1982, Stanford University; virology, gene therapy.
Mottet, N. Karle * 1959, (Emeritus); MD, 1952, Yale University; effects of trace elements, especially methymercury and arsenic, on growth and development.

Narayan, A. Sampath * 1971, (Research); PhD, 1967, University of Madras (India); connective tissue, periodontal disease, regulation of fibroblast growth, matrix synthesis.

Neill, Paul E. * 1971, (Adjunct); MD, 1964, University of Washington; oncology.

Nicolas, Roberto F. 1999; MD, 1976, University of Rome (Italy), PhD, 1984, Medical College of Pennsylvania; vascular and renal pathology.

Norwood, Thomas H. * 1973; MD, 1968, University of Maryland; somatic cell genetics, pathobiology of aging, mitotic cell cycle regulation.

Oster, Roy C. * 1967; DDS, 1957, University of Maryland, PhD, 1967, University of Washington; connective-tissue pathology, chronic inflammation, immunopathology, periodontal disease.

Page, Roy C. * 1967; DDS, 1957, University of Maryland, PhD, 1967, University of Washington; connective-tissue pathology, chronic inflammation, immunopathology, periodontal disease.

Raines, Elaine W. * 1975, (Research); MS, 1975, University of California (San Francisco); molecular mechanisms responsible for vascular cell migration.

Reay, Donald T. 1982, (Emeritus); MD, 1963, University of Utah, MPA, 1978, Seattle University; forensic medicine.

Reich, Dennis D. 1966, (Emeritus); MD, 1958, University of Washington; cardiovascular pathology, myocardial cell injury.

Reidy, Michael A. * 1980; PhD, 1976, Cambridge University (UK); identification of migration specific genes, expression of matrix metalloproteinases.

Rohr, Larry R. * 1982, (Affiliate); PhD, 1973, University of Wisconsin; control of growth, differentiation, transformation by the c-fms proto-oncogene.

Rosenfeld, Michael E. * 1992, (Adjunct); PhD, 1981, University of Wisconsin; mechanisms of atherogenesis and macrophage gene expression.


Schwarz, Stephen Mark * 1974; MD, 1967, Boston University, PhD, 1973, University of Washington; vascular biology, atherosclerosis, molecular basis of lineage, developmental biology, cell kinetics.

Shaw, Cheng-Mei * 1963, (Emeritus); MD, 1950, National Taiwan University; neuropathology, immunopathology, trace metal neurotoxicology.

Shulman, Howard M. 1982; MD, 1971, University of California (Los Angeles); graft-versus-host disease; venoocclusive disease of the liver.


Spence, Alexander M. 1974; MD, 1965, University of Chicago; neurology, neuro-oncology.

Stamatoyannopoulos, George 1964, (Adjunct); MD, 1958, DrMedS, 1960, University of Athens (Greece); medical genetics.

Sumi, Shuzo Mark 1966, (Emeritus); MD, 1956, University of Toronto (Canada); neuropathology, neuromuscular disease, neurodegenerative diseases.

Swanson, Paul E. 2001; MD, 1984, Oregon Health Science University; surgical pathology, immunocytochemistry, soft tissue and GI pathology.


Vessella, Robert L. 1989, (Adjunct); PhD, 1974, University of Mississippi; tumor markers and immunology.

Wight, Thomas * 1978, (Affiliate); PhD, 1972, University of New Hampshire; connective tissue biology and pathology, proteoglycan metabolism, atherosclerosis.

Wolf, Norman S. * 1968; DVM, 1953, Kansas State University, PhD, 1960, Northwestern University; hematopoietic stem cell dynamics and transplantation in radiation biology.

**Associate Professors**

Bornfeldt, Karin E. * 1991; PhD, 1991, Linkoping University (Sweden); cardiovascular disease in diabetes, focusing on vascular muscle cells.

Bronner, Mary P. 1993; MD, 1989, University of Pennsylvania; gastrointestinal and hepatic pathology, neoplastic progression and transplantation pathology.

Finger, Corinne L. 1983; MD, 1976, University of New Mexico; autopsy and forensic pathology, fetal and perinatal pathology, forensic toxicology.

Giachelli, Cecilia * 1982, (Adjunct); PhD, 1987, University of Washington; adhesion molecules and vascular biology processes.

Hackman, Robert C. 1982; MD, 1971, Stanford University; infectious and pulmonary complications in immunocompromised patients.

Horwitz, Marshall S. * 1983, (Adjunct); PhD, 1988, MD, 1990, University of Washington; inherited blood cell disorders, including leukemia.

Kapur, Raj P. * 1988; MD, 1988, University of Southern California; normal and abnormal development of the enteric nervous system.


Myerson, David * 1985; PhD, 1979, Albert Einstein College of Medicine; the pathology of viral disease in humans.

Oshima, Junko * 1996, (Research); PhD, 1992, Boston University; pathobiology of aging.

Ott, Susan M. 1980, (Adjunct); MD, 1974, University of Washington; nephrology.

Patterson, Kathleen 1992; MD, 1976, University of Iowa; pediatrics.

Porter, Peggy L. * 1987; MD, 1987, University of New Mexico; identifying/understanding the molecular events associated with the initiation/progression of cancer.

Schmidt, Rodney 1984, PhD, 1984, MD, 1984, University of Washington; surgical pathology, pulmonary pathology, sarcomas, image analysis, electron microscopy.

Siebert, Joseph Robert 1986, (Research); PhD, 1985, University of Washington; pediatric pathology.

Stephens, Karen G. * 1989, (Adjunct Research); PhD, 1982, Indiana University; neurofibromatosis, tumorogenesis, gene mapping and regulation, human genetics.


Tait, Jonathan F. * 1985; (Adjunct); PhD, 1983, MD, 1983, Washington University; biochemistry of blood coagulation, laboratory diagnosis of genetic disorders.

Tapsicott, Stephen J. * 1986; (Adjunct); PhD, 1982, MD, 1982, University of Pennsylvania; molecular and developmental biology.

Thorning, David R. 1982; MD, 1965, University of Kansas; anatomic pathology, pulmonary pathology, tissue biology, electron microscopy.

True, Lawrence D. * 1990; MD, 1971, Tulane University; urologic pathology, nuclear aspects of tumor differentiation.


Yeung, Raymond S. 1997, (Adjunct); MD, 1982, University of Toronto (Canada); general and surgical oncology.

Zarbé, Helmut * 1996, (Affiliate); PhD, 1983, McGill University (Canada).

**Assistant Professors**

Born, Donald E. 1987; PhD, 1986, MD, 1987, University of Virginia; family medicine, sports medicine, team care.


Finn, Laura S. 1998; MD, 1989, Pennsylvania State University; pediatric pathology.

Franklin, Christopher C. 1997, (Research); PhD, 1989, University of Missouri; signal transduction pathways in mammalian cells.


Hevner, Robert F. 2000; PhD, 1992, MD, 1992, Medical College of Wisconsin; development of cerebral cortex.

Jin, Lee-Way 1996; MD, 1985, National Taiwan University, PhD, 1993, University of California (San Diego); molecular analysis and animal modeling of Alzheimer’s disease.

Kemp, Christopher James * 1996, (Affiliate); PhD, 1989, University of Wisconsin; genetic and environmental influence on multistage cancer in the mouse.

Kuechle, Melanie K. 1995, (Adjunct); MD, 1989, Baylor University; dermatology.

Lawton, Thomas J. 1999; MD, 1990, University of Michigan; clinicopathologic research in breast cancer with particular interest in lobular carcinoma.

Mulvihill, Eileen R. 1999, (Research); PhD, 1987, Albert Einstein College of Medicine; the study of human carcinogenesis using tools of genomics and bioinformatics.
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See page 39 for an explanation of course numbers, symbols, and abbreviations.

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PATH 410 Introduction to Pathology (3) Narayanan Basic pathologic processes, including cell and tissue involvement in degenerative processes, cell death, inflammation and repair, immunopathology, cell cycle events, carcinogenesis, and responses to alterations in hormone and growth factor levels. Illustrative disease conditions are reviewed. Required for physical therapy students. Others with suitable biology background by permission of instructor. Offered: A.

PATH 444- 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. Offered: A.

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 postreparative cells, longevity assurance genes). Proseminar based on student participation. Undergraduate honors students, graduate students with biology, zoology, genetics or medical sciences back grounds. 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 and second year graduate students to introduce the concepts of general pathology at the cellular and molecular levels.

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: A/WSpS.

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: A/WSpS.

PATH 512 Introduction to the Anatomical Analyses of Animal Disease (5, max. 10) See Comparative Medicine courses.

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 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, even years.

PATH 530 Human Cytogenetics (*) Maximum 4 Distelhe Sources and methods of preparation and identification of human chromosomes. Molecular structure and mapping of chromosomes. Human cyogenetic pathology: karyotype-phenotype interactions, chromosome breakage, and cancer cytogenetics. Prerequisite: permission of instructor. Offered: even years.

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 and 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: alternates years.

PATH 563 Neuropathology (*) Alvord, Shaw, Sumi Course consists of ten parts. Conferences on gross neuropathology (brain cutting and clinicopathologic correlation) held at six hospitals. Weekly neuropathology or surgical neuropathology conferences, neuropathology slide show, and neuropathology laboratory case studies. Prerequisite: permission of instructor.

PATH 564 Neuropathology Brain Modeling (4) Alvord Designed along clinically important, functional, neuroanatomical lines, generally based first on the embryologic development of the most primitive segmental elements (sensory, motor and association cells, and simple reflexes), followed by the more elaborate suprasegmental elements (cerebellum, colliculi, and forebrain).

PATH 569 P-Pathology Summer Clerkship (*, max. 24) Dissection, writeup, and literature review of autopsy. Emphasis on etiology and pathogenesis of disease as a biological process. Designed for students who have not completed organ systems as covered in Human Biology courses. Prerequisite: HUBIO 520 and completion of first year of medical school.

PATH 600 Independent Study or Research (*) Credit/no credit only.

PATH 679 P-Pathology Summer Clerkship (*, max. 24) Dissection, writeup, and literature review of autopsy. Emphasis on etiology and pathogenesis of disease as a biological process. Designed for students who have not completed organ systems as covered in Human Biology courses. Prerequisite: HUBIO 520 and completion of first year of medical school.

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 by junior staff, including dissection, microscopic examination, and literature review. Attends 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 685 P-Diagnostic Pathology Clerkship—Sacred Heart Hospital, Spokane (*, max. 24) Williamson

CONJ 560, 561 Tumor Biology (3, 2) See Conjoint Courses.

PATH 563 Neuropathology (*) Alvord, Shaw, Sumi Course consists of ten parts. Conferences on gross neuropathology (brain cutting and clinicopathologic correlation) held at six hospitals. Weekly neuropathology or surgical neuropathology conferences, neuropathology slide show, and neuropathology laboratory case studies. Prerequisite: permission of instructor.

PATH 564 Neuropathology Brain Modeling (4) Alvord Designed along clinically important, functional, neuroanatomical lines, generally based first on the embryologic development of the most primitive segmental elements (sensory, motor and association cells, and simple reflexes), followed by the more elaborate suprasegmental elements (cerebellum, colliculi, and forebrain).

PATH 571 Neuroanatomic Pathology (*) Alvord, Shaw, Sumi The particular diseases occurring in specific areas of the nervous system are considered in terms of the segmental, intersegmental, and suprasegmental components. Clinicopathologic correlations are emphasized. Prerequisite: permission of instructor; recommended as concurrent course: PATH 563.

PATH 572 Neuropathologic Reactions (*) Alvord, Shaw, Sumi The reactions of the nervous system, considered in terms of congenital malformations, inflammatory processes, vascular, traumatic, metabolic-toxic, degenerative, and neoplastic diseases peculiar to the nervous system as a whole. Clinicopathologic correlations are emphasized. Prerequisite: permission of instructor; recommended as concurrent course: PATH 563.

PATH 584 Neuropathology Brain Modeling Laboratory (*) Alvord Designed along clinically important, functional, neuroanatomic study based on embryologic motor, sensory, and association cells and simple reflexes, followed by the more elaborate suprasegmental elements (cerebellum, colliculi, forebrain). Three-dimensional neuroanatomical relationships, critical for understanding neuropathology, can best be obtained in constructing a brain model. Prerequisite: PATH 564, which may be taken concurrently.

PATH 600 Independent Study or Research (*) Credit/no credit only.

PATH 679 P-Pathology Summer Clerkship (*, max. 24) Dissection, writeup, and literature review of autopsy. Emphasis on etiology and pathogenesis of disease as a biological process. Designed for students who have not completed organ systems as covered in Human Biology courses. Prerequisite: HUBIO 520 and completion of first year of medical school.

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 by junior staff, including dissection, microscopic examination, and literature review. Attends 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 685 P-Diagnostic Pathology Clerkship—Sacred Heart Hospital, Spokane (*, max. 24) Williamson
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 689 P-Diagnostic Pathology Clerkship—Valley 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 692 P-Diagnostic Pathology Clerkship—Group Health Cooperative (*, 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 (*)

Pediatries

RR314 Health Sciences

General Catalog Web page: www.washington.edu/students/gencat/Pediatrics.html

Department Web page: www.peds.washington.edu

Pediatries 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 24 electives, including the general pediatrics clerkship at multiple WWAMI sites. A residency program is offered with a wide variety of electives in addition to 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.

Faculty

Chair
F. Bruder Stapleton

Professors
Bennett, Forrest C. 1977; MD, 1970, University of Minnesota; child development and handicapped children.

Bergman, Abraham 1964; MD, 1958, Case Western Reserve University; ambulatory pediatrics.


Chance, Philip F. 1998; MD, 1978, University of Tennessee; pediatric neurology and genetics.

Christie, Dennis L. 1979; MD, 1968, Northwestern University; gastroenterology.


Connel, Frederick A. * 1978. (Adjunct); MD, 1972; New York University; child health, child health services research, Medicaid, community health assessment.

Combs, John B. 1983; MD, 1972, Cornell University; health care outcomes, rural health policy, healthcare workforce issues and applied nutrition.

Corey, Lawrence * 1977. (Adjunct); MD, 1971, University of Michigan; DX, therapy and pathogenesis of viral infections, AIDS/herpes viruses.

Deisher, Robert W. 1949. (Emeritus); MD, 1944, Washington University; adolescent medicine.

Eddy, Allison A. 1997; MD, 1975, McMaster University (Canada); nephrology.

Emmanuel, Irvin * 1966. (Emeritus); MA, 1956, University of Arizona, MD, 1960, University of Rochester, MS, 1966, University of Washington; epidemiology of maternal and child health problems, growth and development.

Fantel, Alan G. * 1973; PhD, 1974, University of Washington; embryology, teratology.

French, James W. 1984; MD, 1963, University of Michigan; pediatric cardiology.

Gieason, Christine A. 1997; MD, 1979, University of Rochester; neonatology.


Guralnick, Michael J. 1986; MS, 1964, PhD, 1967, Lehigh University; developmental disabilities, peer relations, social and language development, evaluation systems.

Hayden, Patricia 1969, (Emeritus); MD, 1953, University of Rochester; congenital defects.

Hays, Ross M. * 1983. (Adjunct); MD, 1978, University of Washington; pediatric rehabilitation, medical ethics, neuromuscular diseases, congenital defects.

Hedison, W. Alan 1966; MD, 1959, University of Manitoba (Canada), MMSc, 1964, Ohio State University; neonatal and respiratory diseases.

Jaffe, Kenneth M. * 1981, (Adjunct); MD, 1975, Harvard University; pediatric rehabilitation, brain injury, neuromuscular diseases, congenital defects.


Lynn, Anne 1981, (Adjunct); MD, 1975, Stanford University; pediatric anesthesiology.

Mackler, Bruce 1957, (Emeritus); MD, 1943, Temple University; developmental biology.


Neff, John 1982; MD, 1960, Harvard University; children with special health care needs.

Novack, Alvin H. 1979, (Emeritus); MD, 1958, Temple University; general pediatrics.

Ochs, Hans D. 1969, MD, 1962, University of Freiburg (Germany); immunology.

Pagon, Roberta A. 1979; MD, 1972, Harvard University; medical genetics.

Quan, Linda 1977; MS, 1969, Dartmouth College, MD, 1971, University of Washington; pediatric emergency medicine.


Redding, Gregory J. 1980, MD, 1974, Stanford University; pediatric pulmonary medicine.


Rivara, Frederick P. * 1984; MD, 1974, University of Pennsylvania; pediatric epidemiology and injury prevention and research.

Robertson, William O. 1963, (Emeritus); MD, 1949, University of Rochester; general pediatrics, toxicology.

Rubens, Craig E. * 1984; PhD, 1978, Medical University of South Carolina, MD, 1982, University of Washington; infectious diseases/pathogenesis of gram (+) bacterial infections.

Sanders, Jean E. 1975; MD, 1970, University of Iowa; hematology, oncology.

Scott, C. Ronald * 1965; MD, 1959, University of Washington; diagnosis and nutritional management of genetic disorders of children.

Smith, Nathan J. * 1965, (Emeritus); MD, 1945, University of Wisconsin; sports medicine.

Stapleton, F. Bruder 1996; MD, 1972, University of Kansas; nephrology.

Stevenon, James G. 1976; MD, 1970, Baylor University; pediatric cardiology.

Tarr, Philip I. 1983; MD, 1980, Yale University; gastroenterology/infectious diseases.

Watts, Sandra L. 1981; MD, 1981, University of Texas (Houston); nephrology.

Wedgwood, Ralph J. 1962. (Emeritus); MD, 1947, Harvard University; rheumatology.

Weinberger, Edward 1979, (Adjunct); MD, 1979, Harvard University; pediatric radiology.

Wilson, Christopher B. * 1980; MD, 1972, University of California (Los Angeles); immunology, infectious diseases.

Woodrum, David E. 1971; MD, 1965, University of Illinois; neonatology.

Zimmerman, Jerry J. 1998; PhD, 1975, MD, 1979, University of Wisconsin; critical-care medicine.

Associate Professors
Andrews, Robert G. 1979; MD, 1976, University of Minnesota; hematology/oncology.
Astley, Susan J. * 1980. (Adjunct); PhD, 1990, University of Washington; chronic childhood diseases.

Brewer, David K. 1978. (Adjunct); MD, 1972, Harvard University; pediatric radiology; angiography, computed tomography.

Brownstein, Dena R. 1986; MD, 1982, University of Washington; pediatric emergency medicine.


Cunningham, Michael L. * 1988; MD, 1988, University of Vermont, PhD, 1996, University of Washington; molecular, development, craniofacial, malformation, human, mouse, craniosynostosis, birth defects.

Davis, Robert L. * 1991; MD, 1983, University of California (San Diego), MPH, 1993, University of Washington; childhood immunization, including adverse events perinatal and pediatric epidemiology.

Del Beccaro, Mark A. 1985; MD, 1985, University of Washington; pediatric emergency medicine.


Geyer, Jeffrey R. 1984; MD, 1977, Wayne State University; hematology/oncology.

Glass, Ian 2000; MD, 1991, University of Otago (New Zealand); genetics.


Holm, Vanja A. 1962. (Emeritus); MD, 1954, Karolinska Institute (Sweden); child development.

Jackson, J. Craig 1979; MD, 1979, Vanderbilt University; neonatal and respiratory diseases.

Jardine, David 1987; MD, 1980, Johns Hopkins University; pediatric anesthesiology.


Kapur, Raj P. * 1988, (Adjunct); MD, 1988, University of Southern California; normal and abnormal development of the enteric nervous system.

Kawabori, Isamu 1973; MD, 1966, University of Southern California; pediatric cardiology.

Kletter, Gad B. 1995; MD, 1982, Sackler School of Medicine (Israel); pediatric endocrinology.

Marshall, Susan G. 1979; MD, 1980, University of California (Los Angeles); neonatal and respiratory diseases.

Martin, Lynn D. 1994. (Adjunct); MD, 1982, University of Washington; pediatric anesthesiology.

Massagli, Teresa L. * 1985, (Adjunct); MD, 1982, Yale University; pediatric physiatry.

Matthews, Dana C. 1984; MD, 1981, University of Washington; hematology/oncology.

Mayock, Dennis Edward 1985; MD, 1975, Ohio State University; neonatology and respiratory diseases.

McDonald, Ruth A. 1987; MD, 1987, University of Minnesota; nephrology.

Melzer, Sanford M. 1990; MD, 1982, Mt Sinai School of Medicine; general pediatrics.

Militson, Jerrod M. 1980; MD, 1964, University of Minnesota; pediatric neurology.

Moseley, Stephen L. * 1985, (Adjunct); PhD, 1981, University of Washington; molecular basis of pathogenesis in E. coli diarrhea.

Murphy, Janet Haworth 1974; MBChB, 1967, Victoria University (UK); neonatal biology and respiratory disease.

Pendergrass, Thomas W. 1978; MD, 1971, University of Tennessee, MPH, 1979, University of Washington; hematology, oncology.


Rawlings, David J. * 2001; MD, 1984, University of California; immunology and rheumatology.

Rosenbaum, David M. 1983. (Adjunct); MD, 1977, Albert Einstein College of Medicine; pediatric radiology.

Sherry, David Dan 1984; MD, 1977, Texas Technological University; immunology/rheumatology.

Smith, Mark S. 1977; MD, 1969, University of Virginia; adolescent medicine.

Stout, James W. * 1986; MAT, 1981, Duke University, MD, 1986, Wake Forest University; childhood asthma, health services and epidemiology.


Sulzbacher, Stephen 1976; MA, 1964, Hollins College (Virginia), PhD, 1971, University of Washington; psychiatry and behavioral sciences.

Tarczy-Hornoch, Peter 1992; MD, 1989, Stanford University; bioinformatics and clinical informatics; clinical systems and integrating genetic databases.


Walker, William O., Jr. 1993; MD, 1979, Tulane University; developmental pediatrics.


Wei, Avery H. 1991, (Adjunct); MD, 1974, Miami University (Ohio); pediatric ophthalmology, strabismus.

Wright, Jeffrey A. 1988; MD, 1978, University of Missouri; general pediatrics.

Assistant Professors


A laboratory experience is optional. Prerequisite: permission of instructor. Offered: AWP.

**PEDS 530 P- Adolescent Seminar (1)** Deisher, Smith Clinic-based setting for seminar and interview practice with Pioneer Square 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 551 P-Pediatric Electrocardiography (2)** Guntheroth Brief review of the physiology and physics pertinent to clinical electrocardiography is followed by a presentation of terminology and methods in clinical use. Normal electrocardiograms are studied, followed by abnormal tracings, with emphasis on pediatric material, but including adult material such as myocardial infarction. Prerequisite: HUBIO 540. Offered: W.

**PEDS 611 City Doc FREE-TEEN Clinic (1, max 24)** Breuner, Giesel Participation in a free clinic for out-of-home youth; either Monday or Tuesday evenings. Clinic offers comprehensive medical care with a focus on reproductive health, STD evaluations/treatment, and the impact of a homeless lifestyle on general health. Offered: AWP.

**PEDS 630 P-WRITE Pediatrics Clinical Clerkship (1, max 24)** Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: completion of basic curricular requirements; third- and fourth-year students; acceptance in the WRITE program.

**PEDS 661 P-Pediatric General Clerkship, Anchorage (1, max 24)** Lyon 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: AWP.

**PEDS 662 P-Pediatric General Clerkship (1, 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: AWP.

**PEDS 663 P-Pediatric General Clerkship (1, max 24)** Schweich 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: AWP.

**PEDS 664 P-Pediatric General Clerkship (1, max 24)** Bradford 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: AWP.

**PEDS 665 P-Pediatric General Clerkship (1, 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: AWP.

**PEDS 666 P-Pediatric General Clerkship (1, max 24)** Mannon 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: AWP.

**PEDS 667 P-Pediatric General Clerkship (1, max 24)** Newmann 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: AWP.

**PEDS 668 P-Pediatric General Clerkship (1, max 24)** Stucky 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: AWP.

**PEDS 669 P-Pediatrics-Klerckship (1, max 24)** Gleason 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 665. (Limit: two students.) Offered: AWP.

**PEDS 670 P-Pediatric Infectious Diseases (1, max 24)** Rubens 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 665 or permission; third- or fourth-year medical student standing. (Limit: one student.) Offered: AWP.

**PEDS 673 P-Office Practice (1, 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: AWP.

**PEDS 676 P-Pediatric Clerkship with the Mentally Handicapped (1, max 12)** Dahl (Finest School) Opportunity to provide parent counseling. Prerequisite: PEDS 665. (Four or six weeks, full-time.) Offered: AWP.

**CONJ 677 P-Clinical Allergy and Immunology (1, max 12)** See Conjoint Courses.

**PEDS 679 P-Clinical Problems in Developmental Disabilities (1, 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 student.) Offered: AWP.

**PEDS 680 P-Pediatric Clinics (1, 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 (1, max 24)** Pagon Clinical focus on evaluation and management of children with genetic disorders. Counseling is provided to deal with special health problems, and other related problems of “street kids” through interviews and observations. Credit/no credit only. Offered: W.

**SCHOOL OF MEDICINE / PEDIATRICS**

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the *General Catalog* or visit the online course catalog at www.washington.edu/students/crs-cat/.

**PEDS 498 Undergraduate Thesis (1)** Bennett For medical students. Offered: AWP.

**PEDS 499 Undergraduate Research (1)** Bennett Participation in various clinical or basic research programs in progress, specifically: child development, developmental biology, human embryology and teratology, medical genetics, infectious diseases, neontology, neuropathology, cardiology, endocrinology, and metabolism, respiratory disease. Offered: AWP.

**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. Offered: AWP.

**PEDS 506 Interdisciplinary Seminars in Adolescent Health (1)** Focus on interviewing adolescents, health problems, public health issues, and health care policy. Prerequisite: graduate or professional student status.

**PEDS 512 P-Seminars in Human Embryology and Teratology (3)** Chance, Mirkes Present in depth discussions of human embryonic-fetal development and malformations that arise, correlations with experimental studies and molecular embryology are included.
Prerequisite: permission of department at away site.

be available at institutions other than the University of

ified students, special clerkships or externships may

AWSpS.

sion of instructor. (Limit: one student.) Offered:

metabolic congenital defects. Prerequisite: permis-

cal diagnosis and management of structural and

course in pediatrics providing experience in the clini-

Experience (*, max. 24)

PEDS 685 P-Pediatric Hematology and Oncology (*, max. 24) Bernstein 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) Borchardt, Kavanagh 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.

Pharmacology

E401 Health Sciences

General Catalog Web page:

www.washington.edu/students/gencat/

academic/Pharmacology.html

Department Web page:

depots.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 offered for general, dental, pharmacy, nursing, and graduate students.

Graduate Program

Graduate Program Coordinator

J-681F Health Sciences, Box 357280

206-616-9296

phcoladm@u.washington.edu

The Department of Pharmacology offers the Doctor of Philosophy degree. The Master of Science degree may be elected by the student or requested by the department.

Master of Science and Doctor of Philosophy

Admission Requirement: A baccalaureate degree with a major in any of the sciences, such as biochemistry, chemistry, pharmacy, physics, physiology, psychology, or zoology. Students are selected from the applicant pool based on several criteria, including academic records, recommendations, and previous research experience.

Master of Science

Graduation Requirements: PHCOL 511, 512, and 513 (4 credits each) with a grade of 2.7 or above for each class. PHCOL 519 (laboratory rotations) during the autumn, winter, and spring quarters of the first year. Two advanced pharmacology classes. PHCOL 507 (pharmacology seminar) throughout graduate school. PHCOL 514 (current topics in pharmacology) while enrolled in the pharmacology program or for 3 years, whichever is less. 9 credits of graded, graduate-level courses in other disciplines including physiology, biochemistry, molecular biology, cell biology, immunology. Creditable passage of a comprehensive written exam on general pharmacology.

Students are required to write and successfully defend a Master’s thesis based on laboratory research work performed while in residence. The amount of research accomplished necessary to obtain the degree will be determined by the Master’s thesis committee, to be formed by the student.

Doctor of Philosophy

Graduation Requirements:

PHCOL 511, 512, and 513 (4 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/structure of material. The student receives a grade and an academic credit for PHCOL 519. Students entering into the Ph.D. program with an M.S. degree or equivalent may petition to be allowed 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 (at 500 level) in addition to the 511–513 series are required. Nine graded credits (non-seminar) in physiology, biochemistry, molecular biology, immunology, cell biology or other relevant areas are required. The courses should strengthen the foundation of the student’s thesis proposal and must be at the approved 500 level.

Creditable passage of a comprehensive written exam on general pharmacology, to be taken during the summer quarter of the second year, is required. During the first quarter of the third year of study, students take the oral General Exam. 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. As a result of the examination, the Committee may recommend termination, further work and subsequent reexamination, or approval of the student’s performance and candidacy for the Ph.D. degree.

After successful completion of the General Exam, 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. The 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.

Faculty

Chair

William A. Catterall

Professors

Beavo, Joseph A. * 1977; PhD, 1970, Vanderbilt University; roles and molecular mechanisms of cyclic nucleotide phosphodiesterase regulation of cell function.

Bomsztyk, Karol 1983, (Adjunct); MD, 1977, University of Rochester; role of cytokine-induced protein kinases in the regulation of gene expression.
Catterall, William A. * 1977; PhD, 1972, Johns Hopkins University; molecular biology of ion channels, molecular pharmacology and neurobiology.

Chavkin, Charles * 1984; PhD, 1982, Stanford University; cell and molecular mechanisms of psychoactive opiate drugs to understand normal and pathophysiology.

Hol, Wilhelmus G. J. * 1992, (Adjunct); PhD, 1971, University of Groningen (Netherlands); protein crystallography, drug design, vaccine development, and protein engineering.

Horita, Akira *, (Emeritus); PhD, 1954, University of Washington; neuropsychopharmacology.

Krebs, Edwin G. * 1977, (Emeritus); MD, 1943, Washington University; intracellular signaling mechanisms involving protein phosphorylation.

McKnight, G. Stanley * 1979; PhD, 1976, Stanford University; phosphorylation; gene expression and neuroendocrine physiology in mice using genetic approaches.

Moon, Randall T. * 1985; PhD, 1982, University of Washington; embryonic development; signal transduction; cancer biology.

Nathanson, Neil M. * 1979; PhD, 1975, Brandeis University; neurobiology; molecular analysis of neural signal transduction by muscarinic and neurokinin receptors.

Palczewski, Krzysztof * 1992, (Adjunct); MS, 1980, PhD, 1986, Technical University of Wroclaw (Poland); visual transduction.

Storm, Daniel R. * 1978; PhD, 1971, University of California (Berkeley); molecular basis of neuroplasticity; CaMP and Ca2+ signal transduction systems in the CNS.

Tempel, Bruce L. 1988; PhD, 1983, Princeton University; molecular neurobiology/neurogenetics, especially potassium channel gene structure and function.

Vincenzi, Frank F. * 1967; PhD, 1965, University of Utah; salivary gland physiology and regulation.

Associate Professors

Halpern, Lawrence M. * 1965; PhD, 1961, Albert Einstein College of Medicine; neuropharmacology.

Hamblin, Mark W. 1990, (Adjunct); PhD, 1982, 1982, University of California (San Diego); molecular and cell biology of serotonin receptors, geriatric psychiatry.

Assistant Professors

Bajjalieh, Sandra M. * 1995; PhD, 1989, University of Wisconsin; molecular neurobiology.

Cook, David G. * 1998, (Adjunct Research); PhD, 1991, Yale University; molecular mechanisms of Alzheimer’s disease.

Muchowski, Paul J. 2001; PhD, 1998, University of Washington; molecular chaperones, neurodegeneration.

Stella, Nephi * 1999; PhD, 1995, Ecole Polytechnique Federale De Lausanne; microglia cells activation: involvement of endogenous cannabinoid ligands and their allied receptors.


Xia, Zhengui * 1987, (Adjunct); MS, 1985, Wuhan University (China), PhD, 1991, University of Washington; neuronal apoptosis, neuronal gene regulation.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.


PHCOL 402 General Pharmacology II (2-3, max. 4) Bajjalieh, Storm General pharmacology of drugs affecting the autonomic and central nervous systems. Prerequisite: PHCOL 401. Offered: W.

PHCOL 403 General Pharmacology III (2-3, max. 4) McKnight General pharmacology of drugs affecting the endocrine and cardiovascular systems. For phar- macy students and other undergraduates. Prerequisite: PHCOL 402. Offered: Sp.

PHCOL 434 General Pharmacology (2) Halpern, 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) Halpern, 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: W.

PHCOL 498 Undergraduate Thesis (*) Offered: A.

PHCOL 499 Undergraduate Research (*) Participation in departmental research projects. Offered: AWSp.

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: AWSp.

PHCOL 511 General Pharmacology I (1-5, max. 5) Wang Consideration of principles governing drug-receptor interactions, dose-effect relationships, drug absorption, distribution, metabolism, and excretion. Introduction to drug toxicity, tolerance, allergy, and drug-induced mutagenesis and carcinogenesis. Drugs utilized as antimicrobial and cancer chemotherapeutic agents. For graduate students. Prerequisite: organic chemistry, biochemistry, and introductory anatomy and physiology. Offered: A.

PHCOL 512 General Pharmacology II (1-5, max. 5) Bajjalieh, Storm General pharmacology of drugs affecting the autonomic and central nervous systems with an emphasis on current research approaches to understanding the basic mechanisms of drug action. For graduate students. Prerequisite: PHCOL 511 or permission of instructor. Offered: W.

PHCOL 513 General Pharmacology III (1-5, max. 5) McKnight General pharmacology of drugs affecting the endocrine and cardiovascular systems. For graduate students. Prerequisite: PHCOL 511, PHCOL 512, or permission of instructor. 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: AWSp.

PHCOL 527 Drug Metabolism (3) Rette Considerations of the biochemical mechanisms for the biotransformation of drugs and foreign compounds. Open to medical and graduate students. Prerequisite: one year graduate, medical, or dental biochemistry, or permission of instructor. Offered: jointly with MEDCH 527; odd years; W.

PHCOL 529 Ion Channel Pharmacology (2) Catterall, Tempel Current topics in ion channel structure, function, genetics, and pharmacology, including consideration of role in excitatory 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: CONU 532 and CONU 533 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, phychostimulant, and cannabinoid effects on signal transduction events, electrical activity of neurons, and drug-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 (2) Romszyck, 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 536 Free Radicals in Health and Disease: A Pharmacological Perspective (2) Hindes, Vincenzii
Exploration of chemistry and properties of free radicals and related reactive-oxygen and nitrogen species. Review of biological effects of free radicals and reactive oxygen and nitrogen species with a view toward pharmacological intervention. Analysis of literature implicating free radicals in disease processes. Prerequisite: permission of instructor. Offered: odd 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) Chkran Discussed the principles 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 Neuropeptide Receptors (1) Nathanson Discussion of research strategies and methodologies in the areas of molecular neurobiology and signal transduction of muscarinic receptors, G-proteins, and neuropeptide 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 (3) 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) Vincenzii 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) Bajaj/leh 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: AWSpS.

PHCOL 574 Molecular and Cellular Basis of Chaperone Function and Protein Misfolding Diseases (1) Muchowski Analysis of research problems, techniques and emerging concepts in the study of the molecular chaperones and protein misfolding diseases. Emphasizes experimental problem solving, data analysis, and development of presentation skills. Prerequisite: permission of instructor. 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.

PHCOL 800 Doctoral Dissertation (*) Pharmacology graduate students only. Offered: AWSpS.

PHCOL 800 Doctoral Dissertation (*) Pharmacology graduate students only. Offered: AWSpS.
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.

Faculty
Chair
Stanley C. Froehner

Professors
Anderson, Marjorie E. * 1971; PhD, 1969, University of Washington; physiology of basal ganglia and thalamus; neural control of movement.
Berger, Albert J. * 1978; MA, 1965, PhD, 1967, Princeton University, PhD, 1976, University of California (San Francisco); neural and chemical control of respiration, neurobiology, synaptic transmission.
Binder, Marc D. * 1978; PhD, 1974, University of Southern California; organization of spinal reflexes.
Bothwell, Mark A. * 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology.
Brengelmann, George L. * 1966, (Emeritus); PhD, 1967, University of Washington.
Carlson, Steven S. * 1985; PhD, 1975, University of California (Berkeley); molecular and cellular physiology of synaptic transmission.
Conley, Kevin E. * 1988; PhD, 1983, University of Wisconsin; muscle metabolism and energetics in vivo.
Crill, Wayne E. * 1967; MD, 1962, University of Washington; properties of spinal and cortical neurons, mechanisms of repetitive firing of CNS neurons.
Detwiler, Peter B. * 1977; PhD, 1970, Georgetown University; physiology of photoreceptors.
Feigl, Eric O. * 1969; MD, 1958, University of Minnesota; cardiovascular physiology, coronary and cerebral circulation.
Fetz, Eberhard 1975; PhD, 1966, Massachusetts Institute of Technology; cortical regulation of movement.
Froehner, Stanley C. 2000; PhD, 1973, California Institute of Technology; molecular mechanisms of synapse formation and muscle disease.
Fuchs, Albert F. * 1969; PhD, 1966, Johns Hopkins University; oculomotor physiology, vision.
Gordon, Albert M. * 1964, (Emeritus); PhD, 1961, Cornell University; skeletal and cardiac muscle physiology/biophysics.
Hildebrandt, Jacob * 1966; PhD, 1966, University of Washington; respiratory physiology.
Hille, Bertil * 1968; PhD, 1967, Rockefeller University; receptors and ion channels of excitable membranes; cell signaling; intracellular calcium dynamics.
Hornbein, Thomas F. * 1963; MD, 1956, Washington University; physiology, biophysics.
Kennedy, Thelma T. * 1958, (Emeritus); PhD, 1955, University of Chicago.
Kushmerick, Martin J. * 1988; MD, 1963, PhD, 1966, University of Pennsylvania; muscle contraction, magnetic resonance, metabolic imaging; NMR spectroscopy.
Mackie, Kenneth P. * 1987, (Adjunct); MD, 1984, Yale University; molecular and cellular biological studies of cannabinoid receptor signaling.
Patton, Harry D. 1947. (Emeritus); PhD, 1943, MD, 1946, Yale University.
Powers, Randall K. 1988; PhD, 1982, University of Washington; spinal cord neurophysiology.
Ransom, Bruce Robert * 1995, (Adjunct); PhD, 1972, MD, 1972, Washington University; neurology, neuroscience research.
Rowell, Loring B. * 1963, (Emeritus); PhD, 1962, University of Minnesota.
Rubel, Edwin W. * 1986; PhD, 1969, Michigan State University; developmental neurobiology, with special emphasis on vertebrate auditory system development.
Scher, Allen M. * 1950, (Emeritus); PhD, 1951, Yale University.
Schwindt, Peter C. * 1974, (Emeritus); PhD, 1972, University of Washington.
Smith, Orville A. * 1958, (Emeritus); PhD, 1953, Michigan State University.
Stahl, William L. * 1975; PhD, 1963, University of Pittsburgh; neurochemistry of brain ATPase systems.
Steiner, Robert A. * 1977; PhD, 1975, University of Oregon; neuroendocrinology, neuroscience, endocrinology.
Slicting, Charles E. * 1968, (Emeritus); PhD, 1966, State University of New York (Upstate Medical Center).
Teller, Davida Y. * 1965; PhD, 1965, University of California (Berkeley); vision, psychophysics, development of vision.
Towe, Arnold L. * 1953, (Emeritus); PhD, 1953, University of Washington.
Van Citters, Robert L. * 1962, (Emeritus); MD, 1953, University of Kansas; cardiovascular physiology.
Winn, Robert K. 1984; PhD, 1974, University of Washington; pulmonary physiology, neuropathology, immunology, and monoclonal antibody.
Zagotta, William N. * 1993; PhD, 1989, Stanford University; molecular mechanisms of ion channel function.

Associate Professors
Babcock, Donner 1986; PhD, 1971, Oregon State University; ion channels of sperm cells.
Giniger, Edward Scott * 1994; PhD, 1988, Harvard University; neural development, mechanism of axon guidance, genetic specification of brain structure.
Gleny, Robb * 1987; MD, 1984, University of Virginia; determinants of regional pulmonary blood flow and ventilation distribution.
Gorman, Mark 1997; PhD, 1979, University of Michigan; control of coronary blood flow.
Landau, Barbara R. 1962. (Emeritus); MS, 1949, PhD, 1956, University of Wisconsin.
Modell, Harold I. 1981, (Affiliate); PhD, 1971, University of Mississippi.
Shadlen, Michael N. * 1995; PhD, 1985, University of California (Berkeley), MD, 1988, Brown University; neurobiology of vision and cognition.
Wordeman, Linda * 1994; PhD, 1988, University of California (Berkeley); mitosis and myofilament formation.

Assistant Professors
Gordon, Sharon E. * 1993; PhD, 1994, Brown University; molecular mechanisms of ion channel gating in visual and olfactory transduction.
Jagadeesh, Bharathi * 1999; PhD, 1993, Northwestern University; neural basis of visual learning and memory.
Koh, Duk-Su 1995, (Research); PhD, 1992, University of Leipzig (Germany); regulation of exocytosis.
Rieke, Frederick Martin * 1997; PhD, 1991, University of California (Berkeley); sensory signal processing and computation.
Santana, Luis F. * 2001; PhD, 1996, University of Maryland; molecular basis of heart failure via mouse genetic model.

Senior Lecturer
Linder, Thomas M. 1982; PhD, 1971, University of Washington.

Lecturer
Melby, Anna 1996; PhD, 1995, University of Oregon.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.
For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

CONJ 401, 402, 403 Human Anatomy and Physiology (4, 4, 4) Linder, Melby See Conjoint Courses.
P BIO 405 Human Physiology (4) Wordeman Intensive coverage of physiology through lectures, conference. Autumn Quarter: excitable tissue, skeletal muscle; spinal reflex; cardiovascular, respiratory physiology; acid base balance; autonomic nervous system; temperature regulation. Winter Quarter: renal, body fluids; neuroendocrinology, reproductive, gastrointestinal, neurophysiology. Required for dental, graduate nursing, and bioengineering students. Also offered for graduate students. Offered: A.
P BIO 406 Human Physiology (4) Hlastala Intensive coverage of physiology through lectures,
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: either PSYCH 101, PSYCH 102, BIOL 202, or ZOOL 301. Offered: jointly with PSYCH 424; W.

P BIO 498 Undergraduate Thesis (*) Offered: AWSpS.

P BIO 499 Undergraduate Research (*) Offered: AWSpS.

P BIO 505 Topics in Physiology (0.5) Topics include excitation-contraction coupling, muscle structure, and molecular mechanisms of contractile function; regulation of contraction, muscle mechanisms, energetics, and adaptation. Emphasis on skeletal muscle with some discussion of cardiac and smooth muscle. Series of six one-hour lecture discussions. Prerequisite: first-year P BIO graduate student. Offered: A.

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 neuroendocrine and molecular aspects of several topics in neuroendocrinology, including neuropetide 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.

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) Hastala 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) Hilgenreiner 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) Bengelmann 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: Sp.

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 547 Readings in Cell Physiology (2/3, max. 15) Hildebrandt 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 560 Muscle and Cell Motility (*) Selected topics in muscle contraction and cell motility. Reading of original papers. Presentations by students and faculty. Topics vary. Prerequisite: permission of instructor.

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: AWSpS.

P BIO 700 Master’s Thesis (*) Offered: AWSpS.

P BIO 800 Doctoral Dissertation (*) Offered: AWSpS.

Psychiatry and Behavioral Sciences

BB1644 Health Sciences

General Catalog Web page: www.washington.edu/students/gencat/academic/Psychiatry.html

Department Web page: depts.washington.edu/psychweb/pbsci/u.washington.edu

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: Alexander Troster

A one-year internship in clinical psychology accredited by the American Psychological Association is offered as an interdepartmental program. This internship is open to candidates for the doctorate in clinical psychology from graduate programs accredited by the American Psychological Association.

**Postdoctoral Fellowship Training**

Contact: Richard Veith

Postdoctoral fellowships for advanced clinical and research training in behavioral medicine, broadly construed, are also offered.

**Faculty**

**Chair**

Richard C. Veith

**Professors**


Aylward, Elizabeth H. 1997, (Adjunct); MA, 1976, University of Connecticut, PhD, 1982, Cornell University; structural and functional neuroimaging in neuropsychiatric disorders, developmental psychology.

Becker, Joseph * 1965, (Emeritus); PhD, 1958, Duke University; psychosocial aspects of depression.

Bird, Thomas D. 1976, (Adjunct); MD, 1968, Cornell University; neurology, neurogenetics.

Borson, Soo 1972; MD, 1969, Stanford University; geriatric psychiatry.

Bowden, Douglas M. 1969; MD, 1965, Stanford University; neural substrates of learning and memory.


Buchwald, Dedra S. 1987, (Adjunct); MD, 1981, University of California (San Diego); internal medicine.

Calsyn, Donald 1981; PhD, 1979, University of Washington; drug abuse treatment, AIDS prevention.

Carr, John E. * 1963, (Emeritus); PhD, 1963, Syracuse University; phobic disorders, patient therapist matching and therapy outcome, cross-cultural psychopathology.


Dager, Stephen R. * 1979; MD, 1978, University of Nebraska; application of functional brain imaging techniques to investigate neuropsychiatric disorders.

Dikmen, Suryeys S. * 1974, (Adjunct); PhD, 1973, University of Washington; clinical neuropsychology, traumatic brain injury.

Doerr, Hans O. * 1967, (Emeritus); PhD, 1965, Florida State University; psychophysiology of central and autonomic nervous systems, neuropsychology.

Donovan, Dennis 1981; MA, 1972, Western Washington University, PhD, 1980, University of Washington; cognitive-behavioral factors in substance abuse and addictive behaviors.


Heiman, Julia R. * 1980; PhD, 1975, State University of New York (Stony Brook); sexuality and sexual relationships, prevention and treatment of family abuse.

Horita, Akira * 1950, (Emeritus); PhD, 1954, University of Washington; neuropsychopharmacology.


Johnson, Merlin 1982, (Emeritus); MD, 1947, University of Iowa.

Katon, Wayne J. * 1976; MD, 1976, University of Oregon; depression, panic disorder, somatization, adherence.

Linehan, Marsha M. * 1977, (Adjunct); PhD, 1971, Loyola University (Chicago); behavioral assessment and therapy, suicide and parasuicide, borderline personality disorders.

McCann, Barbara S. * 1986; MS, 1982, PhD, 1984, Rutgers University; behavior change, health, nutrition, psychological stress, cardiovascular disease, diabetes, obesity.

McCaughey, Elizabeth 1979; PhD, 1973, State University of New York (Buffalo); developmental psychopathology focused on affective disorders, behavioral genetics.

Meltzoff, Andrew N. * 1977, (Adjunct); PhD, 1976, Oxford University (UK); perceptual, cognitive and social development in infants.


Ries, Richard K. 1975; MD, 1975, Northwestern University; severe mental illness treatment, addictions, health services outcomes.

Robinson, Nancy M. * 1969, (Emeritus); PhD, 1958, Stanford University; psychology.

Roy-Byrne, Peter 1986; MD, 1978, Tufts University; diagnosis and psychopharmacology of anxiety, depression, and ADHD in adults.

