# Academic Calendar

## First Semester

<table>
<thead>
<tr>
<th>Event</th>
<th>1980-81</th>
<th>1981-82</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration, Thursday and Friday</td>
<td>Sept. 18, 19</td>
<td>Sept. 17, 18</td>
</tr>
<tr>
<td>Classes begin, Monday</td>
<td>Sept. 22</td>
<td>Sept. 21</td>
</tr>
<tr>
<td>Midsemester grades due in the Registrar’s Office, 8:00 a.m., Friday</td>
<td>Nov. 7</td>
<td>Nov. 6</td>
</tr>
<tr>
<td>Thanksgiving vacation begins, 12:00 Noon, Saturday</td>
<td>Nov. 22</td>
<td>Nov. 21</td>
</tr>
<tr>
<td>Thanksgiving vacation ends, 8:00 a.m., Monday</td>
<td>Dec. 1</td>
<td>Nov. 30</td>
</tr>
<tr>
<td>Christmas vacation begins, 12:00 Noon, Saturday</td>
<td>Dec. 20</td>
<td>Dec. 19</td>
</tr>
<tr>
<td>Christmas vacation ends, 8:00 a.m., Monday</td>
<td>Jan. 5</td>
<td>Jan. 4</td>
</tr>
<tr>
<td>Final examinations, Saturday through Friday</td>
<td>Jan. 24-30</td>
<td>Jan. 23-29</td>
</tr>
<tr>
<td>Final grades due in Registrar’s Office, 8:00 a.m., Monday</td>
<td>Feb. 2</td>
<td>Feb. 1</td>
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## Second Semester

<table>
<thead>
<tr>
<th>Event</th>
<th>1980-81</th>
<th>1981-82</th>
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</thead>
<tbody>
<tr>
<td>Registration, Thursday and Friday</td>
<td>Feb. 5, 6</td>
<td>Feb. 4, 5</td>
</tr>
<tr>
<td>Classes begin, Monday</td>
<td>Feb. 9</td>
<td>Feb. 8</td>
</tr>
<tr>
<td>Midsemester grades due in the Registrar’s Office, 8:00 a.m., Friday</td>
<td>Mar. 27</td>
<td>Mar. 26</td>
</tr>
<tr>
<td>Spring vacation begins, 12:00 Noon, Saturday</td>
<td>Apr. 4</td>
<td>Apr. 3</td>
</tr>
<tr>
<td>Spring vacation ends, 8:00 a.m., Monday</td>
<td>Apr. 13</td>
<td>Apr. 12</td>
</tr>
<tr>
<td>Final Examinations, Saturday through Friday</td>
<td>May 30-June 5</td>
<td>May 29-June 4</td>
</tr>
<tr>
<td>Commencement, Saturday</td>
<td>June 6</td>
<td>June 5</td>
</tr>
<tr>
<td>Final grades due in Registrar’s Office, 8:00 a.m., Monday</td>
<td>June 8</td>
<td>June 7</td>
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## Summer Session

<table>
<thead>
<tr>
<th>Event</th>
<th>1980-81</th>
<th>1981-82</th>
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</thead>
<tbody>
<tr>
<td>Registration, Monday</td>
<td>June 22</td>
<td>June 21</td>
</tr>
<tr>
<td>Classes begin, Tuesday</td>
<td>June 23</td>
<td>June 22</td>
</tr>
<tr>
<td>Six-week session ends, Friday</td>
<td>July 31</td>
<td>July 30</td>
</tr>
<tr>
<td>Eight-week session ends, Friday</td>
<td>Aug. 14</td>
<td>Aug. 13</td>
</tr>
<tr>
<td>Final grades due in the Registrar’s Office, 8:00 a.m., Monday</td>
<td>Aug. 17</td>
<td>Aug. 16</td>
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The Board of Regents

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Advisory Member Ex Officio

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Burton

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Bainbridge Island

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Seattle

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Acting Dean, College of Pharmacy
Washington State University is dedicated to the preparation of students for productive professional careers, to basic and applied research in a variety of areas, and to the dissemination of knowledge to the general community. The university consists of eight colleges, a graduate school, an Intercollegiate Center for Nursing Education, and the Seattle Center for Hotel and Restaurant Administration. WSU offers more than 90 majors fields of study to undergraduate students. The bachelor's degree is available in all major areas of study and the master and doctoral degrees are available in most subject areas. This catalog contains a complete list of departmental requirements and degrees awarded.

The university provides a variety of educational opportunities, including study in the traditional liberal arts and professional training in subject areas such as agriculture, architecture, business administration, education, engineering, fine arts, home economics, nursing, pharmacy, radio and television, and veterinary medicine. The honors program is one of the few all-university programs for superior students at a major American institution of learning. In recent years programs in environmental science, Asian American studies, Black studies, Chicano studies, speech pathology, and Women studies, as well as doctoral study in engineering science and literary studies, have been initiated. The student body of Washington State University is composed of over 14,000 undergraduate and more than 2,000 graduate full-time students.

Students at Washington State University come from every part of the state, from all sections of the country, and from Europe, Asia, South America, and Africa. The faculty includes a substantial number of scholars with noteworthy reputations in their areas of specialization.

Accreditation

Washington State University is accredited by the Northwest Association of Secondary and Higher Schools, the regional accrediting association.

The institution is a member of the National University Extension Association and is listed in the official publications of the U.S. Office of Education and the State Department of Public Instruction.

Several departments and colleges are accredited by professional accrediting associations recognized by the National Commission on Accrediting. This information is included in the introductory material of the various departments and colleges.

The Campus

Washington State University is located at Pullman in the southeastern part of the state. In addition to the main campus, the university maintains thousands of acres of farmland and agricultural research centers at various locations throughout the state. Modern classroom buildings, special research and instructional equipment, student living accommodations, libraries, hospital facilities, auditoriums, gymnasiums, and administrative offices are located on campus and are easily accessible to students and visitors. In the last few years a number of important buildings have been constructed on campus. These include a performing arts coliseum, a biological sciences building, a science and engineering library, a computer science building and computing center, a communications building, a fine arts building including galleries, and a multi-story physical sciences building. A stadium expansion project and a new track and field facility are under construction.

Many recreational facilities are located on campus. These include a nine-hole golf course, sixteen all-weather tennis courts, and Olympic-sized swimming pools. Special playing fields afford an opportunity for fall and spring outdoor intramural competition, and nearby hills are available for skiing, hiking, picnicking, and camping.
The Summer Session
Washington State University conducts an eight-week Summer Session for graduate, undergraduate, and transient students as an integral part of its year-around operation. Credit earned during summer sessions may be applied toward fulfillment of requirements for baccalaureate and advanced degrees in the same manner and subject to the same rules as credit earned during semesters or regular academic years.

During the Summer Session, courses are offered in most university departments to meet the needs of new freshmen and transfer students who wish to get an early start on their degree programs. Courses in a variety of academic areas are offered for continuing undergraduate and graduate students as well as for others qualified to pursue them to advantage. Emphasis is also placed on a program of advanced work for teachers and school administrators. Shorter sessions varying from one to six weeks for regular courses, special conferences, and institutes are also features of the Summer Session.

Applications for Summer Session enrollment must be on file with the Registrar’s Office by the deadline published in the Summer Session Bulletin.

The Summer Session Bulletin, published annually in January, is available upon request to the Registrar, Washington State University.

Continuing University Studies
The Office of Continuing University Studies (OCUS) coordinates WSU off-campus classes, campus evening classes, and courses by correspondence. The office also assists academic departments in presenting noncredit classes, short courses, and workshops both on and off campus. Its mission is to extend the educational resources of the university to individuals and groups throughout the state. Most WSU courses can be offered for credit on campus, providing that suitable facilities and instructors are available.

Nontraditional modes of instruction using broadcast and closed circuit television, audio and video tapes, telephones, and other media in conjunction with off-campus and/or independent study provide flexible learning alternatives for part-time students.