Speltz, Matthew L. 1981; MA, 1975, Western Washington University, PhD, 1980, University of Missouri; developmental psychotherapy, family therapy, pediatric behavioral medicine.

Streissguth, Ann P. 1972; MA, 1959, University of California (Berkeley); PhD, 1964, University of Washington; psychology and behavioral teratology.

Tera, Linda * 1984, (Adjunct); PhD, 1980, University of Vermont; controlled clinical trials of caregiving training for patients with Alzheimer’s.

Townes, Brenda D. * 1961, (Emeritus); PhD, 1970, University of Washington; psychology.

Trupin, Eric W. 1973; MA, 1973, PhD, 1974, University of Wyoming; psychology.

Tucker, Gary J. 1985, (Emeritus); MD, 1960, Case Western Reserve University; neuropsychiatry.

Turner, Judith A. 1980; MA, 1975, PhD, 1979, University of California (Los Angeles); psychology.


Vitaliano, Peter P. * 1978; PhD, 1975, Syracuse University; psychiatric methodology (epidemiology, design, psychometrics), behavioral medicine.

Vitiello, Michael V. * 1982; PhD, 1980, University of Washington; sleep, sleep disorders, circadian rhythms, aging, behavioral medicine.


Ward, Nicholas G. 1975; MD, 1973, Cornell University; treatment resistant mood disorders, psychopharmacology.

**Associate Professors**

Armstrong, Hubert E. 1966, (Emeritus); PhD, 1963, Syracuse University; clinical psychology.

Barnes, Robert 1977; MD, 1973, University of Utah.

Calderon, Rosemary 1987; PhD, 1988, University of Washington; mental health and deafness, childhood psychopathology, early intervention.

Carlin, Albert S. 1964, (Emeritus); MA, 1961, PhD, 1964, Syracuse University; clinical psychology.

Chesney, Edmund 1977; PhD, 1976, University of Washington; clinical psychology.

Craft, Suzanne * 1994; PhD, 1985, University of Texas (Austin); neuropsychology of attention and memory in development and aging.

Dubach, Mark F. 1978; PhD, 1983, University of Washington; anthropology.

Erickson, Richard C. 1991; PhD, 1969, University of Washington; clinical psychology.

Hamblin, Mark W. 1990; PhD, 1982, MD, 1982, University of California (San Diego); molecular and cell biology of serotonin receptors, geriatric psychiatry.

Kivlahan, Daniel R. * 1983; PhD, 1983, University of Missouri; evaluating assessment, prevention, and treatment approaches for addictive behaviors.


Logsdon, Rebecca G. * 1986, (Adjunct Research); PhD, 1986, Oklahoma State University; geriatric psychology, Alzheimer’s disease, caregiving.
SCHOOL OF MEDICINE / PSYCHIATRY AND BEHAVIORAL SCIENCES

Maiuro, Roland D. 1978; PhD, 1978, Washington University; clinical psychology.


McClellan, Jon M. 1984; MD, 1984, University of Michigan; child psychiatry.

McFall, Miles E. 1982; MA, 1979, PhD, 1981, University of Montana; clinical psychology.

McCurry, Susan Melanson * 1991, (Adjunct Research); MS, 1977, MS, 1984, PhD, 1991, University of Nevada; dementia, aging, older adults, depression, sleep, psychotherapy intervention research.

Moe, Karen E. 1990, (Research); PhD, 1981, University of Washington; sleep; hormones and cognition in aging; estrogen effects on sleep and circadian rhythms.

Murburg, Michele 1982; MD, 1978, Albert Einstein College of Medicine; neurobiology of PTSD, PTSD in special populations, psychiatric consequences of workplace harassment.

Myers, Kathleen M. 1980; MD, 1979, MPH, 1979, University of Hawaii; child and adolescent psychiatry.


Pascualy, O. Marcella 1984; MD, 1982, Universidad De Lausanne (Germany); geriatric psychiatry.

Pepping, Mary * 1994, (Adjunct); PhD, 1981, Washington State University; psychosocial outcome after TBI and mild TBI; neuropsychological features of dementia and mild TBI.


Radtan, Allen D. 1985; MD, 1985, University of California (Davis).


Romano, Joan 1982; MS, 1974, PhD, 1982, University of Pittsburgh; clinical psychology.

Russo, Joan E. 1982, (Research); PhD, 1989, University of Washington; psychiatric outcomes.

Saxon, Andrew J. 1982; MD, 1977, Tufts University; addiction psychiatry.

Scher, Maryonda 1961, (Emeritus); MD, 1954, University of California (Los Angeles); dissociative disorders/PTSD.

Scott, David T. 1993; PhD, 1978, Yale University; natural history of premature infants, efficacy of early intervention for premature infants.

Simon, Gregory E. 1988, (Research); MD, 1982, University of North Carolina (Chapel Hill); MPH, 1990, University of Washington; mental health services research; primary care.

Sullivan, Mark D. 1985; PhD, 1982, MD, 1984, Vanderbilt University; depression and chronic medical illness, chronic pain, ethics, quality of life.

Sulzbacher, Stephen 1976; MA, 1964, Hollins College (Virginia), PhD, 1971, University of Washington; psychiatry and behavioral sciences.


Troster, Alexander I. 2000; PhD, 1991, University of California (San Diego), San Diego State University; neuropsychology of movement disorders, cognitive and quality of life outcomes.

Unis, Alan S. * 1987, MD, 1976, University of Pittsburgh; researching the role of dopamine.

Varley, Christopher K. 1974; MD, 1973, University of Washington; attention deficit hyperactivity disorder, pediatric psychopharmacology.

Verhulst, Johan 1977; MD, 1964, Catholic University of Louvain (Belgium); clinical psychology, marital therapy.


Wilkinson, Charles W. 1984, (Research); PhD, 1977, University of California (Santa Barbara); neuroendocrine comitants of aging; Alzheimer's disease, depression.

Wilson, Lawrence G. 1978; MD, 1966, University of Kansas; cultural influences on manifestation of symptoms of psychiatric illness and psychological distress.

Womack, William M. 1969, 1961, University of Virginia; behavioral medicine, pediatric headache, stress/anxiety disorders, juvenile offenders.

Assistant Professors

Comtois, Katherine Ann 1991; PhD, 1992, University of Maryland; services research, borderline personality disorder, women, dual diagnosis.

Dobie, Dorcas J. 1984; MD, 1984, University of Michigan; geriatric psychiatry.

Elliot, Andrew B. 1992; MD, 1992, University of Nevada; HIV/AIDS, psychotic disorders, dialectical behavior therapy.

Fann, Jesse R. 1990; MD, 1989, Northwestern University; MH, 1995, University of Washington; neuropsychiatry, psycho-oncology, epidemiology, health services research, depression, delirium.

Felker, Bradford 1997; MD, 1987, University of Virginia (Charlottesville).

Grant, Therese M. 1984, (Research); PhD, 1999, University of Washington; fetal alcohol syndrome.

Hall, Victoria L. 1990; MD, 1989, University of British Columbia (Canada); subspecialty ABPN certification in forensic psychiatry.

Iwamoto, Satori 1993, (Adjunct); MD, 1989, Harvard University, dermatology.

Larimer, Mary E. * 1995; PhD, 1992, University of Washington; prevention of alcohol problems among college students.


Pham, Tony A. 2000; PhD, 1993, MD, 1993, Baylor University; development and plasticity of neural connections in the mammalian forebrain.

Reou, Joseph P. 1995; MD, 1985, University of Texas (Houston); addiction psychiatry, substance withdrawal syndromes, pharmacotherapy, clinical guidelines.

Richards, Henry J. 1999, (Research); PhD, 1987, Loyola University; mental health in the criminal justice system.

Rippet, Julie D. 2001; PhD, 1997, San Diego State University; University of California (San Diego); neuropsychology.

Shore, Molly M. 1989; MD, 1987, University of Washington; geriatric psychiatry.

Simpson, Tracy L. 1997; PhD, 1999, University of New Mexico; post-traumatic stress disorder, addictions.


Snowden, Mark B. 1990; MD, 1990, University of Washington.

Srebnik, Debra S. 1992; PhD, 1992, University of Vermont; public mental health services research, program and policy evaluation, community psychology.

Stella, Nephi * 1999; PhD, 1995, Ecole Polytechnique Federale De Lausanne; microglia cells activation: involvement of endogenous cannabinoid ligands and their allied receptors.

Szot, Patricia 1987, (Research); PhD, 1987, Oregon State University.

Tsang, Debby W. 1992; MD, 1988, University of Iowa; genetics of schizophrenia and late-life dementia.

Udall, Karina K. 1987; MD, 1987, University of Missouri; HIV/AIDS, health services.


Wagner, Amy W. 2000; PhD, 1995, University of Washington.

Whitsett, Stan F. 2001; PhD, 1982, University of Tennessee; child adolescent psychology.


Zatzick, Douglas F. 2000; MD, 1989, University of California (San Diego); traumatic life events, posttraumatic behavioral and emotional disturbances.

Senior Lecturers

Carmichael Olson, Heather 1986; PhD, 1986, University of Washington.


Lecturer

Kohen, Ruth 1988; MD, 1986, University of Aachen (Germany).

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs.cat/

CONJ 475 Alcoholism: A Course for Medical Students in the Allied Health Sciences (2) See Conjoint Courses.

PSBC 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 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, competency to stand trial, and criminal responsibilities. 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 developmental and cognitive, and how psychoanalytic treatment reestablishes 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 how childhood experiences and development affect adult personality functioning. Views emotional development from a psychoanalytic and psychobiological point of view. Clinical case discussion integrates theoretical concepts.

PBSCI 546 Psychosocial Epidemiology (3) Vander
Stoop
Application of 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. Prerequisite: one course in epidemiology or permission of instructor. Offered: jointly with EPI 546, 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 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 neuropsychological assessment procedures and applications to diverse medical conditions. Prerequisite: psychological assessment experience.

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 Veteran's 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)
Klett
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. Assessment, 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 670 P-Clerkship in Consultation/Liaison Psychiatry UWMC (*, max. 24)
Foster
Walker Assessment of patients with major psychiatric 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 (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 brief, nonacute, nonpsychiatric medical conditions. Students participate in integrated macotherapeutic 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 680 P-Clerkship in Psychiatric Long-term Care and Rehabilitation (*, max. 12)
Chantran
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)
Gardner
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)
Varley
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 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.
Radiation Oncology

NN106 University of Washington Medical Center

General Catalog Web page: www.washington.edu/students/gencat/academic/Radiation_Oncology.html

Department Web page: 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 biochemical 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.

Faculty

Chair
Geoffrey E. Larramore

Professors
Gordon, Mark * 1982; MD, 1975, PhD, 1976, University of Pennsylvania; chromatin structure and gene activity.
Krohn, Kenneth A. * 1981; PhD, 1971, University of California (Davis); chemistry, radiation oncology.
Larramore, George E. 1976; MS, 1966, PhD, 1969, University of Illinois, MD, 1976, University of Miami (Florida); therapeutic radiology.
Russell, Kenneth J. 1985; MD, 1979, Harvard University; therapeutic radiology.
Wootton, Peter 1964; (Emeritus); HonBSc, 1944, University of Birmingham (UK); medical radiation physics.

Associate Professors
Austin-Seymour, Mary M. 1988; MD, 1978, University of Chicago; therapeutic radiology.
Cho, Paul S. 1990; PhD, 1989, University of California (Los Angeles); medical radiation physics.
Kale, Ira J. * 1980; PhD, 1968, Princeton University; computer simulation of radiation therapy, artificial intelligence, computer graphics.
Koh, Wai-Jin 1984; MD, 1984, Loma Linda University; therapeutic radiology.
Lindsley, Skyler 1993; MD, 1985, Vanderbilt University; therapeutic radiology.
Phillips, Mark H. 1991; PhD, 1982, University of Wisconsin; medical radiation physics.
Schwartz, Jeffrey L. 1995; PhD, 1979, University of Texas (Dallas); radiation biology.
Wallner, Kent E. 1997; MD, 1981, Ohio State University; therapeutic radiology.
Wilbur, D. Scott 1986; PhD, 1978, University of California (Irvine); radiochemistry.

Assistant Professors
Gu, Yansong * 2001; PhD, 1994, Thomas Jefferson University; DNA damage signaling and repair pathways.
Yao, Michelle S. 2000; MD, 1993, University of Michigan; radiation oncology.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

R ONC 499 Undergraduate Research (*, max. 24)
Austin-Seymour, Cho, Douglas, Einck, Koh, Larramore, Lindsey, Ling, Phillips, Rasey, Russell, Schwartz, Stelzer, 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)
Koh 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 7-Radiation Oncology Special Elective (*, max. 24)
Koh 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)
By special arrangement for qualified students, special clerkships or externships may be available at institutions other than WWAMI. Prerequisite: permission of department.

Radiology

RR215 University of Washington Medical Center

General Catalog Web page: www.washington.edu/students/gencat/academic/Radiology.html

Department Web page: 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.

Faculty

Chair
Albert A. Moss

Professors
Aylward, Elizabeth H. 1997; MA, 1976, University of Connecticut; PhD, 1982, Cornell University; structural and functional neuroimaging in neuropsychiatric disorders, developmental psychology.
Bassingthwaighte, James * 1975, (Adjunct); MD, 1955, University of Toronto (Canada), PhD, 1964, Mayo Medical School/graduate School; computer analysis of transport mechanisms in blood and tissues.
Bush, William H. 1979; MD, 1967, Oregon Health Sciences University; genitourinary radiology.
Calderwall, James H. 1983, (Adjunct); MD, 1970, University of Missouri; positron emission tomography imaging of myocardial oxygenation, metabolism and sympathetic function.
Chesnut, Charles * 1974; MD, 1966, University of Florida; nuclear medicine.
Cohen, Wendy A. 1987; MD, 1975, Harvard University; neuroradiology.
Conley, Kevin E. * 1988; PhD, 1983, University of Wisconsin; muscle metabolism and energetics in vivo.
Dager, Stephen R. * 1979; MD, 1978, University of Nebraska; application of functional brain imaging techniques to investigate neuropsychiatric disorders.
Eary, Janet F. 1980; MD, 1980, Michigan State University; nuclear medicine.
Esbrook, Joseph M. 1987; MD, 1981, University of Louisville; neuroradiology.
Figley, Melvin M. 1958, (Emeritus); MD, 1944, Harvard University; thoracic and pulmonary radiology.
Godwin, J. David 1986; MD, 1971, Stanford University; pulmonary radiology.
Hayes, Ceci E. 1991; PhD, 1973, Harvard University; physics, MRI.
Haynor, David R. * 1979; PhD, 1971, University of California (Berkeley); MD, 1979, Harvard University; medical image processing and segmentation; image deformation; functional MRI; expression arrays.

Kim, Yongmin * 1982, (Adjunct); MS, 1979, PhD, 1982, University of Wisconsin; computer architecture, imaging systems, medical imaging, computer graphics, multimedia.

Krohn, Kenneth A. * 1981; PhD, 1971, University of California (Davis); chemistry, radiation oncology.

Kushmerick, Martin J. * 1988; MD, 1963, PhD, 1966, University of Pennsylvania; muscle contraction, magnetic resonance, metabolic imaging NMR spectroscopy.

Lewellen, Thomas * 1967; PhD, 1972, University of Washington; bioengineering, electrical engineering.

Lichtenstein, Joel E. 2000; MD, 1972, Ohio State University; gastrointestinal radiology, computed tomography.

Mann, Frederick A. 1993; MD, 1975, Indiana University; emergency and trauma radiology.

Maravilla, Kenneth R. 1986; MD, 1970, State University of New York (Brooklyn); neuroradiology and neurosurgery.

Minoshima, Satoshi 2000; MD, 1987, PhD, 1994, Chiba University (Japan); nuclear medicine.

Moss, Albert A. 1984; MD, 1967, State University of New York (Upstate Medical Center); gastrointestinal radiology, computed tomography.

Nelp, Wil B. 1962, (Emeritus); MD, 1955, Johns Hopkins University; nuclear medicine.

Nelson, James A. * 1986; MD, 1965, Harvard University; diagnostic radiology with basic research in related sciences.

O'Sullivan, S, Finbarr * 1987, (Affiliate); PhD, 1983, University of Wisconsin; nonparametric curve estimation, inverse problems, radiology.

Richards, Todd L. * 1985; PhD, 1984, University of California (Berkeley); nuclear magnetic resonance imaging, spectroscopy of the brain in demyelinating diseases.

Richardson, Michael L. 1984; MD, 1975, Baylor University; bone and joint radiology and musculoskeletal radiology.

Rohrmann, Charles A. 1975; MD, 1966, University of Washington; gastrointestinal radiology.

Schmiedl, Udo P. 1989; PhD, 1979, MD, 1982, University of Heidelberg (Germany); abdominal imaging, ultrasound, computed tomography.

Stern, Eric J. 1992; MD, 1985, University of Medicine and Dentistry of New Jersey; chest radiology.

Stewart, Brent K. * 1993; PhD, 1988, University of California (Los Angeles); biomedical physics, biomedical image processing, medical imaging, medical information systems.

Talner, Lee B. 1993; MD, 1963, Yale University; genitourinary radiology.

Weinberger, Edward 1979; MD, 1979, Harvard University; pediatric radiology.

Wilson, Anthony J. 1994; MBCh, 1972, Otago University (New Zealand); orthopaedic trauma imaging, teleradiology, digital radiography, MRI/CT.

Yuan, Chun 1991; PhD, 1988, University of Utah; magnetic resonance imaging in medical application.

**Associate Professors**

Brewer, David K. 1978; MD, 1972, Harvard University; pediatric radiology, angiography, computed tomography.

Dalley, Robert W. 1987; MD, 1982, University of Utah; neuroradiology.

Dubinsky, Theodore J. 1997; MD, 1983, University of Maryland; ultrasound, computed tomography, body imaging.

Gardner, Jill C. 1992, (Research); PhD, 1981, Dalhousie University (Canada); computed imaging processing and analysis.

Gillespy, Thurman 1990; MD, 1980, Thomas Jefferson University; musculoskeletal radiology, orthopaedics.


Griep, Robert J. 1982; MD, 1968, University of Texas (Galveston); internal medicine/radiology.

Hunter, John C. 1992; MD, 1970, University of Illinois; musculoskeletal radiology, MRI.

Jarvik, Jeffrey G. 1993; MD, 1987, University of California (San Diego); neuroradiology, outcomes research.

Kimmey, Michael 1979, (Adjunct); MD, 1979, Washington University; gastrointestinal radiology, gastroenterology/endoscopy.

Kinahan, Paul E. 2001; PhD, 1994, University of Pennsylvania; bioengineering.

Lehman, Constance D. 1990; PhD, 1990, MD, 1990, Yale University; mammography, women's breast imaging.

Lewis, David H. 1985; MD, 1985, Virginia Commonwealth University; nuclear medicine.

Link, Jeanne 1982; MS, 1982, PhD, 1998, University of Washington; radioanalytical chemistry.

Mankoff, David A. 1990; PhD, 1988, University of Pennsylvania; MD, 1988, University of Pennsylvania; high count rate PET imaging.

Marglin, Stephen I. 1980; MD, 1968, Yale University; chest and oncologic radiology.

Ott, Susan M. 1980, (Adjunct); MD, 1974, University of Washington; nephrology.

Parisi, Marguerite T. 2001; MD, 1977, State University of New York (Downstate Medical Center); pediatric radiology.

Phillips, Leon A. 1959, (Emeritus); MD, 1952, Yale University; general radiology, uroradiology.

Rosenbaum, David M. 1983; MD, 1977, Albert Einstein College of Medicine; pediatric radiology.

Schulte, Scott J. 1988; MD, 1979, University of Washington; gastrointestinal radiology.

Shaw, Dennis 1985; MD, 1983, University of Washington; neuroradiology, pediatric radiology.

Takasugi, Julie E. 1988; MD, 1982, University of California (Los Angeles); pulmonary radiology.

Wiseman, Robert W. * 1989, (Affiliate); PhD, 1988, Florida State University; cellular energetics, mri spectroscopy, mitochondria, kinetics, gene expression, metabolism.

**Assistant Professors**

Anzai, Yoshimi 2000; MD, 1986, DSc, 1993, Chiba University (Japan); neuroradiology.
Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs/cat.

RADGY 498 Undergraduate Thesis (*) Supervised clinical and/or laboratory research in the broad field of medical imaging, culminating in a thesis. Offered: AWSpS.

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: AWSpS.

RADGY 505- P-Preceptorship in Nuclear Medicine (1, max. 24) Early (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: AWSpS.

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: AWSpS.

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: AWSpS.

RADGY 695 P-Radiology Sub-specialty Elective (*, max. 8) Schulte Clinical rotation in one of the subspecialty 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: AWSpS.

RADGY 696 P-Nuclear Medicine Clerkship (*, max. 12) Early 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: AWSpS.

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: AWSpS.

RADGY 699 P-WWAMI Radiology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

Rehabilitation Medicine

BB919 Health Sciences

General Catalog Web page: www.washington.edu/students/genca/academic/Rehab_Medicine.html

Department Web page: 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 graduate curricula leading to the following degrees: Master of Occupational Therapy, Master of Physical Therapy, and a Bachelor of Science in the field of prosthetics and orthotics. The department also offers a Master of Science degree in rehabilitation medicine with options for occupational therapists, physical therapists, and residents in physical medicine and rehabilitation who wish to pursue academic or research careers.

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. In addition, there are five prerequisite courses that must be completed prior to being admitted to the program. The admission process occurs once a year for entry to the program in 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 outside of the UW, comparable courses must be taken:

Natural Sciences: Survey of Physiology (Zool 118), 5 credits; General Anatomy (B STR 301), 4 credits; Introduction to General Chemistry (Chem 109), 5 credits; General Physics (PHYS 114), 4 credits; General Physics Laboratory (PHYS 117), 1 credit; Basic Educational Statistics (EDPSY 490), 3 credits.

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; insurance and indemnity, 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 course work 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 examination. Most states, including Washington, require state licensure in order to practice.
The following courses are prerequisites for admission:

- Principles of Sociocultural Anthropology (ANTH 202), 5 credits
- Survey of Sociology (SOC 110), 5 credits
- Developmental Psychology (PSYCH 306), 5 credits
- Abnormal Psychology (PSYCH 305), 5 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 or via the program's Web page (depts.washington.edu/rehab/education/ot.shtml).

Graduation Requirements: The following courses must be completed satisfactorily in the schedule sequence, beginning autumn quarter only, at the UW: REHAB 400, 401, 403, 414, 442, 444, 445, 448, 451, 452, 570, 571, 572, 574, 575, 576, 577, 578, 579, 580, 581, 582, 584, 585, 587, 591, 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 course work to maintain satisfactory standing and to graduate. Detailed scholastic requirements are available on the program's Web page (depts.washington.edu/rehab/education/ot.shtml).

If at any point the OT curricular 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 the subsequent quarters. If a student is unable to remove his/her probation status, he/she is subject to dismissal from the program.

The student must satisfactorily complete all academic course work before taking the two required Level II Fieldwork placements (REHAB 594). Both of the two required Level II Fieldwork placements must be satisfactorily completed within two years after the 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 at depts.washington.edu/rehab/education/ot.shtml.

**Physical Therapy**

**Head**

Mark Guthrie

Physical therapy is a direct form of professional patient care that can be applied in all 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 a rebuilding of self-confidence and the creation of 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 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 perception, fine motor skills, and functional skills. Some of the 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, prothetic, 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 by 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.

**Master of Physical Therapy**

**Admission Requirements:** Applicants are required to complete a bachelor's degree in another field prior to enrollment in the physical therapy curriculum. For current admission requirements, applicants should request detailed program information (which is updated annually and available after September 1 each year) from the Physical Therapy Curriculum Office, Box 356490, University of Washington, Seattle, Washington 98195-6490; or visit the General Catalog online at www.washington.edu/students/gencat/.

**Prosthetics and Orthotics**

**Head**

John Ferguson

Upon successful completion of the prosthetics and orthotics program, the student will have learned the skills necessary to function as an entry level provider in prosthetics-orthotics. 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 Board for Certification in Orthotics and Prosthetics, Inc.

The prosthetist-orthotist is a member of the rehabilitation health care team working together with disabled or physically challenged individuals to enhance their daily life and increase their functional abilities. The three 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; (2) orthotic devices, which help with the control of motion and the support of a weakened body segment; and (3) adaptive devices, which enable the person to perform specific activities. Practitioners design and fabricate the appropriate device 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.

Upon successful completion of the program, the student 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 (CAAAHP). For more information on the Prosthetics and Orthotics undergraduate program, see the undergraduate volume of the General Catalog or visit the General Catalog online at www.washington.edu/students/gencat/.

**Post-Professional Programs**

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. Additional information may be found at the program's Web site (depts.washington.edu/rehab/education).

**Master of Science, Rehabilitation Medicine (Occupational Therapy Pathway)**

This degree program is designed to prepare occupational therapists to discuss rehabilitation science, models of disability, and/or theory and frames of reference relating to occupational therapy; to design and conduct research; to provide instruction, and to administer occupational therapy services or provide a higher level of clinical service. Independent-study options and electives offer flexibility, allowing the student to meet individual objectives. Completion of a data-based thesis is required. Full-time students generally complete the course work in four quarters. The additional time to complete the thesis requirement varies.

**Admission Requirements:** An applicant for admission must be a graduate of an approved occupational therapy program and must be certified to practice by the American Occupational Therapy Certification Board. A minimum of one year of professional experience is desirable. Detailed information about the program is available from the Division of Occupational Therapy Curriculum Office at 206-598-5392 or from the Web site (depts.washington.edu/rehab/education).
Master of Science, Rehabilitation Medicine (Physical Therapy Pathway)

This degree program is designed to prepare physical therapists to assume a career in teaching and administration within the field. The curriculum emphasizes preparation for research and contribution to the professional literature; therefore, a thesis is a requirement of this plan. Opportunities are provided to enhance specialized knowledge and skill in selected content areas of physical-therapy practice. Depending upon the student's educational goals and prior accomplishments, the program should require one to two calendar years for completion.

Admission Requirements: Selection for admission to the Master of Science degree program (physical-therapy pathway) is based on an assessment of intellectual capacity, basic professional competence, promise for future contributions to the field, and availability of the program (due to funding limitations, the program is not offered every year). Students must have completed a baccalaureate degree and an accredited physical-therapy program with a minimum cumulative GPA of 3.00, based on a four-point scale, in all college work. Detailed information on program and admission requirements is available from the Division of Physical Therapy Curriculum Office, 206-598-3233, or email gth@uw.edu.

Graduation Requirements: All students must satisfactorily complete (1) a minimum of 36 credits, including specified core courses; (2) all Graduate School requirements for a master's degree; and (3) a database-based thesis contributing to the knowledge base in physical therapy.

Master of Science, Rehabilitation Medicine (Rehabilitation Medicine Pathway)

This degree program is designed to prepare physicians, specifically physiatrists, as academicians in the field of physical medicine and rehabilitation. In addition to core course work in relevant medical sciences, an emphasis is placed on developing skills toward the goal of conducting independent or collaborative research projects.

Admission Requirements: An applicant for admission must be a physician from an approved medical school and must be concurrently enrolled, or have completed, an approved residency program in physical medicine and rehabilitation.

Graduation Requirements: All students must complete (1) a minimum of 36 credits, including specific core courses; (2) all Graduate School requirements for a master's degree; and (3) a data-based thesis contributing to the knowledge base in physical medicine and rehabilitation.

Associate Professors


Benditt, Joshua O. 1994, (Adjunct); MD, 1982, University of Washington; pulmonary and critical care medicine.

Berni, Rosemarian * 1962, (Emeritus); MN, 1973, University of Washington; rehabilitation nursing.


Chang, Michael Wei 1992; PhD, 1982, University of Washington, MD, 1988, University of Texas (Galveston); biomedical simulation, ultrasonography, electrophysiology, biomechanics.

Czerniecki, Joseph M. * 1982; MD, 1981, University of British Columbia (Canada); MS, 1985, University of Washington; rehabilitation engineering, prosthetics, biomechanics and gait analysis.

Egan, Kelly J. 1980, (Adjunct); MA, 1968, Texas Technological University, PhD, 1980, University of Washington; clinical psychology.

Engel Knowles, Joyce M. * 1993; PhD, 1988, University of Kansas; use of occupational therapy, pain management with children and persons with physical disabilities.


Gardner, Gregory C. 1989, (Adjunct); MD, 1984, Baylor University; rheumatology.

Goldstein, Barry * 1987; PhD, 1981, 1986, University of California (Los Angeles); skin adaption to mechanical stress, pressure ulcers, overuse injuries of the upper extremity.

Guthrie, Mark R. * 1983; PhD, 1990, University of Washington; functional assessment, physical therapy efficacy.

Hammond, Margaret C. * 1979; MD, 1979, Medical College of Wisconsin; medical consequences of longstanding spinal cord injury.

Haselkorn, Jodie K. * 1985; MD, 1985, Louisiana State University; health services for the disabled; diagnostic accuracy of tests, effectiveness of interventions.

Hicks, Ramona R. * 1999; PhD, 1993, University of Connecticut; brain injury, neural plasticity, cell death and regeneration.

Johnson, Kurt Lewis * 1990; PhD, 1984, University of Wisconsin; counseling psychology; psychological, social vocational aspects of disability and chronic illness.

Kanny, Elizabeth M. * 1978; MA, 1977, Seattle University, PhD, 1996, University of Washington; education of allied health practitioners; ethical reasoning and ethics education.

Massaggi, Teresa L. * 1985; MD, 1982, Yale University; pediatric physiatry.

McMillan, Jo Ann * 1958; (Emeritus); MEd, 1968, University of Southern California; physical therapy.

Odderson, Ib R. * 1985; PhD, 1978, Indiana University, MD, 1985, Vanderbilt University; physiatry; stroke, multiple sclerosis, spasticity, botulinum toxin.

Pepping, Mary * 1994; PhD, 1981, Washington State University; psychosocial outcome after TBI and mild TBI; neuropsychological features of dementia and mild TBI.

Reilly, Dominic F. 1991, (Adjunct); MD, 1988, University of Washington; general internal medicine.

Rodriquez, Arthur A. * 1999; MD, 1972, University of Wisconsin; musculoskeletal pain disorders and clinical neurophysiology.

Sanders, Joan Elizabeth * 1985, (Adjunct); PhD, 1991, University of Washington; soft tissue biomechanics and tissue adaptation to mechanical stress.

Shumway-Cook, Anne * 1995; MS, 1973, PhD, 1983, University of Oregon; physiologic basis for balance problems following neurological injury.

Slimp, Jefferson C. * 1979; PhD, 1976, University of Wisconsin; clinical neurophysiology, intraoperative neuromonitoring, evoked potentials, deep-brain stimulation.
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Assistant Professors
Barr, Karen P. 2001; MD, 1993, Northeastern Ohio University; musculoskeletal rehabilitation, sports medicine, acupuncture.


Breuer, Kristen K. 1999, (Clinical); PhD, 1997, University of Iowa.


Chan, Leighton * 1990; MD, 1990, University of California (Los Angeles); health service delivery related to Medicare patients.

Ciol, Marcia A. 2000, (Research); PhD, 1991, University of Washington; biostatistics.

Dudgeon, Brian J. 1982, MS, 1983, PhD, 2000, University of Washington; occupational therapy, assistive technology, disability studies.

Ehde, Dawn * 1991; PhD, 1992, University of North Dakota; chronic pain secondary to disability, psychological distress following disability.

Fann, Jesse R. 1990, (Adjunct); MD, 1989, Northwestern University, MPH, 1995, University of Washington; neuropsychiatry, psycho-oncology, epidemiology, health services research, depression, delirium.

Harrast, Mark A. 2001; MD, 1996, Northwestern University; spine, sports, and musculoskeletal medicine and rehabilitation.

James, Jennifer J. 1998, (Clinical); MD, 1994, University of Vermont; spine, sports, and musculoskeletal medicine and rehabilitation.

Kartin, Deborah * 1984; MS, 1988, PhD, 1996, University of Washington; developmental disabilities, pharmaceutical drug exposure, high-risk infancy, postural development.

Kinney, Gregory A. 1997; PhD, 1996, Northwestern University; neuroscience.

Paynter, Kirsten S. 2001; MD, 1996, University of Florida; acute musculoskeletal injuries, sports medicine, back pain, amputee rehabilitation.

Powell, Janet M. 1998, PhD, 2001, University of Washington; vision, perception, and cognition following brain injury; rehabilitation outcomes.

Toshima, Michelle 1995, (Clinical); PhD, 1990, University of California (San Diego).

Washington, Kathleen A. * 1982, (Clinical); MS, 1980, University of Wisconsin.

Yu, David T. 2001; MD, 1992, Bowman Gray School of Medicine; stroke rehabilitation, motor recovery and shoulder pain in hemiplegia, neuromuscular stimulation.

Senior Lecturer
Fergason, John R. 1996; BA, 1985, California State University, Fresno; post-operative amputation care.

Lecturers
Okumura, Ramona M. 1990; BS, 1981, University of Washington; pediatric limb deficiency, upper extremity prosthetics, prosthetic biomechanics.

Yamane, Ann 1979; BS, 1976, University of Washington; prosthetics and orthotics.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

REHAB 400 Medical Science (4) 
Kanny, Powell
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) 
Fergason, Powell
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 Exercise Physiology for Rehabilitation Professionals (2) 
Anderson, Stimp
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) 
Patternen, 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, Jackhs
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) 
Fergason
Instruction in patient evaluation, casting, cast modification, socket fabrication, static and dynamic alignment, alignment duplication, suspension systems, and documentation. Required for prosthetics and orthotics majors; others by permission of instructor.

REHAB 421 Lower Extremity Prosthetics II (11) 
Fergason
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 pathologic 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) 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.

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 429 Immediate Post-Operative and Early Fitting (2) Fergason Lecture and laboratory designed to introduce the student to the principles of immediate post-operative prosthetic fitting, including patient management.


REHAB 442 Applied Kinesiology (4) Guthrie, Shumway-Cook 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, Yamane 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) Study of musculoskeletal, peripheral-vascular, and peripheral-nervous systems from prospected material.
Required for physical therapy, occupational therapy, and prosthetic/orthotic students.

REHAB 452 Functional Anatomy Laboratory (1) Study of musculoskeletal, peripheral-vascular, and peripheral-nervous systems from prosected material. Required for physical therapy, occupational therapy, and prosthetic/orthotic students.

REHAB 458 Augmentative and Alternative Communication: Implementation Strategies (2-3) NW Communication needs of nonspeaking individuals. Interdisciplinary approaches to the evaluation, selection, and implementation of aided and unaided communication augmentations. Recommended: basic course work in either SPHSC, OT, PT, or ENGR. Offered: jointly with SPHSC 453; irregularly, S.

REHAB 459 Augmentative and Alternative Communication: Access for Technology (3) NW Communication technology and motor evaluation of augmentative and alternative users. Issues related to hardware, software, switching, placement and access, with opportunities for clinical trials. Recommended: SPHSC 453 or REHAB 458. Offered: jointly with SPHSC 454.

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 Clerkships in Physical Therapy (2, max. 8) 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 situations. Required for physical therapy students. Credit/no credit only.

REHAB 501 Lifespan I: General Lifespan Development (2) Hicks Provides professional physical therapy students an overview of professional human development across the lifespan, with particular emphasis on motor development. Serves as framework for understanding atypical development and the effects of disease and disability across the lifespan.

REHAB 502 Lifespan II: Pediatrics (3) Kartin, Mullens, Washington Provides an overview of pediatric physical therapy practices for children with atypical development. Assessment, development of physical therapy plans of care for children with various disabilities will be presented within the frameworks of family-centered-care and disablement models.

REHAB 503 Lifespan III: Geriatric Physical Therapy 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 for the geriatric patient. Lectures and laboratories.

REHAB 504 Physical Therapy Procedures I: Assessment (2) McGough Development of clinical competence in patient assessment techniques from a neuromusculoskeletal perspective. Discussion of normal and pathological findings. Special emphasis on upper quadrant anatomy and patient handling skills. Lecture and laboratory format.

REHAB 506 Physical Therapy Procedures II: Assessment (2) McGough 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 510 Rehabilitation Psychology (2) Jensen 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) VanBuuren 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) VanBuuren 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 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 518 Infants and Young Children: Current Research (3) Delitz, Swanson Introduces students to recent research relating to assessment and intervention with infants and young children who are “at risk” or who are disabled. A critical evaluation of the current research emphasized. Prerequisite: clinical experience or coursework related to infants and young children with disabilities and permission of instructors.

REHAB 520 Seminar (1-5, max. 5) Conferences, seminars, discussions of advanced physical medicine 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) Shumway-Cook 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 neuromotor impairments. Lectures and laboratories.

REHAB 527 Neuroscience IV: Physical Rehabilitation of Adult Neuromuscular Disorders (2) Hicks Critical analysis and application of physical therapy assessment and treatment techniques to problems related to specific adult neuromuscular disorders. Neuromuscular disorders to be covered include stroke, spinal cord injury, traumatic brain injury, and multiple sclerosis.

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 disabilities in clinical and administrative tasks, on job stations; work with community resources for vocational/educational placement; and develop activity-oriented schedules. Prerequisite: permission of instructor.

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 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 Occupational and Physical Therapy (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) Kraft: Examination, analysis, 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 Electrodiagnosis (2.5) Kniha: Demonstration of fundamentals of electromyography and peripheral nerve stimulation followed by participation in clinical electrodiagnosis examinations. Develops awareness of knowing when such procedures are indicated for patients and interpreting results rather than developing proficiency in performing these examinations. Prerequisite: HUBIO 560 and permission of instructor.

REHAB 556 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 environments providing rehabilitation services. Practicum arrangements and permission by instructor.

REHAB 568 Biophysics as Applied to Physical Medicine (2) Essenman: 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) Engel-Knowles: An overview of human development as it relates to occupational performance and functional adaptation in the ages and stages of life from infancy through 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 (5) Engel-Knowles: An overview 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: S.

REHAB 573 Occupational Therapy in Community Practice (4) Engel-Knowles: 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 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: A.

REHAB 576 Occupational Therapy Theory and Practice in Pediatrics (6) Dietz: 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 578 Occupational Performance Analysis (3) Dudgen: Skills in the analysis, adaptation, and sequencing of therapeutic 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) Engel-Knowles: 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) Deitz: Evaluation of rehabilitation research literature and design of research studies relevant to rehabilitation. Offered: S.

REHAB 581 Application of Measurement Systems (3) Dietz: 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) Dudgen: 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) Kanni: 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 (3) Kanni: 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) Dudgen: 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 Master's Project (1-4, max. 7) Master's project focused on research, administration, education, practice, policy, or other scholarly or creative work. 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) Rallinger: Six months of supervised fieldwork education. Experience in delivering occupational therapy services to clients focusing on application of purposeful and meaningful occupation. Exposure to a variety of clients across the lifespan and in a variety of settings reflective of current practice in the profession. 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) Dietz: 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) Kanni: 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) Kanni: 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) Kanni: 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, Hayes 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 (6/12)
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, neuroscience, and plastic surgery.

REHAB 697 P-Rehabilitation Medicine Special Elective (*, max. 24) Equivalent to 686, 687, or 688. Satisfies requirements in rehabilitation medicine/chronic care. Student arrangements with another university, using the "Special Assignment Form." Students can qualify after review, similar experience at another university. Prerequisite: permission of instructor.

REHAB 699 P-WWAMI Rehabilitation Medicine Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

REHAB 700 Master's Thesis (*) Credit/no credit only.

**Surgery**

BB487 University of Washington Medical Center

General Catalog Web page:
www.washington.edu/students/encat/academic/Surgery.html

Department Web page:
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.

**Faculty**

**Chair**
Carlos A. Pellegrini

**Professors**
Ashbaugh, David G. 1982, (Emeritus); MD, 1957, Ohio State University; thoracic surgery.

Beach, Kirk-Watson * 1976; MSCHE, 1968, PhD, 1971, University of California (Berkeley), MD, 1976, University of Washington; arterial disease in diabetes, blood flow studies with ultrasonic Doppler.


Copp, Michael K. 1971, (Adjunct); MA, 1964, MD, 1964, Northwestern University; neurology/emergency services.

Dean, Larry S. 2000; MD, 1980, University of Alabama; cardiology.

Dellinger, E. Patchen * 1977; MD, 1970, Harvard University; general and gastrointestinal surgery.

Engrav, Loren H. 1977; MD, 1969, University of California (Los Angeles); plastic and reconstructive surgery.

Gruss, Joseph S. 1991; MBCHB, 1969, University of Witwatersrand (South Africa); craniofacial and maxillofacial surgery.

Hanel, Douglas Paul 1992, (Adjunct); MD, 1977, St Louis University; orthopaedics, hand/microsurgery.

Hannaford, Blake * 1989; Adjunct); MS, 1982, PhD, 1985, University of California (Berkeley); haptic interfaces, robotics, biomechanics, bioengineering, controls, human-machine interaction.

Heimbach, David M. 1974; MD, 1964, Cornell University; burn and general surgery.

Herman, Clifford M. 1977, (Emeritus); MD, 1959, University of Vermont; general surgery.


Merendino, K. Alvin 1948, (Emeritus); MD, 1940, Yale University; PhD, 1946, University of Minnesota; general surgery.

Moe, Roger E. 1967, (Emeritus); MD, 1959, University of Washington, oncology and general surgery.

Patterson, David R. * 1984, (Adjunct); PhD, 1982, Florida State University; treatment of acute pain, psychology of burn patients, psychological outcome of physical trauma.

Pellegrini, Carlos A. 1993; MD, 1971, University of Rosario Medical School (Argentina); general and laparoscopic surgery.

Perkins, James D. 1989; MD, 1979, University of Arkansas; transplant surgery.

Tapper, David 1983; MD, 1970, University of Maryland; pediatric surgery.

Trumble, Thomas E. 1989, (Adjunct); MD, 1979, Yale University; orthopaedics, hand and microvascular surgery.

Verrier, Edward D. 1989; MD, 1974, Tufts University; cardiothoracic surgery.

Winterscheid, Loren C. 1958, (Emeritus); PhD, 1953, MD, 1954, University of Pennsylvania; general and thoracic surgery.

Zierler, R. Eugene 1984; MD, 1976, Johns Hopkins University; general and vascular surgery.

**Associate Professors**

Anderson, Benjamin O. 1994; MD, 1985, Albert Einstein College of Medicine; oncology, general surgery.

Byrd, David R. 1992; MD, 1982, Tulane University; general surgery and oncology.

Daum, Guenter 1993; PhD, 1989, University of Konstanz (Germany); cellular and molecular biology, tryosine phosphotase and kinases.

Egbert, Mark A. 1986, (Adjunct); DDS, 1981, University of Washington; oral and maxillofacial surgery.

Foy, Hugh M. 1978; MD, 1978, University of Nebraska; general surgery.

Gibran, Nicole 1990; MD, 1985, Boston University; general, burn, and trauma surgery.

Hatsukami, Thomas 1988; MD, 1982, University of California (Los Angeles); vascular surgery.

Isik, F. Frank 1990; MD, 1985, Mt Sinai School of Medicine; plastic surgery/control of angiogenesis.

Langdale, Lorrie A. 1985; MD, 1979, University of Washington; general surgery.


Lupineti, Flavian M. 1993; MD, 1978, Johns Hopkins University; cardiothoracic surgery.

Marsh, Christopher L. 1989; MD, 1980, Loma Linda University; transplant surgery.

Meissner, Mark H. 1985; MD, 1985, University of Colorado (Denver); general, vascular, and critical care surgery.

Nicholls, Stephen C. 1986; MBChB, 1975, University of Auckland (New Zealand); vascular surgery.


Sawin, Robert 1989; MD, 1982, University of Pittsburgh; pediatric surgery.

Sinanan, Mika N. * 1980; MD, 1980, Johns Hopkins University, PhD, 1986, University of British Columbia (Canada); surgical education, bioborative surgical instrument development, and clinical procedure development.

Stelzner, Matthias G. 1996; MD, 1983, University of Bonn (Germany); general surgery.

Vallieres, Eric 1996; MD, 1982, Laval University (Canada); thoracic, lung transplant.
Vedder, Nicholas 1990; MD, 1981, Case Western Reserve University; case history, plastic and reconstructive surgery.


Yeung, Raymond S. 1997; MD, 1982, University of Toronto (Canada); general and surgical oncology.

Assistant Professors

Allan, Christopher H. 1998, (Adjunct); MD, 1992, Northwestern University; hand and microsurgical surgery.

Anderson, Richard V. 1997; MD, 1987, St Louis University; cardiac surgery.

Billingssley, Kevin G. 1998; MD, 1989, Johns Hopkins University; general surgery.

Buliger, Eileen 1992; MBBS, 1984, Madras Medical College (India); trauma, critical care.

Cornejo, Carol J. 1991; MD, 1991, University of California (San Francisco); trauma/critical care.

Curtis, William E. 1997; MD, 1986, University of Colorado (Denver); cardiac surgery.

Healey, Patrick J. 1993; MD, 1987, Boston University; general and pediatric surgery.


Karmy-Jones, Ryad 1997; MD, 1983, University of Alberta (Canada); thoracic surgery.


Lynge, Dana C. 1993; MD, 1985, McGill University (Canada); general surgery.

Mann, Gary N. 2000; MBCH, 1989, University of Witwatersand (South Africa); surgical oncology, breast cancer, endocrine neoplasia, melanoma, soft tissue sarcoma.


Nathens, Avery B. 1998; MD, 1990, Queen’s University (Canada), PhD, 1997, University of Toronto (Canada); trauma and critical care surgery, surgical infection.

Whelan, Michael F. 1998; DDS, 1988, University of California (Los Angeles), MD, 1992, St. Louis University; craniofacial surgery, cleft lip and palate, microsurgery, jaw reconstruction, orthognathic 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-patient, and doctor-nurse relationships in the office and hospital. Prerequisite: permission of the department.

SURG 600 Independent Study or Research (*) Langdale

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. Physiologic 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 680 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 board-certified staff physicians at Madigan Army Medical Center. Emergency Department. Prerequisite: basic clerkship in medicine, surgery, obstetrics, or pediatrics.

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) Tapper (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 684 P-Trauma and Emergency Care (*, max. 16) Copass, Eisenberg (Harborview Medical Center, University of Washington Medical Center) Register for one or both segments of this course. Segment 1: emergency medicine and trauma at Harborview Medical Center with assignment to the emergency department. Emphasis on management of severely injured and critically ill patients. Segment 2: acute medicine at University of Washington Medical Center. Evaluate and treat ambulatory emergencies. Prerequisite: SURG 665, MED 665. (Four weeks, third-year and fourth-year students. Limit: twelve students at Harborview Medical Center; three students at University of Washington Medical Center.)

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 surgical 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; MS IV, limit 2; MS I/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 complications, the ICU patient, and outpatients; patient 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. 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.)
Urology

BB1115 Health Sciences

General Catalog Web page: www.washington.edu/students/gencat/academic/Urology.html

Department Web page: 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, 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.

Faculty

Chair
Paul Henry Lange

Professors
Ansell, Julian S. 1959, (Emeritus); MD, 1951, Tufts University, PhD, 1959, University of Minnesota; congenital defects and pediatric urology.
Barnes, Glover W. * 1969; MA, 1955, PhD, 1961, State University of New York (Buffalo); tissue, organ immunology.
Brannen, George 1979; MD, 1969, Northwestern University; general adult urology, third-world medicine.

Chapman, Warren H. 1962, (Emeritus); MD, 1952, University of Chicago; oncology and microsurgery.
Mayo, Michael Edward 1975; MBBS, 1962, St Thomas’ Hospital Medical School (UK); neuro-urology and reconstruction, urodynamics.
Mitchell, Michael E. 1989; MD, 1969, Harvard University; pediatric urology and reconstruction.
Vessella, Robert L. 1989; PhD, 1974, University of Mississippi; tumor markers and immunology.

Associate Professors
Berry, Donna L. * 1988, (Adjunct); MN, 1981, University of Texas (Houston), PhD, 1992, University of Washington; health care of persons with, and risk for, cancer.
Ellis, William J. 1991; MD, 1985, Johns Hopkins University; oncology, prostate disease.
Joyner, Byron David 1999; MD, 1988, Harvard University; pediatric urology.
Lentz, Gretchen M. 1992, (Adjunct); MD, 1986, University of Washington; urogynecology.
Marsh, Christopher L. 1989; MD, 1980, Loma Linda University; transplant surgery.
Miller, Jane L. 1985; MD, 1985, University of Oklahoma; female urology and urodynamics, urologic trauma.
Riley, Donald E. * 1982; PhD, 1976, University of Washington; pathogenic research and diagnosis involving DNA sequences.
Wessells, Hunter 2000; MD, 1988, Georgetown University; gynourinary trauma, reconstructive surgery.

Assistant Professors
Nelson, Peter S. * 1993, (Adjunct); MD, 1986, University of Kansas; the study of human carcinogenesis using tools of genomics and bioinformatics.
Penson, David F. 1999; MD, 1991, Boston University, MPH, 1999, Yale University; clinical epidemiology and health services research in the area of urologic disease.
Porter, James Roscoe 1992; MD, 1990, Medical College of Ohio; urologic trauma, laparoscopy, endourology.
Takeyama, Thomas K. 1989; MD, 1985, Tufts University; biochemistry of prostate specific antigen.
Yang, Claire C. 1993; MD, 1988, Vanderbilt University; neurourology and electrophysiology testing.

Lecturer
Muller, Charles 1980; PhD, 1976, University of California (Berkeley); male fertility and sperm physiology.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

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, Takeyama, 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, Takeyama, 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

Dean
Nancy F. Woods
T318 Health Sciences

Associate Deans
Ruth F. Craven, Educational Outreach
Pamela H. Mitchell, Research and Practice
Susan L. Woods, Academic Services

General Catalog Web page:
www.washington.edu/students/gencat/
academic/School_Nursing.html

School Web page:
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 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 schools of nursing, in colleges and universities throughout the world.

The School of Nursing offers programs leading to baccalaureate, master's, and doctoral degrees.

Undergraduate Program
Adviser
Dagmar Schmidt
T310 Health Sciences, Box 357260
206-221-2461
sonas@u.washington.edu

For information on the School of Nursing’s undergraduate programs, the graduate and professional volume of the General Catalog or visit the General Catalog online at www.washington.edu/students/gencat/

Graduate Program
Graduate Program Coordinator
T310 Health Sciences, Box 357260
206-543-8766
sonapo@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 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 community-health nursing (cross-cultural nursing/occupational health nursing/healthy aging/policy and program development), advanced practice in care systems management, advanced practice home care nurse practitioner, advanced practice genetics nursing, advanced practice options in bio-behavioral nursing, family-centered pediatric nursing, nurse midwifery, perinatal nursing/neonatal nurse practitioner, psychosocial nurse practitioner, family nurse practitioner, pediatric nurse practitioner, women’s primary care 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. The School of Nursing offers three concurrent graduate degree programs with the School of Public Health and Community Medicine: The M.N./M.P.H., the M.S./M.H.A., and the M.N./M.H.A.

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 non-matriculated 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 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.

Special Requirements
In addition to the basic requirements for graduate status in the University, admission to premaster’s status in the School of Nursing requires baccalaureate preparation either in nursing or in another major, a basic course in statistics, Graduate Record Examination scores within the past five years, an admissions essay, and three references. Licensure as a registered nurse is required for application to the M.N. program. At least one year of practice is recommended for most clinical programs. Admission is usually for autumn quarter. The application deadline for most master’s degree options is February 1. Early application is encouraged, although late applications may be accepted on a space-available basis. Additional information may be obtained from the School of Nursing Academic Programs Office.

Admission requirements for the doctoral program, in addition to the above, include Graduate Record Examination scores within the past five years, three references, a statement of goals for doctoral study which includes a description of area-of-research interest, and an example of scholarly work. The deadline for application to the doctoral program is February 1.

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 Programs Office, School of Nursing, for current information.

Faculty
Professors
Allen, David G. * 1988; PhD, 1975, University of Iowa; philosophy of science, critical and feminist theory, psychosocial nursing theory.
Barnard, Kathryn E. * 1972; MSN, 1962, Boston University, PhD, 1972, University of Washington; ecological factors of child development.
Batey, Marjorie V. * 1956, (Emeritus); MS, 1956, PhD, 1968, University of Colorado (Boulder); sociological factors in health-care systems.
Beaton, Randal D. * 1976; PhD, 1972, University of Washington; assessment and treatment of temporomandibular joint pain and dysfunction.
Bencel, Jeanne 1970, (Emeritus); MS, 1961, University of California (Los Angeles), DNS, 1969, University of California (San Francisco).
Berkowitz, Bobbie * 1988; PhD, 1990, Case Western Reserve University; administration, leadership and policy development within public health and nursing.
Blackburn, Susan T. * 1973; PhD, 1979, University of Washington; high-risk infants and their families, infant care-giving interactions and environments.
Bond, Eleanor * 1984; MN, 1976, PhD, 1985, University of Washington; acute care and critical care nursing, gut motility, effect of ovarian hormones on GI track, stress.
Booth, Cathryn L. * 1980; PhD, 1974, Ohio State University; mother-infant interaction, observational methodology, child birth experiences and attachment.
Brandt, Patricia * 1981; PhD, 1981, University of Washington; influence of family functioning on early child development.
Brown, Marie Annette * 1983; PhD, 1983, University of Washington; women’s health, depression, mood disorders, lifestyle changes, exercise, and loss/grief/dying.
Budzynski, Helen Kogan * 1968, (Emeritus); PhD, 1968, University of California (Los Angeles); stress response: cognitive/physiological interface in chronic dysfunctions, self-management teaching.
Carwein, Vicky * 1995, (Adjunct); MS, 1972, University of California (San Francisco), DNS, 1981, Indiana University; specializing in descriptive work related to the use of alternative therapies by persons with HIV.
Chrisman, Noel J. * 1973; PhD, 1966, University of California (Berkeley); health beliefs and practices, social networks and social support; clinically applied anthropology.
Cowan, Marie J. * 1977, (Affiliate); MS, 1972, PhD, 1979, University of Washington; estimation of infant size by electrocardiography, sudden cardiac death, physiological nursing.
De Tornyay, Rheba * 1975, (Emeritus); EdD, 1967, Stanford University; health services, nursing education.
Dimond, Margaret * 1988; MN, 1971, University of Iowa; PhD, 1978, University of Wisconsin; aging, bereavement, family caregiving, Alzheimer's disease, chronic illness, long-term care.

Egert, Leona * 1978, (Emeritus); MA, 1970, University of Washington; PhD, 1984, University of Washington; adolescents, drug use, suicide, communication, personal relationships.

Gallucci, Betty J. * 1973; MS, 1971, North Carolina State University, PhD, 1973, North Carolina State University; oncology, nutritional assessment, pathophysiology of stomatitis, and graft versus host disease.

Giblin, Elizabeth C. * 1982, (Emeritus); MN, 1954, University of Washington, EdD, 1959, University of Colorado (Boulder); nursing assessment and nursing therapies, pathophysiological bases.

Graham, Katherine J. * 1988, (Emeritus); MN, 1967, PhD, 1978, University of Washington; family adaptation; quality of life in wellness and illness; professional commitment.


Hegevary, Sue T. 1986; MN, 1966, University of Washington, PhD, 1974, Vanderbilt University; administration and productivity of health care and nursing services.

Heitkemper, Margaret M. * 1981; MN, 1975, University of Washington, PhD, 1981, University of Illinois; gastroenterology, enteral nutrition, gerontology.

Horn, Barbara J. * 1977, (Emeritus); PhD, 1971, University of Michigan; effective organization of nursing resources.

Kelly, Jean F. * 1986; PhD, 1979, University of Washington; family factors that affect at-risk children.

Kilien, Marcia G. * 1973; PhD, 1982, University of Washington; women's health, reproductive decision making, work and family.

Kodadek, Sheila M. 1996, (Affiliate); PhD, 1985, University of Illinois; population-based nursing.

Landis, Carol A. * 1991; MS, 1973, DNS, 1988, University of California (San Francisco); health consequences of sleep loss, neuroendocrine-immune interactions, methods of inquiry.

Lewis, Frances M. * 1978; PhD, 1977, Stanford University; complex organizational analysis, evaluation research, psychosocial factors in chronic illness.

Little, Dolores E. 1951, (Emeritus); MN, 1957, University of Washington; physiological nursing.

Magyary, Diane L. * 1981; PhD, 1981, University of Washington; family centered health care of children at risk, disabled or handicapped.

Mansfield, Louise W. 1979, (Emeritus); MA, 1951, Columbia University; physiological nursing.


Muecke, Marjorie A. * 1979; PhD, 1976, University of Washington; community health, medical anthropology, reproductive health, Southeast Asia (Thailand).

Murphy, Shirley Ann * 1985, (Emeritus); PhD, 1981, Portland State University; addictive processes in women, coping with undesirable life events.

Osborne, Oliver H. * 1969, (Emeritus); PhD, 1968, Michigan State University; ideology, policy and health-care systems, cross-cultural health, mental health, nursing.

Patrick, Maxine L. * 1973, (Emeritus), DPH, 1970, University of California (Los Angeles); gerontology, geriatrics.

Price Spreatlin, Lois * 1976; PhD, 1976, University of Washington; sexual harassment and perceived workplace mistreatment in higher education.

Prinz, Patricia * 1976; PhD, 1969, Stanford University; pharmacology.


Siantz, Mary Lou * 1998, (Affiliate); MN, 1971, University of California (Los Angeles), PhD, 1984, University of Maryland; child/adolescent psychiatric nursing, risk and adaptation among migrant children and families.

Spieker, Susan J. * 1983; PhD, 1982, Cornell University; developmental psychology, infant security, mother-infant interaction.

Swanson, Kristen M. * 1985; PhD, 1983, University of Colorado (Boulder); caring therapeutics, responses to miscarriage, women's health, loss, bereavement.

Teri, Linda * 1984; PhD, 1980, University of Vermont; controlled clinical trials of caregiving training for patients with Alzheimer's.

Thompson, Frances Elaine A. * 1984; PhD, 1990, University of Washington; attribution theory, adolescent drug use, suicide.

Vitiello, Michael V. * 1982, (Adjunct); PhD, 1980, University of Washington, sleep, sleep disorders, circadian rhythms, aging, behavioral medicine.

Webster-Stratton, Carolyn *; PhD, 1980, University of Washington; parent intervention programs for behaviorally disturbed children.

Whitney, Joanne D. * 1991; MS, 1979, University of Michigan, PhD, 1991, University of California (San Francisco); wound healing.

Willke, Diana J. * 1990; MN, 1984, PhD, 1990, University of California (San Francisco); cancer pain assessment and management, pain research.

Wolf-Wilts, Vivian * 1969, (Emeritus); PhD, 1969, University of Chicago; curriculum development, instruction, stress management.

Woods, Nancy * 1978; PhD, 1978, University of North Carolina; women's health.

Woods, Susan L. * 1975; MA, 1975, University of Washington, PhD, 1991, Oregon Health Sciences University; cardiovascular clinical specialist, pulmonary artery catheter measurement.

Associate Professors

Baydar, Nazi * 2001, (Research); PhD, 1984, Interuniversity Programme in Demography (Belgium); normative child development, family processes, multivariate statistical methods, psychometrics.

Belza, Basia * 1991; MN, 1982, University of Virginia, PhD, 1991, University of California (San Francisco); chronic illness, gerontology, fatigue prevention and management in rheumatic diseases.


Betrus, Patricia * 1978; PhD, 1985, University of Washington; women and depression, epigenesis of emotions, mental health, stress, violence quantitative analysis.

Bevenius, Stella Hay * 1983, (Emeritus); MA, 1951, University of Minnesota; physiological nursing.

Blaine, Carol * 1967; MN, 1967, University of Washington; clinical teaching and problems of patients with diabetes mellitus.

Brandt, Edna M. 1979, (Emeritus); MN, 1953, University of Washington; physiological nursing.


Bush, James P. 1984, (Emeritus); MN, 1973, University of Washington, EdD, 1984, University of San Francisco; pain management, power and powerlessness as perceived by professional nurses.

Carnevali, Doris 1982, (Emeritus); MN, 1961, University of Washington.

Elmore, Shawn K. * 1983; PhD, 1990, University of Washington; psychobiological aspects of women with mood disorders and light therapy.

Ensign, B. Josephine * 1994; MS, 1986, Virginia College of Medicine, MPH, 1992, DPH, 1994, Johns Hopkins University; health care program planning and evaluation for marginalized populations and high-risk youth.

Estes, Nada * 1972, (Emeritus); MS, 1958, University of Colorado (Boulder); counseling people with substance use disorder, depression.

Flagler, Susan B. * 1979; DNS, 1981, University of California (San Francisco); maternal role adjustment and early parent-infant interaction.

Fought, Sharon G. * 1986, (Adjunct); PhD, 1983, University of Texas (Austin); emergency care/critical care nursing; simulation gaming educational strategies.

Herting, Jerald R. * 1996; PhD, 1987, University of Washington; research methodology and at-risk youth.

Hoffman, Agnes * 1979, (Emeritus); PhD, 1977, University of Kansas; substance use disorders, mental health care of the elderly.

Horn, Beverly M. * 1976, (Emeritus); PhD, 1975, University of Washington; cross-cultural research in maternal-child nursing.


Johnson, Clark * 1994; MSEd, 1973, PhD, 1978, University of Washington; applied research methods including development in applied statistics, assessment, and analysis.

Jordan, Pamela L. * 1984; PhD, 1984, University of Michigan; expectant/new fatherhood, transition to parenthood.

Kang, Rebecca R. * 1981; PhD, 1985, University of Washington; environment of at-risk infants and families, Asian and Pacific Islander health.

Kieckhefer, Gail M. * 1987; PhD, 1985, University of Washington; motivation for health promotional and illness management behavior in children.
Lalonde, Bernadette 1980, (Adjunct Research); PhD, 1979, University of Toronto (Canada); public health program development, process and outcome program evaluation, evaluation research.

Lentz, Martha J. * 1983; MN, 1975, PhD, 1984, University of Washington; physiological adaptation: the influence of sleep and other biological rhythms.

Leppa, Carol J. * 1990, (Adjunct); PhD, 1990, University of Illinois; ethics and comparative health care systems, palliative care approaches to end of life care.


Lindenberg, Catherine S. 1998, DPH, 1985, Johns Hopkins University; public health policy and management.

Logsdon, Rebecca G. * 1986; PhD, 1986, Oklahoma State University; geriatric psychology, Alzheimer's disease, caregiving.


Martell, Louise K. * 1992; PhD, 1990, Oregon State University; maternal adaptations to childbirth.

McCurry, Susan Meloncon * 1991; MS, 1977, MS, 1984, PhD, 1991, University of Nevada; dementia, aging, older adults, depression, sleep, psychotherapy intervention research.

McCraith, Barbara B. * 1987; PhD, 1993, University of Washington; ethnographic studies with U.S. Pacific Islanders on health issues, specifically, HIV/AIDS prevention.

Meyer, Kerry E. * 1992; MN, 1981, Vanderbilt University, PhD, 1990, University of Maryland; health informatics, expert systems in support of clinical decision making, and geriatrics.

Mitchell, Ellen S. * 1977; MN, 1967, University of Florida, PhD, 1986, University of Washington; women's health; menstrual cycle symptom experience, food cravings and eating control.

Molbo, Doris M. * 1969, (Emeritus); MA, 1968, University of Washington; oncology: prevention and screening, care and rehabilitation.

Montano, Daniel E. * 1979, (Affiliate); PhD, 1983, University of Washington; attitude-behavior research and behavior change, cancer control, HIV prevention.

Munet-Vilaro, Frances * 1997; PhD, 1984, University of Washington; coping of Latinos with a family member with cancer and/or AIDS.

O'Connor, Frederica W. * 1986; PhD, 1986, Northwestern University; public sector mental health treatment provision, interventions promoting desired life quality.

Olishansky, Ellen F. * 1985, (Affiliate); DNS, 1985, University of California (San Francisco); psychosocial implications of infertility related to the family, qualitative research, depression.

Patterson, Diana * 1989; DNS, 1984, University of Alabama; childbirth family, pediatric primary health care.


Pittman, Rosemary 1964, (Emeritus); MS, 1947, University of Chicago.

Randell, Brooke P. * 1993; MN, 1969, University of California (Los Angeles), DNSc, 1987, University of California (San Francisco); preventive community-based interventions with high-risk adolescents and their families.

Richardson, Mary L. * 1977, (Adjunct); MHA, 1978, PhD, 1984, University of Washington; organization, management, and analysis of policy relevant to health services.

Schepp, Karen G. * 1988; PhD, 1985, University of Arizona; stress and coping of physically and mentally ill youth and their families.

Schoeder, Carole A. * 1993; MSN, 1985, University of Nevada, PhD, 1993, University of Colorado (Denver); women's health experiences, critical approaches to knowledge development, and developing partnership.

Schwartz, Anna L. * 1998, (Affiliate); MS, 1991, Florida State University, PhD, 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. 1984; PhD, 1992, University of Washington, MSN, 1992, University of Washington; clinical ethics; decision-making surrounding use of life-sustaining therapies.

Simpson, Teri A. * 1991; MN, 1975, University of California (San Francisco), PhD, 1988, University of Washington; critical care patients' psychological and psychological responses to environmental stressors.

Spitzer, Ada 1993, (Affiliate); PhD, 1990, University of Washington; migration, cross-cultural nursing, stress and coping of children with illness, nursing scholarship.

Thomas, Karen A. * 1981; PhD, 1986, University of Washington; preterm infant development, care unit environments, acute care pediatrics, thermoregulation.

Thomas, Mary Durand * 1983; PhD, 1978, University of Hawaii; psychiatric illnesses, assessment and diagnostic reasoning, cultural aspects of care.

Ward, Deborah * 1987; PhD, 1987, Boston University; health policy and politics, women's paid and unpaid caregiving work.

White-Trant, Rosemary 1994, (Affiliate); DSc, 1983, Rush University; preterm infant physiological and behavioral responsiveness to multimodal stimulation by caregivers.


Assistant Professors

Atman, Gaylene M. 1983; MN, 1973, PhD, 1992, University of Washington; women's health and inflammation; pain and endometriosis.

Bond, Gail E. 2000, (Research); PhD, 1995, University of Washington; aging, memory, substance-use disorders, long-term care.

Carr, Catherine A. * 1998; PhD, 1993, University of Michigan; factors the affect provider practice and clinical outcomes of midwifery care.

Carrere, Sybil 1989, (Research); PhD, 1990, University of California (Irvine); interface between family relationships, stress, and health.

Cochrane, Barbara B. * 1985, (Affiliate); PhD, 1992, University of Washington; women's health; individual adaptations to health and illness, clinical therapeutics.

Davis, Shoni Kay * 1993, (Affiliate); DNSc, 1992, University of California (Los Angeles); program development, clinical treatment strategies, and research of perinatal chemically dependent.

Draye, Mary A. 1982; MPH, 1968, University of Michigan; primary health care, health promotion, risk appraisal, coping with infertility.


Jones, Mary C. 1964, (Emeritus); MS, 1962, Boston University.

Kasprzyk, Danuta M. 1991, (Affiliate), PhD, 1984, University of Washington; preventive and behavioral medicine and health psychology.

Kennedy, Michael 1987; PhD, 1994, University of Washington; symptom self-management, clinical nursing research.

Kim, Eunjung * 2001; PhD, 2001, University of Wisconsin (Madison); Korean-American parenting's influence on adolescents' developmental outcomes.


Kozuki, Yoriko 2000; PhD, 1999; University of San Francisco; symptom awareness and neurologic adherence in schizophrenia spectrum disorders.

Labyak, Susan * 2001; PhD, 1993, University of Michigan; human sleep and circadian timing.

Larson, Margaret L. * 1958, (Emeritus); MN, 1967, University of Washington; cross-cultural variables in mental illness, nursing interventions in disturbed behaviors.

Lydon-Rochelle, Mona 2001; PhD, 1999; University of Washington; applied epidemiology in maternal health.

MacLaren, Aileen * 1994; MSN, 1982, University of Miami (Florida), PhD, 1998, Johns Hopkins University; nurse midwifery.


Motzer, Sandra Adams * 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).

Sales, Anne * 1997, (Adjunct); MSN, 1989, University of North Carolina, PhD, 1998, University of Minnesota; patient and organizational outcomes, health care work force, health economics.

Sikma, Suzanne 1979, (Adjunct); MSN, 1979, Loyola University (Chicago), PhD, 1994, University of Washington; caring in organizations, development and evaluation of organizations, care delivery systems.

Solchany, JoAnne E. 1995; PhD, 2000, University of Washington; relationships between children and their primary caregivers.

Strickland, Carolyn J. B. * 1991; MS, 1976, PhD, 1983, University of Washington; health related behavior, complex organizations, American Indian populations.

Venkatraman, Manorama M. 1995, (Research); MSW, 1984; PhD, 1990, University of Michigan; cross-cultural comparison of mid-life women in the United States and India.
Weston, Donna 2001; PhD, 1983, University of California (Berkeley); methods for characterizing early manifestations of pathology.

Wilgerott, Mayumi * 2001; PhD, 1999, University of Illinois (Chicago); ethnic minority health issues as they relate to acculturation and cultural orientation.

Zierler, Brenda * 1988; PhD, 1996, University of Washington; research in patient with venous thromboembolism; clinical outcomes, process outcomes.

Senior Lecturers
Albert, Marilyn L. 1989; MSN, 1974, Boston University; health policy and politics; kin care and women's studies.


Conner, Barbara J. * 1979; PhD, 1988, University of Washington; sexual assault victims, kinetic family drawings, family having child with cancer.


Gordon, Patricia E. 1993; MN, 1977, University of Washington; individuals, couples, and family therapy.


Lecturers
Hoyle, Christine A. 1985; MN, 1979, University of Washington; women's health, peri and post menopausal years, primary care of pediatric patients, asthma, diabetes.

Jensen, Marilee M. 1990; MSN, 1988, University of Washington; women's primary care nurse practitioner.

Johnson, Gail 1987; MN, 1987, University of Washington; asthma management and education, pediatrics and women's health.

Petersen, Karla Renee 1990; MN, 1988, University of Washington; primary care of children.

Zimmer, Phyllis Ann 1983; MN, 1982, University of Washington; family nursing practitioner role, practice characteristics, education, and political advocacy.

Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

Nursing
NURS 401 Care in Illness I (5) Selected psychopathological and pathophysiologic health alterations and therapies across life span. Assesses human functioning, pathophysiology, pharmacology, psychosocial, cultural variation, health care resources, and person-environment relationships to select nursing strategies for acutely and chronically ill individuals of all ages.

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 and implement acute/chronic strategies for acutely/chronically ill individuals of all ages.

NURS 407 Cultural Variation and Nursing Practice (3) Introduces knowledge and skills for culturally competent health care for all. Compares health related values, beliefs, and customs among major cultural groups. Views family and social network as culturally variable health seeking behavior contexts. Examines Western biomedicine and alternative healing methods within broader environment, including government, other social institutions.

NURS 408 Nursing Care with Families in the Community (3) Application of biopsychosocial and social environmental theories and assessments to diagnosis 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) Critical analysis 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.

NURS 412 Nursing Care Systems (3) Introduction to analyzing current health care systems and their effectiveness in achieving desired health outcomes for selected client populations from a system perspective. Emphasizes key features of interface between client and health care professionals, and environmental factors and organizational structures which influence the transaction.

NURS 413 Nature of Health, Threats to Health, and Health Promotion (3) Introduction to scientific principles of nursing care to promote health, wellness, prevent disease in clients. Emphasis on understanding multidimensional aspects of health; personal, environmental factors that support healthy functional patterns of individual clients, health promotion interventions. Assessment of health patterns in terms of risk, vulnerability, resilience, protective factors. Corequisites: NCLIN 414. Offered: A.

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 451 Connecting to Families in Transition (1-2, max. 6) Focuses on working with families as partners in care for clients who are experiencing personal or family life and health transitions. Begins with family experiences with transitions and the way health issues were learned from the family and widens the lens through discussions with classmates and experiences with other families.

NURS 495 Child Rearing, Culture, and Health (3) I&S Cross-cultural study of the child-rearing processes, 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: AW&SP.

NURS 500 Children and Adolescents with Special Health Needs, Their Families and Communities (2/4, max. 4) Advanced practice with infants, children, and adolescents at risk for or with chronic physical, neurobiological, developmental, or psychosocial problems. Focus on assessment and referral with select management strategies relevant for primary and specialty health care. Includes care coordination, multidisciplinary, culturally competent, and family centered approaches. Prerequisite: permission of instructor.

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 will be 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 Foundations in Psychosocial Nursing (3) Introduces students to Psychosocial Nursing by study of classic published papers. Current status of the specialty analyzed by review of standards of practice, certification criteria, and discussion of ethical, clinical, and educational issues. Examines visions and projected needs for the future.

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 (3) 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 Adaptation in Women and Children (1-6, max. 6) Analysis of developmental physiologic adaptations in four women: reproductive processes, pregnancy/postpartum, fetus/neonate, and infancy through adolescence. Emphasis on implications for nursing practice. Examination of research basis for selected intervention strategies.

NURS 515 Common Adolescent Health Problems (2) 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) Lung development, anatomy, and physiology; clinical application when caring for children with acute and chronic lung disease. Prerequisite: permission of instructor.

NURS 517 Pediatric Pulmonary Pathophysiology: Clinical Applications (2) Applies knowledge of pediatric anatomy and physiology to assessment and treatment of pulmonary pathophysiologies in children. Nursing issues in caring for children and families with acute and chronic lung disease. 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 comprehensive management plans for the young child who presents with common physical and behavioral symptoms in the primary care setting. Prerequisite: permission of instructor.

NURS 519 Curriculum Development in Nursing Education (3) Theoretical rationale for curriculum development, study of curriculum components 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 and field nursing. Seminarquisite: graduate standing or permission of instructor.

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-child nursing. Seminar with ongoing and critical analysis of current topics and readings. Implications for research, prevention, and health care stressed. Prerequisite: permission of instructor.

NURS 532 Seminar in Cardiovascular Nursing (3) Systematic inquiry into the influence of physical and emotional factors on pathophysiology underlying selected cardiovascular problems. Seminar with ongoing and critical analysis of current therapies with emphasis on prevention and rehabilitation. Individual study of topic of interest.

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 biology and oncology 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 Pain Management: Pharmacological and Nonpharmacological Therapeutics (3) Course focuses on nursing management of pain as a multidimensional phenomenon. Pharmacologic and nonpharmacologic therapeutic approaches are critically reviewed for appropriateness in treatment of acute, chronic, and cancer pain. Nursing actions to initiate and maintain optimal therapy, based on individual responses, are reviewed and evaluated. Research-based clinical decisions are practiced.

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 Care of Well Women (4) Examines components of the advanced nursing/midwifery care of well women. Emphasis on assessment, diagnosis, and management of common health issues and problems of women across the life span. Prerequisite: permission of instructor.

NURS 542 Care During Childbearing I (4) Advanced nursing/midwifery care and management of the low-risk childbearing woman and fetus through preconception, prenatal, intrapartum, and postpartum periods. Prerequisite: NURS 514.

NURS 543 Advanced Practice Childbearing and Women’s Health Care (1-4, max. 4) Assessment and management related to advanced nursing/midwifery perinatal care and women’s health care problems. Topics covered are ambulatory antepartum and postpartum care, intrapartum care, and advanced women’s health care and adolescents at risk. Module(s) selected depends on program requirements or student elective. 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) Adaptation of neonate to the extraterine 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 across the 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 disinhibitions. 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 Seminar in Infant Mental Health (1-, max. 3) Reviews four aspects of infant mental health: early development, prevention, multigenerational factors, and multidisciplinary perspectives. Includes presentations by faculty, visiting scholars, practitioners, and students. Exposes students to leading theories, major developmental issues, prevention models, and the long-term consequences of risk and protective factors. Credit/no credit only.

NURS 549 Assessment in Psychosocial Nursing (4) 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 People of Color, Psychosocial Health, and the Culture of Oppression (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.

NURS 551 Theoretical Foundations of Primary Care (1-, max. 3) Presentation and interpretation of theoretical basis of advanced nursing practice in primary care. Provides students with conceptual foundation upon which to base their professional and interpersonal skills as nurse practitioners. Prerequisite: graduate standing. Permission of instructor.

NURS 552 Health Promotion (2-3) Emphasis on health promotion, screening, and disease prevention in primary care. Examination of individual and family wellness, models of risk assessment and behavior change, health promotion strategies, and barriers to achieving health. Opportunity to explore age-related health risks. Prerequisite: graduate standing and permission of instructor; recommended: nurse practitioner students take fieldwork concurrent.

NURS 5533 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 community health initiatives within correctional and mental health field. Credit/no credit only. Offered: W.

NURS 554 Psychosocial Interventions in Nursing (3) Conceptual foundations and interpersonal skills for interventions to promote personal change.

Application made to nursing care of persons with psychosocial or physical health problems. Lecture-discussion and in-class practice. Prerequisite: graduate standing in nursing or permission of instructor.

NURS 555 Psychopathology, Assessment, and Diagnostics of Children 3 and under (4, 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 understanding of signs necessary in infant mental health. Prerequisite: acceptance into Infant Mental Health Certificate program or permission of instructor. Offered: WSp.

NURS 556 Biopsychosocial Perspectives on Addictions (3) Psychosocial and pathophysiologic aspects of substance use examined for their effects on individual health care in community settings. Topics include caregiving-child interaction, attachment, mental health diagnostic classifications, ecological aspects of the caregiving environment. The NCAST Parent-Child Interactive Scales and the Zero to Three Diagnostic Classification are presented.

NURS 557 Theories of Psychiatric Disabilities (3) Theories from psychosocial nursing, psychiatry, and behavioral sciences explaining 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 558婴幼期：关系的建构（4））Conceptual and empirical findings relevant to these theories and techniques are applied to substance use disorders, including those related to targeted populations. Prerequisite: basic course in biological sciences.

NURS 559 Theories of Psychiatric Disabilities (3) Theories from psychosocial nursing, psychiatry, and behavioral sciences explaining 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 experience with principles of clinical practice in community settings. Topics include 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 variations in illness beliefs and behavior, types of healing practices, illness prevention, social support networks. Prerequisite: graduate standing or permission of instructor. Offered 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 nursing assessments and 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, pregnancy, electroconvulsive therapy, and phototherapy. Emphasis on empirical neuroendocrine bases and then nursing management issues pertaining to these interventions. Legal and ethical issues pertaining to cognitive/behavioral self-management strategies and techniques necessary in infant mental health. Prerequisite: graduate standing or permission of instructor.

Application made to nursing care of persons with psychosocial or physical health problems. Lecture-discussion and in-class practice. Prerequisite: graduate standing in nursing 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 instructor.

NURS 566 Occupational Stress and Stress Management (3) Relationships between occupational stress 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.

NURS 567 Theoretical Basis of Management of Stress Response (3) Theories of psychologic reactions are related 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 psychology 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 (2, max. 4) Classification of attachment behaviors in infancy and preschool years according to systems developed by Ainsworth, Main and Solomon, Cassidy, Marvin et al., and Crittenden. Extensive first-hand experience in conducting and coding Strange Situation attachment assessments. Standardized national tests in attachment classification. Offered: WSp.

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 572 Family Nursing Therapeutics: Behavioral Models (3) Behavioral models of health-related behavior analyzed to develop therapeutic programs and services for families experiencing health-related concerns or disruptions. Seminars introduce didactic material and laboratory assignments for development of therapeutic and programmatic content. Prerequisite: permission of instructor.

NURS 573 Professional Issues for Nurse Practitioners (2) Presentation and analysis of cur-
rent 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 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, theoretic, and pragmatic issues underlying choices and decisions in clinical practice. Open to graduate students with permission of instructor. (Limit: sixteen students.)

NURS 576 Populations at Risk in the Community (3) Health needs and risks of selected populations in the community and theoretical and analytical perspectives on assessment and intervention strategies in community health nursing practice with groups and populations whose health is at risk. Prerequisite: graduate standing and permission of instructor.

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 experience 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 Health, Care, and Community (3) Analysis of health care in community from nursing and behavioral science perspectives. Sociocultural influences on health beliefs and practices, natural-care units, and community life patterns analyzed. Community as both context and target of change explored in relation to nursing approaches in health promotion and maintenance. Prerequisite: graduate standing.

NURS 579 Transcultural Nursing Practices (3) Study of nursing practices in different cultures. Seminar focus is on theoretical formulations and comparative analysis of values, patterns, techniques, and practices of nursing care in many societies. Rituals, myths, taboos, and beliefs are studied in relation to the subculture(s) of caring and nursing practices.

NURS 580 Current Issues in Occupational and Environmental Nursing (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, AWP.

NURS 581 Study of International Health (2-3) Hegyvary International health based on the concept of health ecology. Assigned readings, discussions, and analyses include different perspectives, strategies, systems, and the wide range of conditions and forces that affect global and local health and illness. Emphasizes roles of health care providers. Credit/no credit only.

NURS 582 Socio-Cultural Perspectives of Public Health Genetics (3) Examines social and cultural issues of human genetics 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 584 Critical and Interdisciplinary Approach to Health Policy (3) Advanced seminar to critically analyze various public health policies from a social justice framework.

NURS 587 Role Transition Seminar (2) Emphasis on transition to doctoral study and eventual postgraduate 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. 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 in-depth analysis and evaluation of literature 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 clinical practice. Emphasis on appraising 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, 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) Intensive field work in a nursing care specialty focusing on critical examination, synthesis, and evaluation of professional nursing care. Client populations include individuals and/or groups reflecting diverse settings, ages, ethnic communities. Emphasizes mastering theoretical concepts, applying research findings, improving skill competency, developing leadership capabilities.

NURS 592 The Science of Nursing Therapeutics (4) Requires the presence of a 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.” Credit/no credit only.

NURS 595 Synthesis of Nursing Science (3) Provides a forum for critical analysis, integration, and synthesis of approaches used during the final 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-, max. 18) Analysis of selected readings with faculty mentor. Credit/no credit only. Prerequisite: permission of instructor.

Nursing Clinical

NCLIN 402 Practicum: Care in Illness I (4) 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 406 Practicum: Care in Illness II (4-10, 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 nursing process and conceptualization of community health diagnoses as basis for community-level interventions to maintain and promote biopsychosocial health, prevent disease, and enable self care by the community. Analysis of nursing’s role in community health/mental health.

NCLIN 411 Transition to Professional Practice (12-20) Intensive field work in a nursing care specialty focusing on critical examination, synthesis, and evaluation of professional nursing care. Client populations include individuals and/or groups reflecting diverse settings, ages, ethnic communities. Emphasizes mastering theoretical concepts, applying research findings, improving skill competency, developing leadership capabilities.

NCLIN 414 Practicum: Health Promotion (4) Provides the opportunity to apply the nursing process to promote health and prevent illness. Integrates the perspectives of the client with the current scientific bases for health promotion. Incorporates analysis of the effect of multiple dimensions on health and wellness. Credit/no credit only. Corequisite: NURS 413. Offered: A.

NCLIN 500 Comprehensive Health Assessment (2) 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-, 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-, 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. Introduction to diagnostic testing 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 (3) Guided experience in select teaching-learning situations 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 512 Advanced Practicum in Parent and Child Nursing (1-2, max. 25) Clinical seminar and practicum provides 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 525 Managing Clinical Effectiveness Within Care Systems (1) 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.

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 528 Advanced Practice in Care Systems Management (4-8, max. 8) Analysis of relationship between theory and practice in real-time conditions. Comparative analysis of structure and behavior of management approaches. Prerequisite: core courses in Care Systems Management.

NCLIN 540 Relationship Development and Intervention (3-, max. 15) Clinical work with infant and toddlers and their parents in relation to infant disorders of affect, self-regulation, attachment trauma, and stress disorders. Reflective supervision in groups and individually required. Restricted to candidates in the Infant Mental Health Certificate Program. Credit/no credit only. Offered: AWSpS.

NCLIN 541 Specialization in Clinical Practice (1-10, max. 10) Clinical fieldwork and seminar opportunities to synthesize, apply, evaluate, and communicate knowledge about a specific domain of advanced clinical practice. Clinical fieldwork emphasizes the refinement of assessment and diagnostic skills. Seminars focus on critical analysis of clinical issues. Students develop a professional portfolio to highlight their expertise.

NCLIN 544 Roles in Clinical Practice (1-10, max. 20) Clinical fieldwork emphasizes analytical skills in the implementation of intervention and evaluation strategies for practice, education, and/or administration. Seminars focus on critical analysis of role-related issues. Students refine their professional portfolio of expertise. Credit/no credit only. Prerequisite: NCLIN 541.

NCLIN 546 Management of Acute and Chronic Wounds (2-3) 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 individuals/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 nursing practice. 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/implmenting therapies and for documenting/evaluating outcomes. Credit/no credit only. Prerequisite: NCLIN 551.

NCLIN 553 Seminar in Primary Care I: Health Promotion (2) Weekly seminars with supervised field study within selected primary-care and wellness settings. Emphasis on health assessment and strategies related to improving health in people of all ages. Analysis of, and counseling on, life-styles, nutrition, physical fitness, stress management, self-care, and prevention. Credit/no credit only. Prerequisite: graduate standing, 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: Management of Common Health Concerns (3) Focus on research questions, patient presentations, and group discussions drawn from field study. Supervised clinical field study within selected primary health-care settings and weekly seminar discussions related to theory presented in NURS 510. Credit/no credit only. Prerequisite: graduate standing and permission of instructor.

NCLIN 557 Seminar in Primary Care III: Management of Common Health Concerns (3) Focus on research questions, patient presentations, and group discussions drawn from field study. Supervised clinical field study within selected primary health-care settings and weekly seminar discussions related to theory presented in 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 science 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 field experience 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 (1-6, max. 12) Seminar and associated field study. Focuses on development of advanced clinical and role-function skills. Provides practice in settings with selected populations corresponding to subspecialty interests with supervision by expert clinicians. Seminar uses inferential process leading from the observed to the conceptual. Credit/no credit only. Prerequisite: NURS 556, NURS 559, NURS 567.

NCLIN 569 Practicum in Biopsychosocial Assessment (2/4, max. 4) Practicum in either physical health assessment with opportunity to refine skills in taking health history and performing physical examinations or psychosocial assessment with opportunity to refine skills in psychosocial assessment interview, mental status examination, standardized clinical assessment instruments. Credit/no credit only. Prerequisites: NCLIN 500 and NCLIN 501, NURS 549 which may not be taken concurrently.

Analyzes research questions that emerge from field of study. Prerequisite: NURS 563, NURS 576, and NURS 576 or permission of instructor.

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 advisor 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 520 Methods of Research in Nursing (3) Research process as it applies to nursing. Use of the literature in building theoretical rationale. Selection of appropriate methods. Presentation of findings. Minimum of two laboratory hours weekly. Prerequisite: a course in statistics.

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 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 health 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 Interpretive 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 inerfering 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 (2-3, 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 and NMETH 521 or permission of instructor.

NMETH 600 Independent Study or Research (*) Credit/no credit only.

NMETH 700 Master's Thesis (*) Credit/no credit only.

NMETH 800 Doctoral Dissertation (*) Credit/no credit only. Prerequisite: permission of Supervisory Committee chairperson or graduate program adviser.
College of Ocean and Fishery Sciences

Dean
Arthur R.M. Nowell
207 Ocean Sciences

Associate Dean
Ken Chew

General Catalog Web page: www.washington.edu/students/gencat/academic/College_Ocean_Fish.html

College Web page: 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 of the 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. For undergraduates, it is easy to pursue joint undergraduate degrees with departments such as Zoology, Chemistry, and Geology 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, résumé preparation, and job opportunities in the marine and freshwater sciences. Northwest Water Work, a semimonthly summary of current employment opportunities and internships available in water-related areas, is published by the College and made available free of charge 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 1999, 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 is concerned with wise management of fish and shellfish stocks, ecological relationships between aquatic organisms and their environment, culture of aquatic plants and animals, and impacts of human population pressures on the aquatic environment.

The School of Oceanography carries out research and teaching on the physical, chemical, geological and geophysical, and biological processes in the ocean, and interactions of the ocean with the earth, the biosphere, and the atmosphere. It is concerned with the study of ocean currents and mixing, life in the sea, the chemical composition and properties of seawater, the sediments and rocks beneath the sea, and the geophysics of the sea floor. It offers both undergraduate and graduate degrees.

The School of Marine Affairs is concerned with policy and institutional issues related to the ocean. It combines natural sciences and engineering with law, economics, international affairs, and public administration. Marine affairs, coastal zone management, ports and maritime transportation, atmospheric and marine policy, living marine resources, and international law of the sea are all part of the School’s teaching and research programs. It offers a Master of Marine Affairs degree.

The Applied Physics Laboratory is a research and development unit with strong capabilities in marine science and technology, acoustic sensors and sound propagation, marine instrumentation, and polar science and technology. No degrees are offered, but a regular seminar series is presented. APL faculty members with joint appointments in other University departments teach courses and advise graduate students. Part-time employment for students, including a program offering four years of support to students who contemplate a career in engineering or science, is also provided.

The Washington Sea Grant Program is a component of the National Sea Grant Program which was created by Congress to enhance the wise use and protection of the nation’s marine resources through coordinated efforts in research, education, and public service. The Washington Sea Grant Program is administered as a division of the College but has additional statewide and multi-institutional responsibilities. It funds research and education throughout the state; supports advisory services; presents workshops, short courses, and lectures; and produces publications. The University of Washington was one of the first four universities in the country designated in 1971 as Sea Grant Colleges in recognition of outstanding sustained programs in research, education, and advisory services in the marine area.

Aquatic and Fishery Sciences

116 Fishery Sciences

General Catalog Web page: www.washington.edu/students/gencat/academic/Fisheries.html

School Web page: www.fish.washington.edu

The School of Aquatic and Fishery Sciences, established in 1919, is the largest and most diverse academic fisheries program in the United States. Students benefit from our faculty, whose breadth of expertise includes marine biology, freshwater ecology, habitat restoration, quantitative fishery management, invertebrate and fish aquaculture, and a number of disciplines related to physical, biological and societal processes that bear on growing issues of fisheries conservation. Faculty and students in the School develop a wide range of disciplines including biology, botany, chemistry, genetics, mathematics, nutrition, oceanography, physics, physiology, and zoology to conduct basic and applied research in the field of fishery science.

Courses

A full spectrum of undergraduate- and graduate-level courses allows students to learn the basic principles of fishery science and to develop expertise in specialized fields such as quantitative fishery management, fish genetics, and aquatic ecology. Among the wide variety of courses open to students are ichthyology, world fisheries and aquaculture, freshwater ecosystems, forestry-fisheries interactions, marine biology, salmonid behavior and life history, fisheries stock assessment, ecology of marine fishes, conservation, and physiological effects of water pollutants.

The School cooperates with other units on campus (Biology, Civil and Environmental Engineering, Forest Resources, Marine Affairs, Quantitative Science, Program on the Environment, Zoology, and Oceanography) to offer jointly listed courses. Instruction is offered both on the main campus and at the Friday Harbor Laboratories on San Juan Island.

Advising

The Student Services Office is located in 116 Fishery Sciences. Students can receive assistance regarding curriculum, course scheduling, and graduation requirements. The Student Services Office may be reached by email at safs@u.washington.edu.

Related Programs

The Center for Quantitative Science is an interdisciplinary program sponsored by the Office of Undergraduate Education, the School of Aquatic and Fishery Sciences, and the College of Forest Resources. It is dedicated to providing 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 philosophy of the center is to provide 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 Forest Resources, Aquatic and Fishery Sciences, and other campus units. Students may wish to complete a minor in quantitative science to document their understanding of the mathematical and statistical methods used in the analysis of data.

Quantitative Ecology and Resource Management: The graduate program offered by the Quantitative Ecology and Resource Management (QERM) interdisciplinary program provides a unique opportunity for students to study the application of statistical, mathematical, and decision sciences to a broad array of terrestrial and marine ecology, natural resource management, and biometrical and mathematical biology problems. The QERM program of study leads to a Master of Science and Doctor of Philosophy degree, and is designed to attract mathematically trained students interested in working on contemporary ecological or resource-management problems from a quantitative perspective. Faculty associated with this interdisciplinary program come from thirteen campus units, including Statistics, Applied Mathematics, Forest Resources, Aquatic and Fishery Sciences, Zoology, Biostatistics, Marine Affairs, and Public Affairs. This pool of faculty talent is available to enrich the academic experience of all QERM students. Prospective students interested in QERM should contact the Graduate Program Coordinator at 206-616-9571 or qerm@u.washington.edu.
Research
The faculty, staff, and students of the School conduct basic and applied research on regional, national, and international fishery and aquatic resource problems. Research foci are grouped under major disciplines of aquatic biodiversity (e.g., microbiology, marine mammals, fish systematics), aquatic organismal processes (e.g., aquaculture, physiology, genetics, pollution/toxicology), and aquatic ecology (marine fish-eries, stream/riparian ecology, policy, and management). Examples of research projects include the influence of physical oceanographic factors on recruitment of larval fish and shellfish, stock assessment of marine fishes, mechanisms controlling growth and growth efficiency in fishes, application of molecular biotechnology to the study of phylogeny, behavioral studies of homing and straying in Pacific salmon, contaminant transport through aquatic food chains, effects of forest practices on fish habitat, development of mitigation measures for restoring damaged wetlands, and approaches for reducing pollution caused by aquaculture effluent.

The School continues to coordinate long-term programmatic research on anadromous fishes. The Alaska Salmon Program, the High-Seas Salmon Program, and the Wetland Ecosystems Program as well as individual projects collectively focus on the origins, abundance, migratory patterns, and ocean distribution of Pacific salmon and steelhead trout; spawning distribution, growth, and abundance of sockeye salmon in Bristol Bay, Alaska; and environmental (physical and biological) factors influencing salmonid productivity.