Off-Campus Classes are offered by academic departments and programs through the auspices of Continuing University Studies. Most of the courses are for upper-division or graduate credit. Some degrees are available off campus. Courses may begin at any time of the year and need not conform with the campus semester calendar.

Campus Evening Classes, offered each semester include credit and noncredit courses, and short courses and workshops.

Courses by Correspondence are offered by nineteen academic departments and programs. Many of the courses supplement written materials with slides and/or audio cassettes. Up to 25 percent of the credits for a baccalaureate degree may be taken from WSU by correspondence study.

Short Courses, Conferences, Workshops, and other noncredit educational programs are administered by Continuing University Studies. The sponsoring department selects suitable instructors, determines the curriculum, and furnishes overall academic supervision. Continuing Education Units (CEU’s) are awarded for some of these noncredit programs.

Information on all programs may be obtained by contacting Continuing University Studies, Van Doren Hall 208; phone (509)335-3557.

Student Clubs and Honoraries
Participation in departmental clubs and honoraries, service organizations, and campus activities is an important part of student life. More than three-fourths of the student body take part in the activities program. Adequate opportunities are available for every student to pursue extra-curricular interests, through service, recreation, religious and other specialized interest groups.
Student Government
Undergraduate students at Washington State University are represented on the University Senate by 20 of their members who are elected to a dual role of Senator and member of the Associated Students of Washington State University (ASWSU) Assembly. The Assembly is directly involved in the allocation of ASWSU funds for programming and the establishment of operating procedures. Through the Assembly, ASWSU has developed a number of student committees and programs in the areas of education, service, entertainment, recreation, and spirit groups. ASWSU is interested in a wide range of issues relating to the student's life at WSU and is led by the student body president who also serves as one of the 20 Senators.
Graduate and professional students are members of the Graduate and Professional Student's Association (GPSA). Five members of the GPSA represent their constituents on the University Senate.

Student Publications
Student Publications provide opportunities for students to express themselves, serve the community, and to gain experience in the production of a variety of printed self-supporting publications. The goal of each student publication is to provide information for students, staff, faculty, alumni, and other readers interested in Washington State University.

_The Daily Evergreen_ is issued four times per week on campus during the nine months of the regular academic year. "The Summer Evergreen" is issued weekly during the 8-week summer session.

_The Chinook_ is the university yearbook issued each September to nearly 10,000 buyers.

Compton Union Building
The Compton Union Building is the campus community center. More than a building, it is an educational program of out-of-class activities designed to provide for the students' personal, social, and cultural development; practice in leadership; and management and enjoyment of leisure activities. The ASWSU Activities Center coordinates and guides existing student organizations and assists new groups in developing sound programs. A professionally trained staff is prepared to help all students in planning well-balanced activity programs adapted to their particular interests and needs.

The Union has facilities for student activities, conferences, and conventions. Facilities include food service of all kinds, meeting rooms, a games area, crafts area, guest rooms for campus visitors, and a variety of shops and businesses including a U. S. Post Office, barber shop, bank, gift shop, travel service, credit union, floral shop, sports shop, dry cleaning service, and film developing service.

Communication Disorders Clinic
The Communication Disorders Clinic helps students to correct communication disorders involving defective articulation (such as lisping and defective sound production), stuttering, voice disorders (harshness, hoarseness, nasality, abnormal pitch), and speech and language problems resulting from brain injury or neuromuscular disability. The clinic tests hearing and provides hearing-aid evaluations, speech, language, lipreading, and auditory training for persons with hearing disabilities. Students with specific learning disabilities may also receive special help at the clinic. Application should be made to the Communication Disorders Clinic of the Department of Speech immediately after registration. There is no charge to students.

Physically Impaired Student Services
The Physically Impaired Student Services Program operates through the Office of Supportive Service Programs. This program plans for and coordinates services for students with physical impairments and permanent health problems, and works with other agencies within the university to increase accessibility and sensitivity to the special needs of physically impaired students. The program includes direct and referral services to students.
Services to the visually impaired include the taping of textbook and research matter, arrangements for readers, campus orientation and mobility training, access to materials printed in braille, braille equipment and tape machines, and special registration for classes.

Services for the hearing impaired include notetakers (occasionally paid through Washington State Vocational Rehabilitation), interpreter, auditory training units, specialized counseling; diagnosis, speech, and language training through the speech department faculty. Special services are also available for mobility impaired students.

For additional information on the availability of these services and equipment, contact the program center, Holland Library 461.

Science Supportive Services
Science Supportive Services is a program designed to academically assist students from various ethnic and academic backgrounds who are interested in science careers. The program serves two broad areas—health science and general science. The health science component prepares students to enter the spectrum of health care-related professions and professional schools. The general science component serves students who are interested in such disciplines as agriculture, forestry, engineering, architecture, computer science and other science disciplines. Outstanding features of the SSS are academic planning and counseling, summer placement, tutors, recommendations for professional schools, and special seminars and lectures. SSS is located in College Hall 306A.

Student Health Services
The Student Health Service is located in the same building as Pullman Memorial Hospital on the southern periphery of the campus. All students who pay full university fees are eligible for care at the Student Health Service and are also eligible to purchase a supplemental hospital-accident plan at a very reasonable cost. A Personal Medical History Form is to be completed by the student and returned to the Student Health Service prior to initial registration. The completion of this form does not necessitate a visit to your physician or a physical examination.

Clinic registration hours are from 9:00 to 11:00 a.m. and from 1:00 to 4:00 p.m., Monday through Friday, and from 9:00 to 11:00 a.m. on Saturday. Care for emergency injury and illness is available 24 hours per day. A $5.00 fee is charged for visits after regular clinic hours.

Students without other hospitalization insurance coverage are urged to buy the supplemental insurance plan offered at registration. All international students, with the exception of Canadians, are required to purchase the Student Accident and Hospitalization Insurance, and if they have dependents living with them, the dependents must also be insured.

Student Counseling Center
The Student Counseling Center, third floor of the Administration Building Annex, offers specialized individual and group counseling and testing services without charge to any regularly enrolled student. A staff of professionally trained counselors is available to provide confidential assistance on an individual basis to students with educational, vocational, personal, marital, developmental, and social concerns. Group counseling is also provided to help students improve their ability to communicate and relate effectively to others and to examine personal values as well as other personal and educational matters.

The Counseling Center also serves as the university representative for a variety of national testing programs and maintains an up-to-date library of occupational materials for students’ use.

Black Student Counseling Office
The Black Student Counseling Office, located in the Heritage House, provides programs
and services designed to address the cultural, social, academic, and personal needs and concerns of the university’s Black students. Students are assisted with academic problems, financial aid, tutorial services, housing, work-study employment, and social and cultural adjustment to campus life.

- **Chicano Student Counseling Office**
  Major services offered by the Chicano Student Counseling Office include advising, personal, career, and educational counseling, job placement, liaison with university offices and outside agencies, and information distribution. The office, located on the third floor of College Hall, promotes self-determination for Chicano students by providing them with an accepting and supporting environment.

- **Native American Student Counseling Office**
  The Native American Student Counseling Office, located in the Native American Program Center, provides students with individual and group counseling, advisory services, and assistance with financial aid, housing and food service, and relations with Tribal and Bureau of Indian Affairs offices.

- **Office of Programs for Women**
  The Office of Programs for Women (OPW), located in the French Administration Building, coordinates programming of issues relevant to women, acts in an advocacy role for women within the university, and provides services and resources to meet the special needs of all women. The Role Model Resource Bank and Adult Returning Women Program are sponsored by this office.

  The Women’s Center, located in the Compton Union Building, is a component of OPW and provides a place where students, staff, faculty, and community people can gather in a non-sexist environment to exchange ideas and information. Programs include a noon brown-bag series on such topics as career choices for women, women’s health, family relationships, and current issues of concern to women.