Researchers in the School collaborate with scientists within the University and with investigators employed by other agencies. The School benefits from the presence in Seattle of laboratories of the National Marine Fisheries Service, U.S. Geological Service’s Biological Resources Division, and the Washington State Departments of Ecology, Fish and Wildlife, and Natural Resources. The headquarters and research staff of the International Pacific Halibut Commission are located on the campus as well. Researchers also collaborate with the scientific staff of private companies located in the Puget Sound region and elsewhere. School of Aquatic and Fishery Sciences researchers frequently participate in inter-institutional projects that involve scientists from other states and countries.

The research program is enhanced through the activities of several institutes and centers with which the School collaborates closely.

The Washington Cooperative Fish and Wildlife Research Unit was established in 1967 and is part of the Biological Resources Division of the U.S. Geological Survey. The goal of the WACFWRU fish and wildlife research program is to facilitate studies on a variety of resource management issues. Base funding is provided by the USGS, the University of Washington School of Aquatic and Fishery Sciences, and the Washington Departments of Ecology, Fisheries, and Natural Resources. Both graduate and undergraduate students are encouraged to participate in the research being conducted in the WACFWRU.

The Center for Streamside Studies is an interdisciplinary unit of the College of Forest Resources and the College of Ocean and Fishery Sciences. The center conducts research and offers classes related to management issues surrounding the preservation and protection of forest, fish, wildlife, and water resources associated with streams and rivers in the Pacific Northwest. A minor in streamside studies is also available to students.

The Western Regional Aquaculture Center is one of five regional aquaculture centers supported by the U.S. Department of Agriculture. Participating scientists from twelve Western states conduct research directed toward enhancement of commercial aquaculture production.

The Olympic Natural Resources Center, located in Forks, WA, is an interdisciplinary research and educational program related to the marine and forest resources of the Olympic Peninsula in Washington state.

Facilities and Services
The Fisheries Sciences, Fisheries Teaching and Research, Marine Studies, and Fisheries Center buildings are located adjacent to the Lake Washington Ship Canal. The buildings contain class-rooms, laboratories, and support facilities. The Fisheries-Oceanography Library, a branch library offering research materials in fisheries, food science, oceanography, and wildlife science, is located nearby in the Oceanography Teaching Building. The School’s Fish Collection has served as a resource for teaching and varied scientific investigations for over 50 years. One of five major permanent facilities on the west coast of the United States, the collection is by far the largest in our region in terms of number of specimens, containing in excess of 230,000 juvenile and adult fish specimens and well over 3.3 million eggs and larvae. Together the collections represent some 3,778 species in 1,419 genera and 310 families.

An annual run of several thousand salmon has been developed and is maintained at the School by the release of thousands of fingerlings each spring. Returning adults use a fish ladder to enter the School’s Teaching and Research Hatchery facility. The run is the basis for both instruction and research on the life cycle of Pacific salmon, as well as the focus for the School’s popular outreach programs, which accommodate thousands of school children annually.

The Marine Molecular Biotechnology Laboratory is jointly operated by the Schools of Aquatic and Fishery Sciences and Oceanography. Advanced equipment is available for semi-automated sequencing of DNA as well as other techniques of molecular biology.

Other laboratories provide for the study of the physiology, biochemistry, and behavior of fishes and of the effects of pollutants on fishes. Physiological facilities include equipment for surgical procedures and biochemical analysis of body fluids and tissues from both freshwater and marine fishes.

The School uses various small vessels for instruction- al and research work, including tow netting, purse seining, and harvesting of nontarget species, as well as chartered vessels, are used in regular courses or training cruises to introduce students to shipboard opera- tions. Fisheries field stations in Alaska and at Big Beef Creek on Hood Canal provide additional opportuni- ties for field studies and research in stream and estau-arine ecology.

Financial Aid
The University of Washington Financial Aid Office administers a variety of government and University funded financial aid programs for which students must submit the Free Application for Federal Student Aid form (FAFSA). Please check with the Financial Aid Office, located in 105 Schmitz Hall, for applications and timelines. The FAFSA may also be obtained at any college, university, or high school in the United States.

Through the generous donations of alumni and friends, the School of Aquatic and Fishery Sciences has established a strong scholarship program to assist students. Scholarships are awarded on the basis of academic merit and other factors. The applica- tion process commences in spring; please check with the Office of Student Services for applications and deadlines to apply for scholarships.

Employment
Aquatic and fishery scientists are employed in three major sectors in the economy: public, private, and nonprofit. Jobs in the public sector are found with federal, state, county, and municipal agencies. The private sector includes fisheries and seafood companies and environmental consulting firms. Nonprofit agencies are involved in research, public policy, and public education. Much of their work is done by volunteers, paid staff members involved in field research, grant writing, public relations work and volunteer coordination.

There is a Career Center run through the College of Ocean and Fishery Sciences (COFS) located at 202 Ocean Sciences Building. In addition to collecting and disseminating job announcements, the Career Center also publishes an employment newsletter (Northwest WaterWorks) twice monthly, listing current openings. This publication can be picked up at Student Services. Those who are not members of the UW community may also subscribe to receive either an electronic or print version by calling 206-543-0719. Also, each winter the College organizes a Career Fair specifically for COFS students.

Graduate Program
Graduate Program Coordinator
116 Fishery Sciences, Box 355020
206-543-7160
safs@u.washington.edu

The School offers programs leading to the Master of Science and Doctor of Philosophy degrees.

Admission Requirements
Minimum requirements for admission to the graduate program in the School are a bachelor’s degree from an institution of recognized standing, a GPA of 3.00 in the last two years of college work, and approval of the School and the Graduate School. Students enter the School from varied disciplines at many universities. All have in common a strong background in the sciences and mathematics. Previous training in fish-eries is not required.

Applicants for the graduate program must submit a completed application form and description of their interests and objectives, GRE scores (general test only is required), transcripts of all previous college course work, three letters of recommendation, and a TOEFL score (only for applicants who are non-native English speakers). Admission is also dependent upon program resources and fit within student and program openings. This publication can be picked up at Student Services. Those who are not members of the UW community may also subscribe to receive either an electronic or print version by calling 206-543-0719. Also, each winter the College organizes a Career Fair specifically for COFS students.

Master of Science
Applicants without a master’s degree from a recognized college or university are expected to start at the master’s
level. A minimum of 45 quarter credits, including completion of a thesis research project, leads to the Master of Science degree. A minimum of 45 400-level or graduate credits must be earned, including successful completion of the School of Aquatic and Fishery Sciences core curriculum plus 18 credits of FISH 700 (Thesis Research). A seminar on results of the research and oral defense of the thesis are required for graduation. The degree must be completed within six years of initial enrollment.

**Doctor of Philosophy**

The student must complete at least three years of graduate study (90 credits) and complete a dissertation to earn the Ph.D. Completion of a master's degree program may be applied toward one year of the doctoral program. The core classes must be taken if the student has obtained a master's degree from another program or received a master's degree from the School of Aquatic and Fishery Sciences under a different set of requirements than those outlined here. In some instances, students who have initially been accepted into a master's program will be allowed to proceed directly to the Ph.D. Preparation for a Ph.D. dissertation requires registration for 27 credits of FISH 800 (Dissertation Research). Requirements must be completed within 10 years.

**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.

**Faculty**

**Chair**

David A. Armstrong

**Professors**

Armstrong, David A. * 1978; MS, 1974, Oregon State University; PhD, 1978, University of California (Davis); crustacean ecology and fisheries, estuarine habitat protection, impacts on dragging, pesticides.

Bare, B. Bruce * 1969. (Adjunct); MS, 1965, University of Minnesota, PhD, 1969, Purdue University; forest land management and valuation, taxation, finance, management science.

Brown, George W. * 1967. (Emeritus); PhD, 1955, University of California (Berkeley); fish biochemistry and biochemical ecology.

Burgner, Robert L. * 1956. (Emeritus); PhD, 1958, University of Washington; salmon ecology and salmon biology.

Chew, Kenneth K. * 1962. (Emeritus); PhD, 1962, University of Washington; shellfish biology and aquaculture; Director, Western Regional Aquaculture Center.

Conquest, Loveday L. * 1976; PhD, 1975, University of Washington; statistics in forestry, fisheries, and environmental pollution monitoring.

Dickhoff, Walton W. * 1977; PhD, 1976, University of California (Berkeley); fish physiology, endocrinology, aquaculture.

Erickson, Albert W. * 1974. (Emeritus); PhD, 1964, Michigan State University; wildlife biology and marine mammals.

Francis, Robert C. * 1983; PhD, 1970, University of Washington; fisheries management, marine ecosystem dynamics, fisheries oceanography and global climate change.

Gaillucci, Vincent * 1976; PhD, 1971, North Carolina State University; stock assessment, fisheries management.

Gunderson, Donald R. * 1978; PhD, 1975, University of Washington; marine fisheries, stock assessment, recruitment processes.

Halver, John E. * 1949. (Emeritus); PhD, 1953, University of Washington; fundamental fish nutrition, physiology and metabolism, nutrients balance in feed formulations.

Hilborn, Ray * 1987; PhD, 1974, University of British Columbia (Canada); stock assessment, population dynamics, fisheries policy.

Karr, James A. * 1991; PhD, 1970, University of Illinois; stream and watershed ecology, tropical forest ecology, conservation biology, environmental policy.

Kocan, Richard M. * 1978. (Emeritus); PhD, 1967, Michigan State University; aquatic toxicology, fish and wildlife diseases.

Landolt, Marsha L. * 1975; PhD, 1976, George Washington University; fish and shellfish disease; aquatic toxicology.

Liston, John * 1957. (Emeritus); PhD, 1955, University of Aberdeen (UK); food science, marine microbiology.

Mathews, Stephen B. * 1972. (Emeritus); PhD, 1967, University of Washington; quantitative fishery management.

Miles, Edward L. * 1974. (Adjunct); PhD, 1965, University of Denver; international law and organization; science, technology, and international relations; marine policy.

Miller, Bruce S. * 1971. (Emeritus); PhD, 1969, University of Washington; life history and ecology of marine fishes, especially early life history.

Miller, Marc A. * 1979. (Adjunct); PhD, 1974, University of California (Irvine); maritime anthropology, cognitive anthropology and social/cultural change.

Naiman, Robert J. * 1988; PhD, 1974, Arizona State University; forest stream ecosystems, aquatic landscape dynamics.

Pettsch, Theodore W. * 1978; PhD, 1973, University of Southern California; systematic ichthyology, zoogeography, behavior, functional morphology, biotic survey.

Pigott, George M. * 1965. (Emeritus); PhD, 1963, University of Washington; fish engineering.

Quinn, Thomas P. * 1986; PhD, 1981, University of Washington; fish ecology, fish behavior, ecology, evolution.

Royce, William F. * 1983; PhD, 1943, Cornell University; applications of fisheries science.

Seymour, Ailayn H. * 1962. (Emeritus); PhD, 1956, University of Washington; radioecology.

Skalski, John R. * 1987; PhD, 1985, Cornell University; population estimation, environmental statistics and sampling, effects assessment.

Smith, Lynwood S. * 1965. (Emeritus); PhD, 1962, University of Washington; fish physiology.

Swartzman, Gordon Leni * 1973. (Research); PhD, 1969, University of Michigan; ecological modeling, quantitative natural resources management.

Taub, Frieda B. * 1959. (Emeritus); PhD, 1959, Rutgers University; ecology.

Wissmar, Robert C. * 1972; PhD, 1972, University of Idaho; freshwater ecosystems, fish ecology, and trophic dynamics, river restoration.

**Associate Professors**

Anderson, James J. * 1981; PhD, 1977, University of Washington; biomathematics, ecology, fisheries oceanography, toxicology, fish protection at power plants.

Bolton, Susan M. * 1992. (Adjunct); MS, 1979, University of North Dakota, MS, 1985, PhD, 1991, New Mexico State University; hydrology, watershed management, stream restoration, ecological engineering.

Grue, Christian E. * 1989; PhD, 1977, Texas A&M University; wildlife toxicology, wildlife science.

Herwig, Russell P. * 1983; PhD, 1989, University of Washington; environmental applied aquatic microbiology, bioremediation-related microbiology.

Huppert, Daniel D. * 1987. (Adjunct); PhD, 1975, University of Washington; economics and management of natural resources, especially marine fisheries.

Punt, Andre * 2001. (Research); PhD, 1991, University of Cape Town (South Africa); methods for assessing and managing marine renewable resource populations, Bayesian assessment.

Sibley, Thomas H. * 1978; PhD, 1976, University of California (Davis); environmental effects on biota.

Simenstad, Charles A. * 2001. (Research); MS, 1971, University of Washington; estuarine/coastal ecology, food web structure, juvenile salmon ecology, wetland restoration.

VanBlaricom, Glenn R. * 1993; PhD, 1978, University of California (San Diego); marine wildlife, community ecology.

**Assistant Professors**

Beauchamp, David A. * 1987; PhD, 1987, University of Washington; aquatic community ecology, bioenergetics, food web modeling, predator-prey, interactions, behavior.

Friedman, Carolyn * 2001; PhD, 1990, University of California (Davis); examination of infectious and non-infectious diseases of wild and cultured marine invertebrates.

Horne, John K. * 2000. (Research); PhD, 1995, Memorial University of Newfoundland (Canada); spatial ecology, predator-prey interactions, fisheries acoustics.

Parrish, Julia * 1990; PhD, 1988, Duke University; animal aggregation, fish schooling, seabirds, marine conservation, by catch.

Schindler, Daniel E. * 1997. (Adjunct); PhD, 1995, University of Wisconsin; ecosystem and community ecology, especially of aquatic systems.
Course Descriptions
See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

FISH 401 Systematics, Zoogeography, and Evolution of Fishes (5) NW Advanced course in ichthyology with emphasis on living bony fishes of the world; past and present biodiversity, evolutionary history, classification, morphological and historical zoogeography. Recommended: 10 credits biological science.

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 405 Molluscan Aquaculture and Fisheries (5) NW Biology, ecology, management, and economic importance of oysters, clams, scallops, mussels, abalones, cephalopods, and other mollusks. Emphasis on techniques for production through aquaculture as well as harvest strategies for wild stocks. Field trips. Recommended: 10 credits biological science.

FISH 406 Crustacean Fisheries and Aquaculture (4) NW Biology, ecology, management, and economic importance of shellfish, emphasizing crustaceans. Wild populations, crustacean aquaculture, production of important phyla discussed. Field trips. Recommended: 10 credits biological science.

FISH 415 Fish Physiology (5) NW Examines physiological principles and adaptations of fish to grow, metabolism, salt and water balance, digestion, locomotion, special senses, stress, reproduction, and neural and endocrine control mechanisms. Emphasis on environmental physiology and evolution. A nine-week laboratory component involves original experiments with juvenile salmon in hatchery on campus.

FISH 420 Life History of Marine Fishes (5) NW Modes of reproduction, spawning, development, identification and ecology of eggs and larvae. Food and feeding, age, stock and population identification, movements, species, assemblages/habitat associations of juvenile and adult fishes. Recommended: FISH 311.

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 429 Seminar in Streamside Studies (1, max. 6) Discussion by invited speakers on current research and issues related to streamside studies. Speakers are a mix of on-campus and off-campus experts. Credit/no credit only. Offered: jointly with CFR 429; AWSp.

FISH 430 Biological Problems in Water Pollution (3/5) NW Ecological risk assessment of toxic chemical and problems associated with eutrophic algal bloom production. Considers safety and toxicity and effects on individuals, populations, and communities. Laboratory covers simulation models of chemical exposure and community effects. Recommended: senior undergraduate standing in fisheries, engineering, or related field. Offered: jointly with CEE 461.

FISH 434 Ecological Effects of Waste Water (5) NW Principles of aquatic ecology that relate to causes and effects of water quality problems in lakes and streams. Population growth kinetics, nutrient cycling, eutrophication; acidification; oxygen/temperature requirements, and effects of various wastes on aquatic animals. Offered: jointly with CEE 462; A.

FISH 436 Biological Monitoring and Assessment (5) NW Explores the technical questions (conceptual, sampling, and analytical), the rationale, policy relevance, and legal basis for tools—existing and needed—to assess ecological health. Prepares students to see the biological components of ecological systems in diverse ways. Offered: jointly with BIOL 436.

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 fragmenta- tion, genetic viability, management of wild and captive populations (including aquaculture), reintroduc- tions, hatchery-wild interactions and feronics. 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, emerg- ency, migration, and early life history; and behavior of marine mammals; the techniques of studying and the management and conservation of them. Recommended: either Q SCI 135, or Q SCI 292; Q SCI 381; Q SCI 456 or FISH 456. Offered: jointly with Q SCI 456; A.

FISH 457 Methods of Abundance Estimation (4) NW Methods of estimating fish abundance by direct sampling and indirectly from tagging, catch, and effort analysis. Confidence limits and bias adjustments. Design of marine fishery surveys using statistical sampling principles. Laboratory work with real fishery data and data collected during trawl sampling survey. Recommended: Q SCI 292; Q SCI 381; Q SCI 456 or FISH 456. Offered: jointly with Q SCI 456.

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 456; Sp.

FISH 475 Marine Mammalogy (3/5) NW Evolution, taxonomy, paleontology, 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, no-net protected, introduced species, citizen action, co-management, and marine ethics. Offered: with BIOENVIR 478.


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.
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 494 Capstone Project I** (3-9, max. 9) Self-directed research or project under direction of a faculty member. Typically includes defining research question, determining methodology, data collection and analysis, writing a paper, and presenting findings. Course is first of two-semester requirement for graduation for majors. May be taken concurrently with FISH 495. If approved.

**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 497 Special Topics in Fisheries** (1-5, max. 5) NW One-time offerings of topics in fisheries by resident or visiting faculty.

**FISH 498 Internship/Experiential Learning** (1-15, max. 15) NW 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: AW/Sp/S.

**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.

**Courses for Graduates Only**

**FISH 507 Special Topics in Fisheries** (1-5, max. 15) Recommended: permission of instructor.

**FISH 510 Current Topics in Genetics and Physiology** (2, max. 8) Contemporary problems and issues in genetics and physiology as they relate to fisheries and aquatic sciences. Topics vary. Credit/no credit only.

**FISH 511 Current Topics in Evolution, Ecology, and Behavior** (2, max. 8) Contemporary problems and issues in evolution, ecology and behavior as they relate to fisheries and aquatic sciences. Topics vary. Credit/no credit only.

**FISH 512 Current Topics in Quantitative Science** (2, max. 8) Contemporary problems and issues in quantitative science as they relate to fisheries and aquatic sciences. Topics vary. Credit/no credit only.

**FISH 514 Current Topics Aquaculture, Utilization, and Pathology** (2, max. 8) Contemporary problems and issues in aquaculture, utilization, and pathology as they relate to fisheries and aquatic sciences. Topic varies. Credit/no credit only.

**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 award factors. Examples of successful and unsuccessful research applications. Preparing proposals and critiquing other's efforts.

**FISH 522 Classical Literature of Fisheries Science and Aquaculture** (2) Discussion of the classic literature of aquatic and fishery sciences. Both oral and written communication skills stressed. Credit/no credit only. Offered: A.

**FISH 525 Ecology and Behavior of Fishes** (3) Basic principles of ecology and behavior (e.g., habitat associations, competition and predation, migrations and movements, reproductive patterns) as applied to fishes. Critical evaluation of current literature and fieldwork required. Recommended: 311 or equivalent permission of instructor.

**FISH 526 Advanced Fisheries Ecology II: Populations, Communities, and Ecosystems** (5) Recent advances in the study of aquatic communities and ecosystems in relation to a number of contemporary issues in fisheries science and management. Focus on case histories drawn from freshwater, estuarine, and marine ecosystems. Emphasis on relationships between science and public policy in attempting to resolve these issues.

**FISH 527 Aquatic Community Responses to Chemical Stress** (3) Aquatic ecotoxicology; bridging the gap between physiological and ecosystem responses to toxic chemicals. Detecting effects against natural variability, altered species abundances and dominance, counter-intuitive responses. Case histories, controversies on data interpretation. Recommended: at least one course in ecology, limnology, oceanography or permission of instructor.

**FISH 529 Topics in Streamside Studies** (1) Discussion by invited speakers on current research related to streamside studies. Offered: jointly with CPR 529; AWSP.

**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 542 Principles and Applications of Molecular Methods** (3) Techniques of molecular analysis with emphasis on DNA methods, including PCR, DNA sequencing, RFLP, RAPD and VNTR analysis and cloning. Applications of these techniques to fisheries, aquaculture, oceanography, population and evolutionary studies, and other areas of science. 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 studying the relevant 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 streams and river ecosystems from a watershed perspective. Emphasis on fundamental principles of aquatic and riparian communities and the riparian zone. Resource conflicts, new technologies, field trips, and class projects. Offered: jointly with ESC 547, Sp.

**FISH 548 Special Topics in Streamside Studies** (2, max. 6) Contemporary problems and issues in forestry, fisheries, and wildlife management in watershed topics. May focus on interactions of land and water resources in the forests of the Pacific Northwest. Recommended: permission of instructor. Offered: jointly with ESC 548.


**FISH 556 Mathematical Analysis in Fisheries Stock Assessment** (3) Analytic approaches to stock assessment and population management applications of parent-progeny models and logistic models; biological and economic yields of natural populations; analysis of population data on computers. Recommended: Q SCI 292, 456, and 483 or permission of instructor.

**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 fishery management strategies; analysis of population data on computers. Recommended: 456, 458, 557, or permission of instructor.

**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. Offered: jointly with ZOOL 526.

**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** (1-15) Credit/no credit only.

**FISH 700 Master's Thesis** (1-15) Credit/no credit only.

**FISH 800 Doctoral Dissertation** (1-15) Credit/no credit only.
Marine Affairs
3707 Brooklyn Avenue Northeast
General Catalog Web page:
www.washington.edu/students/gencat/
academic/School_Marine.html
School Web page: www.sma.washington.edu

Graduate Program
Graduate Program Coordinator
3707 Brooklyn NE, Box 355655
206-543-4326, 206-543-7004
uwmsa@u.washington.edu

Master of Marine Affairs
The School of Marine Affairs offers an interdiscipli-
inary 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, oceanography, political science, and
public 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 prob-
lems and conflicts, charting rational use of living
and non-living marine resources, and managing human
activities on the coasts, at sea, and in estuaries, wet-
lands, 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 empha-
sized, and all students are expected to gain familiar-
ity with relevant aspects of the social, technological,
and environmental sciences. In addition, each stu-
dent is expected to develop a professional and schol-
arily 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, stud-
ents develop a comprehensive understanding of the
marine affairs field and acquire analytic skills. During
the second year, a special competence is developed
in an topical area of interest (e.g., ocean and coastal
affairs). A thesis is prepared and presented under
the supervision of a faculty supervisory committee.

Individual courses of study may be adjusted to
accommodate prior experience and academic back-
ground.

Admission Requirements
Admission to the School of Marine Affairs is based on
evaluation of required application materials in com-
petition 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 quar-
ter, and new students normally are admitted only at
that time.

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.

Faculty
Chair
Marc Hershman

Professors
Allen, Craig H. 1994, (Adjunct); JD, 1989, University
of Washington; marine affairs, evidence, environmen-
tal regulation.

Alverson, Dayton L. 1982, (Affiliate); PhD, 1967,
University of Washington; marine aff airs.

Crutchfield, James A. 1960, (Emeritus); PhD, 1954,
University of California (Berkeley); natural resources
economics, policy, and management, especially
marine and environmental resources.

Delaney, John R. 1977, (Adjunct); PhD, 1977,
University of Arizona; geological oceanography, ori-
gin of oceanic crust, igneous petrology.

Francis, Robert C. 1983, (Adjunct); PhD, 1970,
University of Washington; fishery oceanography,
effects of climate on marine ecosystems, paleoeoc-
ology, fisheries management.

Gallucci, Vincent 1976, (Adjunct); PhD, 1971, North
Carolina State University; biometrics and popula-
tion dynamics.

Heath, G. Ross 1984, (Adjunct); PhD, 1968,
University of California (San Diego); geochemistry
and mineralogy of deep-sea sediments.

Hershman, Marc 1976; JD, 1967, Temple University,
LLM, 1970, University of Miami (Florida); coastal zone
management law.

Miles, Edward L. 1974; PhD, 1965, University of
Denver; international law and organization; science,
technology, and international relations; marine policy.

Miller, Marc 1979; PhD, 1974, University of California
(Irvine); maritime anthropology, cognitive anthropolo-
gy and social/cultural change.

Olson, David J. 1974, (Adjunct); PhD, 1971,
University of Wisconsin; American government and
politics (urban, state, and labor relations).

Vesper, Karl H. 1969; PhD, 1969, Stanford
University; business policy, mechanical engineering,
marine studies.

Wooster, Warren S. 1976, (Emeritus); PhD, 1953,
University of California (San Diego); effects of climate
change on marine ecosystems, use of scientific infor-
mation in marine management.

Associate Professors
Canning, Douglas J. 1997, (Affiliate); MS, 1987,
Evergreen State College; coastal zone management,
public trust doctrine, global climate change and sea
level rise.

Copping, Andrea 1992, (Affiliate); PhD, 1982,
University of Washington; marine environment and
water quality, marine science/marine policy.

De Master, Douglas Paul 1994, (Affiliate); PhD, 1978,
University of Minnesota; marine mammals, popula-
tion dynamics, conservation biology.

Duxbury, Alyn C. 1954, (Emeritus); PhD, 1963, Texas
A&M University; estuarine processes and the man-
gagement of human uses of these marine systems.

Fluharty, David L. 1983; PhD, 1977, University of
Michigan; natural resource and environmental policy.

Goodwin, Robert F. 1973, (Affiliate); MA, 1972,
University of Washington; geography of the coastal
zone, coastal zone management, urban waterfront
development.

Huppert, Daniel D. 1987; PhD, 1975, University of
Washington; economics and management of natural
resources, especially marine fisheries.

Kaczynski, Wlodzimierz M. 1977; PhD, 1973,
University of Gdansk (Poland); fishery economics,
international joint ventures in marine fisheries, inter-
national fisheries policy.

Leschine, Thomas M. 1983; PhD, 1975, University of
Pittsburgh; marine pollution management, ocean
policy studies.

Assistant Professors
Christie, Patrick 1999, (Research); PhD, 1999,
University of Michigan; tropical coastal zone man-
agement.

Klenger, Terrie 1993; PhD, 1988, University of
California (San Diego); marine ecology and conser-
vation biology.

Mantua, Nathan J. 1998, (Affiliate); PhD, 1994,
University of Washington; climate change, El Niño,
Southern Oscillation, climate impacts on human activ-
ities and ecosystems.

Parrish, Julia 1999, (Adjunct); PhD, 1988, Duke
University; animal aggregation, fish schooling,
seabirds, marine conservation, by catch.

Ryan, Clare 1997, (Adjunct); PhD, 1996, University
of Michigan; natural resource policy and administra-
tion, environmental conflict management, water
policy.

Course Descriptions
See page 39 for an explanation of course numbers,
symbols, and abbreviations.

For complete undergraduate course descriptions,
see the undergraduate volume of the General
Catalog or visit the online course catalog at
www washington.edu/students/crscat/.

SMA 455 Marine Business Environment in Russia
and Eastern Europe (3) I&S: Kaczynski International
marine business environment of Russia and the mar-
inine 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 infrastructure, marine tourism, and water
sports. Offered: jointly with SIS/455.

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 499 Undergraduate Research (1-15, max. 15)
Research on assigned topics under the supervision of
faculty members. Prerequisite: permission of
instructor.
Courses for Graduate Students Only

SMA 500 Marine Affairs (5) Hershman Surveys a wide range of academic disciplines and substantive problems pertinent to interaction of human beings and the world’s oceans and coasts. Management of living/nonliving resources, shipping, scientific research, pollution, recreation, and others. Lecture and discussion by invited specialists.

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 506, SMA 591, or permission of instructor. Offered: A.

SMA 505 Introduction to Administrative Law and Process (2) Hershman Constitutional and administrative law applied to selected coastal and marine statutes. How to research legislative and administrative materials. Reading and briefing selected judicial opinions. Control of administrative agencies by the executive, legislative, and judicial branches. Designed for non-law graduate students pursuing natural resources and environmental subjects. Prerequisite: permission of instructor.

SMA 506 International Law of the Sea (4) Allen Ways nations claim authority to regulate activities at sea. The Fundamentals of regulation and decision-making for navigation for commercial and military purposes, fisheries, exploitation and conservation, continental shelf resources, scientific research, protection of environment, deep-sea mining, and other uses of the ocean. Offered: jointly with LAW B 561.

SMA 507 International Organizations and Ocean Management (3) Miles Survey of the manner in which international regulatory 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 competing uses and roles of intergovernmental organizations, with an emphasis on management. Prerequisites: SMA 500 or permission of instructor. Offered: jointly in the United States and Southeast Asia. Prerequisite: SMA 500 or permission of instructor.

SMA 511 Ecological Concepts for Decisionmakers (3) Huppart Evaluation of ecological assumptions implicit in decision-making about management of marine ecosystems. Emphasis on developing scientific concepts useful to managers in the context of actual management decisions.

SMA 513 Marine Pollution Management Issues (3) Leschine Management and policy aspects of marine environmental protection, emphasizing the two-way interaction between environmental managers and marine environmental and policy scientists which shapes policy.

SMA 515 U.S. Coastal and Ocean Law (4) Huppart 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 Port of Puget Sound. 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 shippers 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) Huppart Analysis the economic, legal, and political factors that affect international science and technology policies. Prerequisite: knowledge of Soviet/Russian socio-economic problems or permission of instructor.

SMA 525 Marine Protected Area Management and Science (3) Fluharty, Klinger Examinations management and scientific issues involved with the design, establishment, operation, and maintenance of MPAs. Offered: Sp.

SMA 536 Applied Microeconomics for Marine Affairs (3) Huppart 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 demand, 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) Huppart 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) Huppart 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 planning for management. 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 Russian Ocean Policy (3) Kaczynski Russian ocean policy following Perestroika and disintegration of Soviet empire. Discusses Russian navy, fishery industry, merchant marine, ocean research fleet in light of international agreements and joint ventures and new political, economic, and social environments. Prerequisite: knowledge of Soviet/Russian socio-economic problems or permission of instructor. 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) Huppart 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 591 Marine Science in the Coastal Zone (4) Heath, Klinger Major oceanic and nearshore processes, conditions, and their influence on human activities in coastal zone. Methods of understanding and accessing the accumulated knowledge on marine processes and its applications to decision-making processes. Lectures and discussions of biological, chemical, geological, and physical oceanography. Generation and use of data bases as interpretative tools. Offered: jointly with OCEAN 591; A.

SMA 600 Independent Study or Research (1-6) SMA 700 Master's Thesis (1-6)

Oceanography

108 Oceanography Teaching Building
General Catalog Web page: www.washington.edu/students/gencat/academic/Oceanography.html
School Web page: www.ocean.washington.edu

Oceanography is the study of the marine environment and its interactions with the earth, the biosphere, and the atmosphere. The study 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. It is an interdisciplinary science integrating 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 investigation 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.

The School of Oceanography, which had its beginnings in 1930, offers courses and conducts basic research in oceanography, the science that examines physical, geological, chemical, and biological processes in the ocean and interactions of the ocean with the earth's biomes, and the atmosphere. Education and research in the School include studies of seawater in motion; life in the sea; chemical composition and properties of seawater; interactions between the sea and the atmosphere, the sea and the land, sediments and rocks beneath the sea, and the geophysics of the ocean floor. Because the science of oceanography is interdisciplinary in nature, joint programs are maintained in the areas of astrophysics, atmospheric sciences, biochemistry, environmental chemistry, geochemistry, geophysical fluid dynamics, geophysics, and marine biology and botany with the departments of Applied Mathematics, Astronomy, Atmospheric Sciences, Botany, Chemistry, Genetics, Geological Sciences, Geophysics, Microbiology, and Zoology, and with the other units in the College of Ocean and Fishery Sciences.

Courses
A full spectrum of basic and advanced courses is offered in each area of specialization: biological, chemical, and physical oceanography, and marine geology and geophysics. Among the wide variety of courses open to students are molecular approaches to oceanographic questions, marine microbiology, zooplankton ecology, aquatic organic geochemistry, estuarine circulation and mixing, ocean and climate variation, sedimentary dynamics and history of the ocean, marine science of coastal zone management, and human impacts on the ocean.

Summer-quarter instruction is offered both on the main campus and at the Friday Harbor Laboratories on San Juan Island.

Advising
The Student Services Office is staffed by an academic counselor, who assists students with curriculum, scheduling, and career counseling. Students also consult with a faculty adviser.

Research
Each year the School participates in a broad range of oceanographic investigations, ranging from individual research projects to multidisciplinary or multi-university prospective programs. Biological programs are carried out in Puget Sound, in the waters of the continental shelf off Washington and California, and in the North Pacific Ocean. These projects include investigations of the processes governing the communities of organisms in the water column and on the seabed, and microorganisms occurring in extreme environments (hydrothermal vents, polar sea ice, abyssal habitats). Chemical oceanography includes study of the distribution and fluxes of organic and inorganic chemicals and stable and radioactive isotopes in the water column and sediments on local, regional, and global scales with special emphasis on the ocean carbon cycle. Geological investigations include theoretical studies and field experiments on sediment motion and sedimentary processes. This work ranges from deep-sea fans and deep water fans of the Atlantic Ocean to Prudhoe Bay, Barents Sea, New Guinea, the Amazon, and the east and west coasts of the United States.

Geophysical research is concerned with the oceanic crust and upper mantle. Topics include seismic experiments on plate boundaries, crustal formation, hydrothermal processes in the Juan de Fuca-Gorda Ridge System, and studies of the earth's magnetic field. Physical oceanographic programs range from large-scale circulation studies of the North Pacific, the North Atlantic, the tropical oceans, and the Antarctic circumpolar current to coastal and estuarine circulation studies and small-scale mixing programs. The theoretical and experimental programs include studies of air-sea interaction, surface and internal waves, oceanic fronts, and sea ice.

Studies in local waters include sediment transport, mixing processes, subsurface structure, and biological communities in the fjords and inlets of Puget Sound. The Puget Sound Regional Synthesis Model (PRISM), an interdisciplinary initiative, proposes to develop and sustain a dynamic understanding of the environmental and human factors that will shape the estuary's future.

Facilities and Vessels
Housed in four large and several smaller buildings on campus by Portage Bay, the School is equipped with extensive laboratories and teaching facilities, including controlled-environment rooms, a paleomagnetics laboratory, a sea-ice laboratory, a marine molecular biotechnology laboratory, and a geophysical fluid dynamics laboratory. The new 100,000-square-foot Oceanography Sciences Building features state-of-the-art laboratory facilities and provides additional office space for faculty and students.

The School operates its own midscale interactive computer and highly specialized laboratory instruments, such as mass spectrometers, scanning electron microscopes, and seawater sediment transport flumes. Access to other more sophisticated facilities and instruments, as well as super computers, is available on campus. Docks provide mooring for the School’s two research vessels. Deep-ocean research programs are accommodated on the 274-foot R/V Thomas G. Thompson. Graduate students are involved in all of the cruises, most often for their thesis research. The 65-foot R/V Clifford A. Barnes undertakes short cruises into Lake Washington and Puget Sound for the instructional and research programs.

Friday Harbor Laboratories on San Juan Island offer unique opportunities for research and study. Specialized courses in new areas of oceanography are offered each summer. The facilities are used by faculty members and students throughout the year for oceanographic research.

Funding
The School is supported primarily by funds from the state of Washington and federal agencies. Major sources of federal funding include the National Science Foundation, National Oceanic and Atmospheric Administration, Office of Naval Research, and Department of Energy. Funds are also provided by various state and local government agencies and private organizations.

Graduate Program
Graduate Student Services
106 Ocean Teaching, Box 357940
206-543-5039
student@ocean.washington.edu

The School of Oceanography provides excellent 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.

Admission
Students enter the School from varied undergraduate disciplines at many universities. All have in common a strong background in the sciences and mathematics; most have never taken courses in oceanography. Evaluation of candidates is based on Graduate Record Examination scores, the undergraduate transcript (scholarship and depth), three letters of recommendation, and the applicant's statement of objectives and interests. Admission can be accommodated at the beginning of any quarter except winter, although autumn entry is most common.

Master of Science
The program of study includes course work in the student’s area of interest and the other oceanography options, and the 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.

Doctor of Philosophy
The degree program places a strong emphasis on research following completion of course requirements and 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.

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.

Faculty
Chair
Bruce W. Frost

Professors
Aagaard, Knut * 1968; PhD, 1966, University of Washington; physical oceanography, ocean circulation, arctic oceanography.
Anderson, George C. 1972, (Emeritus); PhD, 1954, University of Washington; plankton ecology, biological oceanography.

Graduate Program
Graduate Student Services
106 Ocean Teaching, Box 357940
206-543-5039
student@ocean.washington.edu

The School of Oceanography provides excellent 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.

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Faculty
Chair
Bruce W. Frost

Professors
Aagaard, Knut * 1968; PhD, 1966, University of Washington; physical oceanography, ocean circulation, arctic oceanography.
Anderson, George C. 1972, (Emeritus); PhD, 1954, University of Washington; plankton ecology, biological oceanography.

Banse, Karl * 1960, (Emeritus); Doct, 1955, University of Kiel (Germany); biological oceanography, plankton production and methodology, polychaete systematics.

Barross, John A. * 1984; PhD, 1973, University of Washington; microbial oceanography, bacterial ecology.

Cannon, Glenn A. * 1983, (Affiliate); PhD, 1969, Johns Hopkins University; physical oceanography of coastal waters and deep-sea hydrothermal venting.

Carpenter, Roy * 1968; PhD, 1968, University of California (San Diego); marine geochemistry of metals and hydrocarbons in coastal zones.

Cattolico, Rose A. * 1975, (Adjunct); PhD, 1973, State University of New York (Stony Brook); signal transduction and calcium cycle processes in toxic marine algae.

Creager, Joe S. * 1958, (Emeritus); PhD, 1958, Texas A&M University; geological oceanography, sedimentology.

Criminale, William O. * 1968; PhD, 1960, Johns Hopkins University; fluid dynamics, nonlinear mechanics, stability theory.

D'Asaro, Eric A. * 1980; PhD, 1980, Massachusetts Institute of Technology; physical oceanography, internal waves, turbulence and mixing processes.

Delaney, John R. * 1977; PhD, 1977, University of Arizona; geological oceanography, origin of oceanic crust, igneous petrology.

Deming, Jody W. * 1988; PhD, 1981, University of Maryland; evolution and ecology of marine bacteria in the pressurized ocean.

Devol, Allan H. * 1975; PhD, 1975, University of Washington; biogeochemistry, sediment diagenesis, anoxic systems, carbon fluxes.

Emerson, Steven R. * 1976; PhD, 1974, Columbia University; marine geochemistry, chemical oceanography, sediment diagenesis.

Eriksen, Charles C. * 1986; PhD, 1977, Massachusetts Institute of Technology; experimental physical oceanography; equatorial and upper ocean dynamics, internal waves.

Ewart, Terry E. * 1956, (Emeritus); PhD, 1965, University of Washington; physics, ocean microstructure, diffusion, acoustic transmission.

Francis, Robert C. * 1983, (Adjunct); PhD, 1970, University of Washington; fishery oceanography, effects of climate on marine ecosystems, paleoecology, fisheries management.

Frost, Bruce W. * 1969; PhD, 1969, University of California (San Diego); biological oceanography, marine zoogeography, plankton ecology and systematics.

Gammon, Richard H. * 1985; PhD, 1970, Harvard University; atmospheric chemistry, chemical oceanography, environmental chemistry; biogeochemical cycles.

Gregg, Michael C. * 1974; PhD, 1971, University of California (San Diego); physical oceanography, ocean microstructure, coasts, estuaries, hydraulics, internal waves.

Harrison, Don Edmunds * 1985, (Affiliate); MS, 1973, PhD, 1977, Harvard University; ocean circulation modeling, air-sea interaction, ocean and climate dynamics.

Heath, G. Ross * 1984; PhD, 1968, University of California (San Diego); geochemistry and mineralogy of deep-sea sediments.

Hedges, John I. * 1976; PhD, 1975, University of Texas (Austin); organic geochemistry, sources, transport, fate of organic material in coastal zones.

Hickey, Barbara M. * 1973; PhD, 1975, University of California (San Diego); physical oceanography, dynamics of equatorial and shelf circulation.

Holmes, Mark L. 1975; PhD, 1975, University of Washington; estuarine geologic processes, natural hazards in Puget Sound, crustal evolution at mid-ocean ridges.

Johnson, Harlan Paul * 1976; PhD, 1972, University of Washington; paleomagnetism and marine geophysics.

Jumars, Peter A. * 1975; PhD, 1974, University of California (San Diego); biological oceanography, benthos, biological sedimentary dynamics and spatial statistics.

Kelly, Kathryn A. * 1996, (Affiliate); PhD, 1983, University of California (San Diego); physical oceanography, specializing in combining models with satellite observations.

Kunze, Eric L. * 1987; PhD, 1985, University of Washington; mesoscale phenomena, wave-mean flow interaction double diffusion and mixing.


Martin, Seelye * 1969; PhD, 1967, Johns Hopkins University; geophysical fluid dynamics, properties of sea ice.

McCormick, Norman J. * 1966, (Adjunct); PhD, 1965, University of Michigan; radiative transfer, optical oceanography, reliability/risk analysis, mechanical engineering design.

McDuff, Russell E. * 1981; PhD, 1978, University of California (San Diego); marine geochemistry.

McManus, Dean A. * 1959, (Emeritus); PhD, 1959, University of Kansas; geological oceanography, continental shelf sediments, geoscience education.

McPhaden, Michael J. * 1982, (Affiliate); PhD, 1980, Scripps Oceanographic Institution; equatorial ocean dynamics, climate scale air-sea interaction.

Merrill, Ronald T. * 1967, (Adjunct); MS, 1961, University of Michigan, PhD, 1967, University of California (Berkeley); geomagnetism, paleomagnetism.

Mobley, Curtis D. 1997, (Adjunct); PhD, 1977, University of Maryland; optical oceanography and radiative transfer, especially numerical modeling.

Moore, Dennis W. 1996, (Affiliate); PhD, 1968, Harvard University; equatorial oceanography, geophysical fluid dynamics, and inertial boundary currents.

Morison, James H. * 1972, (Affiliate); PhD, 1980, University of Washington; upper ocean physical processes in the polar regions.

Murray, James W. * 1973; PhD, 1973, Massachusetts Institute of Technology; marine geochemistry, aquatic chemistry.

Nelson, Bruce K. * 1986, (Adjunct); MS, 1979, University of Kansas, PhD, 1985, University of California (Los Angeles); isotope geochemistry, volcanism, mantle chemistry and evolution.

Nittouer, Charles * 1998; PhD, 1978, University of Washington; geological oceanography, continental margin sedimentation.

Nowell, Arthur R. M. * 1978; PhD, 1975, University of British Columbia (Canada); physical oceanography, turbulent boundary layer dynamics, sediment transport.

Perry, Mary J. 1976, (Affiliate); PhD, 1974, University of California (San Diego); biological oceanography, photoplankton physiology, nutrient cycling.

Quay, Paul D. * 1977; PhD, 1977, Columbia University; chemical oceanography, stable isotope geochemistry, ocean tracers and mixing.

Rattray, Maurice 1950, (Emeritus); PhD, 1951, California Institute of Technology; physical oceanography, hydrodynamics, ocean circulation modeling.

Rhines, Peter B. * 1984; PhD, 1967, Cambridge University (UK); the circulation of the oceans and evolution of climate.

Richey, Jeffrey E. * 1973; PhD, 1973, University of California (Davis); quantitative problems of aquatic ecosystems, primary Amazon River, limnology.

Sanford, Thomas B. * 1979; PhD, 1967, Massachusetts Institute of Technology; physical oceanography, dynamics of ocean currents, molitional induction, instrumentation.

Sarachik, Edward S. * 1984, (Adjunct); PhD, 1966, Brandeis University; atmospheric dynamics, air-sea interactions, greenhouse warming, equatorial dynamics, climate change.

Shreve, Ronald L. 2000, (Research); PhD, 1959, California Institute of Technology; geology, geomorphology, glaciology, geophysical physics, and geophysics.

Spindel, Robert C. 1987, (Adjunct); MS, 1966, PhD, 1971, Yale University; ocean acoustics, signal processing, acoustic navigation systems, acoustic tomography.

Sternberg, Richard * 1965, (Emeritus); PhD, 1965, University of Washington; geological oceanography, marine sedimentation processes.

**Associate Professors**

Balistrieri, Laurie S. * 1995, (Affiliate); MS, 1977, University of Washington; aqueous and environmental geochemistry, processes controlling trace elements in aquatic systems.

Duxbury, Alyn C. * 1964, (Emeritus); PhD, 1963, Texas A&M University; estuarine processes and the management of human uses of these marine systems.

Feely, Richard A. * 1983, (Affiliate); PhD, 1974, Texas A&M University; chemical oceanography, oceanic sources and sinks for carbon dioxide.

Holcomb, Robin T. 1988, (Affiliate); PhD, 1979, Stanford University; volcanology.

Howe, Bruce M. 1987; PhD, 1986, University of California (San Diego); physical oceanography, acoustic tomography.

Johnson, Gregory C. * 1990, (Affiliate); PhD, 1991, Massachusetts Institute of Technology; large-scale ocean circulation, dynamics and variability.

Kawase, Mitsuhiro * 1988; PhD, 1986, Princeton University; geophysical fluid dynamics, ocean general circulation; tracer oceanography.
Keil, Richard G. * 1991; PhD, 1991, University of Delaware; microbial degradation of organic compounds in aquatic and soil environments.

Kelley, Deborah S. * 1992; PhD, 1990, Dalhousie University (Canada); marine geology, volcanic-hosted submarine hydrothermal systems, sulfide-microbial habitats.

Kessler, William S. * 1995, (Affiliate); PhD, 1989, University of Washington; equatorial ocean circulation and waves; interannual climate variability.

Krieger-Brockett, Barbara * 1976, (Adjunct); MS, 1972, PhD, 1976, Wayne State University; reaction engineering, chemical kinetics and catalysis simulation.

Lessard, Evelyn J. * 1989; PhD, 1984, University of Rhode Island; microzooplankton ecology and physiology; physical/biological interactions at oceanic fronts.

Lilley, Marvin D. * 1984; PhD, 1983, Oregon State University; chemical oceanography.

MacCready, Parker * 1994; PhD, 1991, University of Washington; ocean circulation in estuaries and the southern ocean.

Mofield, Harold 1970, (Affiliate); PhD, 1970, University of Washington; tsunami dynamics, long waves and currents in the ocean, storm surge inundation.

Nystruen, Jeffrey A. 1999, (Affiliate); PhD, 1985, University of California (San Diego); acoustic oceanography, applied to oceanic rainfall and physics of the air-sea interface.

Riser, Stephen C. * 1981; PhD, 1981, University of Rhode Island; physical oceanography, mesoscale mixing, physics of mesoscale eddies, numerical modeling.

Shuman, Frank R. 1999, (Affiliate); PhD, 1978, University of Washington; monitoring activities in marine waters: sediment, water, plants and animals, toxic substances.

Thompson, Luanne * 1990; PhD, 1990, Massachusetts Institute of Technology; numerical modeling of mesoscale and general circulation of the oceans.

Warner, Mark J. * 1989; PhD, 1988, University of California (San Diego); physical oceanography, ocean ventilation and mixing processes.

Wilcock, William S. D. * 1993; PhD, 1992, Massachusetts Institute of Technology; marine seismology, dynamics of mid-ocean ridges, geological fluid dynamics.

Williams, Kevin L. * 1998; PhD, 1985, Washington State University; propagation and scattering of sound in the ocean: applied to remote sensing and sediment acoustics.

Assistant Professors

Alford, Matthew H. * 2001, (Affiliate); PhD, 1998, University of California (San Diego); internal waves, turbulence, double diffusion and mixing in the ocean.

Armbrust, E. Virginia * 1996; PhD, 1990, Massachusetts Institute of Technology; molecular ecology, genetic diversity of microbial populations, diatom sexual reproduction.

Bullister, John L. 1991, (Affiliate); PhD, 1984, University of California (San Diego); chemical tracers of large-scale ocean circulation and mixing, gases in the ocean and atmosphere.

Butterfield, David A. 1997, (Affiliate); PhD, 1990, University of Washington; geochemical systematics of hydrothermal fluids, relation to seafloor volcanism, microbial activity.

Cronin, Meghan 1998, (Affiliate); PhD, 1993, University of Rhode Island; upper-ocean heat, salt, and momentum balances, western boundary currents, eddy-mean flow interaction.

Dushaw, Brian D. 1999, (Affiliate); PhD, 1992, University of California (San Diego); acoustic tomography; applications to ocean temperature, tidal dissipation, ocean mixing.


Hautala, Susan L. 1994; PhD, 1992, University of Washington; physical oceanography, abyssal and paleo abyssal circulation.

Lee, Craig M. 1987, (Affiliate); PhD, 1995, University of Washington; upper-ocean processes, internal waves, fronts, interactions between dynamics and biology.

Logsdon, Miles G. 1989, (Research); PhD, 1997, University of Washington; spatial modeling and analysis of environmental systems in the earth sciences.

Napp, Jeffrey M. 1991, (Affiliate); PhD, 1986, University of California (San Diego); biological-physical interactions in the epiipelagic zone, zooplankton ecology, fisheries oceanography.

Newton, Jan A. 1998, (Affiliate); PhD, 1989, University of Washington; production and export of organic material, estuarine/coastal dynamics and marine water quality.

Ogston, Andrea S. 1997, (Research); PhD. 1997, University of Washington; sediment transport processes in the marine environment.

Oltman-Shay, Joan M. 1991, (Affiliate); PhD, 1986, University of California (San Diego); nearshore waves and currents: wave climatology, generation and dissipation, sediment dynamics.

Parsons, Jeffrey D. * 2000; PhD, 1998, University of Illinois (Urbana-Champaign); sediment dynamics, environmental fluid mechanics, submarine and Martian morphology.

Resing, Joseph A. 2001, (Affiliate); PhD, 1997, University of Hawaii; effects of submarine volcanism and hydrothermal effluent on the large-scale chemistry of the oceans.

Rocap, Gabrielle L. * 2001; PhD, 2000, Massachusetts Institute of Technology; ecology and evolution of cyanobacteria; comparative genomics and distribution of genetic diversity.

Sabine, Christopher L. 1999, (Affiliate); PhD, 1992, University of Hawaii; carbon cycling in the global oceans, including air-sea fluxes and estimates of anthropogenic carbon.

Tynan, Cynthia T. 1999, (Affiliate); PhD, 1993, University of California (San Diego); biological-physical processes, distribution and abundances of plankton and marine mammals.

Woodgate, Rebecca A. 1999, (Research); PhD, 1990, University of Cambridge (UK); physical oceanography research, especially collection and analysis of in situ time series.

Senior Lecturer

Emerick, Christina M. 1985; PhD, 1985, Oregon State University; marine geochemistry and tectonics.
OCEAN 444 Advanced Field Oceanography (5) NW
Conduct field experiment (designed in OCEAN 443) during a week-long cruise aboard a research vessel. Analyze sample data and present results in a series of drafts and a final term paper. Results are present- ed 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. Prerequisite: MATH 125, MATH 145, or Q SCI 292; and PHYS 115 or PHYS 122.

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 499 Undergraduate Research (1-12, 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 estuar- ies. Physical understanding of basic processes, such as tides, wind stress, topographic effects on turbu- lence, sill hydraulics, and exchange flow. Vertical mix- ing and residence times important to biological and population studies. Prerequisite: permission of instruc- tor.

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: AWSpS.

OCEAN 510 Physics of Ocean Circulation (5) Structure of ocean basins; physical properties of sea- water 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 flow. Potentially enforces the Navier-Stokes equation for viscous fluids, Cartesian tensors, stress- strain relations; Kelvin's theorem, vortex dynamics; potential flows, flows with high-low Reynolds num- bers; boundary layers, introduction to singular per- turbation techniques; water waves; linear instability theory. Prerequisite: AMATH 403 or permission of instructor. Offered: jointly with AMATH/ATM S 505; A.


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 par- ticles, tracers; cascades, eddy flux of heat, moisture. Q. Prerequisite: OCEAN 512. Offered: Sp.

OCEAN 514 Waves (3) Application of marine hydro- dynamics principles to wave motion in oceans. Offered: W.

OCEAN 515 Ocean Circulation: Observations (3) Coastal large- and small-scale ocean observations, interpretation of ocean 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 circula- tion. Prerequisite: OCEAN 510 or permission of instructor. Offered: Sp.

OCEAN 516 Ocean Circulation: Theories (3) Hydrodynamic theories concerning origin and char- acteristics 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 oceanogra- phy. Devices and systems that measure pressure, temperature, electrical conductivity, sea state, and velocity. Prerequisite: permission of instructor. Offered: alternate years.

OCEAN 520 Marine Chemistry (5) Processes con- trolling the chemical composition of seawater. Chemical distributions in the ocean, marine physical chemistries, chemical processes; their application to mass balance. Mechanisms and models used to explain distributions of stable and radioactive isoto- topes, gases, trace metals, and biochemicals in the world's oceans. Offered: A.

OCEAN 521 Aquatic Chemistry (3) Application of physical chemistry and thermodynamics to process- es 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. Chemical, biological processes; application to mass balance. Prerequisite: CHEM 237 and CHEM 239 or permis- sion of instructor.

OCEAN 523 Geochemical Cycles (4) Descriptive, quantitative aspects of earth as biogeochemical sys- tem. Study of equilibria, transport processes, chemi- cal 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 559/ATM S 509.

OCEAN 524 Environmental Chemical Modeling (3) Benjamin, Murray Physical/chemical principles con- trolling the form and distribution of environmental pol- lutants and use of models to apply those principles. Includes modeling of physical transport in conjunc- tion with chemical equilibrium and reaction kinetics. Applications include acid mine drainage, acid depo- sition, and groundwater and lake water contamin- ation. Offered: jointly with CEE 550.

OCEAN 529 Seminar on Chemical Oceanography (1, max. 8) Lectures, discussions, and readings on selected problems of current interest. Prerequisite: permission of instructor. Offered: A/W.

OCEAN 530 Biological Oceanography: Bacteria and Protozoa (3) Bacteria in the marine environment; fate of organic carbon in the ocean and the interrela- tionship of the carbon cycle with other biogeochemi- cal cycles. Prerequisite: permission of instructor. Offered: W.

OCEAN 531 Biological Oceanography: Phytoplankton (3) Phytoplankton in the marine envi- ronment: ecology, primary productivity, and physiolo- gy. Phytoplankton growth and photosynthetic pat- terns; spatial and temporal distributions of phyto- plankton; methods for determining distributions and rates of production and growth. Prerequisite: permis- sion 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 struc- ture and dynamics, pelagic community structure, models of populations and food chains, secondary production and biogeochemistry. Prerequisite: permis- sion of instructor. Offered: Sp.

OCEAN 533 Biological Oceanography: Benthos (3) Analysis of marine benthic communities; new research questions and method; ecologically impor- tant 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 inter- tidal, focusing on soft substrates. Prerequisite: permis- sion of instructor. Offered: Sp.

OCEAN 535 Biological Oceanography for Physical Scientists (5) Principles and practice of biological oceanography for students with strong background in physical sciences but little recent exposure to biol- ogy. Ecological principles at individual, population, and community levels, and mechanistic aspects of the biogeochemical cycles; case studies of interdiscipli- nary problems shared with the physical sciences. Prerequisite: permission of instructor. Offered: W.

OCEAN 539 Seminar in Biological Oceanography (1, max. 9) Lectures, discussions, and work on selected problems of current interest. Prerequisite: permission of instructor. Offered: A/W.

OCEAN 540 Marine Geological Processes (5) Principles of thermodynamics, heat and mass trans- fer, fluid mechanics, continuum mechanics, and time- series analysis applied to marine geological and geo- physical data. Applications to thermal balance of the oceanic lithosphere, Pleistocene sedimentation and global climate change; and sediment transport in high energy environments. Prerequisite: permission of instructor. Offered: W.

OCEAN 541 Marine Sedimentary Processes (5) Erosion, transportation and deposition of sediment in estuarine, beach, continental shelf and slope, and deep sea environments. Development of equations characterizing boundary shear flows, initiation of grain motion, bedload and suspended load transport. Evolution of primary bed forms, processes of sedi-
ment accumulation, and measurement techniques. Prerequisite: permission of instructor.

**OCEAN 542 Sediment Dynamics and Boundary-Layer Physics (4)** Parsons Theoretical descriptions of sediment transport processes constrained by laboratory demonstrations. The physics of boundary layers, initiation of motion, suspended load, bedload, bedforms, and continuous transport (turbidity currents, debris flows, and suspensions) and its application to the geological record. Offered: jointly with ESS 526; W.

**OCEAN 544 Geochemical Evolution of Oceanic Lithosphere (3)** Parsons Geophysical techniques of oceanic lithosphere. Comparisons of theoretical models with field studies conducted using submersibles and deep ocean drilling. Prerequisite: permission of instructor.

**OCEAN 545 Physics of the Oceanic Lithosphere I (3)** Parsons Physical processes responsible for the formation and evolution of the oceanic lithosphere. Thermodynamic mechanisms of mantle creep; fluid dynamics of mantle flow, decompressional melting, formation of oceanic crust, and cooling of the oceanic lithosphere. Prerequisite: either ESS 511 or GPHYS 501; either ESS 514 or GPHYS 504; or permission of instructor. Offered: jointly with ESS 568.

**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: AWSp.

**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 Niño/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: AWSp.

**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 feedback 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)** Techniques of molecular analysis with emphasis on DNA methods, including PCR, DNA sequencing, RFLP,RAPD and VNTR analysis and cloning. Prerequisites: OCEAN 534 or permission of instructor. Offered: jointly with FISH 542; A.

**OCEAN 575 Molecular Techniques (4)** Laboratory on DNA methods. Experiments analyzing genetic variation at the intraspecific level, including one experiment of student's own design. Techniques include DNA extraction and quantitation, PCR, DNA sequencing, RFLP analysis and cloning. Prerequisite: OCEAN 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: CO₂ hydrolysis, Fe, Mn, and H₂S oxidation, stable isotope fractionation, mixtures, reaction; homogeneous, heterogeneous, microbial catalysis; reaction and transport at air-water, sediment-water, and O₂/H₂S interfaces. Prerequisite: permission of instructor.

**OCEAN 582 River Basin Biogeochemistry (3)** The function of rivers and river basins in transporting materials to the oceans and their importance in biogeochemical cycles. Origin of water and water routing within drainage basins, sources and modification of dissolved and particulate materials in transport, ecological theory, and estuarine mixing zone transformations. Prerequisites: permission of instructor.

**OCEAN 583 Isotope Biogeochemistry (3)** The use of stable isotopes to study biogeochemical cycles in the oceans and atmosphere, specifically carbon, nitrogen, and sulfur cycles. Isotopic effects during photosynthesis, respiration, organic matter degradation, CaCO₃ dissolution, methane genesis, nitrification/denitrification, and sulfate reduction. Prerequisite: permission of instructor.

**OCEAN 585 Paleoceanography (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 transports; 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; A.

**OCEAN 588 The Global Carbon Cycle and Climate (3)** Quay Oceanic and terrestrial biogeochemical processes controlling atmospheric CO₂ and other greenhouse gases. Records of past changes in the earth’s carbon cycle from geological, oceanographic and terrestrial archives. Anthropogenic perturbations to cycles. Develop simple box models, discuss results of complex models. Offered: jointly with ATM S 588/ESS 588; W.


**OCEAN 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 (4)** Major oceanic and nearshore processes, conditions, and their influence on human activities in coastal zone. Methods of understanding and accessing the accumulated knowledge on marine processes and its applications to decision-making process. Lectures and discussions of biological, chemical, geological, and physical oceanography. Generation and use of data bases as interpretive tools. Offered: jointly with SMA 591; A.

**OCEAN 600 Independent Study or Research (*)** Offered: AWSpS.

**OCEAN 700 Master’s Thesis (*)** Offered: AWSpS.

**OCEAN 800 Doctoral Dissertation (*)** Offered: AWSpS.
School of Pharmacy

Dean
Sidney D. Nelson

Associate Deans
Nanci L. Murphy
Stanley S. Weber

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 pharmacuetics 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 Retail 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).

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. An on-site interview and writing assignment are required as part of the admission process. 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 at depts.washington.edu/pharmi/.

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 in the pharmaceutical sciences. Graduate school information may be obtained from the individual departments offering the advanced degrees.

Medicinal Chemistry

Graduate Program Coordinator
H164 Health Sciences, Box 357610
206-543-2224
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, molecular modeling and dynamics as well as a broad array of supportive spectroscopic techniques including mass spectrometry and NMR.

One major area of research interest is the role of bio-transformation 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 computational methods, NMR, mass spectrometry, and other biophysical techniques. Issues of biomedical importance include elucidation of mechanistic aspects of drug-induced cell toxicity, drug-drug and drug-herbal interactions, identification of enzyme attributes that dictate substrate specificity and catalytic mechanism, pharmacogenetics, structural immunology in vaccine design, biotherapeutics, protein folding in disease states and structural characterization of bacterial toxins.

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 who intend to work toward the Doctor of Philosophy degree must apply for admission to the Graduate School and meet the requirements outlined in the Graduate Study section of this catalog. Graduate students must satisfy the requirements for an advanced degree in force at the time the degree is to be awarded. Graduate study requires approval of the Graduate School and the Department of Medicinal Chemistry.

Special 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

A student in the master’s degree program must present at least 27 credits of course work, inclusive of thesis and non-thesis research. The student also must complete a research project, prepare an acceptable thesis, and pass a final examination.

Doctor of Philosophy

A student in the doctoral program must present a minimum of 45 credits of course work, inclusive of dissertation and non-thesis research. Credits earned for the master’s degree may be applied toward the doctoral degree. The student must pass a General Examination for admission to candidacy for the doctoral degree. Satisfactory completion of departmental cumulative examinations precedes scheduling of the General Examination. The student must complete a research project, prepare an acceptable dissertation and pass a Final Examination. Research for the doctoral degree must be done at the UW.

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 students should contact the graduate program coordinator for additional information.

Faculty

Chair
Allan Edward Rettle

Professors

Baillie, Thomas A. * 1981, (Affiliate); PhD, 1973, University of Glasgow (UK); MSc, 1973, University of London (UK); medicinal chemistry.

Elmer, Gary W. * 1971; PhD, 1970, Rutgers University; pharmacognosy.

Kharasch, Evan D. * 1984, (Adjunct); PhD, 1983, MD, 1984, Northwestern University; clinical pharmacology of anesthetic agents, drug metabolism, and drug interactions.
of mathematical models to describe drug disposition and pharmacological processes.

During the first two years of study, students take courses in medicinal chemistry, pharmacology, physiology, biochemistry, mathematics, computer science, biostatistics, and pharmacokinetics.

The department’s research program includes seven NIH-funded laboratories addressing a variety of fundamental and clinical problems pertaining to drug transport, metabolism, and toxicity associated with several diseases (AIDS, cystic fibrosis, leukemia, epilepsy), as well as pain management and transplantation. Most projects involve collaborative arrangements with investigators from other departments in the University or at the Fred Hutchinson Cancer Research Center. The collaborative relationship of the faculty of the Departments of Pharmaceutics and Medicinal Chemistry in the field of drug metabolism has received worldwide recognition.

Thesis research can involve experimental animal work, in vitro studies, clinical investigation, or a combination of approaches. Graduate students are given the opportunity to participate in interdisciplinary research, providing an added dimension to their training.

A wide range of career paths are available to graduates of this program. 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.

Admission Qualifications

Students with undergraduate degrees in pharmacy, chemistry, or in the biological sciences are accepted for graduate study in pharmaceutics. Undergraduates who plan to pursue graduate study may expedite their programs by selection of pertinent electives. This information can be obtained from the graduate program coordinator.

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.

Faculty

Chair
Rene H. Levy

Professors
Anderson, Gail * 1981, (Adjunct); PhD, 1987, University of Washington; pharmacokinetics, metabolism and interactions of drugs in epilepsy and trauma.

Gibaldi, Milo * 1978, PhD, 1963, Columbia University; critical analysis of literature on drug discovery and development.

Hu, Shiu-Lok 1988; PhD, 1978, University of Wisconsin; virus-host interactions, AIDS vaccines and pathogenesis of primate lentivirus infection.

Levy, Rene H. * 1970; PhD, 1970, University of California (San Francisco); metabolic interactions among antiepileptic drugs and between cytokines and drugs.

Graduate Program Coordinator

Graduate Program Coordinator
H375 Health Sciences, Box 357630
206-543-4788

depts.washington.edu/grad/pharmacy/
Admission Requirements
Students with undergraduate or graduate degrees in a health-science discipline or those with sufficient experience in pharmaceutical outcomes and policy research will be considered for admission. Applicants must apply to the Graduate School and the Department of Pharmacy and meet the admission criteria outlined in the Graduate School section of this catalog. Applications materials can be obtained by contacting the graduate program coordinator in the Department of Pharmacy or by visiting the graduate program Web page at deps.washington.edu/porpp/gradprog.htm.

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.

Faculty
Chair
Danny D. Shen

Professors
Anderson, Gail * 1981; PhD, 1987, University of Washington; pharmacokinetics, metabolism and interactions of drugs in epilepsy and trauma.
Bauer, Larry * 1980; PharmD, 1980, University of Kentucky; clinical pharmacokinetics and drug metabolism, drug interactions.
Ellsworth, Allan J. 1981; PharmD, 1977, Philadelphia College of Pharmacy and Science; primary care, family medicine.
Gibaldi, Milo * 1978, (Adjunct); PhD, 1963, Columbia University; critical analysis of literature on drug discovery and development.
Hasten, Philip D. 1989; PharmD, 1968, University of California (San Francisco); drug interactions.
Horn, John R. * 1978; PharmD, 1977, University of Cincinnati; pharmacotherapeutics, with emphasis on drug interactions.
Patric, Donald L. * 1987, (Adjunct); MS, 1968, PhD, 1972, Columbia University; health status and quality of life, end of life, adolescents.
Shen, Denny D. * 1984; PhD, 1975, State University of New York (Buffalo); CNS pharmacokinetics and pharmacodynamics of opioid analgesics and anti-convulsants.
Sullivan, Sean * 1992; PhD, 1992, University of California (Berkeley); health economics, pharmaceutical outcomes research and health policy.
Associate Professors
Downing, Donald F. 1982, (Clinical); BS, 1975, University of Washington; medical devices, innovative pharmaceutical care services.
Gardner, Jacqueline S. * 1990; PhD, 1980, University of Washington; pharmacoepidemiology, drug therapy use and effects, pharmacist practice patterns.
Gray, Shelly L. 1995; PharmD, 1989, University of Michigan; geriatric pharmacy.
Hebert, Mary F. 1996; PharmD, 1987, University of California (San Francisco); transplantation, immunology, pharmacotherapeutics.
Kwok, Karl 1982, (Clinical); PharmD, 1984, University of Washington.
Lippert, Michaela E. 1988, (Clinical); BS, 1970, University of Wisconsin; substance abuse, community health care.
Paun, Dorothy Ann * 1993, (Adjunct); PhD, 1993, University of Oregon; financial performance analyses; international countertrade; business-to-business relationships.
Ramsey, Scott D. * 1990, (Adjunct); MD, 1990, University of Iowa, PhD, 1994, University of Pennsylvania; economics in medicine.
Somani, Shabir M. 1994; MS, 1982, MBA, 1992, University of Minnesota; hospital pharmacy administration.
Weber, Stanley S. 1996; PharmD, 1975, University of Cincinnati; psychiatric pharmacy practice, pharmacy distance learning.
Assistant Professors
Awan, Asaad B., (Clinical); PharmD, 1992, University of Washington.
Blough, David K. 1994, (Clinical); PhD, 1982, Iowa State University; biostatistics applications; generalized linear models; time series analysis.
Capoccia, Kam Lee 2000, (Clinical); PharmD, 1999, University of Colorado (Denver).
Devine, Emily E. 1999, (Research); PharmD, 1978, University of the Pacific, MBA, 1999, University of California (San Francisco).
Hasten, Philip D. 1989; PharmD, 1968, University of Washington; pharmacokinetics, metabolism and interactions of drugs in epilepsy and trauma.
Kwok, Karl 1982, (Clinical); PharmD, 1984, University of Washington.
Lippert, Michaela E. 1988, (Clinical); BS, 1970, University of Wisconsin; substance abuse, community health care.
Paun, Dorothy Ann * 1993, (Adjunct); PhD, 1993, University of Oregon; financial performance analyses; international countertrade; business-to-business relationships.
Ramsey, Scott D. * 1990, (Adjunct); MD, 1990, University of Iowa, PhD, 1994, University of Pennsylvania; economics in medicine.
Somani, Shabir M. 1994; MS, 1982, MBA, 1992, University of Minnesota; hospital pharmacy administration.
Weber, Stanley S. 1996; PharmD, 1975, University of Cincinnati; psychiatric pharmacy practice, pharmacy distance learning.

Medicinal Chemistry
MEDCH 400 Fundamental Concepts in Medicinal Chemistry (3) Hackett 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 401 Immunizing and Antimicrobial Agents (4) Daggett, Elmer 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 450, or equivalent, PharmD major, or permission of instructor. Offered: Sp.

MEDCH 402 Medicinal Chemistry (3) Elmer, 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; CHEM 239; CONJ 403. Offered: A.

MEDCH 403 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; CHEM 239; CONJ 403. Offered: W.

MEDCH 404 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; CHEM 239; CONJ 403. Offered: Sp.

MEDCH 420 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 435 Diagnostic Medicinal Chemistry (3) S. Nelson Examination of clinical diagnostic tests with
regard to the chemical or biochemical rationale of the testing method, interpretation of test results, and major factors influencing test values, with special emphasis on the effects of medications. Clinical laboratory data from patients considered in light of these factors. Prerequisite: MEDCH 451 or BIOL 406 or equivalent, or permission of instructor. Offered: W.

MEDCH 450 Medicinal Biochemistry I (3) Campbell, Kunze 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 451 Medicinal Biochemistry II (3) Campbell, Kunze Continuation of discussions of those aspects of biochemistry which are particularly relevant to understanding human disease and therapeutic intervention strategies. Offered: Sp.

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) Elm, S. Nelson Advanced study of the various classes of medicinal compounds, with particular emphasis on bioactivity, mechanism of action, biotransformation, and the structural and physical properties governing absorption, distribution, and excretion. Prerequisite: permission of instructor. Offered: AWSp.

MEDCH 502 Advanced Medicinal Chemistry (4) W. Nelson, Retter 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: AWSp.

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: AWSp.

MEDCH 520 Seminar (1, max. 15) Campbell 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 BIOL 442, or permission of instructor. Offered: Sp.

MEDCH 527 Drug Metabolism (3) Retter, Thummel Considerations of the biochemical mechanisms for the biotransformation of drugs and foreign compounds. Includes reaction mechanisms, ultrastructural considerations, induction mechanisms, methodologies, kinetics of inhibition and activation, steroid and amine metabolism. Offered: jointly with PHCOL 527; odd years; W.

MEDCH 528 Proteins in Therapy and Disease (3) Atkins, Daggett Examination of enzyme catalysis and of protein structure and dynamics. Applications to topics of therapeutic relevance including peptides and proteins as drugs, structure-based drug design, drug metabolism, protein engineering, and role of mutant or incorrectly folded proteins in disease states. Prerequisite: comprehensive course in biochemistry or consent of instructor. Offered: even years; W.

MEDCH 530 Mass Spectrometry of Drugs, Toxicants, and Metabolites (3) Hackett 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: odd years; Sp.

MEDCH 541 Macromolecular Mass Spectrometry (3) Hackett Emphasis on problem sets designed to teach basic interpretation skills with respect to proteins and peptides. Basics of mass spectrometry instrumentation for large molecules, including electrospray and MALDI-TOF. Classical techniques in protein chemistry, including Edman chemistry and amino acid analysis. Prerequisite: permission of instructor; recommended: concurrent registration in CHEM 520. Offered: even 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) Retter Discussion of research strategies and methodologies concerning the structure, function, and polymeric 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: AWSp.

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) Elm, S. Nelson Discussion of the literature, research possibilities, and questions that need to be addressed in the area of the application of biotherapeutic agents and other natural products for therapeutic purposes. Emphasis 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) Hackett 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 Mechanistic Aspects of Drug Metabolism (1) Traeger Discussion of research strategies, methodologies, and new approaches with regard to elucidating the chemical mechanisms and enzymology of metabolite reactions catalyzed by cytochrome P-450. Emphasis on trying to develop in vitro techniques which are predictive of in vivo drug behavior. Credit/no credit only. Prerequisite: permission of instructor. Offered: AWSps.

MEDCH 557 Molecular Modeling Studies of Medicinal Chemistry (1) Daggett Discussion of research strategies, methodologies, and literature concerning protein and peptide structure, function, dynamics, and folding. 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 Protein NMR Spectroscopy (1) Campbell Combines a comprehensive theoretical treatment of high resolution NMR spectroscopy with a practical description of the experimental techniques applicable to proteins and other biological macromolecules. Offered: AWSps.

MEDCH 582 Topics in Medicinal Chemistry (1, max. 18) W. Nelson, Retter Discussion of pertinent articles from current literature. Offered: AWSp.

MEDCH 590 Doctor of Pharmacy Thesis (*) Writing intensive course in which students develop a high quality scientific paper that demonstrates grammatical and organizational excellence and the ability to critically evaluate biomedical literature. Credit/no credit only.

MEDCH 599 Cumulative Exams for Medicinal Chemistry (1) Quarterly cumulative examinations for graduate students. Credit/no credit only. Offered: AWSps.

MEDCH 600 Independent Study or Research (*) Credit/no credit only. Offered: AWSps.

MEDCH 700 Master’s Thesis (*) Credit/no credit only. Offered: AWSps.

MEDCH 800 Doctoral Dissertation (*) Credit/no credit only. Offered: AWSps.

Pharmaceutics

PCEUT 331 Pharmaceutical Formulation: Principles and Dosage Forms (4) Ho, Lee, Unadkat 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. Offered: A.

PCEUT 402 Drug Therapy and the Media (2) Gibaldi Review of media to provide a perspective on disease
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. Offered: Sp.

PHARM 304 Profession of Pharmacy (3) Awon Overview of the profession of pharmacy emphasizing 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. Prerequisite: PHARM 309.

PHARM 305 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 309 Quantitative Methods I (3) O'Sullivan Instruction in methods essential for conducting pharmacy calculations, interpreting and evaluating data and literature related to pharmacy, and responding to drug information queries from health professionals and patients. Introduction to statistical concepts necessary for pharmacy course work.

PHARM 334 Pharmacy Practice (3) Hammer Focuses on principles of contemporary pharmacy practice with emphasis on preparation and dispensing of the top 100 prescription drugs and related nonprescription therapies. Laboratory exercises in patient assessment and counseling, preparation of sterile products, and use of technology for dispensing medications and maintaining patient records. Prerequisite: PCEUT 331.

PHARM 335 Dispensing Practicum (2/4, max. 4) O'Sullivan Under preceptor supervision, students master competencies necessary for distributional responsibilities in the institutional and ambulatory care pharmacy practice settings. Credit/no credit only.

PHARM 402 Drug Therapy and the Media (2) Gibson, Awan View media with a perspective on disease and drug therapy. Elements include drug discovery and development, clinical trials, the pharmaceutical industry, regulatory agencies, and socioeconomic consideration. Preparation of written and oral summaries of media reports. Offered: jointly with PCEUT 402.

PHARM 403 Chemical Dependency Concepts (1) Lipper Genesis of addiction: harm reduction strategies, legal and ethical considerations, medication management in the substance-abusing population, impaired pharmacist rehabilitation, community resources. Prerequisite: PCEUT 402. Credit/no credit only.

PHARM 409 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 405.

PHARM 411 Medical Devices for Home Health Care (3) Downing, Zolotu 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 436 Pharmacoeconomics, Genetics, and Healthcare (2) Wenestra Provides an introduction to outcomes research and economic evaluation related to pharmaceuticals and genetic technologies. Covers cost-effectiveness analysis and quality of life evaluation. Discusses the use of economic evaluation in healthcare to affect policy decisions.

PHARM 437 Chemical Dependency Issues in Practice (3) Lippert 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 403.

PHARM 438 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 439 Community Outreach Service (1) Work in assigned community settings 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.

PHARM 440 Pharmaceutical Care Systems I (3) Dawson Focuses on how human behavior and communication influence the pharmacist’s activities in designing, delivering, and managing patient-focused pharmaceutical care. Writing, listening, interviewing, teaching, and counseling as applied to pharmaceutical practice are emphasized.

PHARM 445 Pharmacy-Based Immunization Programs (1) Gardner Provides didactic training in the epidemiology and prevention of vaccine-preventable diseases and the implementation of community-based immunization programs; practical training in vaccine administration and management; and a community practicum in vaccine administration. Credit/no credit only. Prerequisite: MEDIH 401.

PHARM 446 Community-based Screening (1) Downing, Odegard, Walker-Roe Examines the practical application of cholesterol, hypertension, bone density, body composition, and wellness assessment techniques and counseling for health behavior modification. Following didactic and laboratory training, students will obtain practice by conducting a screening at a community location. Course offered following their first professional year. Credit/no credit only.

PHARM 447 Overview of Contraceptive Management (1) Gardner, Walker-Roe Didactic overview of contraceptive methods, fertility interventions, and medical abortions. Establishes forum for interactive discussion. Includes patient screening criteria and selection and monitoring of outcomes of currently available barrier and hormonal methods of contraception and medical abortions. Offered to students following their first professional year, as well as other health science professional students.

PHARM 452 Contemporary Problems (1) Discussion of current trends affecting the role of pharmacy in health-care delivery. Credit/no credit only.

PHARM 460 Principles of Professional Practice Management (3) Emphasizes the major issues and barriers associated with providing pharmaceutical care, managing human resources, evaluating workflow and facility design, complying with legal and safety standards, managing drug distribution services, implementing effective systems of payment for services, and marketing pharmaceutical care services of a community pharmacy.

PHARM 468 Case Studies 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. Analytical reasoning, self-study skills, and knowledge are emphasized.

PHARM 479 Quantitative Methods II (4) Blough Introduction to basic biostatistical concepts in the field of pharmacy. Prerequisite: PHARM 309.

PHARM 483 Institutional and Healthcare Systems Pharmacy Practice (2) Somani Presentation of topics regarding current contemporary institutions pharmacy practice. Discussion of new systems technology, methods and tools, applications, budgeting, formulary systems, drug information services, intravenous admixture programs, quality assurance process, and patient-oriented services.

PHARM 488 Elective Advanced Practicum (1-16, max. 40) Plein Advanced-level geriatric clinical pharmacists provide care in institutional (hospital, nursing home, long-term-care facility) and ambulatory patient-care facilities under direct supervision of a clinical preceptor.

PHARM 490 Fluid and Electrolytes and Parenteral Nutrition (2) Awan, Edwards Principles of fluid and electrolyte therapy, including saline, water, and acid-base balance, carbohydrate, protein, lipid, vitamin, and mineral requirements. Nutritional assessment, complications of parenteral nutrition, stability and compatibility of intravenous solutions, modifications of parenteral nutrition in pediatrics and specific disease states are also covered.

PHARM 491 Cancer Pharmacotherapeutics (2) Kwok, McCune, Takekuchi, Takemoto, Winter Pharmacotherapy as it relates to antineoplastic (antineoplastic, immunosuppressive, antipyretic, and anti-inflammatory) and antineoplastic agents. Specialists in each area serve as guest lecturers.

PHARM 492 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 organizational and Pharmaceutical services for independently living elderly.

PHARM 495 Special Studies in Pharmacy (1, max. 6) Special studies of professional topics in pharmacy. An opportunity to expand the breadth and depth of understanding in specific areas. Students undertake independent study under the individual direction of a faculty member.

PHARM 497 Drug Therapy for the Elderly (3) Gray Current knowledge of the effects of aging on the clinical use of drugs in elderly patients. Emphasizes selection and monitoring of therapy for common conditions of the older adult with multiple medical conditions. Prerequisite: nurse practitioner students or permission of instructor.

PHARM 499 Independent Study/Research (1, max. 6) Applied pharmaceutical research problems. Credit/no credit only.

PHARM 502 Neonatal Drug Therapy (3) Blackburn, Joseph Clinical applications of drugs used with acute and chronically ill preterm and term neonates. Review of neonatal pharmacology and laboratory tests. Examination of selected therapeutic agents in relation to indications, efficacy, therapeutic and adverse effects, monitoring parameters, and dosing principles in the neonate.

PHARM 509 Medical Literature Evaluation (2) Gibaldi, Harvey, Lavigne, Odegard, O’Sullivan, Watkins Introduction to the processes involved in the assessment of primary and tertiary medical literature. Students are required to read and critique medical literature. Classes are conducted in a journal club format.

PHARM 510 Current Topics in Infectious Disease (3) Bauer, Black Specialty topics of infectious disease pharmacotherapeutics, emphasizing the optimum use of antibiotic therapy. Discussion discussion format using primary medical literature. Topics chosen for discussion reflect contemporary issues. Prerequisite: PHARM 560.

PHARM 511 Current Topics in Immunology and Immunotherapeutics (2) Hebert Overview of the immune system and pharmacologic agents which modulate the immune response. Credit/no credit only. Prerequisite: second- or third- or fourth-year Pharm.D. student or permission of instructor.

PHARM 512 Clinical Applications of Drug Interactions (2) Hansten, 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: third- or fourth-year Pharm.D. student.

PHARM 514 Primary Care Pharmacotherapeutics (3) Acker, Anderson, Black, Hanster, Joseph, Kirkness, McCune, O’Sullivan Explores clinical applications and therapeutic issues for selected drug categories currently used in primary care settings and across age groups. Selected drug categories defined by pharmacokinetics, indications for use, efficacy, therapeutic and adverse effects, monitoring parameters, common drug interactions. Patient education, socioeconomic, and behavioral factors emphasized.

PHARM 515 Pharmacotherapeutics for Acute/Critical Illness (3) Landis Analysis of issues that impact the assessment, prescription, and evaluation of pharmacotherapeutic regimes 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 Certificate Program in Biomedical Regulatory Affairs (3) Hazlett Comprehensive overview of the knowledge and skills necessary to be an effective regulatory affairs and compliance specialist overseeing the design, development, testing, and production of drugs, biotechnology-derived therapeutics, and medical devices. Credit/no credit only.

PHARM 517 Certificate Program in Biomedical Regulatory Affairs (3) Hazlett Comprehensive overview of the knowledge and skills necessary to be an effective regulatory affairs and compliance specialist overseeing the design, development, testing,
and production of drugs, biotechnology-derived therapeutics, and medical devices. Credit/no credit only.

PHARM 518 Certificate Program in Biomedical Regulatory Affairs (3) Hazlet Comprehensive overview of the knowledge and skills necessary to be an effective regulatory affairs and compliance specialist overseeing the design, development, testing, and production of drugs, biotechnology-derived therapeutics, and medical devices. Credit/no credit only.

PHARM 532 Methods in Pharmaceutical Policy Analysis (4) Hazlet, Blough, Johnson 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. Prerequisite: graduate standing in pharmacy or permission of instructor.

PHARM 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 pharmacoepidemiology principles pertinent to pharmacoepidemiology. Prerequisite: Graduate student or with permission. Offered: jointly with EPI 533.

PHARM 534 Economic Evaluation in Health and Medicine 2 (3) Patrick, Sullivan, 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; A.

PHARM 535 Evaluating Cost and Outcomes in Health and Medicine 2 (3) Patrick, Sullivan Concepts and methods for evaluating cost and outcomes of health and medical interventions with a focus on cost-effectiveness analysis, pharmacoconomics, health and quality of life assessment, resource allocation, and medical decision-making. Prerequisite: permission of instructor. Offered: jointly with HSERV 584.

PHARM 536 Publishing and Presenting with Style (3) Blough, Johnson Introduces how to publish and present pharmaceutical research. Familiarizes students with methodological principles for writing and graphing. Projects and computer sessions train in preparation of scholarly work.

PHARM 541 Health Care and Society (3) Sullivan 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: jointly with HSERV 515.

PHARM 543 Pharmacy Laws and Ethics (4) Hazlet Study of the laws regulating the practice of pharmacy. Professional liability, warranties, and contracts are discussed. Case studies of ethical considerations of pharmacy practice.

PHARM 550 Pharmacotherapeutics for Older Adults (4) Gray Clinical use of drugs for older adults. Age-related pharmacokinetics, pharmacodynamics, and pharmacotherapeutics as applied to selecting and monitoring drug regimens for elderly patients. Problem solving regarding drugs of choice for older people with multiple pathologies. Prerequisite: fourth-year Pharm.D. student or permission of instructor.


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 435 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 practica either in areas of traditional practice or in innovative practice plans designed by faculty and student. Objectives, activities, schedules, and length are site- and preceptor-specific. Credit/no credit only.

PHARM 586 Clinical Case Conference (2) Bauer, Horn Weekly pharmacotherapy case conference emphasizing current therapeutics and clinical decision making. Credit/no credit only.

PHARM 590 Doctor of Pharmacy Thesis (1) Writing intensive course in which students develop a high quality scientific paper that demonstrates grammatical and organizational excellence and the ability to critically evaluate biomedical literature. Credit/no credit only.

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. Credit/no credit only.

PHARM 596 Seminars in Pediatric Pharmacotherapy (2) Joseph Overview of drug disposition and medication utilization as it applies to the pediatric patient. Specific emphasis on neonatology and ambulatory pediatrics. Prerequisite: third-year Pharm.D. student or permission of instructor.

PHARM 597 Graduate Seminar (1) Blough, Gardner, Hazlet, Johnson, 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.
Daniel J. Evans School of Public Affairs

Acting Dean
Paul T. Hill
208E Parrington Hall

Associate Dean
William M. Zumeta
231 Parrington Hall

General Catalog Web page: www.washington.edu/studentsgencat/academic/PubAffairs.html
School Web page: evans.washington.edu

The Daniel J. Evans School of Public Affairs is a graduate professional school providing education and research for the public service. The school confers the Master of Public Administration (M.P.A.) degree with day, Peace Corps Master's International, and evening program options. The Evans School's program of study is designed to train highly skilled managerial leaders and policy analysts for a wide range of careers in the public and nonprofit sectors. The academic and professional orientation of the degree program gives Evans School students the knowledge and skills necessary to make significant contributions to regional, national and international policy.

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; and leaders and staff 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.

Graduate Program Coordinator
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Master of Public Administration

Day Program
The M.P.A. program is designed for present and future leaders of the public and nonprofit sectors. The program emphasizes broad-based public policy analysis and management knowledge, while students pursue one or more specialized policy fields known as Gateways. The core devotes considerable time to mastering the basic analytic and managerial skills needed by good analysts and managers. The curriculum draws upon the wide range of academic disciplines throughout the University of Washington.

Full-time day students complete 60 credit hours of course work, encompassing the core requirements, an internship and a degree project. They generally take two academic years (six quarters) to complete the degree program. Part-time and Evening Degree students typically take three or more academic years to complete the M.P.A.

The M.P.A. program has five major components:
- the Required Core Curriculum;
- concentrated study in the three curricular areas of study: Economics, Analysis, and Values;
- specialized plan of study chosen from one or more of the following gateways: Education and Social Policy, Environmental Policy, International Affairs, Nonprofit Management, or Urban and Regional Affairs;
- a final degree project; and
- an internship.

Concurrent Degree Programs
In addition to the day M.P.A. program, the Evans School offers five concurrent M.P.A. degree programs: Master of Arts in International Studies (M.A.I.S.), Master of Urban Planning (M.U.P.), Master of Science in Forest Resources (M.S.), Juris Doctor (J.D.), and Master of Public Health (M.P.H.).

Peace Corps Master’s International
Peace Corps Master’s International (PCMI) students undertake a concentrated 51-credit curriculum, including a full tour of Peace Corps service. The required course work can be completed in a total of four or five quarters. One year of course work must be completed prior to leaving for Peace Corps service, while on assignment overseas, students remain in touch with their faculty adviser and a returned volunteer from the Evans School. PCMI participants return to the Evans School for one term at the end of their international service to complete their course work and final project report.

Mid-career Evening Degree Program
Mid-career professionals with seven to ten years of progressively responsible work experience in the public, nonprofit or private sectors are offered the Master of Public Administration degree through the Evening Degree Program. This program enables these students, typically midlevel managers, to work full-time while developing the leadership and analytic tools needed to attain higher leadership positions within their organization or field. The Evening Degree Program blends academic and professional perspectives to engender a practical orientation to the theories, values and managerial skills critical to success in public life.

Mid-career students must successfully complete 54 credits of graduate coursework to receive the M.P.A. degree. Degree requirements are divided between the integrated core sequence, electives, and leadership seminars. Students usually take two evening courses each quarter and graduate in three years. Mid-career students do not have an internship or degree project requirement. Although summer attendance is not required, some students take electives during the summer quarter to reduce academic year course loads.

The Evening Degree Program features three distinct components:

Core Sequence (21 credits)
The core sequence is a series of integrated manage- ment and analysis courses required of all students. Since the materials in these courses build upon each other, these classes must be taken in sequence. The integrated core curriculum is designed by a team of Evans School faculty and distinguished practitioners. Important core concepts (e.g., human resource management, microeconomics, policy analysis, political management) are presented in an integrated way that best reflects the actual practice of public management and policy analysis.

Electives (26 credits)
Mid-career students have great flexibility in design- ing a course of study that best suits their professional needs and interests. Students may mix their elective courses in substantive policy areas such as environmental or social welfare policy with more practice-based management courses. Students may choose their elective courses from any department within the University of Washington.

Leadership Seminar (7 credits)
Mid-career students take three leadership seminars during their program. The Evening Degree Program places special emphasis upon the development of managerial leadership. The seminars create a forum in which professionals can relate their workplace roles and challenges to the theories and skills exam- ined in the M.P.A. curriculum. In an effort to foster a professional and academic support network among mid-career students, the seminar is open only to evening degree candidates.

The first leadership seminar focuses upon the personal aspects of leadership, the second focuses on analysis skills and abilities needed by leaders. The final leadership seminar integrates the lessons of the previous seminars and is taken during the third year of study. These seminars replace the degree project requirement of full-time day students.

Admission Requirements
The Daniel J. Evans School of Public Affairs admits students on an annual basis, for summer or autumn quarter only. The application deadline for either quar- ter is February 1.

The prospective student must hold a baccalaureate degree from an accredited college or university in the United States, or its equivalent from a foreign institution. The student’s academic record should be a strong one, with a minimum GPA of 3.00 on the last 90 (quarter) or 60 (semester) credits of undergradu- ate work. GRE and TOEFL scores are required for admission. GRE and TOEFL scores are required for international students only.

The primary criterion for admission to the school is the applicant's demonstrated ability to complete the graduate program while sustaining a high level of achievement. The Evans School’s admissions committee considers grades and test scores, and gives considerable weight to professional experience, volunteer work, letters of recommendation and the applicant’s writing skills as demonstrated in a personal essay.

Applicants for the Evening Degree Program must demonstrate seven to ten years of progressively responsible administrative experience. If prospective students have spent most of their careers in the private sector, they will need to demonstrate an active interest in, and contact with, public issues.

Concurrent degree applicants must apply through and be accepted into both respective programs.

Although the Evans School requires no specific pre- requisite courses for admission, the school’s core courses in economics and quantitative methods assume that entering students have been exposed to these subjects at the undergraduate level. Ideally, new students will possess an academic or profes-
Financial Aid

Evans School Scholarships

The Evans School offers several scholarships 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.

The Daniel J. and Nancy Evans Fellowship honors former U.S. Senator, Washington State Governor, and current University Regent Daniel J. Evans and his wife Nancy. The fellowship supports students who aspire to excellence in public service.

The Henry M. Jackson Fellowship, given in honor of the late U.S. Senator Henry M. “Scoop” Jackson, supports students pursuing careers in environmental policy and natural resources management.

The Brewster C. Denny Fellowship, named for former Dean Brewster Denny, supports students who are committed to excellence in public service.

The Robert J. Lavoie Fellowship provides funds to outstanding students who are preparing to work in public service. Mr. Lavoie served as a Deputy Mayor of Seattle.

The Hubert G. Locke Fellowship, established in honor of former Dean Hubert Locke, provides support for students pursuing internships in nonprofit organizations devoted to social justice issues.

The William Shelton Fellowship is funded by the Scottish Rite Foundation of Washington and supports students with a demonstrated commitment to the values of public service.

The George A. Shipman Fellowship offers support to outstanding students pursuing careers in public service. Professor George Shipman was the founder of public administration education at the University of Washington.

Applicants interested in departmental scholarships must submit the Evans School Financial Aid Form with their Evans School application.

Assistantships

The Evans School offers approximately 20 to 30 research, teaching, and staff assistantship positions each year. These positions are typically 10 to 20 hours per week and may include tuition waivers. Hiring for assistantships is a competitive process. Announcements are posted as the positions become available.

Research assistantships are open to first and second year students. First year students are eligible upon their arrival at the school. 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 environmental protection. In addition, up to 40 research fellowships are offered each year to highly qualified applicants during the admissions 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 only. Teaching assistants are hired for the Evans School’s core courses and computer lab. Staff assistantships include such positions as Hubert Humphrey Fellows Coordinator, Peer Advisor, Evening Degree Program Recruitment Coordinator and Internship Coordinator.

Work-Study Status

When hiring research assistants, preference is often given to students possessing work-study status. Work-study status is one of several forms of aid granted by the University of Washington Financial Aid Office, based on a student’s FAFSA. Financial aid applicants should highlight any financial change expected on the FAFSA.

Research Facilities

The culture of the Evans School promotes the integration of extensive applied research into the academic program. Students participate in independent research work related to their degree projects. In addition to supporting the independent research of its faculty members, the school houses the Forum at the Evans School and several research and policy centers.