- **Career Services and Placement Center**
  Individual career planning assistance, occupational outlook information and employer literature, seminars in job hunting techniques, and the option to establish a placement file for eligible candidates are among the many services available at the Career Services and Placement Center. Business, industry, government, and education regularly send representatives to campus for individual interviews with students and graduates. All services are available to alumni as well as on campus students.

  The Career Services and Placement Center is located in the Administration Annex, Rooms 206, 203 and 107.

- **International Programs**
  The Office of International Programs administers and coordinates international programs undertaken by the university to strengthen its role in international affairs. Its functions may generally be described as follows:

  Administration of participant training for overseas projects; administration of international Exchange Awards; administering student educational exchanges between Washington State University and foreign universities; acting as a clearinghouse for interested WSU staff and students on matters relating to study and teaching abroad, including Fulbright awards. The office works with and administers programs of foreign student sponsoring agencies such as African-American Institute (AAI), Latin American Scholarship Program of American Universities (LASPAU), Institute of International Education (IIE), Agency for International Development (AID), United States Department of Agriculture (USDA), and Food and Agriculture Organization of the U.N. (FAO).
Study Abroad Programs
Washington State University offers exchange programs with University College, Cardiff, Wales; Friedrich Wilhelms University, Bonn, Germany; University of Lund, Sweden; Nihon University, Tokyo, Japan; and Tamkang College in Taiwan. In addition, the university offers study abroad programs at the University of Sterling, Scotland; and the University of Copenhagen, Denmark. Students majoring in foreign languages may select a program of study in Rennes, Seville, or Cadiz through the Council on International Educational Exchange (CIEE). Washington State University is also a member of the Northwest Interinstitutional Council for Study Abroad (NICS), a consortium which offers programs in London, Avignon, and Cologne.

Concerts and Recitals
The Music Department presents a varied program of hundreds of concerts, recitals, workshops and master classes each year. These presentations given by faculty, students, ensembles, and visiting artists are listed in a monthly calendar of events which is available from the Kimbrough Music Office on request.

Music Performance Groups
The University supports several performance organizations with enrollment open to the general university student by audition. Students interested in enhancing their musical experience through participation in one of the orchestras, bands, jazz ensembles, choral groups, small ensembles, or music theatre productions are encouraged to contact the Music Office for further information.

University Theatre
The University Theatre presents a widely varied year-round program offering many opportunities for participation: eight productions in Daggy Hall theatres, touring Shakespearean players logging over 10,000 miles each year, a seven-week summer repertory season, theatre for children and young people, and many experimental and student-directed productions. Interested students should contact the Director of University Theatre in the Department of Speech for information regarding any aspect of the program—performance, technical, or management. Auditions are open to all members of the university community.

University Honors Program
The Honors Program at Washington State University provides a broad and comprehensive intellectual experience. In addition to intensive specialization in their chosen fields of study, those enrolled in the program acquire an appreciative understanding of the natural and social sciences, of the arts, of language and literature, and of the historical and philosophical development of the cultures of the world. The aim of the program is to promote genuine intellectual curiosity which will abide long after the student has graduated.

Approximately 600 students are enrolled in the Honors Program at Washington State. They are from all departments and colleges of the university, from agriculture and from zoology, from engineering and from English, from fine arts and from economics. In every case the student is pursuing work in a major department in preparation for a professional career. In addition, special Honors courses are required of all those enrolled in the Program.

Honors courses often correspond to the usual undergraduate courses but with important differences. The Honors Program is not an accelerated program; it tends to enrich rather than to accelerate the learning process. Most Honors classes are small, and students establish a close intellectual relationship with their instructors.

Admission to the Honors Program
Each year approximately 10 percent of the entering freshman class is invited to join the Honors Program. Freshmen are selected on the basis of high school grade point averages, scores from college and pre-college testing programs, and information obtained from the
student and high school advisers. Eligible students will receive letters inviting them to consider the Honors Program during the spring or summer preceding their freshman year. Those who do not receive such letters but are anxious to investigate the possibility of participating in the Program should contact the Honors Center, Washington State University, for information.

The eligibility of transfer and foreign students is judged in each individual case on the basis of the student's knowledge and competence in the work which has been done elsewhere. Such students ordinarily are not considered for admission to the Honors Program after the beginning of their junior year.

Students who are not admitted in the initial selection may petition to enter the Honors Program at any time after the end of their first semester but not later than the end of their sophomore year. To continue participation in the Honors Program a student must maintain an overall B average (3.00) and must maintain the same average in Honors work. Students in the Honors Program are not required to complete the General University Requirements for Graduation.

The Libraries
Washington State University Libraries are an integral part of the educational facilities of the institution. A collection of nearly 3 million items includes approximately 1.3 million bound volumes and thousands of pamphlets, maps, charts, microfilms, art prints, and photographs. More than 25,000 magazines, technical journals, periodicals, and newspapers are regularly received. The libraries are a depository for most United States Government documents and receive many municipal and state documents, plus documents from foreign countries, and most of the publications of the United Nations.

Books are arranged on open stacks, and current periodicals are arranged in convenient browsing areas. Quiet study areas are available, including a limited number of carrels for graduate students and others engaged in research.

Reference librarians answer telephone questions and offer personal assistance to patrons in the library. Active programs to support instruction, research and community service include library use instruction and computerized information systems connected with nationwide networks.

Holland Library Building houses collections in the humanities, social sciences and the reserve book room; the Manuscripts, Archives and Special Collections area contains a rich collection of books and manuscripts to support study in Pacific Northwest history, and many other subjects. Instructional Media Services provides a comprehensive collection of instructional materials and equipment and a full range of services to obtain, develop, and display audiovisual materials in support of University programs. Distribution facilities include classroom display services, cable TV on campus and on the community cable system, cable FM and direct telephone access to audio materials, and individual study facilities.

The Frances Penrose Owen Science and Engineering Library opened in 1977. A six-story structure with excellent facilities, convenient to most related departments, it is the largest and most technologically advanced science and engineering library in the Pacific Northwest.

The Education Library, located adjacent to the classrooms of the College of Education in Cleveland Hall, houses books and journals related to that college, as well as fine collections of curriculum materials and juvenile literature.

The Veterinary Medical Library houses materials essential for the veterinary medical curricula, convenient to the facilities and classrooms of that college.

Nuclear Radiation Center
The Nuclear Radiation Center houses facilities for support of research on university-wide basis. The facilities include a pool-type 1,000 kilowatt TRIGA-III fueled reactor, a 12,000
curie cobalt-60 source, and associated advanced nuclear radiation detection equipment. The reactor power was increased to 1,000 kilowatts in 1967, with capability of pulsing to 1,500 megawatts.

Additional facilities available include a thermal column, beam ports, pneumatic transfer system for short-lived isotopes, isotope production tubes, and a 14 MeV neutron exposure facility. Equipment for use in experiments includes microprocessor bases multichannel analyzers, large volume Ge(Li) detectors, 5" x 5" Na(Tl) detectors, ND6620 analyzer system, low energy photon detector-MCA system, dual parameter analyzer, fast and delayed coincidence equipment. The Center houses a trace element laboratory that specializes in neutron activation analysis but includes also an atomic absorption unit. The Center also has a coal-research laboratory using gas chromatography, gel permeation chromatography and high performance liquid chromatography. Trace element analyses are performed for other groups on the university campus.

Radio-Television Services
The Radio-Television Services operate two radio stations, one television station, and a tape network. KWSU-AM, a member of National Public Radio (NPR), is one of the nation's pioneer public radio stations. KUGR is a student-operated campus station. KWSU-TV, an affiliate of the Public Broadcasting Service (PBS), produces and broadcasts local and national programs. The Tape Network distributes radio and television programs to educational and commercial broadcasting stations throughout the western United States. Students are used extensively on the working staffs for both radio and television stations.

Electron Microscope Center
The Electron Microscope Center (EMC), located in Science Hall, is available for training and research in science and technology. Students, staff, and faculty members of WSU and other institutions have access to the facilities for training, consultation and service work under flexible conditions designed to provide maximal use of the EMC. Formal courses in electron microscopy, and undergraduate and graduate research (with or without credit) are offered by the Center.

The EMC maintains two transmission electron microscopes, a scanning electron microscope, and a full complement of auxiliary facilities and equipment. It has a skilled staff experienced in a wide range of problems.

Museums
Conner Museum
The Charles R. Conner Museum, located in Science Hall, exhibits fishes, amphibians, reptiles, several hundred mounted birds and mammals, including deer, antelope, mountain sheep, mountain goat, cougar, and small species. The display collection is open to the public from 8:00 a.m. to 5:00 p.m. daily including weekends.

The Museum of Art
The Museum of Art was established in 1974 around a core collection of American paintings assembled by former President E. O. Holland and is dedicated to serving the educational purpose of W.S.U. and the people of the state of Washington. The museum operates an eleven month program embracing a wide variety of exhibitions ranging from antiquity to the contemporary, from design and architecture to sculpture and painting, both by regionally and nationally known artists, with the majority of exhibits being originated by the museum staff. The museum sponsors an annual art symposium which brings to the campus noted figures in American art to discuss significant current trends and issues. The museum offers a wide variety of speakers and films, and special music and dance programs throughout the year.
The museum's collection of American 19th and 20th century paintings, drawings, and prints is exhibited in public areas throughout the campus as well as in the administrative offices of the university. Renewed emphasis has been placed on the collection and it has grown in the past years through financial donations and important gifts from collectors and alumni in the Northwest. In 1975 the Museum of Art was a founding member of the Washington Art Consortium, a then unique venture by four small museums to build a major national collection of works on paper by American artists. The museum's consortium activities have provided an added focus to its own collecting of additional works on paper from all areas represented in its collection.

The museum documents its major exhibitions with published catalogs, available in the museum's bookshop. The exhibition galleries of the Museum of Art are open and free to the public seven days a week.

Jewett Observatory and University Planetarium
The James Richard Jewett Observatory is the gift of Mr. and Mrs. George F. Jewett of Spokane and is named in honor of Mr. Jewett's father, a former professor of ancient languages at Harvard University. The observatory houses a twelve-inch refractor with a visual lens and a twenty-five-foot revolving dome.

The University Planetarium is located in Room 231 of Sloan Hall. Information about open houses and group tours can be obtained by contacting the Department of Pure and Applied Mathematics.

The Social Research Center
The Social Research Center has two primary missions: (1) to facilitate and administer research in the social sciences that is responsive to the needs and concerns of the local, state, and regional communities, and, (2) to provide research training for both undergraduate and graduate students in the social sciences. The clientele of the Social Research Center includes the students, faculty, and administration of Washington State University, and the citizens and agencies of the state. The center includes units on Aging, Criminal Justice, and Human Values. Research facilities include the Public Opinion Laboratory and a Data Processing Center operated jointly with other departments. The professional-technical staff of the center provides assistance in all facets of the research enterprise.

Faculty and students from all social science disciplines may become involved in center projects. Physical and biological scientists and engineers increasingly require social science participation in their research and the Social Research Center is an active participant in such projects. Cooperation with other research centers and departments in the university lends a strong interdisciplinary emphasis to the work of the center.

Environmental Research Center
The Environmental Research Center is an all-university research unit reporting to the Dean of the Graduate School. The Center is the focal point for university development of interdisciplinary research on problems related to the environment. It provides an organizational structure and administrative unit to accommodate interdisciplinary environmental research projects which cut across departmental and college boundaries.

The Center is closely integrated with the academic program in Environmental Science and students are encouraged to participate in the research projects carried out through it. In order to stimulate an awareness of environmental problems to whose solution the university can make contributions, the Center acts as an information source for faculty and students of the university and for citizens of the state. It also assists in securing financial support for research projects involving faculty and students and acts as a liaison unit for interuniversity and other cooperative activities dealing with environmental matters.
The center has provided direct support for graduate students and has sponsored a number of conferences on regional environmental problems.

**Computing Service Center**
The Computing Service Center provides a wide range of sophisticated computing resources to the university community and a multitude of other institutions and agencies. The primary computer is an Amdahl 470V/6-II with 8 million bytes of main memory, with over 8 billion bytes of on-line disk storage, 11 tape drives, and a host of peripheral devices. Supported by the center and other academic departments are several mini-computers, microprocessors, and analog computers.

The center provides both interactive and batch computing support. An extensive data communication network provides terminal access to the Amdahl via dedicated circuits and publicly accessible dial ports. A number of public terminal laboratories are located on the university campus for use by faculty and students. Also provided are software libraries, consulting services, and a science library with many of the latest books, journals, and manuals.
Admission

General Information
Admission to Washington State University is granted without regard to age, sex, race, religion, color, creed, handicap, national or ethnic origin, or marital status.

The following information relates to admission of new students only. It is not applicable to students previously enrolled in Washington State University during the regular school year.

It is the policy of Washington State University to admit all applicants if the total evidence (academic records, test results, recommendations, and interviews) indicates a reasonable probability of success. The total number of new students admitted for any one semester will be based on the number of students for whom facilities can be made available.

Students who fail to meet the published admission requirements should contact the Director of Admissions for further information. Exceptions to the admission requirements may be made only by the Admissions Subcommittee.

Application forms are available in the high schools and the community colleges of Washington and the Office of Admissions.

The Faculty and the Board of Regents of Washington State University have adopted the following requirements for admission.

Freshman Admission Requirements
A resident of the state of Washington who has a 2.50 or higher grade point average in accredited high school work is eligible for admission. In some cases, special consideration will be given to an applicant with a grade point average below 2.50 on the basis of the total available evidence, including test results, recommendations, and interviews.

All eligible applicants will be considered for admission on the basis of accredited high school work completed through grade 11, such admission to be bona fide provided the applicant maintains a satisfactory record and completes high school graduation or its equivalent prior to the opening of the semester for which the student is admitted.

Students coming from outside the state of Washington will normally be admitted if they meet all of the above requirements. However, they may also be held to meet the requirements for admission to major institutions in their home state or province. While nonresident sons and daughters of WSU alumni will be considered for admission on the basis of resident requirements, they will be required to pay nonresident tuition and fees.

While no specific high school subject-matter pattern is required for entrance, the faculty strongly recommends that all prospective students complete no less than: 3 years of English; 2 years of Mathematics; 2 years of Natural Science and 3 years of Social Science. Students planning to enter the College of Sciences and Arts should complete two years of one foreign language. Additional specialized preparatory courses should be completed for students entering areas of study requiring special background.

Graduates of unaccredited high schools may be required to pass special validating examinations and should write to the Director of Admissions for further information.

Students applying for fall semester admission may submit the application at any time after December 1. Preference will be given freshman applications received by May 1. Applications for spring semester admission are accepted from October 15 to January 15. A complete application includes the application form and official high school transcript.

The Washington Pre-College Test is used primarily for advising and counseling. Washington high school students should take the test when it is given in their high school. Out-of-state students will take the test on campus prior to registration.

Retention of Students
The grade point average for freshmen entering from high school in the fall semester of 1978
was 3.19. Of the 2,505 freshmen who entered in the fall semester of 1978 from the state of Washington, 2,254 were enrolled in the spring semester of 1979, and 2,160 were eligible to continue their enrollment in the fall semester of 1979.

Transfer Admission Requirements
Transfer students will normally be admitted if they show evidence of a 2.00 (C) or higher grade point average in transferable work completed in accredited post-secondary institutions. However, academic departments may establish additional requirements for students seeking admission to specified programs. Transfer students should contact the Office of Admissions for information about special requirements.

Transfer applicants with less than 24 semester (36 quarter) hours of transferable credit will be considered for admission if they meet both freshman and transfer admission requirements. Applicants with 24 or more semester (36 quarter) hours of transferable credit will be considered for admission on the basis of the college record alone.