The Forum at the Evans School

The Forum was established in the fall of 1998 under a three-year grant from the Henry M. Jackson Foundation. As the outreach arm of the Evans School, the Forum brings combined strength in its capacity for civic engagement and the depth and breadth of policy research at the school and throughout the University.

The Forum draws on the expertise of faculty, research staff, and students, focusing on three program areas: Leadership and the New Governance, Engaged Citizens and Engaged Communities, and Meeting the Challenges of Growth and Change.

Guests of the Forum address the process of change, the role of institutions in influencing change, and the importance of targeting policies and programs. In each of these areas, the Forum promotes diverse, credible, and reasoned discussions between and among citizens and leaders from the public, private, and nonprofit sectors. Through partnerships with print and broadcast media organizations, the Forum seeks to expand resources for broad public discussion of critical policy issues.

Cascade Center for Public Service

The Cascade Center for Public Service is the executive education arm of the Evans School. Established in 1984, the center offers two-, three-, and five-day courses as well as two-week advanced programs for leaders and managers in the public and nonprofit sectors. Cascade courses are held in Everett, Leavenworth, Olympia, Seattle, the Tri-Cities, Vancouver, and Wenatchee, and can count as credit toward an M.P.A. degree.

Electronic Hallway

The Electronic Hallway, www.hallway.org, is an internationally recognized 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 worldwide.

Human Services Policy Center

The mission of the Human Services Policy Center (HSPC) is to foster effective, integrated services to children and families, based upon the collaborative efforts of faculty in professional schools of the University of Washington. Achieving this mission entails supporting communication among policy analysts (academic, public, and private), policymakers, practitioners, community/civic leaders, and the media. Combining interdisciplinary applied research with effective communication allows HSFC to help focus and add depth to consideration of critical policy issues in the state of Washington. The center conducts most of its applied research in partnership with organizations engaged in direct services, governance, or policy advocacy in order to achieve direct applicability of research efforts. HSFC’s current areas of focus are the funding early childhood care and education, communications and public policy, comprehensive community initiatives, statistical monitoring of child and family well-being, and program evaluation and outcomes-based planning.

Center on Reinventing Public Education

The Center on Reinventing Public Education seeks to develop and evaluate methods of public oversight that can allow schools to be focused, effective and accountable. The center, established in 1993, pursues a national program of research and development of proposals such as charter schools, school contracting choice and school system decentralization. It also conducts research into reform initiatives in Washington and the Seattle public schools. The center seeks to inform community leaders, policy makers, school and system leaders, and the research community.

Northwest Policy Center

The Northwest Policy Center (NPC) is dedicated to enhancing opportunities for people in need, fostering community well-being, improving the vitality of key sectors in a changing economy, and advancing equitable budget policy agendas. NPC conducts research on the regional economy; works with policy makers and practitioners to develop and implement innovative economic, workforce, and community development strategies; and evaluates and shares lessons learned.

Urban Health Initiative

The purpose of the Urban Health Initiative (UHI) is to work closely for a period of up to ten years with five U.S. cities-Baltimore, Detroit, Oakland, Philadelphia and Richmond-to improve the health and safety of children living in these areas. Because each city is encouraged to try innovative approaches, a major responsibility of UHI is to document and share strategies that work over time, as well as those that prove less fruitful. UHI’s National Program Office is a joint program of the Evans School and the School of Public Health and Community Medicine (SPHCM). UHI’s National Program Director, Charles Royer, is the former mayor of Seattle (1978-1990). Mr. Royer and Deputy Director Cynthia Curren have taught and lectured in both the Evans School and SPHCM.

Faculty

Professors

Dobel, J. Patrick * 1985; PhD, 1976, Princeton University; political theory, ethics and public policy, organizational theory.


Gordon, Andrew * 1988; PhD, 1970, Columbia University; information policy and organizational dynamics.
Gordon, Margaret T. * 1988; PhD, 1972, Northwestern University; news media and public policy; urban policy; women’s issues.

Hill, Paul T. 1993, (Research); PhD, 1972, Ohio State University; politics and reform of K-12 education; business and public policy; urban politics.

Hyman, Barry * 1975; PhD, 1965, Virginia Polytechnic Institute and State University; engineering design, energy systems and policy, technology and public policy.

Karr, James * 1991, (Adjunct); PhD, 1970, University of Illinois; stream and watershed ecology, tropical forest ecology, conservation biology, environmental policy.

Locke, Hubert G. * 1976, (Emeritus); MA, 1962, University of Michigan; criminal justice, urban policy, race and ethnic relations.

May, Peter J. * 1979, (Adjunct); PhD, 1979, University of California (Berkeley); policy processes; policy design and implementation; environmental regulation.

Miles, Edward L. * 1974; PhD, 1965, University of Denver; international law and organization; science, technology, and international relations; marine policy.

Plotnick, Robert D. * 1984; MA, 1973, PhD, 1976, University of California (Berkeley); economics of poverty, labor and social welfare policy.


Watts, Carolyn A. * 1975, (Adjunct); MA, 1974, PhD, 1976, Johns Hopkins University; health economics and policy.

Williams, Walter * 1970, (Emeritus); PhD, 1960, Indiana University; high-level policy decision making, policy implementation.

Wolfe, Dael L. * 1982, (Emeritus); PhD, 1931, Ohio State University; science and public policy, development of human talent.

Zerbe, Richard O. * 1975; PhD, 1969, Duke University; law and economics, cost-benefit analysis, economic history, environmental regulation.

Zumeta, William M. * 1985; MPP, 1973, PhD, 1978, University of California (Berkeley); public policy analysis, higher education policy and finance, education and workforce policy.

Associate Professors

Adams, Jacob E. 2001, (Research); PhD, 1993, Stanford University; policy, policy implementation, school finance, public agency accountability.

Anderson, C. Leigh 1997; PhD, 1989, University of Washington; institutional economics, international trade and environmental policy, international development.

Brock, Jonathan 1982; MBA, 1973, Harvard University; public management, negotiation and mediation, labor relations, managing people.


Cullen, Alison * 1995; DSc, 1992, Harvard University; environmental policy, environmental health risk assessment, decision analysis, information and uncertainty analysis.


Klawitter, Mariika * 1990; MPP, 1982, University of Michigan, PhD, 1992, University of Wisconsin; family and employment policy; women’s studies, sexual orientation discrimination.

Miller, Ernest G. * 1965, (Emeritus); PhD, 1959, Princeton University; management and organization development, organization theory, administrative behavior.

Smith, Steven Rathgeb 1996; MSW, 1978, Washington University, PhD, 1988, Massachusetts Institute of Technology; nonprofit and public management, state and local government, health and social policy.

Waddell, Paul A. * 1997; PhD, 1989, University of Texas (Dallas); urban policy, regional planning, growth management, land use, transportation, GIS.

Assistant Professors

Gugerty, Mary Kay 2001; PhD, 2001, Harvard University; nonprofit and public management; international development, community organizations and development.

Kleit, Rachel G. 1999; PhD, 1999, University of North Carolina; urban politics, public housing, urban planning.

Layton, David F. 2001; PhD, 1995, University of Washington; environmental and natural resource policy.

Page, Stephen B. 1999; PhD, 1999, Massachusetts Institute of Technology; public management, interagency collaboration, U.S. social policy.

Ryan, Clare * 1997; PhD, 1996, University of Michigan; natural resource policy and administration, environmental conflict management, water policy.

Senior Lecturers

Boehrer, John 1999; BA, 1965, Harvard University; faculty development, teaching skills, case teaching and writing, communication skills.

Carlson, Daniel L. 1988; MCP, 1972, University of California (Berkeley); urban policy, public service clinics.

Cormick, Gerald W. 1975; PhD, 1971, University of Michigan; mediation and negotiation.

Donaldson, Susan K. 2000; JD, 1979, University of Washington; urban politics, gender and leadership issues.

Harrison, David S. 1986; MPA, 1979, Harvard University; regional economic development; policy and program design.

Madison, John J. 1995; MS, 1981, American University, PhD, 1994, George Mason University; politics of public policy, technology policy.

McIntire, James L. 1987; MPP, 1978, University of Michigan; PhD, 1993, University of Washington; housing policy, state tax policy, labor market policy.


Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs.cat/.

PB AF 499 Topics in Public Policy (3-5, max. 6) & S
Examines selected issues of importance in all areas of public policy. Focuses 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. Offered: jointly with POL S 572).

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 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 Public Management I (3) Examines broad aspects of organizational life and orient 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 Public Management II (3) 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 (3) Production and use of analysis to support public policy decisions. Defining problems, devising alternative solutions, clarifying stakes in choices, predicting impacts of choices, and being involved 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 514 Policy Implementation (3) Presents set of analytic skills for anticipating and diagnosing implementation problems. Primarily for students who plan to become public-sector policy analysts or managers. Mastery of basic literature and its application to solving problems of public policy, including estimating feasibility of policy alternatives and identifying sources of implementation failure, is expected.

PB AF 515 Decision Making for Public Managers (3) Considers decision making from both 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 (3) 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 implications 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 522 Public Management: Budgeting (3) 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. Students are introduced to public sector financial planning and control, fund accounting, cost accounting, asset accounting, internal controls, auditing, financial analysis, and financial reporting. Prerequisite: permission of instructor.

PB AF 525 Organizational Development in Public Agencies (3) Philosophies, theories, and models of behavioral science interventions in organizational diagnosis and development (OD). In addition to a review of the basic literature dealing with the OD approach, emphasis is placed on examination of case studies and class experience in OD applications, including organizational diagnosis, problem confrontation, and team building. 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 designs. Case studies illustrate various types of evaluation. Prerequisite: background in quantitative methods.

PB AF 527 Quantitative Analysis; Quantitative Analysis for Public Managers (3) 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; Quantitative Analysis for Public Managers (3) 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 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 524.

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 accommodate 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 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 treatment 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 organizations attempt to manage and regulate the uses of the ocean. Primary emphasis on the analysis of processes that support or constrain these organizations and on the leadership of alternative policies and organizations. Prerequisite: SMA 500 or permission of instructor. Offered: jointly with SMA 507.

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: PB AF 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 leadership management and 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, func-
tions of public arts agencies in implementing arts pol-
licy; relation of such agencies to their constituencies.
Seattle, King County, and Washington State serve as
case studies.
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 com-
petition, 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 impor-
tance in nonprofit management. Integrates the poli-
citical, managerial, and economic dimensions of these
issues.
PB AF 560 Urban Affairs (3) Explores national/local
urban policy concerning the major problems con-
fronting cities and metropolitan regions today.
Economic globalization, income inequality, and met-
ropolitan decentralization change the urban agenda,
the context for urban policy, and the analytic focus of
the course. A project allows the exploration of strate-
gies for intervention. Offered: jointly with URBDP 560.
PB AF 561 Urban Economics and Public Policy (3)
Examines the rationale for and consequences of pub-
lic intervention in urban land, housing, and trans-
portation markets, analytic use of regulations such as
zoning and urban growth boundaries, infrastruc-
ture investments, and fiscal policies to manage urban
development and traffic. Prerequisite: PB AF 516 or
equivalent. Offered: jointly with URBDP 561.
PB AF 562 Introduction to Neighborhood Planning
and Community Development (3) Provides intro-
duction to basic practices in neighborhood planning
and community development, including theoretical/historical bases; developing neighbor-
hood plans/projects; indicators and evaluation of
neighborhood quality; community participation; insti-
tutional framework, ethical dilemmas, and profession-
al roles. Addresses current issues, including Seattle’s experience, NIMBYism, security, neighborhood char-
acter, housing segregation, environmental racism.
Offered: jointly with URBDP 562.
PB AF 563 Seminar in Urban Planning and Policy
(1) Seminar for students in the MPA/MUP concurrent
program and the EMBA program. Explores topics that intersect urban planning and policy, through exchange with faculty and professional:
appealing to urban planning and policy, through exchange with faculty and professionals working in this area. Focuses on developing thesis topics that explore this intersec-
tion. Offered: jointly with URBDP 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 ex-
pressed 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: edu-
cation, regulation of labor market, health care, incom-
e maintenance, social services. Discusses alternative
policy instruments, analytic perspectives, intergov-
ernmental 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 involv-
ing education, training, the economy, and the de-
velopment 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 devel-
opment. Offered: jointly with EDLPS 563.
PB AF 573 Topics in Education and Social Policy
(3, max. 12) Examines various issues of public impor-
tance in the areas of education and social policy.
Focuses on in-depth relevant issues and the integra-
tion of the economic, administrative, and political
dimensions of these issues.
PB AF 575 Public Policy Processes (5) Political sci-
ence frameworks, approaches, and theories con-
cerning development and implementation of public
policies within American political systems. Govern-
mental behaviors and processes, including rational,
political, and bureaucratic models of gov-
ernmental decision making; agenda-building
processes; and normative perspectives concerning
role of governmental entities. Offered: jointly with
POL S 575.
PB AF 581 Information Technology and the Policy-
Making Process (3) Demythifies information base for
policy making in democratic societies. Examines theoretical
and practical issues associated with information pro-
cessing in the public sector. Considers role of new
technologies in collecting, analyzing, and dissemi-
nating information with special attention to the rela-
tionship between these technologies and effective
government service, public participation, and organi-
zational 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 lead-
ers of public/non-profit agencies to attract favorable
coverage and minimize damaging coverage. Students learn techniques for assessing impacts of
news coverage.
PB AF 583 Seminar in Science and Public Policy
(3) Issues and problems relating to the interaction of
science and scientists with the public policy-making
process. Science versus the nature and values of
political processes, and the continuing tensions
between the two. The evolving interaction between
scientific and technical knowledge and political
power; scientific versus ethical judgments. Role of
science in the establishment of national goals. Plans
and proposals for increasing governmental compe-
tence to deal with public policy issues involving sci-
ence and technology.
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 strate-
gies for advanced industrial and less-developed
countries; second, to deal with the international impli-
cations of particular technologies as countries try to
make policy for them in regional and global organiza-
tions. Examples of specific technologies are chosen
from such fields as space telecommunication, weath-
er and climate modification, airline transportation,
nuclear energy, and seabed exploitation.
PB AF 589 United States Energy Policy (3)
Examines various aspects of energy policy from
1970 to 2000. Includes consideration of economic
factors, energy-dependent industries, and energy
security. Emphasizes the role of government in
influencing energy policy. Offered: jointly with
PB AF 590 Environmental Policy Processes (3)
Provides introduction to major issues in environ-
mental policy. Explores in a comparative manner,
issues related to environmental regulations, envi-
ronmental policy, capabilities, and national technolog-
ical strategies for advanced industrial and less-de-
veloped countries; second, to deal with the interna-
tional implications of particular technologies as coun-
tries try to make policy for them in regional and global organiza-
tions. Examples of specific technologies are chosen
from such fields as space telecommunication, weath-
er and climate modification, airline transportation,
nuclear energy, and seabed exploitation.
PB AF 596 Ethics and Values in Environmental and
Natural Resource Policy (3) Examines various topics
of public importance in environmental policy and
management. Integrates the political, managerial,
and economic dimensions of these issues.
PB AF 598 Administrative and Policy Skills
Workshop (1.5, max. 3) Teaches practical adminis-
tration, and faculty to connect the research, organi-
zational change, and capacity-building needs of
community organizations and public agencies.
PB AF 607 Public Service Clinic (3) Students work in a
supportive environment facilitated by peer and faculty to connect the research, organi-
zational change, and capacity-building needs of
community organizations and public agencies.
School of Public Health and Community Medicine

Dean
Patricia W. Wahl

F350 Health Sciences

General Catalog Web page:
www.washington.edu/students/gencat/
academic/School_Public_Hlt.html

School Web page:
dep.ts.washington.edu/sphcm/

The School of Public Health and Community Medicine (SPHCM) is composed of five departments: Biostatistics, Environmental Health, Epidemiology, Health Services, and Pathobiology. The School 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.

SPHCM also offers undergraduate degree and undergraduate minor programs, which are described in the undergraduate volume of the General Catalog, or visit the General Catalog online at www.washing-
ton.edu/students/gencat/.

Graduate Programs

Master of Public Health Degree: The M.P.H. is a professional degree that provides broad training in public health and prepares public health practitioners. Each track or program provides additional training in a particular area. Graduates often work in public health practice settings, academia, or research. The M.P.H. degree is offered in biostatistics, environmental health, epidemiology, and health services. Students earning the M.P.H. may emphasize biostatistics, community medicine, community-oriented public health practice, environmental/occupational medicine, epidemiology, international health, maternal and child health, nutritional sciences, public health genetics, or social and behavioral sciences. The M.P.H. degree in public health genetics and nutritional sciences are offered through the Department of Epidemiology. The M.P.H. in public health genetics involves faculty from throughout the University.

Master of Science and Doctor of Philosophy Degrees: M.S. and Ph.D. programs in biostatistics, environmental health, epidemiology, health services, and pathology prepare students for academic or research careers. M.S. and Ph.D. programs in public health genetics are offered through the Department of Epidemiology. The M.S. and Ph.D. programs in nutritional sciences are administered in the School, although the degrees are awarded through the Graduate School’s interdisciplinary group structure.

The M.S. programs in biostatistics, environmental health, epidemiology, health services, pathology, and general epidemiology (pending approval for 2002), and the interdisciplinary M.S. program in nutritional sciences, offer focused research training in specific disciplines. Graduates of these programs often assume positions as senior technical staff in laboratories or other organizations, as research project coordinators, or pursue further graduate training. The M.S. program differs from the Ph.D. programs in that more of the courses emphasize the concepts underlying methodological approaches rather than the ability to independently design a major research program.

The doctoral programs in biostatistics, environmental health, epidemiology, health services, pathology, public health genetics (pending approval for 2002), and the interdisciplinary Ph.D. program in nutritional sciences 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.

Special and Conjoint Programs: The Extended M.P.H. Program allows mid-career public health professionals to pursue the M.P.H. degree in health services after health education while continuing their employment.

Conjoint programs with the School of Business Administration, the Graduate School of Public Affairs, and the School of Nursing offer programs that lead to concurrent M.H.A.-M.B.A., M.H.A.-M.P.A., and M.H.A.-M.N. degrees, respectively. SPHCM and the schools of Business Administration and Public Affairs offer these degree programs during both day and evening times. 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 in order to develop professionally and grow as leaders.

A special program offered by the School of Public Health and Community Medicine and the Henry M. Jackson School of International Studies offers students the opportunity to earn concurrent M.P.H.-M.A.I.S. degrees. Conjoint with the School of Social Work, students may earn concurrent M.P.H.-M.S.W. degrees in maternal and child health and human services. Graduate students in the School of Nursing may pursue concurrent M.P.H.-M.N. degrees in community health care or in parent and child nursing. Medical students may earn concurrent M.P.H.-M.D. degrees, and law students may earn an M.P.H.-J.D. degree (pending approval in 2002).


Residency Programs: The School offers a residency in occupational medicine. Physicians also are welcome to apply to any of the School’s graduate programs.

Admission Requirements

Students may enter the program from an undergraduate major in mathematics, statistics, or a 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.

Many universities have instituted programs relating mathematics or statistics to one particular biological field. The M.S. programs in biostatistics, environmental health, epidemiology, health services, pathology, public health genetics, and the interdisciplinary Ph.D. program in nutritional sciences 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. 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 in order to develop professionally and grow as leaders.

A special program offered by the School of Public Health and Community Medicine and the Henry M. Jackson School of International Studies offers students the opportunity to earn concurrent M.P.H.-M.A.I.S. degrees. Conjoint with the School of Social Work, students may earn concurrent M.P.H.-M.S.W. degrees in maternal and child health and human services. Graduate students in the School of Nursing may pursue concurrent M.P.H.-M.N. degrees in community health care or in parent and child nursing. Medical students may earn concurrent M.P.H.-M.D. degrees, and law students may earn an M.P.H.-J.D. degree (pending approval in 2002).


Residency Programs: The School offers a residency in occupational medicine. Physicians also are welcome to apply to any of the School’s graduate programs.

Admission Requirements

Students may enter the program from an undergraduate major in mathematics, statistics, or a biological field. Applicants from other fields with the prerequisites will also be considered. An applicant must have completed or be in the process of completing two years of calculus (to include one year of advanced calculus), one course in linear algebra, and one course in probability theory.

In addition to fulfilling graduate admission requirements, an applicant must submit all transcripts of prior, post-secondary education; three letters of recommendation from persons competent to evaluate the applicant’s abilities; a narrative statement concerning the applicant’s purpose and interest in entering the program; and official Graduate Record Examination, TOEFL, and TSE score reports, as applicable. Recommendation for selection of candidates is made by a faculty admissions committee, with review of applicants beginning in January for autumn-quarter admission.

Early application for financial aid is advantageous; support is offered throughout the process and may not be available for late applicants. The application deadline for both admission and financial aid is the first week of January; please visit the Web site for specific dates each year.

Master of Science

Students working for the Master of Science degree must complete required course work, demonstrate proficiency in a computer language, write a thesis, take a consulting class, and pass the first-year theo-
Master of Public Health

The M.P.H. program provides quantitative research training to persons holding a doctoral-level degree in another field (M.D., Ph.D., J.D.). Program requirements include credits from Biostatistics, Epidemiology, Pathobiology, Health Services, and Environmental Health courses to provide breadth and depth. Additional requirements include a consulting class, a practicum experience, and a thesis.

Students obtaining an M.P.H. in Biostatistics will receive broad training in public health with specific training in biostatistics, learning a range of statistical methods and applications. The degree is designed for individuals who have a doctorate in another field who seek more methodological training.

Doctor of Philosophy

Students earning the Ph.D. degree develop statistical theory and applications particular to the health sciences. Students in the Ph.D. program must complete required course work, write a dissertation, complete a consulting class, and demonstrate proficiency in a computer language. Students must also pass the Ph.D. statistical theory and applied theory qualifying examinations, a biology project, and pass the General and Final Examinations.

A graduate of the Biostatistics doctoral program will be able to use appropriate statistical techniques to analyze a wide variety of data, provide rigorous proofs characterizing the properties of standard statistical methods, develop expertise in an area of bio-statistical methodology, read and provide critical summaries of biomedical literature, and design and carry out biostatistical research studies that propose new biostatistical methods or provide new information about the properties of existing methods. This program trains future academicians, highly qualified as independent investigators and teachers, and well-trained practitioners of biostatistics.

Faculty

Chair

Thomas Richard Fleming

Professors

Barlow, William E. * 1989; MS, 1982, PhD, 1986, University of Washington; survival analysis, residuals, and evaluation of screening programs.

Breslow, Norman E. * 1967; PhD, 1967, Stanford University; clinical trials, epidemiology, survival and categorical data.

Conquest, Loveday L. * 1976, (Adjunct); PhD, 1975, University of Washington; statistics in forestry, fisheries, and environmental pollution monitoring.


Davis, Kathryn A. B. * 1974, (Affiliate); MS, 1966, University of Michigan; PhD, 1974, University of Washington; density estimation, cardiovascular data analysis, clinical trials.

De Rouen, Timothy * 1975; PhD, 1971, Virginia Polytechnic Institute and State University; applications of biostatistics to clinical epidemiology of oral and infectious diseases.

Diehr, Paula K. * 1970; MS, 1967, University of California (Los Angeles), PhD, 1970, University of California (Los Angeles); health services, small-area analysis, health status.

Emerson, Scott S. * 1995; MD, 1981, University of Virginia, PhD, 1988, University of Washington; clinical trials, sequential testing, survival analysis, categorical data.


Fleming, Thomas Richard * 1984; MA, 1974, PhD, 1976, University of Maryland; survival analysis, cancer clinical trials, AIDS research, sequential analysis.

Green, Stephanie J. * 1984, (Affiliate); MA, 1973, Indiana University, PhD, 1979, University of Wisconsin; censored survival, data analysis, clinical trials, cancer research.

Hallstrom, Alfred * 1975; MSc, 1961, PhD, 1968, Brown University; clinical trial methodologies in cardiovascular research and emergency medical services applications.

Kopecky, Kenneth J. * 1978, (Affiliate); MS, 1975, PhD, 1977, Oregon State University; clinical trials design and survival data analysis, epidemiologic methodology, goodness of fit.

Kronmal, Richard A. * 1964; PhD, 1964, University of California (Los Angeles); nonparametric density estimation, computer algorithms, cardiovascular data analysis.

McKnight, Barbara * 1981, PhD, 1981, University of Wisconsin; statistical methods in epidemiology, human genetics and animal carcinogenic testing.

Moolgavkar, Suresh H. * 1984, (Adjunct); MBBS, 1965, Bombay University (India), PhD, 1973, Johns Hopkins University; cancer epidemiology, development of quantitative methodology.

Pepe, Margaret * 1982; MS, 1984, PhD, 1986, University of Washington; survival analysis, medical decision making, correlated data methods, child health issues.

Peterson, Arthur V. * 1975; MS, 1971, PhD, 1975, Stanford University; survival data methodology, competing risks, design of disease prevention trials.

Prentice, Ross L. * 1974; MSc, 1968, PhD, 1970, University of Toronto (Canada); failure time analysis, disease prevention trials, epidemiologic methods, dietary factors and disease.

Sel, Steven G. * 1984; MS, 1977, California State University, Long Beach, PhD, 1981, University of Washington; longitudinal data analysis, survival time models, cancer prevention, HIV vaccine evaluation.

Storer, Barry E. * 1996, (Affiliate); PhD, 1984, University of Washington; statistical methods in clinical trials and epidemiology.

Thompson, Elizabeth A. * 1985; PhD, 1974, Cambridge University (UK); statistical analysis of human genetic data, population genetics, conservation and computational biology.

Van Belle, Gerald * 1974; MA, 1964, PhD, 1967, University of Toronto (Canada); biostatistics, environmental risk factors for neurodegenerative diseases, risk communication.

Wahl, Patricia W. * 1971; PhD, 1971, University of Washington; multivariate statistical techniques, especially regression analysis applied to cardiovascular data.

Wellner, Jon A. *; PhD, 1975, University of Washington; large-sample theory, asymptotic efficiency, empirical processes.

Wijesman, Eilen M. * 1987; PhD, 1981, University of Wisconsin; human quantitative and population genetics.

Associate Professors

Anderson, Garnet L. * 1983, (Affiliate); MA, 1983, State University of New York (Binghamton), PhD, 1989, University of Washington; clinical trial methodology, survival analysis, women's health, ovarian cancer screening.

Benedetti, Jacqueline K. * 1980; PhD, 1974, University of Washington; statistical methodology in infectious disease research, cancer clinical trials.


Feng, Ziding * 1990, (Affiliate); MS, 1985, PhD, 1990, Cornell University; correlated data methods, mixture models, cancer prevention.


Kooperberg, Charles L. * 1991, (Affiliate); PhD, 1991, University of California (Berkeley); splines, density estimation, image reconstruction, spatial statistics, function estimation.

Le Blanc, Michael * 1987; MA, 1984, University of Waterloo (Canada), PhD, 1989, University of Washington; tree-based models, survival analysis, clinical trials, adaptive statistical methods.

Leroux, Brian * 1991; MSc, 1985, PhD, 1989, University of British Columbia (Canada); mixed models, correlated data, statistical applications in dentistry, toxicology, and psychology.

Polissar, Nayak Lincoln * 1980, (Affiliate); PhD, 1974, Princeton University; statistical consulting, community surveys, clinical trials, demography, epidemiology, environment.

Sheppard, Lianne M. * 1989; MSc, 1985, Johns Hopkins University, PhD, 1992, University of Washington; aggregate data, survival analysis, biostatistical methods in environmental health.

Temkin, Nancy R. * 1977; PhD, 1976, State University of New York (Buffalo); clinical trials, recovery models, statistical modeling of epileptic phenomena, survival analysis.

Thompson, Mary Lou * 1989; PhD, 1979, Georg-August Universität (Germany); filtered point processes, diagonal methods, longitudinal reference ranges, maternal/child health.
Assistance Professors

Assistant Professors

Brumback, Babette 1999; MA, 1992, University of California (Berkeley); PhD, 1996, University of California (Berkeley); functional data analysis, causal inference, epidemiology, statistical applications.

Cai, Tianxi 2000; ScD, 1999, Harvard University; semi-parametric regression and estimation, survival analysis, ROC curve analysis.

Emond, Mary Jane * 1987, (Research); MS, 1989, University of Washington, PhD, 1993, University of Washington; semiparametric models; statistical issues in GI cancer screening and surveillance.

Gooley, Theodore A. * 1993, (Affiliate); PhD, 1990, University of Arizona; design and analysis of clinical trials in bone marrow transplantation.

Hsu, Li * 1996, (Affiliate); MS, 1991, PhD, 1994, University of Washington; genetic epidemiology and biostatistics.

Kerr, M. Kathleen 2001; PhD, 1999, University of California (Los Angeles); statistical genetics, design/analysis of gene expression microarray experiments; experimental design.

Lumley, Thomas S. * 1995, PhD, 1998, University of Washington; statistical methods applied to public health, medicine and environmental science.

Manci, Lloyd A. * 1996, (Adjunct Research); MS, 1988, PhD, 1992, University of Washington; statistical methodology in periodontal disease, TMD, and correlated data.

Monks, Stephanie 1999; MS, 1996, PhD, 1999, North Carolina State University; statistical genetics, permutation tests, sampling design of genetic studies.

Richardson, Barbra Ann 1993, (Research); 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 * 1996, (Affiliate); MS, 1988, PhD, 1991, University of Oxnard (Los Angeles); evaluation of diagnostic tests, ROC curve analysis and correlated data problems.

Tosh, Martin * 1996, (Research); PhD, 1996, Harvard University; causal inference for observational studies, bayes theory, meta-analysis.

Wang, Ching-Yun * 1993, (Affiliate); MS, 1985, National Taiwan University, PhD, 1993, Texas A&M University; case-control study, missing data, measurement error, kernel smoothing.

Wang, Ching-Yun * 1996, (Affiliate); PhD, 1994, Johns Hopkins University; statistical and epidemiological issues in cancer prevention research.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the course catalog at www.washington.edu/students/crsCat/.

BIOST 499 Undergraduate Research (1) Supervised reading programs, library and field research; special projects. Credit/no credit only.

Courses for Graduates 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, W.

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 dental public health, medicine and environmental science. Probability, point and confidence interval estimation; hypothesis testing, confidence intervals, one-way and two-way analyses of variance: including recursive partitioning, developing clinical prediction rules, analyses of community level associations, case-control and cohort studies, case-crossover and case-only designs, propensity scores, two-stage sampling, and missing data imputation. Prerequisite: BIOST 517 or permission of instructor. Offered: W.

BIOST 511 Medical Biometry 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 nonparametric models for one sample; two sample (independent and paired), stratified sample, and simple regression problems.

BIOST 512 Medical Biometry II (4) Multiple regression for continuous, discrete, and right censored data, transforming, 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 513 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, 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 518 Applied Biostatistics II (4) Multiple regression for continuous, discrete, and right censored data, including recursive partitioning, developing clinical prediction rules, analyses of community-level associations, case-control and cohort studies, 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- and two-way analyses of variance; factorial, crossed, nested, repeated measures designs. Clean, messy real-data sets analyzed using standard statistical computer packages. Prerequisites: 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. Prerequisites: BIOST 511 or equivalent, and one of BIOST 513, BIOST 518, STAT 520, STAT 523, STAT 542, or EPI 512; or permission of instructor. Offered: jointly with STAT 524; Sp.

BIOST 525 Sample Survey Techniques (3) Design and implementation of selection and estimation pro-
and clustered data from epidemiology and health sciences. The course emphasizes 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 C&S&S 520/STAT 529.

BIOST 533 Classical Theory of Linear Models (3) Introduction to one- and 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 epidemiological 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; or EPI 514 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 515; or EPI 514 and either BIOST 513 or BIOST 518; 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. Interpreted in the context of 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 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 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: Medical Genetics Studies (3) Wijmans 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 571; or permission of instructor. Offered: jointly with STAT 552; Sp.


BIOST 573 Statistical Methods for Categorical Data (3) Advanced topics in generalized linear models and the analysis of categorical data: overdispersion, quasi-likelihood, parameters in link and variance functions, exact conditional inference, random partitioning, generalized additive models, projection pursuit. Prerequisite: STAT 572.

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 non-parametric 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: randomization, blocking, confounding. Applications of analysis of variance/designed experiments to randomized blocks designs, Latin and Graeco-Latin squares, incomplete blocks designs, split-plot and repeated measures, factorial and fractional replicates, response surface experiments. Prerequisite: BIOST 570 or STAT 421 (minimum 3.0) or permission of instructor. Offered: jointly with STAT 577.

BIOST 578 Special Topics in Advanced Biostatistics (*, max. 3) Advanced-level topics in biostatistics offered by regular and visiting faculty. Prerequisite: permission of instructor. Offered: jointly with STAT 578; AWPSpS.

BIOST 580 Seminar in Biostatistics (*, max. 9) Presentation and discussion of special topics and research results in biostatistics. Speakers include resident faculty, visiting scientists, and advanced graduate students. Offered: AWPSpS.

BIOST 582 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 sample 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 584 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. AWPSpS.

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. AWPSpS.

BIOST 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. Offered: jointly with EPI 593; AWPSpS.

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; 586; or STAT 421 (minimum 3.0) or permission of instructor. Offered: jointly with EPI 593; AWPSpS.

BIOST 598 Techniques of Statistical Consulting (1) Seminar on covering both 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: entrance code. Offered: jointly with STAT 596; AWPSpS.

BIOST 600 Independent Study or Research (*) Offered: AWPSpS.

BIOST 700 Master’s Thesis (*) Offered: AWPSpS.

BIOST 800 Doctoral Dissertation (*) Offered: AWPSpS.
Environmental Health

The Department of Environmental Health 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 technology (M.S.), and occupational and environmental medicine or general environmental health (M.P.H.).

The Ph.D. option in Environmental and Occupational Hygiene 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.S. in Industrial Hygiene and Safety option focuses on the recognition, evaluation, and control of workplace hazards that cause occupational illness and injury. Research opportunities include laboratory and field investigations of exposure to health and safety hazards such as toxic chemicals, radiation, and biomechanical stress. Students may elect one of two program options: industrial hygiene, emphasizing assessment of exposures to chemical and physical agents; or safety/ergonomics, emphasizing assessment, evaluation, and design of the work environment and the tools used.

The M.S. and Ph.D. in Toxicology focus on research and application of basic scientific principles toward a better understanding of the health effects of toxic substances in the workplace and general environment. Students who select the toxicology option participate in laboratory research investigating molecular and biochemical processes involved in regulating chemically induced toxic responses such as soft-tissue (e.g., brain, lung, kidney, and liver) damage, birth defects, cancer, and nervous-system impairment.

The M.S. in Environmental Health Technology focuses on community exposures to biological and chemical agents commonly encountered environmental media including air, water, food, and soil. Research involves environmental sampling and analysis, assessment of pathways and routes of exposure, and evaluation of the significance of particular environmental agents in a regulatory context. Student thesis projects may encompass one or more of these areas of investigation and involve field or laboratory activities or both.

The M.P.H. in General Environmental 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 science of environmental and occupational exposure to health hazards, and to prepare students for careers in the assessment of exposures to chemical 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 will bring substantive public health knowledge and a strong policy and management orientation to their professional careers. This collaboration makes it possible to complete the two degrees in three years rather than four, with faculty from both schools involved in teaching, advising, and research. Applicants must apply separately to each program.

Admission Requirements

Prerequisites for admission to the M.S. graduate programs in industrial hygiene and safety, toxicology, and environmental health technology include a Bachelor of Science or equivalent degree in environmental health, a physical science, a biological science, or engineering, and submission of Graduate Record Examination scores.

Prerequisite for admission to the M.P.H. Occupational and Environmental Medicine program is a doctoral degree.

Prerequisites for admission to the M.P.H. General Environmental Health program or M.P.H./M.P.A. concurrent degree program include a Bachelor of Science or equivalent degree in environmental health, a physical science, a biological science, or engineering, and submission of Graduate Record Examination scores.

Prerequisites for admission into the Ph.D. program in either environmental and occupational hygiene or toxicology include a Bachelor of Science degree in science or engineering with adequate preparation in physics, chemistry, mathematics, and biology. Selection of an applicant will also be based upon a personal goals statement, letters of reference, and high scores on the Graduate Record Examination.

Graduation Requirements

The M.S. and M.P.H. graduate programs are designed for seven quarters of study, including field applications and research, and require completion of departmental and program-specific courses, and submission of an acceptable thesis.

The Ph.D. program has a strong research focus, and requires completion of department and program-specific courses. A dissertation of original research suitable for publication in an appropriate peer-reviewed journal is required. For an entering student with a Bachelor of Science or engineering degree, the program of study can be expected to take approximately four to five years. A student entering with a Master of Science degree in a relevant area may complete the degree in less time.

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.

Graduate Program Coordinator
F461 Health Sciences, Box 357234
206-543-3199

General Catalog Web page:
www.washington.edu/students/gencat/academic/Environmental_Hlth.html
Department Web page:
depts.washington.edu/envhlth/

Faculty
Chair
David A. Kaiman

Professors
Checkoway, Harvey * 1987; MPH, 1975, Yale University; PhD, 1978, University of North Carolina; occupational and environmental epidemiology.
Costa, Lucio Guido * 1983; PharmD, 1977, University of Milan (Italy); neurotoxicology; developmental and molecular mechanisms/biological markers of neurotoxicity.
Covert, David S. * 1975, (Adjunct Research); MS, 1971, PhD, 1974, University of Washington; atmospheric chemistry; aerosol physics, chemistry, optics, and instrumentation.
Eaton, David L. * 1979; PhD, 1978, University of Kansas; biochemical and environmental toxicology, aflatoxin carcinogenesis, metabolism of toxic chemicals.
Fintel, Alan G. * 1973, (Adjunct Research); PhD, 1974, University of Washington; embryology, teratology.
Faustman, Elaine M. * 1981; PhD, 1980, Michigan State University; developmental toxicology, risk assessment methodologies, toxicology of N-nitrosocompounds.
Fenske, Richard A. * 1990; MA, 1976, University of California (Berkeley), MPH, 1978, PhD, 1984, University of California (Berkeley); human exposure and health risk assessment, pesticide exposure.
Franklin, Gary M. * 1988; MD, 1969, George Washington University, University of California (Berkeley); human exposure and health risk assessment, pesticide exposure.
Jackson, Kenneth L. * 1963, (Emeritus); PhD, 1954, University of California (Berkeley); physiological and biochemical mechanisms in radiation biology.
Kaiman, David A. * 1978; PhD, 1978, University of Washington; environmental chemistry, detection and fate of chemical hazards in natural and manmade environments.
Karr, James * 1991, (Adjunct); PhD, 1970, University of Illinois; stream and watershed ecology, tropical forest ecology, conservation biology, environmental policy.
Koenig, Jane Q. * 1974; MS, 1961, PhD, 1963, University of Washington; respiratory physiology, health effects of air pollutants, lung response of susceptible groups.

Larson, Timothy J. * 1970, (Adjunct); PhD, 1976, University of Washington; airborne particles, air quality modeling, and instrument development.

Luchtel, Daniel L. * 1972; PhD, 1969, University of Washington; electron microscopy and cell biology, lung anatomy/pathophysiology, fiber toxicology.

Morgan, Michael S. * 1974; DSc, 1972, Massachusetts Institute of Technology; applied respiratory, physiology and inhalation toxicology.

Mottet, N. Karle * 1959, (Emeritus); MD, 1952, Yale University; effects of trace elements, especially methylmercury and arsenic, on growth and development.

Van Belle, Gerald * 1974; MA, 1964, PhD, 1967, University of Toronto (Canada); biostatistics, environmental risk factors for neurodegenerative diseases, risk communication.


Associate Professors

Barnhart, Scott * 1979; MD, 1979, George Washington University; occupationally related lung disease.

Burbacher, Thomas M. * 1974; PhD, 1983, University of Washington; neurotoxicology, specializing in the behavioral effects of agents on the central nervous system.

Daniell, William E. * 1984; MD, 1979, Tufts University, MPH, 1986, University of Washington; noise-induced hearing loss; long-term disability associated with carpal tunnel syndrome.


Kavanagh, Terrance J. 1985; MS, 1980, PhD, 1985, Michigan State University; free radical toxicology, glutathione metabolism, toxicology and aging.

Keifer, Matthew C. * 1982; MD, 1982, University of Illinois; the human health effects of pesticide exposure.

Kissel, John C. * 1990; MS, 1974, Harvard University, PhD, 1985, Stanford University; solid and hazardous waste management practice, human exposure assessment.

Leroux, Brian * 1991, (Adjunct); MSc, 1985, PhD, 1989, University of British Columbia (Canada); mixed models, correlated data, statistical applications in dentistry, toxicology, and psychology.

Martin, Thomas G. 1996, (Adjunct); MD, 1977, Pennsylvania State University; general internal medicine.

Seixas, Noah S. * 1992; MS, 1982, Harvard University, PhD, 1990, University of Michigan; exposure assessment methods for occupational/epidemiologic studies; small industrial plants.

Sheppard, Lianne * 1989, MSc, 1985, Johns Hopkins University, PhD, 1992, University of Washington; aggregate data, survival analysis, biostatistical methods in environmental health.

Yost, Michael G. * 1993; MS, 1984, University of California (Berkeley), PhD, 1989, University of California (Berkeley); worker exposures to physical agents, electromagnetic fields, noise and vibration.

Assistant Professors

Johnson, Peter W. 2001; PhD, 1992, University of California (Berkeley); ergonomics, bioengineering, office-workers' hazards, measurement tools for physical risk factors.

Liu, Lee-Jane Sally * 1998; MS, 1991, Harvard University, ScD, 1994, Harvard University; air pollution, exposure assessment, environmental epidemiology.

Meschke, John Scott 2002; PhD, 2001, University of North Carolina; pathogen survival, mobility, and detection in the environment; microbial risk assessment.

Samadpour, Mansour * 1987; MS, 1987, PhD, 1990, University of Washington; molecular epidemiology of microbial pathogens, bacterial population genetics and pathogenesis.

Xia, Zhengui * 1987; MS, 1985, Wuhan University (China), PhD, 1991, University of Washington; neuronal apoptosis, neuronal gene regulation.

Senior Lecturers


Morris, Sharon L. 1982; BA, 1965, Reed College; occupational safety and health policy, continuing education.

Treser, Charles D. * 1980; MPH, 1976, University of Michigan; administrative law and process in environmental health; housing; vector control.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCAT/.

ENV H 405 Toxic Chemicals in the Environment (3) 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 203; either 2.0 in CHEM 242 or 2.0 in CHEM 347. Offered: Sp.

ENV H 417 Non-Ionizing Radiation and Electrical Safety (2) Yost Introduction to health hazards from UV, optical laser hazards, infrared radiation, radiofrequency 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 430 Methods in Environmental Sampling and Analysis (3) Samadpour Field sampling methods studied and selected laboratory analyses of food, drinking water, and waste waters conducted. Official methods for characterizing physical and chemical quality of water and wastes demonstrated. Microbiological criteria emphasized for student participation, including: enumeration of subgroups in populations, selective inhibitor, characteristics of normal flora, identification of pathogenic organisms. Prerequisite: 2.0 in MICROM 302. Offered: A.

ENV H 431 Environmental Health Sampling and Analysis II (3) Samadpour Methods for collection and analyses of environmental samples are examined or demonstrated, including official analytical procedures of FDA, USDA, EPA, and AOAC, as well as cutting edge developments. Criteria for wholesomeness, safety, and inhibition of spoilage of food and food products are examined. Prerequisite: ENV H 430. Offered: W.

ENV H 440 Water and Waste Sanitation (4) Yost Study of health problems associated with drinking water and wastewaters and minimization of problems. Focus on drinking water quality and quantity requirements; water pollutants and impacts on environment; individual drinking water, onsite sewage facilities, related site selection criteria/regulations, regulatory agency activities. Field performance of environmental health specialist emphasized. Prerequisite: 2.0 in BIOL 203. 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 arthropods 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) 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 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) Structure and function of the respiratory system and the changes that may be produced by specific air pollutants, such as ozone, SO2 and fine particles. Air quality criteria and the economic costs of disease are discussed. Several classroom demonstrations. Offered: even years; 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
ENV H 454 Industrial Hygiene Measurements (3)  Camp, Hayne  Series of lectures and laboratory demonstrations illustrate the use of a wide spectrum of industrial hygiene sampling equipment. Included are airflow calibration, chemical calibration, detector tubes, personnel sampling devices, both continuous and direct reading instruments. Instrumentation for noise and electromagnetic radiation. Prerequisite: 2.5 in ENV H 453. Offered: W.

ENV H 457 Industrial and Environmental Noise (3)  Yost  Survey of industrial and community noise problems, including sources, effects, measurement, control, and legislation. Prerequisite: 2.0 in PHYS 115. Offered: Sp.

ENV H 461 Air Pollution Control (4)  Plat  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.

ENV H 471 Environmental Health Practice: Administration and Management (2)  Osaki, Treser  Explores selected aspects of the management of environmental health programs in the community, including organization theory and practice, budgeting, personnel management, program planning and evaluation, and community relations. Prerequisite: ENV H 482. Offered: A.

ENV H 472 Environmental Risk and Society (3)  Fenske  Examines scientific determinations of environmental risk 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 480 Environmental Health Problems (*, max. 6)  Treser  Individual projects involving library, laboratory, or field study of a specific environmental health problem. Offered: A/WSPs.

ENV H 482 Environmental Health Internship (2-15)  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: A/WSPs.

ENV H 497 Environmental Health Special Electives (*)  Offered: A/WSPs.

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: A/WSPs.

Courses for Graduates Only

ENV H 511 Environmental and Occupational Health (3)  Effects of exposure to chemical, physical, and biological agents, embodying the community and workplace environments. Current issues, using specific cases from recent literature as basis for class discussion and written assignments. Offered: W.

ENV H 512 Environmental Health Technology and Facilities (3)  De Walle  Survey of selected technological components of environmental health infrastructure to enhance the effectiveness of 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. Offered: S.

ENV H 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3)  Eaton, Thummel  Focus on current DNA sequencing and genotypic 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 ENPHC 513.

ENV H 514 Environmental and Occupational Toxicology I (3)  Omiecinski, Xie  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, BIOL 440, or permission of instructor. Offered: A.

ENV H 515 Environmental and Occupational Toxicology II (3)  Luchtel  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, BIOL 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, BIOL 440, or permission of instructor. Offered: W.

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 453 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 453 or permission of instructor. Offered: even years; S.

ENV H 533 Molecular Toxicology (2)  Kavanagh, Omiecinski  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; even years; S.

ENV H 535 Inhalation Toxicology (3)  Fenske, 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; W.

ENV H 545 Drinking Water and Health (3)  Samadpour  Principles, requirements of public water supply for protection of public health. Includes essential characteristics of water quality and sources, water treatment and distribution systems with associated health hazards; public health engineering, epidemiology, risk assessment; surveillance, regulatory needs to assure safe public water supplies. Prerequisite: ENV H 440 or CEE 361 or permission of instructor. Offered: A.

ENV H 546 Pesticides and Public Health (3)  Fenske  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. Offered: Sp.

ENV H 552 Environmental Chemistry of Pollution (3)  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 state measurements. Prerequisite: admission to graduate program or permission of instructor. Offered: W.