College-level work completed in accredited higher institutions is given appropriate credit upon transfer to Washington State University.

Transfer credit shall not be granted for more than the number of years for which the institution is accredited. The maximum transfer credit allowed from accredited two-year community junior colleges shall be 60 semester (90 quarter) hours toward a baccalaureate degree irrespective of when those hours were earned. The maximum allowable credit toward a four-year degree shall be 90 semester (135 quarter) hours. For a five-year degree program the maximum credit allowed by transfer is 120 semester (180 quarter) hours.

Students who have completed an approved Associate of Arts or Associate of Science degree from a Washington community junior college consisting of a course pattern which approximates the General University Requirements for Graduation (GUR's) of Washington State University, will be considered to have fulfilled the General University Requirements with the exception of additional requirements of the College of Sciences and Arts. For students majoring in the College of Sciences and Arts, additional requirements are described on page 30 of this catalog.

Transfer students applying for fall semester admission may submit the application at any time after December 1. Preference will be given to transfer applications received by July 1. Applications for spring semester admission are accepted from October 15 to January 15. A complete application includes the application form and an official transcript from each college or university attended showing work completed at the time of application.

Foreign Student Admission Requirements
Washington State University encourages the application of qualified students from other nations to compliment its cosmopolitan student community. Applicants must submit official copies of all academic records, the Test of English as a Foreign Language (TOEFL) scores, and evidence of adequate financial resources to meet the costs of the proposed study. In addition, transfer and graduate applicants must have demonstrated their ability to carry a full course of study. Each application is carefully considered on its individual merits.

Selection of a Major
Students seeking a university degree must organize their efforts in a particular department or a group of related courses. This is the student’s major which should be chosen early.

If an entering freshman knows with reasonable certainty what the major interest is to be, that interest may be specified on application for admission. Students may, if they choose, defer this selection until, but not beyond, the end of the sophomore year.

Each freshman is assigned to a faculty adviser in the major interest area by the Coordinator of the Curriculum Advisory Program. Students wishing to pursue general courses will be assigned to an adviser relative to that situation. At any time after the completion of the freshman year (30 semester hours) the student may certify a major. The chairperson of
the major department then becomes the adviser of record.

Students with advanced standing who transfer more than 30 semester hours are certified as departmental majors unless they are uncertain about their major, in which case they are assigned to faculty advisers by the Curriculum Advisory Program.

Students interested in completing a minor or second major should consult the department concerned. Approved minors are identified in the departmental section of this catalog.

**Graduate Admission Requirements**

Applicants for admission to the Graduate School must meet the special requirements of the Graduate School and the particular program desired. For complete information, refer to page 51 of this catalog.

**Former Students Returning—Not Enrolled the Previous Semester**

Students formerly enrolled at Washington State University and wishing to return must submit an application for reenrollment. Preference will be given to applications received by August 1 for fall semester and January 15 for spring semester.

Former students returning whose previous academic record at Washington State University is unsatisfactory will be required to follow established academic reinstatement procedures prior to reenrollment.

Former students returning who have attended other institutions since last enrollment at Washington State University must submit an official transcript from each institution attended. Applicants will normally be required to have at least a 2.00 (C) grade point average in all such work.

Requests for reenrollment information and applications should be made to the Office of Admissions.

**Advance Payment on Tuition and Fees**

All undergraduate applicants, including former students returning, except special students, contract students, and foreign students (other than Canadians) are required to submit a nonrefundable advance payment on tuition and fees in the amount of $50.00 prior to final admission. The advance payment will be requested of those applicants who are eligible for admission and should not be submitted until notice of eligibility is received by the applicant. The payment should be sent directly to the Controller.

**Credit by Examination**

Recognizing the natural ability and educational experience of many of its applicants, Washington State University has developed a broad program of credit by examination. This includes various advanced placement examinations and special examinations.

Credit and placement may be granted for students who submit a score of three (3) or higher on College Board Advanced Placement Examinations. The College Board College Level Examination Program (CLEP) may also yield credit. Up to six semester hours of credit for CLEP general examinations is available for the humanities and arts, social science, and science general examinations passed at or above a standard score of 480. Subject examinations of CLEP yield variable credit as determined by the appropriate academic departments. Some academic departments use national examinations, the results of the Washington Pre-College Test, and departmental examinations in considering students for advanced placement and credit.

Students who want specific and complete information should write to the Office of Admissions.

Matriculated students currently registered may take a special examination for university credit in a course in which they are not registered. Such credits yield no grade points but may yield credit toward completion of General University Requirements for Graduation. For further information contact the Registrar or see Academic Regulations printed annually in the Catalog Supplement.
Academic Regulations

General Regulations
Washington State University and its various colleges reserve the right to change the rules regulating admission to, instruction in, and graduation from Washington State University and any other regulations affecting the student body. Such regulations shall go into effect whenever the proper authorities may determine and shall apply to prospective students and to those who may at that time be enrolled.

Registration
Instructions for registration and procedures for dropping and adding classes are included in the Annual Time Schedule and Catalog Supplement. These bulletins are available at registration or in the Registrar's Office. Registration is held just prior to the start of each term. Student class schedules and fee statements are distributed the day before classes start for the fall and spring semesters. Students have one week to pay tuition and fees. Summer session fees must be paid at the time of registration.

Student Identification Cards
Student identification cards are required for library privileges, admission to athletic events, campus activities, and general university use. Every student, both graduate and undergraduate, will be issued an identification card at the time of the initial enrollment. Identification cards are validated each semester during registration. Identification cards are issued by the Registrar's Records Office.

Change of Address
The student is held responsible for keeping his or her address up-to-date by filing a Change of Address Form with the Registrar's Office. The mailing of notices to the last address on record constitutes official notification.

Withdrawals from the University
Students wishing to withdraw from the university must do so during the first five days of the semester to avoid further financial obligation. Withdrawals from the university are initiated through the Office of the Dean of Students.

Dropping All Courses
A student who decides to drop all courses or an only course before the term in progress is completed, must withdraw from the university. The student initiates the withdrawal procedure through the Office of the Dean of Students.

Credit
Washington State University operates on the semester calendar. Each semester is of 15 weeks duration plus one week of final examinations.

A semester hour is ordinarily defined as (1) lecture—one contact hour per week for each 1 hour credit (2 hours outside preparation implied), (2) studio—two contact hours per week for each 1 hour credit (1 hour outside preparation implied), or (3) laboratory or independent study—three contact hours per week for each 1 hour credit, each for the duration of the semester. The proportion of time in each course assigned to lecture, studio, laboratory, or independent study is recommended by the faculty of the department offering the course. The term "semester hour" corresponds with "credit," "hour," or "credit hour" and is abbreviated to "hour" in the description of courses in this catalog.

Auditing
No university credit will be allowed for auditing courses. To visit a class more than three times requires an audit card which must be obtained from the Registrar. The written
permission of the adviser and the instructor are required. Ordinarily audit cards will be issued only for lecture courses or the lecture portion of laboratory courses. The audit fee is $10.00 per audit hour for other than regularly enrolled full fee paying students.

Credit Hour Requirements for Full-Time Enrollment
The normal load for an undergraduate student is 15 credit hours per semester. Twelve (12) to sixteen (16) credit hours per semester is considered a full load for a graduate student. (Eight hours in the eight-week summer session is full time for both undergraduate and graduate students.) Part-time students do not share in certain student body privileges such as participation in recognized activities, Student Health Services, and Student Publications. Graduate students on half-time teaching or research assistantships are expected to carry 10-12 credits per semester (3-6 in the eight-week summer session). The Graduate School Policies and Procedures Manual explains in detail the requirements for graduate students on appointment or taking examinations.

Tuition and Fees: An enrollment of more than six credits constitutes full-time status for fee purposes only; part-time student fees are based on a per credit hour charge for an enrollment of six hours or less.