ENV H 553 Instrumental Methods for Industrial Hygiene Measurement: Lecture (3)  Morgan  Strategy, methods, instrumentation, and theory of atmospheric sampling and analysis, emphasizing evaluation of potential occupational hazards and exposures to chemical agents. Prerequisite: ENV H 453 or permission of instructor. Offered: W.

ENV H 555 Instrumental Methods for Industrial Hygiene Measurement: Laboratory (3)  Monteith, 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: W.

ENV H 556 Quantitative Occupational Exposure Analysis (3)  Morgan, Seixas  Exploration of industrial hygiene (with data to understand nature of airborne exposures in the occupational environment, and their interpretation for human health. Focus on reading and discussion of primary exposure assessment literature and statistical analysis of real dataset. Prerequisite: one quarter of statistics or biostatistics and basic industrial hygiene. Offered: W.

ENV H 557 Industrial Ventilation I (4)  Yost  Principles of exhaust ventilation systems, design for contaminant control in industry. Offered: W.

ENV H 559 Applied Industrial Hygiene, Safety, & Ergonomics (3)  Camp, Gleason, Johnson
Application of occupational safety and health ergonomic principles through field investigations and classroom discussions. Teams conduct walkthrough evaluations, environmental sampling, review of health and safety programs, and development of control strategies to eliminate or reduce hazards at a local worksite. Prerequisite: ENV H 564 or 453 or equivalent. Offered: W.

ENV H 560 Organizing and Administering Industrial Safety and Health Programs (4) Gleason Explores industrial organization and techniques for integrating safety and industrial hygiene programs with industrial operations. Philosophic issues related to industrial safety and health such as responsibility for safety, dependence on safe practice, and hierarchy of prevention are investigated. Contains numerous case problems and student involvement opportunities. Offered: 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. Machine guarding, electrical safety, systems safety analysis, materials handling, and working at heights are among the subjects covered. Offered: 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 processes understanding and hazard recognition skills during walk-through inspections of several local facilities, stressing a multidisciplinary approach. Offered: A.

ENV H 566 Introduction to Ergonomics (3) Johnson, Stewart Basic principles of ergonomics in work environment applied to problems of worker and machine. Topics include biomechanics, physiological 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: W.

ENV H 567 Mechanisms of Carcinogenesis (3) 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; A.

ENV H 568 Molecular Epidemiology of Infectious Diseases (2) Samadpour 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 epidemiics reported in literature. Prerequisite: ENV H 511 or ENV H 512 or permission of instructor. Offered: jointly with EPI 566; 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 INDE 569; Sp.

ENV H 570 Occupational and Environmental Epidemiology (3) Koenig 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) 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 grantmanship. Guest experts present some topics. Recommended: 511 or equivalent. Offered: jointly with EPI 571; odd years; W.

ENV H 572 Clinical Occupational Medicine (2) Brodkin 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) Kelsey Emphasizes 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 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. Environmental and occupational health. Prerequisite: ENV H 515 and BIOST 511 or permission of instructor. Offered: jointly with CEE 560/PHAF 589; A.

ENV H 580 Environmental Health Seminar (1, max. 6) Presentation of current environmental health research and environmental and public health issues. Credit/no credit only. Offered: W.

ENV H 581 Environmental Health Reading I (1) Koenig, Samadpour Critical reading of recent selected basic and applied research publications on environmental health problems and programs. Offered: A.

ENV H 582 Environmental Health Reading II (1) Exploration of controversial issues facing public health and the environmental health professional. Offered: W.

ENV H 583 Environmental Health Reading III (1) Exploration of controversial issues facing public health and the environmental health professional. Offered: W.

ENV H 584 Occupational Health and Safety: Policy and Politics (3) Camp, Morris Designed to provide a better understanding of the historical, political, and policy issues in occupational health and safety through selected readings and discussion with experts in the field. Particular emphasis on the Occupational Safety and Health Act. Students present testimony in a mock congressional hearing on a health and safety issue. Offered: Sp.

ENV H 590 Selected Topics (1-6, max. 6) In-depth study of a current environmental health topic. For more information and permission, consult department program adviser. Offered: AWSpS.

ENV H 591 Current Topics in Toxicology (1, max. 6) Kavanagh, Xia Provides in-depth examination of current topics in environmental and occupational toxicology taken from recently published journal articles. Consists of presentations led by students, postdoctoral fellows, and faculty. Students expected to participate actively in discussion. Assigned weekly readings given according to the schedule of speakers and topics. Credit/no credit only. Offered: A/W.

ENV H 593 Current Topics in Risk Assessment (1, max. 6) Faustman Examines current topics in risk assessment and risk communication with a focus on issues in environmental health. Consists of presentations led by students, postdoctoral fellows, and faculty. Students expected to participate actively in discussion. Credit/no credit only. Offered: A/W.

ENV H 594 Current Topics in Environmental Health Technology (1, max. 2) Critical review and discussion of current scientific literature of particular relevance to the Environmental Health Technology program. Primary presentations rotate among faculty and students. Credit/no credit only. Offered: W.

ENV H 595 Research Rotation (3, max. 9) Research laboratory rotation for predoctoral graduate students. Students commit to a laboratory research project aimed at introducing the student to current methods in laboratory research, and to familiarize the student with specific faculty research interests. Prerequisite: graduate standing and permission of program director. Offered: AWSpS.

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; A/W.

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: A/W.

ENV H 600 Independent Study or Research (*) Prerequisite: permission of departmental adviser. Offered: AWSpS.

ENV H 700 Master’s Thesis (*) Prerequisite: permission of departmental adviser. Offered: AWSpS.

ENV H 800 Doctoral Dissertation (*) Credit/no credit only. Prerequisite: permission of departmental adviser. Offered: AWSpS.
Epidemiology

General Catalog Web page: www.washington.edu/students/gencat/academic/Epidemiology.html

Department Web page: depts.washington.edu/epidem/

Graduate Program

Graduate Program Coordinator
F262 Health Sciences, Box 357236
206-685-1762
epi@u.washington.edu

The Department of Epidemiology offers three graduate degrees in the field of epidemiology for individuals intending to become academicians, highly qualified research specialists, or well-trained public health practitioners. The Master of Public Health degree requires course work in health services and environmental health in addition to epidemiology course work, thesis research, and a practicum. The Master of Science degree requires concentration on courses and research in epidemiology and biostatistics as preparation for technical specialization or as a prelude to the Doctor of Philosophy program. The Ph.D. course requirements differ from the M.S. program requirements primarily in the scope and complexity of research for the dissertation. Course work includes a basic series in epidemiology, biostatistics, and elective courses in chronic disease, infectious disease, and methodology. The department also offers postdoctoral research training.

Special Requirements

M.P.H. applicants who hold an M.D., D.V.M., D.D.S., or Ph.D.; possess a bachelor’s degree and a health-related background; or seek a combined M.D.,M.P.H. are considered. M.S. applications are welcomed from outstanding bachelor-level graduates, physicians, and other health professionals. Ph.D. applicants must have prior master’s- or doctoral-level training in a health-related field, equivalent postbaccalaureate experience, or anticipate earning a joint M.D.,Ph.D.

Financial Aid

Research training stipends are available on a limited basis. Opportunities for work on various research projects or as a teaching assistant may provide partial assistance.

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 the Fred Hutchinson Cancer Research Center, Group Health Cooperative’s Center for Health Studies, the Harborview Injury Prevention and Research Center, Public Health of Seattle-King County, and several other local hospitals and health institutions.

Faculty

Chair
Scott Davis

Professors

Alexander, E. Russell * 1990, (Emeritus); MD, 1953, University of Chicago; infectious disease epidemiology and infectious disease of children.

Austin, Melissa A. * 1988, PhD, 1985, University of California (Berkeley); genetic epidemiology of chronic diseases and public health genetics.

Becker, Thomas * 1995, (Affiliate); MA, 1976, University of New Mexico, MD, 1981, Case Western Reserve University, PhD, 1986, University of New Mexico; diagnosis and prevention of Native American cancer.

Beresford, Shirley A. * 1987, PhD, 1981, University of London (UK); nutritional epidemiology, folic acid, fruit and vegetables.

Boyko, Edward J. * 1989, (Adjunct); MD, 1979, University of Pittsburgh; epidemiology of inflammatory bowel disease and non-insulin-dependent diabetes mellitus.

Burke, Wylie 1984, (Adjunct); PhD, 1974, MD, 1978, University of Washington; ethical and policy implications of genetic information.

Checkoway, Harvey * 1987; MPH, 1975, Yale University, PhD, 1978, University of North Carolina; occupational and environmental epidemiology.

Connell, Frederick A. * 1978, (Adjunct); MD, 1972, New York University; child health, child health services research, Medicaid, community health assessment.

Daling, Janet R. * 1979; PhD, 1977, University of Washington; maternal and child health and cancer research.

Davis, Scott * 1980; PhD, 1980, University of Washington; radiation and cancer, circadian disruption and cancer, hematopoietic cancers, epimorphic methods.

Drewowski, Adam * 1998; PhD, 1977, Rockefeller University; taste and psychology of food choice in disease prevention.

Eisenberg, Mickey * 1978, (Adjunct); MD, 1971, Case Western Reserve University, PhD, 1978, University of Washington; sudden cardiac arrest and acute myocardial infarction.

Emmanuel, Irvin * 1966, (Emeritus); MA, 1956, University of Arizona, MD, 1960, University of Rochester, MS, 1966, University of Washington; epidemiology of maternal and child health problems, growth and development.

Foy, Hjordis * 1967, (Emeritus); MD, 1953, Karolinska Institute (Sweden), PhD, 1968, University of Washington; epidemiology and control of infectious disease.


Gates, George A. 1993, (Adjunct); MD, 1959, University of Michigan; otology/neurotology, cochlear implantation.


Goldberg, Jack 2001, (Research); PhD, 1983, University of Illinois; chronic fatigue syndrome.


Handsfield, Hunter 1979, (Adjunct); MD, 1968, Columbia University; infectious diseases.

Henderson, Maureen M. * 1975, (Emeritus); MBBS, 1949, DPH, 1956, University of Durham (UK); epidemiology of chronic diseases, dietary prevention of disease.

Holmes, King K. * 1967, (Adjunct); MD, 1963, Cornell University, PhD, 1967, University of Hawaii; clinical epidemiology and pathogenesis of infectious diseases.


King, Mary-Claire * 1995, (Adjunct); PhD, 1973, University of California (Berkeley); genetic analysis of complex human phenotypes, human diversity and evolution.

Koopsell, Thomas D. * 1979; MD, 1972, Harvard University, MPH, 1979, University of Washington; injuries, neuroepidemiology, veterans health, epidemiologic methods, program and policy evaluation.


Kukul, Walter A. * 1981; PhD, 1984, University of Washington; molecular epidemiology, aging and methodology; focus on Alzheimer’s disease.

Lacroix, Andrea Z. * 1989; PhD, 1984, University of North Carolina; older women’s health, osteoporosis, cardiovascular disease, cancer prevention.


Martin, Diane P. * 1978, (Adjunct); MA, 1972, Temple University, PhD, 1979, University of Washington; research methods; health services quality, use, and outcomes.

Moolgavkar, Suresh H. * 1984; MBBS, 1965, Bombay University (India), PhD, 1973, Johns Hopkins University; cancer epidemiology, development of quantitative methodology.

Mueller, Beth A. * 1984; DPH, 1984, Tulane University; epidemiology of perinatal and reproductive diseases, cancer, and injury research.

Oberle, Mark W. 1988; MD, 1974, Johns Hopkins University; public health; Native American health.

Patrick, Donald L. * 1987, (Adjunct); MS, 1968, PhD, 1972, Columbia University; health status and quality of life, end of life, adolescents.


Potter, John D. * 1995; MBBS, 1971, PhD, 1984, University of Queensland (Australia); colorectal cancer etiology, gene-environment interaction, early detection, molecular epidemiology.

Probstfield, Jeffrey L. 1993, (Adjunct); MD, 1967, University of Washington; cardiology.

Psaty, Bruce M. * 1984; PhD, 1979, MD, 1981, Indiana University; cardiovascular disease, coronary heart disease, hypertension, pharmacoepidemiology.
Rivara, Frederick P. * 1984, (Adjunct); MD, 1974, University of Pennsylvania; pediatric epidemiology and injury prevention and research.

Rosendaal, Frits R. * 1994, (Affiliate); MD, 1985, Erasmus University of Rotterdam (Netherlands); PhD, 1989, University of Leiden (Netherlands); clinical and genetic epidemiology of hemostasis and thrombosis.

Sever, Lowell E. * 1991, (Affiliate); PhD, 1973, University of Washington; perinatal epidemiology, particularly reproductive effects of occupational and environmental exposure.

Shy, Kirkwood K. * 1979, (Adjunct); MD, 1973, Wayne State University; epidemiologic applications to problems in obstetrics and gynecology.

Siscovick, David S. * 1987; MD, 1976, University of Maryland; epidemiology.

Stamm, Walter E. * 1979, (Adjunct); MD, 1971, Harvard University; infectious disease.

Stanford, Janet L. * 1986; PhD, 1985, Johns Hopkins University; cancer epidemiology and genetic susceptibility.

Thomas, David B. * 1979; MD, 1963, University of Washington, DPH, 1972, Johns Hopkins University; cervix and breast carcinoma epidemiology.


White, J. Emily * 1982; PhD, 1982, University of Washington; cancer epidemiology and prevention.

Williams, Michelle A. * 1991; ScD, 1991, Harvard University; reproductive and perinatal epidemiology, cancer epidemiology.

**Associate Professors**

Astley, Susan J. * 1980; PhD, 1990, University of Washington; chronic childhood diseases.

Chu, Joseph * 1982, (Affiliate); MD, 1975, Georgetown University; gynecologic cancer epidemiology, perinatal epidemiology, health services research.

Critchlow, Cathy W. * 1979; PhD, 1993, University of Washington; epidemiology of sexually transmitted diseases; HIV prevention, diseases of oral cavity.


Davis, Robert L. * 1991; MD, 1983, University of California (San Diego), MPH, 1993, University of Washington; childhood immunization, including adverse events perinatal and pediatric epidemiology.


Hasekorn, Jodie K. * 1985, (Adjunct); MD, 1985, Louisiana State University; health services for the disabled; diagnostic accuracy of tests, effectiveness of interventions.


Helgerson, Steven D. * 1990; (Clinical); MD, 1973, University of Washington, MPH, 1975, University of Washington; public health practice and epidemiologic field investigation.


Jackson, Lisa A. * 1988; PhD, 1988, University of Virginia, MPH, 1996, University of Washington; infectious disease epidemiology, assessments of vaccine safety and effectiveness.

Jarvik, Gail P. * 1991, (Adjunct); PhD, 1986, University of Michigan, MD, 1987, University of Iowa; quantitative genetics and genetic epidemiology, focusing on common diseases.

Kaufman, Joel D. * 1988, (Adjunct); MD, 1986, University of Michigan, MPH, 1990, University of Washington; occupational and environmental epidemiology; etiologic research and public health surveillance.


McGrath, Barbara B. * 1987, (Adjunct Research); PhD, 1993, University of Washington; ethnographic studies with U.S. Pacific Islanders on health issues, specifically, HIV/AIDS prevention.

McTiernan, Anne * 1989; PhD, 1982, University of Washington; breast and colon cancer, women’s health, exercise and obesity.

Moore, Donald E. 1977, (Adjunct); MD, 1967, Case Western Reserve University; reproductive endocrinology.

Patterson, Ruth E. * 1994; PhD, 1992, University of North Carolina; dietary assessment in adult populations; dietary change, vitamin supplements in cancer prevention.

Pendergrass, Thomas W. 1978, (Adjunct); MD, 1971, University of Tennessee, MPH, 1979, University of Washington; hematology, oncology.

Reiber, Gayle * 1991; MPH, 1975, Johns Hopkins University, PhD, 1989, University of Washington; epidemiology and health services research on preventing complications of diabetes.


Rosing, Mary Anne * 1988; DVM, 1980, University of Illinois, PhD, 1993, University of Washington; cancer epidemiology, particularly cancers of the reproductive system.

Schwartz, Stephen Marc * 1989; PhD, 1990, University of Washington; cancer, cardiovascular disease, reproductive conditions; molecular/genetic epidemiology; methods.

Stehr-Green, Paul 1995; DPH, 1982, University of Pittsburgh; chronic, infectious, vaccine-preventable diseases, environmental health, health-care delivery.

Weigler, Benjamin J. * 1997, (Adjunct); DVM, 1986, Colorado State University, MPH, 1988, University of California (Berkeley), PhD, 1991, University of Washington (Davis); infectious disease epidemiology in laboratory animal medicine and management.

Zhao, Lue-Ping * 1985, (Affiliate); PhD, 1989, University of Washington; methods for genetic epidemiology, family studies of breast and colorectal cancers.

**Assistant Professors**

Cheney, Carrie L. * 1990; PhD, 1989, University of Washington; nutrition in autism spectrum disorder; role of nutrition in cancer prognosis, secondary prevention.

Duchin, Jeffrey S. 1995, (Adjunct); MD, 1985, Rutgers University; infectious diseases and epidemiology.


Lampe, Johanna W. * 1998, (Research); MS, 1982, PhD, 1990, University of Minnesota; gene-diet interactions and cancer susceptibility, phytochemicals, biodisposition enzymes, colon.

Malone, Kathleen E. * 1994, (Research); PhD, 1993, University of Washington; breast cancer: etiology, prognosis, and genetics.

Mock, Charles N. * 1992; MD, 1980, Brown University; injury epidemiology, prevention, treatment; especially in less-developed countries.

Reed, Susan D. 1991, (Adjunct); MS, 1979, Sarah Lawrence College, MD, 1986, Stanford University; gynecology, evidence-based medicine and clinical outcomes studies, hormone replacement therapy.

Stehman-Breen, Catherine O. 1990, (Adjunct); MD, 1990, University of Chicago, MS, 1996, University of Washington; cardiovascular epidemiology among patients with end-stage renal disease.


Tsu, Vivien D. * 1992, (Affiliate); PhD, 1991, University of Washington; maternal and child health in developing countries.

Tsuang, Debby W. 1992, (Adjunct); MD, 1988, University of Iowa; genetics of schizophrenia and late-life dementia.

Vanderstoep, Ann 1994, (Adjunct); PhD, 1997, University of Washington.

Wald, Anna * 1989; MD, 1985, Mt Sinai School of Medicine, MPH, 1994, University of Washington; the epidemiology, natural history and therapeutics of HSV and other herpes viruses infections.
Course Descriptions

EPI 514 Application of Epidemiologic Methods (4)
Crichtlow, Mueller Practical experience in analysis of data. Students analyze data sets, directly on file using contemporary epidemiologic methods as taught in S12 and S13. Prerequisite: EPI 510 or experience in programming. EPI 512, EPI 513 and epidemiology major. Offered: Sp.

EPI 515 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 515. Offered: jointly with BIOST 519. A.

EPI 516 Statistical Methods in Genetic Epidemiology (3) Monks 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 or 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) 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 epidemiology of cardiovascular diseases. 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 published literature. Prerequisite: EPI 511 or EPI 512. Offered: A.

EPI 520 Epidemiology of Infectious Diseases (3) Jackson 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: odd years; W.

EPI 521 Epidemiology of Maternal and Child Health Problems (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, 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 Focus on conditions and diseases of the female reproductive system, as well as pregnancy outcomes other than birth. Presentation of current epidemiologic knowledge and discussion of issues on topics including contraception; infertility; spontaneous abortion; induced abortion; breast, uterine, and ovarian disease; and menopause. Prerequisite: EPI 511 or EPI 512-513. Offered: odd years; A.

EPI 523 Injury Epidemiology (3) Cummings Discussion of research methods which are useful in studying the causes of injury and outcomes after injury. Information regarding the impact of injuries on health and known or suspected risk factors for some injuries. Assigned readings from literature in the field. Prerequisite: EPI 511 or EPI 512 or permission of instructor. Offered: Sp.

EPI 524 Epidemiologic Studies of Cancer Etiology and Prevention (3) Thomas, Ulrich Current knowledge of the role of environmental factors (e.g., smoking, hormonal, nutrition, viral, radiation) and genetic susceptibility in the etiology of several major cancers. Illustrates principles and conduct of research in cancer etiology and cancer prevention. Prerequisite: EPI 511 or EPI 513. Offered: A.

EPI 525 Topics in Preventive Medicine (2) Goldbaum Examines current scientific knowledge and state of the art of preventive medical interventions. Discusses and considers options for current practice. Recommended for MDs, RNs, and others with a clinical background. Credit/no credit only. Offered: jointly with HSERV 505.

EPI 526 Epidemiology of Diseases Communicable from Animals to Humans (3) D’Onofrio, Mosh, Wegle 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 528 Exposure Measurement in Epidemiology (3) White Principles and methods of measuring exposures and covariates in epidemiological studies. Validity and reliability of measures, questionnaire design, effects of measurement error, maximizing response rates, quality-control procedures, measurement of specific exposures. Credit/no credit only. Prerequisite: EPI 513. Offered: Sp.

EPI 529 Emerging Infections of International Public Health Importance (3) Kimball Overview of current emerging infections worldwide and contributing factors. Design of a study of an emerging disease. Prerequisite: Offered jointly with HSERV 536; in residence, even years; online, odd years; W.

EPI 530 AIDS: A Multidisciplinary Approach (2) Koutsky 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; A.

EPI 531 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: jointly with HSERV 531; A.

EPI 532 Epidemiology of Infectious Diseases of Third-World Importance (3) John, Kreiss 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; Sp.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.
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 pharmacoeconomic principles pertinent to pharmacoepidemiology. Prerequisite: graduate student or with permission. Offered: jointly with PHARM 533.

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: EPI 515, or EPI 514 and either EPI 513 or BIOST 518, or permission of instructor. Offered: jointly with BIOST 536A.

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.

EPI 538 Nutritional Epidemiology (3) Beresford, Drewnowski
Application of epidemiological methods to current studies of diet, nutrition, and chronic disease. A discussion of current issues and controversies enables 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 anthropology, and qualitative methods discussed. Lectures, computer lab, and student participation in community-based survey. Offered: jointly with HSERV 539; W.

EPI 542 Clinical Epidemiology (2) Weiss
Principles and methods involved in studying outcome of illness. Prerequisite: EPI 511, or EPI 512 and EPI 513. Offered: S.

EPI 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; Sp.

EPI 546 Psychosocial Epidemiology (3) Vande Stoepe
Application of epidemiological methods to the study of mental health problems. The course topics include assessment and distribution of mental illness, classification of psychiatric disorders; treatment-based vs. community-based studies; epidemiology of depression and schizophrenia; family transmission; developmental epidemiology; mental illness, violence, and crime. Prerequisite: one course in epidemiology or permission of instructor. Offered: jointly with PBSCI 546; Sp.

EPI 568 Molecular Epidemiology of Infectious Diseases (2) DiGiacomo, Samadpour, Roberts
Application of molecular typing methods 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/PBIO 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 risk, relative to exposed vs. non-exposed. 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-grantmanship. Guest experts present some topics. Recommended: 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. The importance of laboratory quality control and use of results in studies. Evaluation of biomarkers, preliminary studies, epidemiologic methods, and control. Critical analysis of molecular biology applications and current literature discussing these issues. Prerequisite: EPI 511 or EPI 512. Offered: jointly with ENV H 573; W.

EPI 580 Geographic Information Systems (2) Hoskins, Shields
Public-health practice and epidemiologic problem solving using data from geographic information systems. Calculating rates of disease using smoothing methods for adjustment, geocoding addresses of health-outcome data including death and cancer incidence for outbreak investigations and spatial analysis, principles of cartography, basic spatial statistics (spatial modeling, autocorrelation, conditioning). Offered: A.

EPI 583 Epidemiology Seminar (1, max. 3) Weiss
Presentation of current epidemiologic research and application of epidemiologic research in the practice of public health. Offered: AwSpS.

EPI 588 Preparing and Writing Research Proposals (2) Kristof, 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: even 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 study of specific topics in epidemiology or international health, usually of current nature. Seminar format. Prerequisite: EPI 511. Also a special summer format presenting introductory material. May be taken 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. Offered: jointly with BIOST 593; AwSpS.

EPI 595 Epidemiologist’s Master’s Practicum (1-4, 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 with permission of instructor; recommended: EPI 501. 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 departmental adviser. Offered: AwSpS.

EPI 800 Doctoral Dissertation (*) Credit/no credit only. Offered: AwSpS.

Public Health Genetics Courses for Graduates Only

PHG 509 Multidisciplinary Communication in Public Health Genetics (2) Watts Focuses on effective communication in a multi-disciplinary context. Students will read and critique published public health genetics literature, and learn and apply principles of effective written and oral communication to public health genetics topics of their choice. Credit/no credit only. Offered: jointly with HSERV 509.

PHG 510 Genetic Principles for Public Health (3) Austin, Doyle, Leboeuf
Basic principles of human genetics, in a public health context; the molecular and cellular components of life, organization of the genome, gene expression, recombinant DNA technology, gene regulation, Mendelian inheritance, quantitative genetics, nutrition and gene expression, mitochondrial inheritance, and basic concepts of pharmacogenetics and toxicogenetics in a public health context. Credit/no credit only. Offered: jointly with HSERV 509.

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) Kusilter, Mastroianni
Equips the student to anticipate and assess potential legal, ethical, and social issues associated with new genetic advances, information, and technologies into public and private health care delivery efforts. Prerequisite: EPI 511, or GENET 371 or equivalent. Offered: jointly with LAW E 562/MHE 514.

PHG 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3) Eaton, Thrummel
Addresses current and emerging approaches to pharmacogenetics and toxicogenetics, and basic concepts of pharmacogenetics and toxicogenomics.
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.

PHG 514 Animal Models and Public Health Genetics (2) LeBoeuf Contributions of animal models to studies of human diseases. Concepts of multi-gene disease; transmission mapping, quantitative traits with emphasis on diseases of major public health impact. Interaction between inheritance and nutrition. Focus on mouse genetics. Prerequisite: GENET 371, PHG 513, or permission of instructor. Offered: jointly with NUTR/PAIO 514.

PHG 518 Computer Demonstrations in Genetic Epidemiology (2) 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. Corequisites: EPI 517/PHG 511 or permission of instructor. Offered: jointly with EPI 518.

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 BIOL 510 or BIOL 518; PHG 511/EPH 517; or permission of instructor. Offered: jointly with EPI/EPH 516.

PHG 521 Socio-Cultural Perspectives of Public Health Genetics (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.

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 diseases, as well as contemporary issues in population and environmental genetics. Prerequisite: LAW E 562/MHE 514/PHG 512 or permission of instructor. Offered: jointly with MHE 516.

PHG 523 Genetics and the Law (2) Kuszlinder 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 LAW E 564.

PHG 532 Statistical Methods in Medical Genetics (2) Wijman Theory and application of statistical techniques used in medical genetics. In-depth discussion of linkage and segregation analysis and ascertainment problems. Applications with stressed with reference to assumptions and limitations. Data sets analyzed with current computer programs. Offered: jointly with BIOSTAT/532.

PHG 537 Pharmacoeconomics, Genetics, and Health Care (2) Ramsey-Veenastra Introduction to outcomes research and economic evaluation related to pharmaceuticals and genetic technologies. Covers cost-effective analysis and quality of life evaluation. Discusses the use of economic evaluation in health care to affect policy decisions.

PHG 580 Interactive Seminar (1, max. 6) Veenastra Seminar series on topics related to public health genetics, including current bioethical, legal, medical, technological, and policy issues.

PHG 590 Selected Topics in Public Health Genetics (1-6, max. 6) Tutorials for a small number of students for in-depth examination of an area of public health genetics, usually of a current nature.

PHG 595 Master's Practicum (1-12, max. 12) Supervised practice experience providing students an opportunity to learn how genetics is applied in a public health setting and in the formulation and application of public health policy. Prerequisite: EPI 517/PHG 511, LAW E 562/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.

Master of Public Health and Master of Science

The M.P.H. and M.S. programs in health services give priority to individuals who have completed their professional training in fields such as medicine, dentistry, or nursing and who have had substantial experience in the health field. The M.P.H. program provides broad-based public health skills, while the M.S. provides more focused health services research skills. These programs offer a general curriculum that includes an introduction to health systems, epidemiology, current issues regarding the provision of medical care, methodological training for research and program evaluation, and preparation of a thesis. In addition, the M.P.H. program offers a practicum and a course in management, an introductory course in environmental health, and a social and behavioral science course. Examples of areas of concentration include studies of patient and provider behavior, evaluation of local, state, and federal health programs; and the impact of technology on medical-care costs and benefits. The programs are organized into four tracks: community medicine, international health, maternal and child health, and social and behavioral sciences. International health, and maternal and child health are offered jointly with the Department of Epidemiology.

The M.P.H. in Community-Oriented Public Health Practice (CO/PHP) offers an innovative method of public health training that prepares students to be effective problem-solvers, innovators, advocates, and leaders in addressing community health problems. Graduates are prepared to work in such varied settings as community and public health agencies, managed care organizations, federal programs, and advocacy and philanthropic associations. The CO/PHP program combines problem-based learning and experiential learning, approaches that are especially effective for adults who are seeking to integrate rigorous academic training and practice. During the first year, students select from a range of community-based field placements that help them acquire practical skills. In the second year, students select a community-based setting for a final degree (capstone) project.

The Community Medicine M.P.H. option provides a generalist approach to public health. Students take the CO/PHP track and, after obtaining their M.P.H., then tailor their programs to their own career goals. Because there are fewer specific course requirements for this track, applicants must have well-defined goals that are compatible with the areas of expertise represented on the campus. This track is best suited for fellows and scholars pursuing studies after receiving an M.D., R.N., or other health degree.

The Maternal and Child Health M.P.H. option provides an interdisciplinary approach to the wide variety of factors that influence the health and health care of women and children. It is an interdisciplinary program offered jointly by the Departments of Health Services and Epidemiology. Students must choose to major in one of these departments; however, all students are exposed to a core content that includes basic epidemiological, behavioral, sociological, political, and economic aspects of maternal and child health. The MCH program combines practical and classroom experience to give students an in-depth understanding of the behavioral, biological, social, and environmental factors that influence health and illness in maternal and child populations; competency in public health research, analytic methods, and core functions; skills in program management; and supervised experience in applying science and management tools to the planning, development and evaluation of health programs and policy. The MCH program is designed primarily for individuals with clinical or public health experience who seek advanced training to assume increased responsibil-
Doctoral Studies Program

Doctoral study in health services is available to qualified students on campus who are enrolled in the doctoral programs of other departments (e.g., anthropology, biostatistics, economics, epidemiology, geography, health policy, health services research, organizational theory, public policy, psychology, social work, or sociology). Students in the Doctoral Studies program take four courses in health services and focus their dissertation on original research that relates the basic discipline to a specific health services issue (e.g., health behavior, health care organizations, costs, or quality and utilization of health care services).

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. However, students should be prepared to use their own resources to finance their graduate education.

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
H865 Health Sciences, Box 357660
206-685-7580

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 course work 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 for M.P.H. and M.S.

In addition to completing Graduate School admission requirements, applicants to the M.P.H. and M.S. programs must submit at least three letters of recommendation, Graduate Record Examination scores, and a goal statement. At least three years of medical or health care experience are usually required. Applicants are accepted only for summer and autumn quarters of each year. The application deadline is January 15.

Doctor of Philosophy

The overall goal of the doctoral program in Health Services is to train health services researchers and health policy analysts for careers in academic institutions, health delivery systems, public health departments, government agencies, and the private sector. This in-residence program prepares students to conduct high-quality, useful, and practice-relevant research and policy analysis by offering applied research opportunities on a wide variety of topics under the mentorship of faculty. In addition, students obtain advanced knowledge of population health and health care, theoretical frameworks, and extensive research skills to identify and critically analyze social, behavioral, and health care system effects on health, and the organization, delivery, financing, and management of health services.

Faculty

Chair
William L. Dowling

Professors

Berkowitz, Bobbie * 1988, (Adjunct); PhD, 1990, Case Western Reserve University; administration, leadership and policy development within public health and nursing.

Bowen, Deborah J. * 1986; PhD, 1986, Uniformed Service University of the Health Sciences; health psychology.

Boyko, Edward J. *, (Adjunct); MD, 1979, University of Pittsburgh; epidemiology of inflammatory bowel disease and non-insulin-dependent diabetes mellitus.

Chapko, Michael K. * 1978, (Research); MA, 1970, Hunter College, PhD, 1972, City University of New York; ambulatory care, long-term care, cost-effectiveness in health care, international health.

Cheadle, Allen D. * 1987, (Research); PhD, 1987, University of California (Berkeley); community-based research and program evaluation.

Connell, Frederick A. * 1978; MD, 1972, New York University; child health, child health services research, Medicaid, community health assessment.


Coombs, John B. 1983, (Adjunct); MD, 1972, Cornell University; health care outcomes, rural health policy, healthcare workforce issues and applied nutrition.

Day, Robert W. * 1968; MD, 1966, University of Chicago, MPH, 1958, PhD, 1962, University of California (Berkeley); translational research.

Deyo, Richard A. * 1986; MD, 1975, Pennsylvania State University; health status measurement and evaluation of common medical practices.

Diehr, Paula K. * 1979; MS, 1967, PhD, 1970, University of California (Los Angeles); health services, small-area analysis, health status.


Fihn, Stephan * 1982; MD, 1977, St Louis University, MPH, 1981, University of Washington; internal medicine.

Fuller, Sherrilynne S. * 1988, (Adjunct); PhD, 1984, University of Southern California; analysis, representation and mapping of research findings (data mining).

Gale, James L. * 1969, (Adjunct); MD, 1961, Columbia University, MS, 1969, University of Washington; epidemiology and control of infectious disease, international health.


Grembowski, David * 1981; MA, 1975, Washington State University, PhD, 1982, University of Washington; health services research, survey research, program evaluation, performance of health care systems.
Grossman, David C. 1988, (Adjunct); MD, 1982, University of California (Los Angeles), MPH, 1990, University of Washington; injury control, Native American health, and pediatric health services research.

Hart, Lawrence G. 1982, (Adjunct); MS, 1975, University of Utah, PhD, 1985, University of Washington; rural health policy, medical geography.

Hedrick, Susan A. * 1983; MA, 1975, PhD, 1982, Michigan State University; long-term care.

Heigvarya, Sue T. 1986, (Adjunct); MN, 1966, University of Washington, PhD, 1974, Vanderbilt University; administration and productivity of health care and nursing services.


Katon, Wayne J. * 1976, (Adjunct); MD, 1976, University of Oregon; depression, panic disorder, somatization, adherence.


Klastorin, Theodore J. * 1974, (Adjunct); PhD, 1973, University of Texas (Austin); operations management, facility location, project management, waiting lines, logistics, inventory.

Kuikku, Walter A. * 1981, (Adjunct); PhD, 1984, University of Washington; neurologic disease etiology, aging and methodology; focus on Alzheimer's disease.

Kuszler, Patricia Carol * 1994, (Adjunct); MD, 1978, Mayo Medical School/graduate School, JD, 1991, Yale University; law and medicine; health-care finance and regulation, medical malpractice, biotechnology and law.

Larson, Eric B. * 1977, (Adjunct); MD, 1973, Harvard University; internal medicine.


Martin, Diane P. * 1978; MA, 1972, Temple University, PhD, 1979, University of Washington; research methods, health services quality, use, and outcomes.

Mayer, Jonathan D. * 1977, (Adjunct); PhD, 1977, University of Michigan; medical geography, health policy, env. health, epidemiology, int'l health, infectious diseases.

McCann, Barbara S. * 1986, (Adjunct); MS, 1982, PhD, 1984, Rutgers University; behavior change, health, nutrition, psychological stress, cardiovascular disease, diabetes, obesity.

Milgrom, Peter M. * 1974, (Adjunct); DDS, 1972, University of California (San Francisco); management of fearful and phobic dental patients, quality of dental care.

Mitchell, Pamela H. * 1971, (Adjunct); MS, 1965, University of California (San Francisco), PhD, 1991, University of Washington; neuroscience nursing, diagnostic strategies.

Monsen, Elaine R. * 1969; MS, 1959, PhD, 1961, University of California (Berkeley); nutrition, dietetics.

Muecke, Marjorie A. * 1979, (Adjunct); PhD, 1976, University of Washington; community health, medical anthropology, reproductive health, Southeast Asia (Thailand).

Norris, Thomas E. 1988, (Adjunct); MD, 1973, University of Texas (Galveston); clinical applications, health policy and health workforce needs.

Oberle, Mark W. 1988; MD, 1974, Johns Hopkins University; public health; Native American health.

Patrick, Donald L. * 1987; MS, 1968, PhD, 1972, Columbia University; health status and quality of life, end of life, adolescents.

Pearlman, Robert A. * 1981, (Adjunct); MD, 1975, Boston University; gerontology.

Perrin, Edward * 1962, (Emeritus); MA, 1956, Columbia University, PhD, 1961, Stanford University; biostatistics, health information, health services research methodology.

Psaty, Bruce M. * 1984, (Adjunct); PhD, 1979, MD, 1981, Indiana University; cardiovascular disease, coronary heart disease, hypertension, pharmaceutobiology.

Rosenblatt, Roger A. * 1977, (Adjunct); MPH, 1971, MD, 1971, Harvard University; research into the organization and delivery of health services, rural health policy.

Ross, Austin, Jr. 1982, (Emeritus); MPH, 1955, University of California (Berkeley); ambulatory care, health care delivery systems.

Sullivan, Sean J. * 1992; PhD, 1992, University of California (Berkeley); health economics, pharmaceutical outcomes research and health policy.

Thompson, Engelberta 1989; MA, 1978, PhD, 1981, Western Michigan University; community studies, cancer prevention, smoking cessation, children's pesticide exposure.


Wagner, Edward H. * 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.

Watts, Carolyn A. * 1975; MA, 1974, Johns Hopkins University, PhD, 1976, Johns Hopkins University; health economics and policy.


Wolf, Fredric M. * 1997, (Adjunct); MEd, 1977, PhD, 1980, Kent State University; clinical decision making, evaluation of new technology, evidence-based health care.

Associate Professors

Baldwin, Laura M. 1984, (Adjunct); MD, 1980, University of Southern California, MPH, 1986, University of Washington; family medicine.

Bell, Michelle * 1984; MSW, 1967, University of Washington, PhD, 1984, University of Washington, maternal/child health, adolescent health, access to health services for disadvantaged populations.

Braddock, Clarence H. * 1993, (Adjunct); MD, 1981, University of Chicago; doctor-patient communication, informed consent, bioethics education.


Ensing, B. Josephine * 1994, (Adjunct); MS, 1986, Virginia College of Medicine, MPH, 1992, DPhi, 1994, Johns Hopkins University; health care program planning and evaluation for marginalized populations and high-risk youth.


Goldberg, Harold I. 1986, (Adjunct); MD, 1977, Stanford University; applying clinical informatics to health services delivery and quality improvement.


Jarvik, Jeffrey G. 1993, (Adjunct); MD, 1987, University of California (San Diego); neuroradiology, outcomes research.

Kienast, Philip K. * 1970, (Adjunct); PhD, 1972, Michigan State University; human resources management.

Kopjar, Branko 1997; PhD, 1996, University of Oslo (Norway); prevention effectiveness, outcomes research, health care reform, quality of care.


Lalonde, Bernadette 1980, (Research); PhD, 1979, University of Toronto (Canada); public health program development, process and outcome program evaluation, evaluation research.

Lessler, Daniel * 1990, (Adjunct); MD, 1986, Stanford University, MHA, 1992, University of Washington; health services research pertaining to cost-effectiveness, quality of care, medical management.

Maynard, Charles C. * 1991, (Research); PhD, 1986, University of Washington; cardiovascular health services research.

Meischke, Hendrika W. * 1991; MPH, 1987, PhD, 1992, University of Michigan; health communication, with an emphasis on mass media and health.

Melzer, Sanford M. 1990, (Adjunct); MD, 1982, Mt. Sinai School of Medicine; general pediatrics.

Plough, Alonso L. * 1995; MA, 1975, Cornell University, MPH, 1977, Yale University, PhD, 1978, Cornell University; anthropology, sociology or social welfare and public affairs/policy, epidemiology.

Reiber, Gayle * 1991; MPH, 1975, Johns Hopkins University, PhD, 1989, University of Washington; epidemiology and health services research on preventing complications of diabetes.

Rhodes, Lorna A. * 1983, (Adjunct); PhD, 1973, Cornell University; medical anthropology, symbolic anthropology, South Asia, religion, psychiatry.

Richardson, Mary L. * 1977; MHA, 1978, PhD, 1984, University of Washington; organization, management, and analysis of policy relevant to health services.
Shell-Duncan, Bettina * 1995, (Adjunct); MS, 1988, University of Wisconsin; PhD, 1994, Pennsylvania State University; health assessment in traditional societies, including immunity, nutrition.

Spigler, Clarence * 1994; MPH, 1982, DPH, 1987, University of California (Berkeley); health of the disadantaged, race/ethnic relations, societal behavior, popular culture.

Stout, James W. * 1986, (Adjunct); MAT, 1981, Duke University, MD, 1986, Wake Forest University; childhood asthma, health services and epidemiology.

Taylor, Victoria M. * 1989, (Research); MD, 1978, University of Nottingham (UK), MPH, 1989, University of Washington; cancer control in minority populations.

Wood, Robert W. 1977, (Adjunct); MD, 1970, University of Rochester; internal medicine.

Assistant Professors


Gray, Darryl 1997, (Research); MPH, 1981, University of Washington, MD, 1984, Case Western Reserve University, ScD, 1992, Harvard University; clinical epidemiology, cost-effectiveness of radiological, pediatric cardiac and surgical procedures.

Doctor, Jason N. * 1995, (Adjunct); PhD, 1995, University of California (San Diego); medical decision making, health economics, decision theory.


Johnson, Donna 1990; MS, 1979, Syracuse University, PhD, 1995, University of Washington; public health nutrition practice: obesity, maternal and child nutrition.

Karras, Bryant Thomas 2000; MD, 1995, University of Wisconsin; public health informatics, guidelines, bioterrorism surveillance.


Liu, Chuan-Fen 1998, (Research); MPH, 1982, National Taiwan University, PhD, 1994, University of Minnesota, health economics, health services research, mental health.

Lydon-Rochelle, Mona 2001, (Adjunct), PhD, 1999, University of Washington; applied epidemiology in maternal health.

Maciejewski, Matthew L. * 1999; PhD, 1998, University of Minnesota; managed care, outcomes research, research methods, health economics, diabetes.


Mock, Charles N. * 1992, (Adjunct); MD, 1980, Brown University; injury: epidemiology, prevention, treatment; especially in less-developed countries.

Penson, David F. 1999, (Adjunct); MD, 1991, Boston University, MPH, 1999, Yale University; clinical epidemiology and health services research in the areas of urologic disease.

Sales, Anne * 1997, MSN, 1989, University of North Carolina, PhD, 1998, University of Minnesota; patient and organizational outcomes, health care work force, health economics.

Seifer, Sarana 1995, (Research); MS, 1985, MD, 1989, Georgetown University; best practices for health professionals, ambulatory medical education.


Yueh, Bevan 1997, (Adjunct); MD, 1989, Stanford University; clinical epidemiology of hearing loss and head and neck cancer.

Zierler, Brenda * 1988, (Adjunct); PhD, 1996, University of Washington; research in patient with venous thromboembolism; clinical outcomes, process outcomes.

Zimmerman, Frederick J. 2002; PhD, 1994, University of Wisconsin; disparities economics, quantitative methods, children’s health services, international health.

Senior Lecturers


Gish, Oscar * 1989; MSS, 1967, MPH, 1969, University of Sussex (UK); socio-economic dimensions of health and health services; third world development focus.

Hanken, Mary A. 1991; MED, 1974, Seattle University, PhD, 1989, University of Washington; health information systems.


Katz, Aaron 1988; CPH, 1975, University of Toronto (Canada); health policy, public health, determinants of health.


Thompson, John (Jack) R. 1989; MSW, 1976, University of Washington; public health practice, health policy analysis, workforce development.


Lecturers


Masuda, David 1997, (Adjunct); MD, 1980, University of North Dakota, MS, 1996, University of Wisconsin; biomedical and health informatics.

Rees, Jane * 1973, (Adjunct); MS, 1972, University of Washington; nutritional support of adolescent health, especially during pregnancy; eating disorders.


Stillman, Dennis 1987; MHA, 1979, University of Washington; health care financial management, management development.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crsCat/.

Health Services

HSERV 475 Perspectives in Medical Anthropology (5) Rhodes 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) Bezuucka, Sappington, Wing Problems and issues in epidemiology, health services delivery and administration, environmental health, pathobiology, biostaticstics, and related fields.

HSERV 499 Independent Study in Health Services (1-12, max. 12) Individual library or field study project selected in consultation with a faculty adviser.

Courses for Graduates Only

HSERV 501 Public Health Practice at the Local Level (3) Thompson 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; Sp.

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 (3) Downer 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 505 Topics in Preventive Medicine (2) Goldbaum Examines current scientific knowledge and state of the art of preventive medical interventions. Discusses and considers options for current practice. Recommended for MDs, RNs, and others with a clinical background. Credit/no credit only. Offered: jointly with EPI 525.

HSERV 507 Mass Media, Health, and Society (3) Meischke Provides students with a broader understanding of how the mass media affects the health of individuals and communities; introduces students to theoretical perspectives on mass communication and persuasion; teaches students how to plan, design, implement, and evaluate media interventions.

HSERV 508 Dynamics of Community Health Practice (3-5, max. 5) Chismar Examination of and experience with basic principles of clinical practice in community settings. Includes family as community
HSEV 509 Multidisciplinary Communication in Public Health Genetics (2) Madden Focuses on effective communication in a multi-disciplinary context. Students will read and critique published public health genetics literature, and learn and apply principles of effective written and oral communication to public health genetics topics of their choice. Credit/no credit only. Offered: jointly with PHG 509.

HSEV 510 Society and Health (3) Spigner Analysis of social inequalities in health and service use by class, gender, and the social construction of race. Examines biological, cultural, social, political, and economic determinants which consistently put certain minority groups within Eurocentric societies at higher risk for inequitable health status and provision. Prerequisite: HSEV 511 or equivalent or permission of instructor.

HSEV 511 Introduction to Health Services and Public Health (3-4) Thompson 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.

HSEV 515 Health Care and Society (3) Lafferty 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: jointly with PHARM 541.

HSEV 516 Introduction to Health Services—Extended Degree (4) Wickizer 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 Degree program. Offered: A.

HSEV 517 Provision of Health Services—Extended Degree (2) Baesler 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: HSEV 516, registration in Extended M.P.H. Degree program. Offered: W.

HSEV 518 Social and Ethical Issues (2, 4) Mastroianni Presents introduction to ethical issues in public health policy and practice. Additional one credit unit option for students interested in 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.

HSEV 520- Methods in Applied Community Research (2) Astley 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.

HSEV 522 Health Program Evaluation (3-4) Grembowski 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 implemen-tation. Case studies drawn from health field illustrate various types of evaluations. Prerequisite: background in introductory statistics.