Financial Aids: For financial aid purposes, full-time enrollment for an undergraduate student is 12 hours and half-time enrollment is considered to be 7 through 11 hours. For graduate students, full-time enrollment is 10 hours and half-time enrollment is considered to be 7 through 9 hours. Certain financial aid programs or policies such as State Need Grant and Tuition and Fee Waivers require a student to be enrolled full time.

Student Government: In order to be qualified for election and tenure as a student member of the Senate, a candidate shall be a full-fee-paying student and must be and remain in good academic standing.

Veterans' Benefits: Requirements for Veterans' Benefits under Public Law 358, (G.I. Bill) and Public Law 634 (War Orphans Act) are 12 undergraduate or 8 graduate hours for full-time benefits. Detailed information on eligibility requirements may be obtained through the WSU Office of Veterans Affairs.

Social Security: Students eligible for monthly benefits under social security must be enrolled for at least 12 semester hours.

Foreign Students Holding F-1 Visas: The Immigration and Naturalization Service requires that nonimmigrant F-1 students be enrolled in a full course of study, i.e., 12 semester hours for undergraduate students and 10-12 semester hours for graduate students per semester (excluding summer session). Additional information on these requirements may be obtained from the Office of International Programs.

Enrollment Limit
The average semester credit load for undergraduate students is 15 credit hours. Students are not normally advised to enroll for more than 18 credit hours. When warranted, superior students may enroll for credits in excess of this limit. Students will not be allowed to enroll for 20 or more hours (10 hours for summer session) without written overload approval from their major department chairperson or CAP adviser.

Numbering System of Courses
Lower-division:

a) Courses numbered below 100 do not carry university credit.
b) Courses numbered 100-199 inclusive are normally taken by freshmen.
c) Courses numbered 200-299 inclusive are normally taken by sophomores.

Upper-division:

d) Courses numbered 300-399 inclusive are normally taken by juniors and seniors. These courses may be included in graduate programs provided they are published in the
Graduate Study Bulletin and provided they are not specific requirements in preparation for graduate study.

e) Courses numbered 400-499 inclusive are normally taken by juniors and seniors. These courses may be included in graduate programs provided they are published in the Graduate Study Bulletin and provided they are not specific requirements in preparation for graduate study.

Graduate:

f) Courses numbered 500-599 inclusive are primarily for graduate students. Qualified seniors may take these courses for graduate credit during their last year or summer session. Other qualified seniors may (with permission of their department head) take these courses for undergraduate credit (see p. 52).

g) Courses numbered 600-800 have as a prerequisite regular student status in the Graduate School.

Course Prerequisites

When applicable, prerequisites are listed in this catalog with the specific course description, preceded by the abbreviation “prereq.” Prerequisites may be levels of competence or courses which a student must have completed or the standing a student must have achieved before enrolling for a specific course. For example, Calculus (Math 171) requires a prereq of Pre-calculus (Math 107), meaning that the student may not enroll for Calculus until successfully completing Math 107. Prereqs may also be general such as “one semester of chemistry or concurrent enrollment” (see Bio S 103; concurrent enrollment is indicated by the symbol c//). Prereqs may include a level of expertise or a specified major, e.g., students may not enroll in Spanish 324 without first being fluent in Spanish, or students may not enroll in an advanced seminar before achieving senior standing in the major.

Questions concerning prerequisites should be referred to the instructor of the course. Students who have not met all prerequisites may be excluded from the course, or the instructor may waive the prereq based on demonstrated competence or equivalent academic experience.

Classification of Students

Undergraduate students who have completed less than 30 semester credits are classified as freshmen, 30-59½ semester credits as sophomores, 60-89½ semester credits as juniors, and 90 and above as seniors.

Graduate non-degree students are those who have received the baccalaureate degree but have not been admitted to the Graduate School. Sometimes called post-graduates, these students include those completing requirements for a second baccalaureate degree, those taking courses for personal enrichment, and those working toward teacher certification.

Graduate degree students are those admitted to a Graduate Program in a degree classification on the basis of a specific application to the Graduate School.

Certification of a Major

An undergraduate student may certify an academic major upon completion of 30 semester hours with the approval of the coordinator of the Curriculum Advisory Program and the department head. Some departments require more than the minimum 30 hours for certification and a gpa higher than the minimum 2.00. Consult the departmental section of this Catalog for specific departmental requirements. A student who has completed 60 semester hours must certify a major as a condition to further enrollment.

A student who has completed 90 semester hours may certify a second major or a minor with the approval of the department concerned. The student should consult with that department for an approved schedule of studies to meet such requirements.

A student may change majors from one department to another only on approval of the department heads and deans concerned.
Grading System
Washington State University uses letter grades and the four (4) point maximum grading scale. The grade A is the highest possible grade, and grades below D are considered failing. Plus (+) or minus (−) signs are used to indicate grades that fall above or below the letter grades, but grades of A+ and D− are not used. For purposes of calculating grade points and averages, the plus (+) is equal to .3 and the minus (−) is equal to .7 (e.g., a grade of B+ is equivalent to 3.3 and A− is 3.7). A student’s work is normally rated in accordance with the following definitions:

A—4 grade points per credit hour. To obtain this grade, the student must have shown uniformly the following qualities: (1) thorough comprehension and retention of both the facts and the principles of the subject; (2) ability to reproduce these facts and principles orally and in writing readily, accurately, and concisely; (3) power to correlate the material with other branches of the subject and with other subjects; (4) individual reaction to the material shown by ability to apply the methods of the course to new and original problems and situations with reasonably good results.

B—3 grade points per credit hour. The student so graded must have shown uniformly the first two qualities of the A grade without the third and fourth. Also, a B student is one who, during a considerable part of the course, but not uniformly, has shown all the qualities of an A grade student, but at times has shown neglect of prescribed tasks, not because of idleness but because of the pressure of other work or legitimate outside interests.

C—2 grade points per credit hour. A student doing average work or near average work will receive this grade. The work may frequently show thorough comprehension and accurate reproduction but is moderately irregular.

D—1 grade point per credit hour. This grade is for the student doing work considerably below the average. This work is barely passing.

F—no credit; 0 grade points (credits attempted are calculated in gpa). Indicates a failure and is given to a student who does not show a satisfactory grasp of the subject and whose examinations and recitations are unsatisfactory.

S (Satisfactory)—no grade points; credit not calculated in gpa. Grade given upon satisfactory completion of courses numbered 499, 600, 700, 702, 800, Special Examinations (Rule 15) and other courses duly authorized for S, F grading by the University Senate. (Courses approved for S, F grading are footnoted in the Annual Time Schedule.) S, A, or F grades only are used to report physical education activity grades. Courses approved for S, F grading may also be graded S at midsemester indicating satisfactory progress.

P (Passing)—no grade points; credit not calculated in gpa. A satisfactory grade for a course taken under the Pass-Fail Grading Option (see p. 26). Instructors will turn in regular letter grades for all students enrolled in courses under the pass-fail option, but grades will appear on the student’s permanent record as P (Passing) or F (Failure).

I (Incomplete)—no credit or grade points. Used to indicate that a grade has been deferred. It is for students who for reasons beyond their control are unable to complete their work on time. The I grade for an undergraduate course taken either by an undergraduate or graduate student, will be changed to an F if the work is not completed during the ensuing calendar year. Instructors are required to submit an Incomplete Grade Report with any grade card indicating an I.

W (Withdrawal Passing)—no credit or grade points. Used if the student has filed, in the Registrar’s Office, official notice of withdrawal from the course prior to the end of the eighth week, withdrew passing in accordance with Rule 69 or withdrew from the university prior to the last day of instruction.