HSEV 523 Community Health Assessment (3) Connel Survey of approaches and tools to measure health status and health-care problems in defined communities. Topics include: uses and limitations of available data; community surveys; public health surveil-lance; problem identification and needs assessment; measurement of community health indices; analytic methods; and presentation techniques for program and policy planning.

HSEV 526 Qualitative Research Methods for Public Health (4) Bezruzhcka 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. Offered: Sp.

HSEV 528 Critically Appraising and Applying Evidence in Health Care (3) Pinsky, 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 and limitations of data, analyses, study design/applicability to a current patient's problem. Prerequisite: permission of instructor. Offered: jointly with MEDEP 540; W.

HSEV 529 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 MEDEP 541; Sp.

HSEV 531 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: jointly with EPI 531; A.

HSEV 533 Population, Health, 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.

HSEV 534 Comparative International Health Systems (2) Kaufman Reviews the effects of political, cultural, social, political, resource constraints on health policy and organization, health status utilization, and financing. Interprets information and feasibility of alterna-tives. Required paper. Prerequisite: graduate standing or permission of instructor.

HSEV 536 Emerging Infections of International Public Health Importance (3) Kimball Overview of current emerging infections worldwide and contribut-ing factors. Design of a surveillance and prevention strategy required. Offered: jointly with EPI 529; in res-idence, odd years; online, even years; W.

HSEV 537 Economic Development and Health (1, max. 3) Gibb Discusses issues of broad interest in the areas of economics, development, and health. Credit/no credit only. Offered: AWSp.

HSEV 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 develop-ing countries. Usefulness, validity, limitation of vital records, health reports, household (and cluster) sur-vveys, nutritional anthropometry, and qualitative meth-ods discussed. Lectures, lab, computer, and student participation in community-based survey. Offered: jointly with EPI 539.

HSEV 541- Topics in Maternal and Child Health I (3) Bell, Freeze topics. Offered: jointly with EPI 521.

HSEV 542 Epidemiology of Maternal and Child Health Problems (3) Freeze 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, abortion, 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.

HSEV 543 Topics in Maternal and Child Health III (3) Hubner Provides an overview of contextually based frameworks for understanding growth and development. Identifies and describes the conceptual and application issues relevant to health and human development. Offered: Sp.

HSEV 544 Maternal and Child Health in Developing Countries (3) Mercer Emphasizes critical health systems 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 EPI 544.

HSEV 550 Policy and Economics: Fundamentals and Applications (3) Katz, Madden 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. Offered: W.

HSEV 551 Health Law (3) Katz, Madden Analysis of the legal system and current legal problems as they relate to the financing and delivery of health care services. Offered: Sp.

HSEV 552 Health Policy Development (3) Katz, Madden Focuses on development and public policy concerns 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) Hagensen
Understanding of health policy making within the con-
text of American politics. Health policy is examined in light of political leadership, the legisla-
ture, the initiative process, rule making, interest groups, and lobbying. Prerequisite: HSERV 551, a
basic understanding of the American health care sys-
tem, or permission of instructor.

HSERV 554 Health Legislation Seminar (1) Licheli-
ni Discussion of current state health policy topics with legis-
latives staff and others involved with state health
policy. In addition to two sessions on campus, course
meets once during the quarter in Olympia. Credit/no
credit only.

HSERV 560- Introduction to Health Promotion and
Planning (3) Downer Overview of behavior change
theory and comprehensive approach to planning,
implementing, and evaluating health promotion inter-
ventions. Links theory to practice. Uses
PRECEDE/PROCEED planning model by Green and
Kreuter as framework.

HSERV 561- Application of Learning Theory to
Health Education (3) Downer Designed to help stu-
dents apply Popular Education theory and practice
to preparation, implementation, and evaluation of
health education. Students design, teach, and evaluate four
separate teaching sessions (one between each sem-
inar) using theory and principles of Popular Education
learned to date. Prerequisite: graduate standing or
permission of instructor.

HSERV 570 Seminar on Issues in Social Medicine
(3) Rhodes Qualitative research organized around
selected works in sociology, anthropology, and pub-
lic health. Readings and discussion of literature, indi-
vidual class presentations. Addresses fellowship pro-
grams and student research projects.

HSERV 572 Community Development for Health
(4) Hagopian, House Structured overview of commu-
nity development in the health field. Discusses power
and leadership, ethical, legal, administrative, and
financial issues; organizing special groups; evalua-
tion; community assessments; and approaches and
tools for community development. Offered: W.

HSERV 573 Community Development for Health
Seminar (1) Provides an opportunity for students to
hear from skilled and talented leaders who are work-
ing to improve the health status in specific com-
munity development strategies. Topics include sus-
tainability, competency, civil society, cultural issues,
community organizing, specific community develop-
ment techniques, ethical and legal issues, financial
and economic problems, power/leadership, and evalu-
aton.

HSERV 575 Seminar in Biobehavioral
Interventions, Communications, and Cancer
Outcomes II (1-3, max 3) An intensive, case-focused
review of methods for conducting research in cancer
prevention and control, covering areas related to epi-
demiology, genetic epidemiology, clinical trials, and
translational research as it applies to cancer. Includes
faculty lectures, discussions of new proposals, and
trainee presentations of research ideas.

HSERV 580 Society, Chronic Illness, and Disability
(3) Hedrick Definition and assessment of chronic ill-
ness, disability, and health status. Analysis of chronic
illness and disability using frameworks from social
sciences and public health. Dimensions of disable-
ment as they affect provision of health services.
Research on effectiveness of services and approach-
es to improvement. Prerequisite: HSERV 511 or per-
mission of instructor.

HSERV 581 Health Promotion and Disease
Prevention (4) Bowen Health promotion planning,
implementation, and evaluation models studies
regarding strengths, weaknesses, and effectiveness.

Students critique strategies to modify behavioral fac-
tors that influence lifestyle of individuals, including
decisions influencing their reciprocal relationship with
environmental factors that affect the health of individ-
uals, organizations, and communities. Prerequisite:
HSERV 511.

HSERV 582- Health Behavior and Preventive
Medicine (3-4) Meischke Overview of theoretical
perspectives in health behavior at the individual,
interpersonal, and community level. Focuses on increas-
ing skills in describing, applying, and integrat-
ing 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) Sullivan, Veenstra Methods and tech-
niques for evaluating costs and cost-effectiveness of
health, medical, and pharmaceutical interventions.
Emphasis on economic evaluation, decision analy-
sis, 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; A.

HSERV 584 Evaluating Cost and Outcomes in
Health and Medicine 2 (3) Patrick, Sullivan, Veenstra
Concepts and methods for evaluating cost and out-
comes of health and medical interventions with a
focus on cost-effectiveness analysis, pharmacoecono-
my, health policy, and life assessment, resource allo-
cation, and medical decision-making.
Prerequisite: permission of instructor. Offered: jointly
with PHARM 535.

HSERV 586 Medical Geography (3) Mayer
Geography of disease, consideration to health sys-
tems planning. Distributions, diffusion models, migra-
tion studies. Application of distance, optimal location
tools to health systems planning; emergency med-
cal services, distribution of health professionals;
cultural variations in health behavior. Prerequisite: fami-
larity with social science research, health-related
issues. Offered: jointly with GEOG 580.

HSERV 587 Health Policy Economics (3) Madden
Applies economic theory to selected topics in health
care and health services. Includes industry organiza-
tion, government regulation, and public health issues.
Emphasizes policy implications of these applications.

HSERV 588 Community Approaches to Health
Promotion (3) Thompson Provides opportunities to
critically examine community-based health promo-
tion interventions and the design, evaluation, and
implementation issues they raise. A wide range of dis-
ciplinary 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 con-
ference appropriate to the topic selected by the stu-
dent. The topic chosen will be within the special com-
petence of the faculty participating in the course, in
the areas of health-care delivery and health-care
administration. Also special summer format present-
ing introductory material may be taken with ENV H
590 and/or EPI 590. For more information and per-
mission, consult department program adviser.

HSERV 592 Program Seminars (1-6, max. 6)
Graduate seminars organized to address specific
educational needs of students in various fellowships,
residencies, and other specialized programs within the
areas of Health Sciences (i.e., maternal and child
health, international health, preventive medi-
cine, 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, med-
ical practice settings, public health agencies, special
problem clinics and facilities, environmental pro-
grams and services. Prerequisite: student'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, devel-
oment of approach, and written paper on conclu-
sions. Prerequisite: registration in extended MPPS,
degree program and satisfactory completion of the
first summer's course work.

HSERV 600 Independent Study or Research (*)
Prerequisite: permission of instructor.

HSERV 700 Master's Thesis (*) Prerequisite: permis-
sion of instructor.

Health Services Management

Courses for Graduates Only

HSGMGT 500 Seminar in Managed Care (2)
Dawling Examination of the organization and man-
agement of managed-care health plans and delivery
systems. Focuses on features that influence the effec-
tiveness of such organizations. Goals, functions, organiza-
tional structure, and technology of the interna-
tional systems common to managed care are discussed
with executives from health plans and delivery sys-
tems. Credit/no credit only. Offered: W.

HSGMGT 501 Epidemiology/Critical Evidence
Appraisal (3-4) Kopjar Basic knowledge about meth-
ods used in epidemiology and their application to crit-
ical appraisal of clinical, epidemiological, and health
administration literature for evidence-based manage-
ment of healthcare organizations, improvement of
delivery of health services, and for creating health
policies. Offered: W.

HSGMGT 502 Evidence-Based Health Care
Planning (3-4) Kopjar, Richardson Applies the tech-
niques of evidence-based medicine to design and eva-
luate the design and evaluation of population-based health
programs. It is the third course in a three-course sequence. Offered: Sp.

HSGMGT 512 Introduction to Management in
Health Services (3) Dawling Overview of managerial
roles, such as supervising and motivating, approach-
es 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 respon-
sibilities.

HSGMGT 513 Allocating Health Care Resources:
A Population Based Perspective (4) Conrad
Analysis of health services financing in the United
States, comparison with systems of other develop-
ed countries. Develops analytic and normative
frameworks for examining public and private health
insurance. Study of pricing, underwriting, benefit
design, and delivery system; financing integration
issues. Prerequisite: HSERV 511 or equivalent or per-
mission of instructor. Offered: Sp.

HSGMGT 514 Health Economics (3) Wickizer 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 hospitals,
physicians, and pharmaceuticals. Emphasis on using
economics to examine issues and solve problems. Prior economics courses not required. Offered: W.
HSMGMT 522 Applied Data Analysis (3) Cheddle, Cornell Practical experience in quantitative research, using a data set of their choosing to formulate a research question, clean and edit the data, and do the analysis. For second-year students in the School of Public Health who plan to do quantitative analysis for the their thesis or project. Credit/no credit only. Offered: W.

HSMGMT 523 Informatics in Health Care Management (3) Masuda Medical informatics concerns the representation, organization, and utilization 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. Offered: W.

HSMGMT 526 Selected Topics in Health Informatics (1-3, max. 12) Masuda 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. Offered: jointly with MEDED 590, AUpS.

HSMGMT 543 Social and Behavioral Strategies for Improving Health (3) Siona 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 treatment.

HSMGMT 545 Capstone Integrative Seminar (4) Scott Design for the final year 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. Offered: Sp.

HSMGMT 546 Long-Term Care (3) Hawley Learning experience for graduate students in health services administration in order to apply 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 Organization (3) Richardson, Sappington 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 and other graduate students.

HSMGMT 561 Health Planning: The Management of Change (3-4) Erbsboeser Designing realistic implementation strategies at beginning of planning process to optimize impact of planning on real problems. Discussion of ways in which change is brought about and decisions made and implemented. Includes managing planning process, work plans, stakeholders, negotiation, and working with groups. Prerequisite: HSERV 511 or permission of instructor. Offered: A.

HSMGMT 562 Strategic Management of Health Care Organizations (3-4, max. 4) Dowling Management of goals, strategy, and structure in health care organizations. Design of external relation-
Faculty

Chair
Kenneth Daniel Stuart

Professors
Campbell, Lee Ann * 1985; PhD, 1982, Pennsylvania State University; molecular biology and pathogenic mechanisms of chlamydiae.

Carter, William G. * 1981; PhD, 1974, University of California (Davis); elucidation of components in cell attachment and cell spreading in normal cells.

Grabstein, Kenneth 1998, (Affiliate); PhD, 1982, University of California (Berkeley).

Grayston, J. Thomas * 1960, (Adjunct); MD, 1948, MS, 1952, University of Chicago; infectious causes (Chlamydia pneumoniae) of atherosclerotic cardiovascular disease.

Hakomori, Sen-Itiroh * 1967; MD, 1951, DrMedS, 1956, Tohoku Imperial University (Japan); membrane biochemistry and glycoproteins.

Kenny, George E. * 1961; PhD, 1961, University of Minnesota; antigenic structure.

Kuo, Cho-Chou * 1969; MD, 1960, National Taiwan University, PhD, 1970, University of Washington; chlamydiae.

Leboeuf, Renee C. * 1987; PhD, 1985, Harvard University, MD, 1987, University of Massachusetts; genetic and nutritional regulation of proteins involved in lipid transport.

Lukehart, Sheila A. * 1980, (Adjunct Research); PhD, 1978, University of California (Los Angeles); immunology of infectious diseases, microbiology, sexually transmitted diseases.

McElrath, Margaret Juliana * 1990, (Adjunct); PhD, 1978, MD, 1980, Medical University of South Carolina; infectious diseases.

Parkinson, Alan J. 1996, (Affiliate); PhD, 1976, Otago University (New Zealand); prevention and control of infectious diseases in Arctic populations.

Parsons, Marilyn * 1981; PhD, 1979, Stanford University; parasite cell biology.


Rausch, Robert L. * 1978, (Emeritus); DVM, 1945, Ohio State University, PhD, 1949, University of Wisconsin; parasitology, helminthic zoonoses.

Reed, Stephen G. * 1993; PhD, 1979, University of Montana; immune response to human pathogens.

Roberts, Marilyn C. * 1981; PhD, 1978, University of Washington; antibiotic resistance genes, plasmids, sexually transmitted diseases, oral microbiology.

Rosenfeld, Michael E. * 1992; PhD, 1981, University of Wisconsin; mechanisms of atherogenesis and macrophage gene expression.

Stuart, Kenneth Daniel * 1985; PhD, 1969, University of Iowa; molecular biology of parasites.


Van Voorhis, Wesley C. * 1986, (Adjunct); PhD, 1983, Rockefeller University, MD, 1984, Cornell University; infectious diseases.

Associate Professors
Belury, Martha 2002, (Affiliate); PhD, 1992, University of Texas (Austin).

Bosch, Marnix L. * 1994, (Affiliate); PhD, 1987, University of Leiden (Netherlands); molecular virology of lentiviruses and herpes viruses, as well as animal models for viral diseases.


Feagin, Jean E. * 1993; PhD, 1982, Stanford University; molecular parasitology, emphasizing gene organization and expression in protozoans.

Haigwood, Nancy L. * 1994; PhD, 1980, University of North Carolina; host immunity in the control and prevention of AIDS.


Kahn, Michael * 1992; PhD, 1983, Yale University; molecular recognition, protein structure-function relationships, peptidomimetics.

Kurath, Gaeil * 1994, (Affiliate); PhD, 1984, Oregon State University; molecular biology and evolution of RNA viruses that infect fish.

Lampe, Paul D. * 1996; PhD, 1984, University of Minnesota; regulation of intercellular communication via gap junctions.

Myler, Peter J. * 1993; PhD, 1982, University of Queensland (Australia); regulation of gene expression in protozoan parasites.

Rose, Timothy M. * 1991; PhD, 1981, University of Geneva (Switzerland); molecular biology of tumor viruses, cell growth, differentiation, and transformation.

Smatrakos, Leonidas 2001; PhD, 1988, McGill University (Canada).

Thouless, Margaret E. * 1980; PhD, 1974, University of Birmingham (UK); retroviruses, herpes viruses, enteric viruses, immunodiagnosis, virus variability.

White, Theodore C. * 1996; PhD, 1984, University of Michigan; molecular mechanisms of virulence and drug resistance in pathogenic yeasts.

Assistant Professors
Cangelosi, Gerard A. * 1985, (Research); PhD, 1984, University of California (Davis); molecular biology of tuberculosis.

Freitag, Nancy E. 2000; PhD, 1989, University of California (Los Angeles); bacterial pathogenesis and regulation of gene expression.

Koelle, David 1988, (Adjunct); MD, 1985, University of Washington; allergy and infectious diseases.

Lingappa, Jaisri * 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.

Sherman, David R. * 1998; PhD, 1987, Vanderbilt University; molecular genetics, microbiology and biochemistry of pathogenic mycobacteria.

Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crscat/.

UCONJ 420 Biological Safety Practices (1) Kenny See University Conjoint courses.

PABIO 445 Medical Virology (2) NW Thouless, Wong 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. Offered: jointly with MIRCROM 445; Sp.

PABIO 498 Undergraduate Thesis (*)

PABIO 499 Undergraduate Research (*)

Courses for Graduates Only

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 514 Animal Models and Public Health Genetics (2) LeBoeuf Contributions of animal models to studies of human diseases. Concepts of multigenic diseases, chromosomal mapping, quantitative traits with emphasis on diseases of major public health impact. Interaction between inheritance and nutrition. Focus on mouse genetics. Prerequisite: GENET 571, PHG 513, or permission of instructor. Offered: jointly with NUTR 514/PHG 514.

PABIO 525 Cell Surface Membrane in Cell Biology (3) Carter, Hakomori Structure and function of cell surface membranes in relation to development of various diseases, particularly infection, cancer, and inflammation. Examines how specific cell surface molecules are targets of recognition by microbes, tumor cells, and recruited inflammatory cells. Prerequisite: BIOC 440, BIOC 441, BIOC 442, and permission of instructor. Offered: jointly with MIRCROM 525.

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 MEDE 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. Offered: Sp.

PABIO 556 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.
School of Social Work

210 Social Work/ Speech and Hearing Sciences

General Catalog Web page:
www.washington.edu/students/gencat/academic/School_Soc_Work.html

School Web page:
depts.washington.edu/sswweb/

Dean
Dorothy Van Soest

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 undergraduate program prepares students for entry-level generalist practice; students earn the Bachelor of Arts in Social Welfare degree. The graduate professional program prepares students for advanced practice within a field of concentration; students earn a Master of Social Work degree. Both professional 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. For the three programs, 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 a concurrent degree program with the School of Public Health and Community Medicine leading to the M.S.W. and M.P.H. degrees.

Graduate Program
Graduate Program Coordinator
Box 354900
206-543-8617
sswstsv@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 MSW 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, service, 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. At the time of publication, the advanced curriculum is being revised. Please check the School’s Web page (depts.washington.edu/sswweb/) for the most current information.

Students in the Evening Degree and Outreach options may also select from courses in advanced policy and services and methodology. Elective offerings are determined by a vote of students in the cohort.

Admission Qualifications

Admission to the M.S.W. program requires formal admission to the Graduate School as well as to the School of Social Work. Applicants are required to have a bachelor’s degree, a strong academic background, and social-service experience. Applicants must submit transcripts, references, application forms, Graduate Record Examination scores, résumé, and an admission essay to be considered for autumn-quarter entry. January 15 is the closing date for receipt of applications and materials. Admission is competitive and selection is based on a review of the applicant’s submitted materials. Current application materials can be obtained from the School’s Admissions Office, 23 Social Work/Speech and Hearing Sciences Building, or by calling 206-643-5676 in Seattle or 1-800-558-8703.

Financial Aid

A limited number of financial-aid opportunities are available to students. 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 to a few resident tuition scholarships which cover only one or two quarters of tuition. Inquiries may be directed to the Office of the Scholarship Committee, School of Social Work.

Master of Social Work-Master of Public Health Concurrent Degree Program

The School of Social Work participates with the School of Public Health and Community Medicine in a concurrent dual degree program leading to the M.P.H. and M.S.W. degrees. The program offers interdisciplinary preparation in the fields of public health and social work. Historically, public health and social work have shared an interest in a preventive approach to health and social problems, a community perspective, and a focus on vulnerable populations. Both fields recognize the interrelationship of the health, social, and behavioral components of contemporary problems and the need for interventions and research that address all three components. The concurrent degree program prepares professionals to function at the interface of both fields, in practice, research, planning, administration, and policy development.

Additional information concerning the concurrent degree program may be obtained from the School of Social Work’s Admissions Office.

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. The program builds on the premise that social welfare scholarship must be scientifically based, responsive to service and practice needs, and informed of developments in related fields and disciplines. After the first year of required courses, each student’s program of study is individually designed and focuses on well-defined substantive and interpersonal 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 are expected to 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 early in 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 consists mainly of 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 is designed to take approximately four years, although academic excellence in learning and performance is always the first criterion for degree progress.

Admission

Admission is highly selective and students are admitted for autumn-quarter entry only. Applicants should have a master’s degree in social work or comparable preparation in 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 to 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 a range of concerns in social welfare and of faculty resources. The deadline for receipt of admission material is January 2. For more information, call 206-685-1680, or email pdhmhrp@u.washington.edu.

Financial Aid

Stipends, scholarships, teachings and research assistantships, and tuition waivers are available. Every effort is made to provide aid to each student who requires it, and research and teaching assistant positions are provided to all Ph.D. students for at least the first three years. The financial assistance provided is not usually adequate to cover all educational and living expenses. Financial-aid forms required for financial assistance must be submitted by February 15 by completing the Free Application for Federal Student Aid (FAFSA).

Faculty

Professors

Catalano, Richard F. * 1979; PhD, 1982, University of Washington; crime, violence and drug abuse prevention, promotion of positive youth development.

Conte, Jon * 1990; PhD, 1979, University of Washington; effects of sexual abuse on children and adult survivors, prevention of sexual abuse.

Gilchrist, Lewayne D. * 1981; PhD, 1981, University of Washington; health promotion and disease pre-
vention in community settings, women's health, research methods.


Hawkins, John D. * 1976; PhD, 1975, Northwestern University; crime and delinquency, substance abuse, social development, research, prevention.

Hooymans, Nancy * 1979; PhD, 1974, University of Michigan; aging, caregivers of dependents, feminist practice, community organization development.

Jaffee, Ben-Joshua * 1967, (Emeritus); DSW, 1972, Columbia University; research methodology, program evaluation, needs assessment, evaluation of direct practice.

Lazzari, Marceline * 1998, (Adjunct); PhD, 1990, University of Denver; women, human diversities, and teaching/learning collaboration.

Levy, Rona L. * 1975; PhD, 1974, University of Michigan; research methodology, single-case evaluation, health care, behavioral medicine, biofeedback.

Longes, John F. * 1993, (Emeritus); PhD, 1970, University of Michigan; race and ethnicity; children, youth, and families.

Maier, Henry W. * 1985, (Emeritus); PhD, 1959, University of Minnesota; child development, group child care, direct practice with individuals, families, and groups.

Morrison, Diane M. * 1980; PhD, 1982, University of Washington; sexual decision-making, attitudes and behavior, teen pregnancy.

Nurius, Paula S. * 1984, PhD, 1984, University of Michigan; social cognition, violence against women, stress and coping, critical thinking.

Parsons, Jack R. 1978, (Emeritus); MA, 1940, University of the Pacific, MS, 1943, Columbia University, PhD, 1958, University of Chicago; social work.

Pecora, Peter * 1990; PhD, 1982, University of Washington; child welfare practice, foster care, family preservation services, personnel management.

Resnick, Herman * 1967, (Emeritus); PhD, 1970, Bryn Mawr College; organizational development, group dynamics, planned change, environmental psychology, social welfare.

Richey, Cheryl A. * 1973; DSW, 1974, University of California (Berkeley); cultural and gender issues, intervention design and research.

Roffman, Roger Alan * 1972; DSW, 1983, University of California (Berkeley); alcoholism and drug abuse, research methodology, program evaluation.

Stier, Florence E. * 1964, (Emeritus); MS, 1941, University of Pittsburgh; social welfare planning and program development.

Sutton, Sharon E. * 1998, (Adjunct); MArch, 1973, Columbia University, PhD, 1982, City University of New York; the effect of the environment on learning and community well-being.

Takagi, Calvin Y. 1961, (Emeritus); MSW, 1962, PhD, 1958, University of Minnesota; mental health services, child development, services to minority populations.

Weatherley, Richard A. * 1975, (Emeritus); PhD, 1977, Massachusetts Institute of Technology; social welfare policy and administration, poverty and inequality.

Whittaker, James * 1970; PhD, 1970, University of Minnesota; interpersonal practice with individuals, families, and small groups; child and family policy.

Associate Professors

Anderson, James R. * 1968, (Emeritus); MA, 1954, Indiana University; social work and health care, interdisciplinary teams in health care, growth and development.

Arthur, Michael * 1991, (Research); PhD, 1990, University of Virginia; Project Director—Community Youth Activity, Six State Prevention Needs and Assessment.

Balassone, Mary Lou * 1986; DSW, 1987, University of California (Berkeley); health care policy and delivery systems, maternal and child health.

Berleman, William C. * 1965, (Emeritus); MSW, 1960, University of Washington; undergraduate social welfare, social welfare policy.

Dear, Ronald Bruce * 1970; DSW, 1972, Columbia University; welfare and income maintenance policy programs, fiscal impact of social programs.

Duplicca, Moya M. * 1963; MSW, 1956, St Louis University; social welfare policy and history, women and social policy, values and ethics.

Ellis, Jack A. N. * 1966, (Emeritus); MSW, 1955, University of British Columbia (Canada); social welfare administration and planning, social work and the justice system.

Erena, Pauline * 1993; PhD, 1983, Cornell University; non-traditional families including: step-families, foster families, single-parent families.

Fredriksen, Karen Ilene * 1993; PhD, 1993, University of California (Berkeley); gerontology, work and family dependent care, non-traditional families, social policy.

Hanneman, Carl F. 1967, (Emeritus); MA, 1951, Indiana University; aging, alcoholism, human services practice.

Harachi, Tracy * 1987, (Research); PhD, 1991, University of Washington; child development, interventions for children and families, cultural adaptation and ethnic identity.

Herrick, James E. * 1966, (Emeritus); DSW, 1966, University of Southern California; social policy, social work and the justice system, research methodology, social and cultural change.

Ishisaka, Anthony H. * 1971; DSW, 1978, University of California (Berkeley); social work practice, mental health services, services to minority communities, human development.

Kelley, Jerry Lee * 1961, (Emeritus); MA, 1949, University of Chicago; social workers in schools, interviewing and counseling in human services.

Kemp, Susan 1994; 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.

Kruzych, Jean * 1991; PhD, 1982, University of Washington; child maltreatment and substance abuse, influence of organizational characteristics on human service.

Leigh, James William * 1967, (Emeritus); MSW, 1954, Wayne State University; social work practice with families, multiethnic and multicultural concerns, family life education.

Lindenberg, Catherine S. 1998, (Adjunct); DPH, 1985, Johns Hopkins University; public health management and policy.

Marcenko, Maureen * 1997; PhD, 1988, McGill University (Canada); research on the efficacy of interventions for families.

Meyers, Marcia 2001; PhD, 1992, University of California (Berkeley); gender, poverty, inequality, welfare, child care, social policy, policy implementation.

Miller, Sidney * 1962, (Emeritus); MS, 1953, Columbia University; children, adolescents, and their families, interviewing, crisis intervention, marital counseling.

Mundt, Lenora B. 1985, (Emeritus); MSW, 1950, University of Washington; family treatment.

Ryan, Rosemary * 1991, (Research); PhD, 1987, University of Washington; behavioral HIV prevention research; AIDS services policy, planning and evaluation.

Semke, Jeanette * 1988, (Research); PhD, 1991, University of Washington; mental health services research, older adults with neuropsychiatric disorders.

Sohng, Sue 1990; PhD, 1989, University of Pittsburgh; action research and chronic mental illness, cross-cultural social work practice.

Teather, Edward Charles * 1966, (Emeritus); MSW, 1962, University of British Columbia (Canada); residential treatment of children, group work, program development.

Uehara, Edwina * 1990; PhD, 1987, University of Chicago; qualitative/quantitative research methods, cross-cultural mental health, human services organization.

Walters, Karina 2000; PhD, 1995, University of California (Los Angeles); American Indian health and mental health research and multicultural counseling.

Assistant Professors

Ai, Amy 1999; PhD, 1996, University of Michigan; health, mental health, aging, spirituality, coping, depression, psychosocial adjustment, PTSD.

Allen, Aleithia Lee * 1966, (Emeritus); MSW, 1950, Boston University, PhD, 1986, Walden University; social work practice, social policy, interviewing, minority women, minority families, adolescents.

Almgren, Gunnar R. 1986; MSW, 1979, Portland State University, PhD, 1990, University of Washington; the relationship between race, ethnicity, socioeconomic status, and health outcomes.

Cherin, David * 1999; PhD, 1996, University of Southern California; community-based health research focused on service delivery systems for chronically/terminally ill.

Cook, Douglas * 1990, (Clinical); PhD, 1990, University of Washington; neurodevelopmental disabilities: parents with, mental retardation, learning disabilities.

Emlet, Charles 2000, (Adjunct); MSW, 1979, California State University, Fresno, PhD, 1998, Case Western Reserve University; gerontology, community-based long-term care, older adults with HIV/AIDS.

Evans-Campbell, Teresa A. 2000; PhD, 2000, University of Washington; sexual decision-making, attitudes and behaviors: parents with; health promotion for; clinic services.

Farrell, Nancy 1998; PhD, 1998, University of California (Berkeley); mental health policy.
Course Descriptions

See page 39 for an explanation of course numbers, symbols, and abbreviations.

For complete undergraduate course descriptions, see the undergraduate volume of the General Catalog or visit the online course catalog at www.washington.edu/students/crs-cat/.

SCHOOL OF SOCIAL WORK / COURSE DESCRIPTIONS 445

SOC WF 443 Facilitating Intergroup Dialogue (3) 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 452. Credit/no credit only.

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 (5) Readings, lectures, and discussions pertaining to significant topics of special and current interest to social workers.

Social Welfare Courses for Graduates Only

SOC WL 552 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 Doctoral Seminar in Teaching Preparation (3) Focus on teaching content and issues integral to being a skillful instructor. Issues and related skills generalized to range of post-graduate positions. Promote understanding of pedagogical issues and development of specific teaching skills. Credit/no credit only. Prerequisite: doctoral student. Offered: A.

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

Hirtenkoh, Todd 1995; PhD, 1998, University of Washington; the etiology and prevention of antisocial behavior among children and adolescents.

Huang, Bu 1997; (Research); PhD, 1997, Bowling Green University; juvenile delinquency, risky sexual behavior, criminological theories, problem behavior, violence.

Laakso, Janice 1999; (Adjunct); PhD, 1999, University of Texas (Austin).

Lincoln, Karen D. 2001; (Acting); PhD, 2002, University of Michigan; informal social networks; role of social and personal resources on stress process; black families.

Lindhorst, Taryn 2001; PhD, 2001, Louisiana State University; violence against women, poverty, gay/lesbian issues, multicultural practice.

Nagda, Biren A. * 1996; PhD, 1996, University of Michigan; multicultural and empowerment approaches in social work, organizations and education.

Ogilvie, Myrth 2001, (Adjunct); MSW, 1982, PhD, 1999, Portland State University.

Oxford, Monica L. 2001, (Research); PhD, 2000, University of Washington; child and adolescent development, parenting, longitudinal data analysis, research methods.

Tajima, Emiko A. 1999; PhD, 1999, Bryn Mawr College; domestic violence; child abuse; parenting practices; law and social policy.

Senior Lecturers

Amidei, Nancy 1992; MSW, 1968, University of Michigan; poverty, public policy, advocacy.

Pearce, Diane * 1998; PhD, 1976, University of Michigan; the feminization of poverty.

Roberts, Elizabeth A. 1982; MSW, 1975, University of Washington; aging, social policy and aging, social work administration and field education.

Lecturers


Carrigan, Lynn 1981; MSW, 1981, University of Washington; spirituality, leadership, communications and ethics.

De Mello, Stan 1996; MSW, 1982, MPA, 1983, Dalhousie University (Canada); cross-cultural social work practice.


Haggerty, Kevin P. 1985; MSW, 1989, University of Washington; Project Director—Focus on Families, Raising Healthy Children; prevention.

Horn, Michael 2001; PhD, 2001, University of Washington; organizational development in child welfare; participatory action research; measurement theory.

Keenan, Lynn 1990; PhD, 1996, University of Washington; project development and initiation; school support; cross-cultural supervision; distance learning.

Macy, Jane 2000; PhD, 1999, University of Minnesota; continuing education, adult education, technology and social work practice.

Rivara, J'may B. 1985; MSS, 1975, Bryn Mawr College.
SOC WL 580 Introduction to Advanced Research Method and Design (3) Introduction to the broad scientific issues and the specific methodological strategies used in formulating and answering research questions within the field of social welfare. Offered: A.

SOC WL 581 Introduction to Advanced Research Method and Design (3) Introduction to the broad scientific issues and the specific methodological strategies used in formulating and answering research questions within the field of social welfare. Offered: W.

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., addressing and evaluating student outcomes, identifying class session goals and objectives, tailoring instruction methods to diverse learning styles. Offered: AWSpS.

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 598 Research Problems and Priorities in Social Work and Social Welfare (3-) Provides students with foundations in the definitions of theory, the socially constructed nature of theory and definition of social “problems”; conceptual and theoretical perspectives on human society, interaction, and change; and analysis of current conceptual models in social welfare literature. Prerequisite: admission to social welfare Ph.D. program or permission of instructor. 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: W.
Focus on relevant skills for social work administration (ADM) concentration. Offered: W.

SOC W 545 Advanced Social Work Research: Participatory Action Research for Multi-Ethnic Practice (1-3, max. 3) Sohng Principles and procedures for the evaluation of direct practice interventions, research methods involved in community needs assessment, program evaluation, and management-information systems. For Multi-Ethnic Practice (MEP) concentration. Offered: W.

SOC W 546 Multi-Ethnic Practice Methods (1-3, max. 12) Focus on specialized knowledge and skills necessary for effective social work with American-Indian, African-American, Asian-American, and Latino or Hispanic individuals, groups, and communities and for work in a variety of settings and fields of practice. Offered: AWSp.

SOC W 552 Planning and Program Development (3) Fredriksen, Kruzich Introduces the practice skills and knowledge required for specialized practice in agency management. Offered: W.

SOC W 553 Supervisory Leadership (3) Kruzich, Pecora Presents critical skills for major phases of the personnel process including recruiting, supervising, and supporting employees. Offered: A.

SOC W 554 Financial Management in Human Services (3) Focus on key budgeting concepts and techniques common to human service agencies including budget development, resource allocation, problems of fiscal control, fiscal record keeping, and cost analysis. Offered: W.

SOC W 555 Advanced Social Work Research: Using information to Improve Agency Performance for Administration (3) Uehara Principles and procedures for the evaluation of direct practice interventions, research methods involved in community needs assessment, program evaluation, and management-information systems. For Administration (ADM) concentration. Offered: W.

SOC W 556 Social Work Administration Methods (3, max. 9) Fredriksen, Kruzich, Pecora, Uehara Focus on relevant skills for social work administration, including such topics as fundraising, grantwriting, and advocacy. Offered: WSp.

SOC W 560 Adult Psychopathology (1) Roffman Introduction to major categories of adult psychopathology, differential diagnosis, applying diagnostic criteria to case examples, and use of DSM-IV in social work practice settings, including strengths and weaknesses of DSM-IV. Offered: A.

SOC W 561 Health and Mental Health Policy (3) Almgren Review of trends in the development of health and mental health policies and services in the United States, the linkage between key policies and care, initiatives for reform in policy and health/mental health care models, and social work roles. Offered: A.


SOC W 563 Advanced Health and Mental Health Practice I (3) Almgren, Conte, Levy, Rivara Emphasizes advanced social work practice skills in health and/or mental health settings. Attention is given to key theoretical bases for assessment and intervention with clients and client systems. Offered: A.

SOC W 564 Advanced Health and Mental Health Practice II (3) Almgren, Conte, Levy, Rivara Emphasizes advanced social work practice skills in health and/or mental health settings. Attention is given to key theoretical bases for assessment and intervention with clients and client systems. Offered: W.

SOC W 565 Advanced Social Work Research: Health and Mental Health (3) Levy Covers methods of measurement, direct practice evaluation, ethical issues, and research methodology of special interest in health and mental health settings. Additional topics may include grant writing, community needs assessment, and management information systems. Offered: W.

SOC W 566 Health and Mental Health Methods (3, max. 9) Roffman Focus on a variety of specialized social work practice roles in individual, developmental, family, and social institutional settings. Emphasis is given to advanced skills and knowledge for specialized expertise. Offered: WSp.

SOC W 592 Social Problems and Social Welfare (3, max. 9) Analysis of major social problems and social welfare service systems providing a systematic approach to assessing the scope, causes, social cost, and public policy alternatives in the provision of services related to such problems. Selected social problems are studied and related to the student's field.

SOC W 594 Advanced Human Services Practice (3, max. 9) Integration of practice and research with an understanding of and an ability to perform practice skills such as specification of problems and goals, intervention planning, evaluation. Scientific reasoning applied to practice tasks with problems including value conflicts and ethical dilemmas.

SOC W 595 Problem-Focused Human Development (3, max. 9) Focus on the social and developmental determinants of specific human problems and their impact on individual development, families, and social institutions. Some time given to examining the nature of organized social responses that are designed to deal with the specified human problem.

SOC W 597 Seminar (3, max. 6) Seminar for special topics in social work.

SOC W 598 Integrative Seminar (1-5, max. 12) Integrates specialized knowledge in social work settings. Credit/no credit only. 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 (*)
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ARCHITECTURE AND URBAN PLANNING, COLLEGE OF
ARCH ARCHITECTURE
CEP COMMUNITY AND ENVIRONMENTAL PLANNING
CM CONSTRUCTION MANAGEMENT
L ARCH LANDSCAPE ARCHITECTURE
URBDP URBAN DESIGN AND PLANNING

ARTS AND SCIENCES, COLLEGE OF
AAS ASIAN AMERICAN STUDIES
AES AMERICAN ETHNIC STUDIES
AFRAM AFRO-AMERICAN STUDIES
AA American Indian Studies
ALKAD AKKADIAN
ALTAL ALTAL
AMATH AMERICAN STUDIES
ANTH ANTHROPOLOGY
ARAB ARABIC
ARAMAIC ARAMAIC
ARCHY ARCHAELOGY
ART ART
ARTH ART HISTORY
ASIAN ASIAN LINGUISTICS
ASTR ASTRONOMY
ATMS ATMOSPHERIC SCIENCES
BIO BIOLOGICAL ANTHROPOLOGY
BIOLOGY
BOTANY BOTANY
BULGR BULGARIAN
C LIT COMPARATIVE LITERATURE
CHEM CHEMISTRY
CHINESE CHINESE
CHSTU CHICANO STUDIES
CL AR CLASSICAL ARCHAEOLOGY
CL LI CLASSICAL LINGUISTICS
CLAS CLASSES
COOM COMMUNICATION
CR SB CROATIAN-SERBIAN
CSASS CENTER FOR STATISTICS AND THE SOCIAL SCIENCES
CZECH CZECH
DANCE DANCE
DANISH DANISH
DRAMA DRAMA
DXARTS DIGITAL ARTS AND EXPERIMENTAL MEDIA
ECON ECONOMICS
EGYPT EGYPTIAN
ENGL ENGLISH
ESS EARTH AND SPACE SCIENCES
ESTO ESTONIAN
EURO EUROPEAN
FINN FINNISH
FRENCH FRENCH
FRLING FRENCH LINGUISTICS
GEOG GEOGRAPHY
GERMAN GERMAN
GREEK GREEK
HBR HEBR
HINDI HINDI
HIST HISTORY
HSTAA HISTORY OF THE AMERICANS
HSTAM ANCIENT AND MEDIEVAL HISTORY
HSTAS HISTORY OF ASIA
HSTEU MODERN EUROPEAN HISTORY
HUM HUMANITIES
INDI INDIAN
INDON INDO-INDIAN
ITAL ITALIAN
JAPAN JAPANESE
KOREAN KOREAN
LATIN LATIN
LATV LATVIAN
LING LINGUISTICS
LITH LITHUANIAN
LSJ LAW, SOCIETIES, AND JUSTICE

MATH MATHEMATICS
MUSAP APPLIED MUSIC
MUSED MUSIC EDUCATION
MUSEN MUSIC ENSEMBLE
MUSIQ MUSIC
NEAR E NEAR EASTERN LITERATURE AND CIVILIZATION
NORW NORWEGIAN
PHIL PHILOSOPHY
PHYS PHYSICS
POL S POLITICAL SCIENCE
POLISH POLISH
PERSAN PERSIAN
PSYCH PSYCHOLOGY
RELIG INT S: RELIGIOUS STUDIES
RLNG ROMANIC LINGUISTICS
ROMAN ROMANIC LANGUAGES AND LITERATURE
ROMN ROMANIAN
RUSS RUSSIAN
SCAND SCANDINAVIAN
SIS INTERNATIONAL STUDIES
SISAT INT S: ASIAN AND PACIFIC AMERICANS
SISAF INT S: AFRICAN
SISCA INT S: CATHOLIC
SISCE INT S: EAST ASIAN AND PACIFIC
SISJE INT S: JEWISH
SISLA INT S: LATIN AMERICAN
SISME INT S: MIDDLE EAST
SISRE INT S: RUSSIA, EASTERN EUROPE, AND CENTRAL ASIA
SISSE INT S: SOUTH ASIA
SISSE INT S: SOUTHEAST ASIA
SLAV SLAVIC
SLAVIC SLAVIC LANGUAGES AND LITERATURES
SNKRT SANSKRIT
SOC SOCIOLOGY
SPAN SPANISH
SPHSC SPEECH AND HEARING SCIENCE
SPLING SPANISH LINGUISTICS
STAT STATISTICS
SWED SWEDISH
THAI THAI
TURKIC TURKIC
VIET VIETNAMESE
WOMEN WOMEN STUDIES
ZOOLOGY

BUSINESS ADMINISTRATION,
SCHOOL OF
ACCTG ACCOUNTING
ADMIN ADMINISTRATION
BA BUSINESS ADMINISTRATION
BA RM BUSINESS ADMINISTRATION
B CMU BUSINESS COMMUNICATIONS
B ECON BUSINESS ECONOMICS
B POL BUSINESS POLICY
EBIZ E-BUSINESS
ENTRE ENTREPRENEURSHIP
FIN FINANCE
HRM HRM HUMAN RESOURCES MANAGEMENT AND ORGANIZATIONAL BEHAVIOR
IBUS INTERNATIONAL BUSINESS
IS INFORMATION SYSTEMS
MGMT MANAGEMENT
MKTG MARKETING
O E ORGANIZATION AND ENVIRONMENT
OPTMGT OPERATIONS MANAGEMENT
QMETH QUANTITATIVE METHODS
ST MGT STRATEGIC MANAGEMENT

DENTISTRY, SCHOOL OF
D HYO DENTAL HYGIENE
DENT DENTISTRY
DPHS DENTAL PUBLIC HEALTH SCIENCES
DNA DENTAL BIOLOGY
OS ORAL AND MAXILLOFACIAL SURGERY
ORALB ORAL BIOLOGY
ORALM ORAL MEDICINE
ORTHO ORTHODONTICS
PEDO PEDIATRIC DENTISTRY
PERIO PERIODONTICS
RES D RESTORATIVE DENTISTRY

EDUCATION, COLLEGE OF
ECDAI CURRICULUM AND INSTRUCTION
EDLPS EDUCATIONAL LEADERSHIP AND POLICY STUDIES
EDPSY EDUCATIONAL PSYCHOLOGY
EDSPE SPECIAL EDUCATION
EDTEP EDUCATION (TEACHER PREP)
EDUC EDUCATION

ENGINEERING, COLLEGE OF
A AERONAUTICS AND ASTRONAUTICS
CEE CIVIL AND ENVIRONMENTAL ENGINEERING
CER E CERAMIC ENGINEERING
CHEM COMPUTER SCIENCE AND ENGINEERING
ENG ELECTRICAL ENGINEERING
INDI INDUSTRIAL ENGINEERING
MEC MECHANICAL ENGINEERING
MET MECHANICAL ENGINEERING INDUSTRIAL ENGINEERING
MESE MATERIALS SCIENCE AND ENGINEERING
TC TECHNICAL COMMUNICATION

FOREST RESOURCES, COLLEGE OF
CFR COLLEGE OF FOREST RESOURCES
ESC ECOLOGY AND CONSERVATION
EHU ENVIRONMENTAL HORTICULTURE AND URBAN FORESTRY
F E FOREST ENGINEERING
F M FOREST MANAGEMENT
PSE PAPER SCIENCE AND ENGR

THE INFORMATION SCHOOL
IMT INFORMATION MANAGEMENT AND TECHNOLOGY
INFO INFORMATICS
INSC INFORMATION SCIENCE
LIS LIBRARY AND INFORMATION SCIENCE

INTERDISCIPLINARY GRADUATE
DEGREE PROGRAMS
GTTL GLOBAL TRADE, TRANSPORTATION, AND LOGISTICS STUDIES
MCB MOLECULAR AND CELLULAR BIOLOGY
MUSEUM MUSEOLOGY
NEUBEH NEUROBIOLOGY AND BEHAVIOR
NUTR NUTRITIONAL SCIENCES
OERM QUANTITATIVE ECOLOGY AND RESOURCE MANAGEMENT
QUAT QUANTUM STUDIES

INTERSCHOOL OR INTERCOLLEGE
PROGRAMS
BIOEN BIOENGINEERING
ENVIR PROGRAM ON THE ENVIRONMENT
Q SCI QUANTITATIVE SCIENCE
UCONJ UNIVERSITY CONJUNCT

LAW, SCHOOL OF
LAW L
LAW A LAW A
LAW B LAW B
LAW C LAW C
LAW D LAW D
LAW T LAW T

MEDICINE, SCHOOL OF
ANEST ANESTHESIOLOGY
B STR BIOLOGICAL STRUCTURE
BIOC BIOCHEMISTRY
C MED COMPARATIVE MEDICINE
CONJ CONJUNCTIVE COURSES
FAMED FAMILY MEDICINE
GENET GENETICS
HUBIO HUMAN BIOLOGY
IMJU INMUNOLOGY
LAB M LABORATORY MEDICINE
MBT MOLECULAR BIOTECHNOLOGY
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**Public Affairs, Daniel J. Evans School of**

PB AF  PUBLIC AFFAIRS

**Public Health and Community Medicine, School of**

BIOST  BIOSTATISTICS
ENHV  ENVIRONMENTAL HEALTH
EPI  EPIDEMIOLOGY
HSERV  HEALTH SERVICES
HSMGMT  HEALTH SERVICES MANAGEMENT
PABIO  PATHOBIOLOGY
PHG  PUBLIC HEALTH GENETICS

**Social Work, School of**

SOC WF  SOCIAL WELFARE (UNDERGRADUATE)
SOC WL  SOCIAL WELFARE (GRADUATE)
SOC W  SOCIAL WORK (MSW)