X (grade withheld)—no credit or grade points. Denotes continuing progress toward completion of special problems, research, thesis, or doctoral dissertation, i.e., 499, 600, 700, 702, 800; X grades are converted to S upon satisfactory completion. An X grade may also be used when no final grade is reported due to instructor’s illness or absence from town.
Grade Point Average

The student’s grade point average (gpa) is computed by dividing grade points earned by the number of credit hours attempted. Grades P and S do not carry grade points, and the credit hours are not calculated into the gpa. Credits attempted for F grades are calculated into the gpa. Transfer and other non-resident credit is not computed in the Washington State University grade point average. The following example illustrates computation of the gpa:

<table>
<thead>
<tr>
<th>Course</th>
<th>credits</th>
<th>grade</th>
<th>grade points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 301</td>
<td>3</td>
<td>A</td>
<td>12.0</td>
</tr>
<tr>
<td>Bio S 305</td>
<td>3</td>
<td>C-</td>
<td>5.1</td>
</tr>
<tr>
<td>Soc 420</td>
<td>3</td>
<td>B+</td>
<td>9.9</td>
</tr>
<tr>
<td>Mus 490</td>
<td>2</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Soc 499</td>
<td>4</td>
<td>S</td>
<td></td>
</tr>
</tbody>
</table>

Credit hours attempted (exclusive of P and S grades) 9  
Total grade points earned 27  
GPA 3.00  
Total hours earned 15

Courses taken by correspondence do not yield grade points and carry no graduate credit. Grades earned in Continuing University Studies courses sponsored by Washington State University yield grade points toward graduation. Correspondence or Continuing University Studies (extension) work submitted for transfer credit yields credit only if completed with grade of C or better.

Grade Reports

Midsemester grades are issued to freshmen students with less than 24 semester hours of credit and are mailed to the campus addresses. Final grade reports for all students are mailed to the student’s campus address at the end of the fall semester, and to the student’s home address for the spring semester.

Transcripts

An official copy of a student’s academic record at Washington State University that bears the official seal of the University and the signature of the Registrar is referred to as a transcript. A charge of $1 per addressee is made for each transcript mailed or picked up in person at the Registrar’s Office. For each additional copy sent to the same address at the same time, the fee is 10¢. Each transcript must include all work taken at Washington State University. A transcript covering a student’s previous secondary or college-level education that has been submitted to Washington State University as a requirement for admission becomes part of the official file and cannot be returned to the student. Any student who desires transcripts of work earned elsewhere must order official transcripts from the institution at which the work was taken. Washington State University does not issue or certify copies of transcripts from other institutions.

Repetition of Courses

Repeat of Courses Graded D or F

A grade of D or F may be disregarded if the student repeats the course and earns another grade. The last grade received shall stand as the course grade, and the last grade only shall count on the cumulative gpa and contribute to the total number of hours required for graduation (in determining graduation honors, the first grade only shall be used).

Grades C and above may not be repeated for credit or grade points.

It is the student’s responsibility to indicate on the enrollment and course request cards at registration all repeated course work. Repeats by correspondence, extension, or at other institutions must be reported to the Registrar.

For purpose of record, the series of repeats and grades will be retained on the student’s official record: the previous grade and/or credit are circled on the permanent record with the symbol (+) indicating removal from the cumulative grade information.
Courses Approved for Repeat Credit
Some courses are approved for repeat credit, i.e., more than one enrollment with credit accumulated ("May be repeated for credit"). However, students are limited to one enrollment per course in any one semester or summer session (one section of a multiple-section course). Reenrollment must be during a subsequent semester or summer session.

Pass-Fail Grading Options
Separate pass-fail options are available for undergraduate and graduate students. During registration, students indicate on the Enrollment Card and Course Request Card that they wish to enroll in the course on a pass-fail basis. The adviser's approval and signature are required. Information indicating which students are enrolled on a pass-fail basis will not appear on class lists transmitted to instructors. Instructors turn in regular letter grades for all students, and the Registrar will change all grades of A through D to P for those enrolled pass-fail. The P (pass) grades earned by pass-fail enrollees will not be included in computing the GPA; however, F grades earned by pass-fail enrollees will be included in GPA computations. Courses approved under rule 90f are excluded from the pass-fail option. (Courses approved for S, F grading are footnoted in the Annual Time Schedule.) Specific characteristics of the two options are as follows:

Undergraduate Pass-Fail Option: A total of six (6) courses may be taken on a pass-fail basis by students initiating and completing work for a baccalaureate degree at Washington State University. No courses designated as meeting General University Requirements for graduation may be taken pass-fail. No more than two (2) courses may be taken on a pass-fail basis during any given semester. One (1) course is the limit for summer session. An undergraduate may change a pass-fail enrollment to a regular letter-graded enrollment, or vice versa, during the first three weeks of classes. After the third week and through the last day of instruction in a semester (end of the fifteenth week), a pass-fail enrollment can be changed to a letter-graded enrollment. Students in the College of Veterinary Medicine with adviser approval may enroll for a total of six courses in the professional curriculum on a pass-fail basis, subject to the regulations listed above. Allowances for transfer students are as follows:

Transfer status upon entering WSU

<table>
<thead>
<tr>
<th>Credits</th>
<th>Pass-Fail allotments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-44½</td>
<td>6 courses</td>
</tr>
<tr>
<td>45-59½</td>
<td>5 courses</td>
</tr>
<tr>
<td>60-74½</td>
<td>4 courses</td>
</tr>
<tr>
<td>75-89½</td>
<td>3 courses</td>
</tr>
<tr>
<td>90 and above</td>
<td>2 courses</td>
</tr>
</tbody>
</table>

University Honors Program courses may be taken on a pass-fail basis only with the permission of the Honors Program Coordinator.

Departments and programs may deny their majors permission to take, on a pass-fail basis, courses in their major field or courses needed to meet departmental requirements.

Departments and programs may refuse to accept courses needed to meet the above requirements if the courses were completed on a pass-fail basis before the student was accepted into the department or program.

Graduate Pass-Fail Option: All graduate students in Class 0 or Class 6 are eligible, with adviser approval and signature, to take courses on a pass-fail basis, but such work cannot be in the student's official degree program or used for removal of a specific undergraduate deficiency. Credit hours earned under pass-fail are counted toward assistantship minimum hour requirements. Enrollment changes in pass-fail courses will be allowed with the adviser's signature during the first three-week period following the beginning of classes. After the third week and through the last day of instruction in a semester (end of the fifteenth), a pass-fail enrollment can be changed to a letter-graded enrollment. There is no limit on the number of hours a graduate student may take on a pass or fail basis.
Honors

President’s Honor Roll. An undergraduate student will be named to the President’s Honor Roll by achieving a grade point of 3.75 for at least 12 hours of graded work in a single semester, or achieving a cumulative grade point average of 3.50 based on at least 30 hours of graded work at Washington State University.

Graduation Honors. Candidates for baccalaureate degrees who have completed at least 30 hours of graded work (grades in which grade points are awarded) at Washington State University, will graduate summa cum laude if the cumulative grade point average for work completed at Washington State University is 3.80 or better, and will graduate cum laude if the minimum cumulative grade point average is 3.30 but less than 3.80. The appropriate Latin phrase will be printed on the diploma and on the final transcript. Qualified students electing to participate in the Honors Program who complete its requirements satisfactorily, regardless of whether they qualify to graduate summa cum laude or cum laude, will receive a certificate of completion and a printed notation on the final transcript. Computation of graduation honors will be done prior to the end of the final semester to allow for publication of the appropriate honors in advance of graduation. However, following the student’s final semester, the Registrar will recompute the student’s GPA including the last semester’s work, and only this computation will determine official graduation honors.

Academic Complaint Procedure

Students having complaints relative to instruction or grading should refer them first to the instructor, and if not resolved, then to the chairperson of the department in which the course is offered. The chairperson, if not able to resolve the problem to the student’s satisfaction, will refer the complaint, presumably with the chairperson’s written impressions, to the Dean of the College. The student is encouraged then to go directly to the Dean of the College. The Ombudsman, the Dean of Students, the Discriminatory Practices Committee, and the Academic Vice President and Provost are always available for any complaint not resolved to the student’s satisfaction.

Academic Deficiency

Undergraduate students are expected to maintain at least a 2.00 cumulative grade point average during their academic career at WSU. A student who falls below a 2.00 cumulative GPA is considered academically deficient, and special action is required for continued enrollment.

A student who is deficient for the first time is normally reinstated for a second semester. For certified majors, the Academic Standing Office grants to the student’s academic department the decision on reinstatement. If denied reinstatement by the academic department, a student may appeal to the Office of Academic Standing for continued enrollment in another department. A student in the Curriculum Advisory Program is, under normal circumstances, automatically reinstated.

A student who is deficient for two consecutive semesters is normally dropped. A student who feels there are important extenuating circumstances can appeal to Academic Standing. A student whose work is improving (semester GPA of 2.00 or better), even though the cumulative GPA is below a 2.00 for two semesters, is usually reinstated.

Student Access to Education Records

The WSU regulations implementing the Family Educational Rights and Privacy Act of 1974 accord to students certain rights and privileges regarding education records. The regulations have been adopted pursuant to the Higher Education Administrative Procedures Act and are published as Chapter 504-21 of the Washington Administrative Code. Pursuant to this Federal law, students are entitled to inspect their “educational records” maintained by university offices. The definition of “educational records” does not include materials used by any university instructor in the course of assessing a student’s academic performance, nor
materials compiled by the university counseling or health centers.

The law provides students with the right to inspect and review information contained in their education records, to challenge the contents of their education records, to have a hearing if the outcome of the challenge is unsatisfactory, and to submit explanatory statements for inclusion in their files if they feel the decisions of the hearing panel to be unacceptable. Students may not inspect and review the following as outlined by the Act: financial information submitted by their parents; confidential letters and recommendations associated with admissions including admission to the Nursing Program or College of Veterinary Medicine, employment or job placement, or honors to which they have waived their rights of inspection and review; or education records containing information about more than one student, in which case the institution will permit access only to that part of the record which pertains to the inquiring student. Confidential letters and recommendation placed in the student’s file prior to January 1, 1975, are not open for inspection.

Students who believe that their education records contain information that is inaccurate or misleading, or is otherwise in violation of their privacy or other rights, may discuss their problems informally with the university employee or office having custody of the particular record. If the decisions are in agreement with a student’s request, the appropriate records will be amended. If not, the student will be notified within a reasonable period of time that the records will not be amended and he or she will be informed of his or her right to a formal hearing. Student requests for a formal hearing must be made in writing to the university employee or office having custody of the record in question. A student may present evidence relevant to the issues raised and may be assisted or represented at the hearings by one or more persons of his or her choice including attorneys, at the student’s expense. The Student Records Committee shall be responsible for reviewing all formal requests for information and for assisting in the interpretation of all regulations and policies that pertain to the Family Educational Rights and Privacy Act of 1974. The committee is also responsible for hearing appeals. The committee consists of the Registrar, a graduate student, an undergraduate student, two faculty members, and a representative of the Office of Student Affairs.

Students who believe that the adjudications of their challenges were unfair, or not in keeping with provisions of the Act, may request, in writing, review by the Executive Vice President. Further, students who believe that their rights have been abridged may file complaints with the Family Educational Rights and Privacy Act Office, Department of Health, Education and Welfare, Washington, D.C. 20201. The complete text of this university policy is on file in the offices of the Registrar, Student Affairs, and University Relations, and is published in the Washington Administrative Code.

Requirements for Graduation
A student who has (a) completed any of the four-year collegiate curricula, (b) completed the General University Requirements for Graduation and any additional departmental or college requirements with a minimum 2.00 gpa may become a candidate for the degree of Bachelor of Arts or the degree of Bachelor of Science, depending upon the field of study. Candidates must also present a minimum of 120 semester hours of credit for graduation for a four-year degree.

A minimum of 40 semester hours of credit in upper-division courses is required for a four-year degree.

A student desiring a second bachelor’s degree shall satisfy the second degree program and present not less than 150 semester hours of credit to receive the second degree (credits applied toward a graduate degree may not be used for a second baccalaureate degree).

A student who has completed any of the five-year curricula, has earned a minimum of 150 semester hours of credit, and has met the implied requirements in the paragraphs above may become a candidate for the bachelor’s degree in the field of study.

Correspondence course credit is limited to not more than 25 percent of the total hours required for any undergraduate degree.
Students are required to do their senior work under the direction of the college in which the degree is to be granted. The degree granted and the schedule of studies for a given curricular will be found in the material for the college or department concerned.

Students are required to earn a C average on all work taken at this institution. The student must also earn a C average in all major subjects. Any deficiency on transfer credit must be removed by work taken through Washington State University.

For otherwise qualified handicapped students, individual course requirements or specific requirements within courses may be waived. Waivers of departmental requirements must be approved by the major department. Waivers of specific requirements within courses must be approved by the department teaching the course. A request for waiver of a General University Requirement must be made directly to the Senior Petitions Committee and be approved by the student's department chairperson and dean.

Catalog Options and Limitations
The graduation requirements of the university and its colleges as published in the Catalog in effect at the time of the student's initial enrollment are those which must be met for completion of an undergraduate degree program. For transfer students, the initial enrollment date shall be that upon which the student entered postsecondary education. Subsequent changes in degree requirements, as published in the Catalog or amended by the University Senate, may be substituted at the option of the student.

Undergraduates who will not graduate within the normal degree time frame (e.g. four years for a four-year baccalaureate program and five years for a five-year program) plus two years must meet the requirements for graduation as published in the Catalog four years prior to the date of graduation.

Departmental requirements for graduation (including those in a college which does not have separate departmental requirements) are those in effect at the time the student initially certifies the major. Changes in departmental requirements after certification will apply provided they do not require a student to enroll in more than a normal complement of credit hours in any semester or do not prolong the time required to complete degree requirements. Department and program chairpersons have authority to waive or provide substitute course work for departmental requirements.

General University Requirements for Graduation
General University Requirements for Graduation have been established by the University Faculty in the belief that all students should devote a significant portion of their academic effort to general education. Students are encouraged to develop to the fullest their capacity for evaluating personal experience and for establishing a meaningful relationship to their natural

<table>
<thead>
<tr>
<th>GENERAL UNIVERSITY REQUIREMENTS FOR GRADUATION</th>
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</thead>
<tbody>
<tr>
<td>Arts and Humanities [H]—6 hours</td>
</tr>
<tr>
<td>Social Sciences [S] or [U]—6 hours</td>
</tr>
<tr>
<td>Communication Proficiency [C]—6 hours</td>
</tr>
<tr>
<td>sciences[B], [P], [U], [Z]—10 hours</td>
</tr>
</tbody>
</table>

No designated GUR course can be taken on a pass-fail basis.

Courses meeting specific GUR's are listed on the following page. Courses in, or cross listed with, a student's major field may not be used to satisfy General University Requirements, except for the communication proficiency.

Transfer students holding an approved Associate of Arts or Associate of Science degree from a Washington state community college have met the General University Requirements (GUR).
and social environment. In addition, all educational development requires the ability to communicate effectively in both oral and written modes. Toward the attainment of these goals the faculty has established minimum requirements in the areas of Communication Proficiency, Arts and Humanities, Science and Social Science. They have identified a wide selection of specific courses which, both by their content and method of instruction, contribute to the development of communications skills and general educational experiences. These courses are offered at both the lower and upper division levels. Students should seek the help of their faculty adviser to adapt course choices to their individual needs and interests.

The General University Requirements constitute a minimum experience asked of all students. The College of Sciences and Arts requires that students go beyond that minimum experience as a condition of graduation in that College.

STUDENTS IN THE COLLEGE OF SCIENCES AND ARTS must meet requirements below which include the General University Requirements.

**Requirements for Graduation in College of Sciences and Arts**

Graduation requirements for students majoring in the College of Sciences and Arts are:
(a) **Arts and Humanities and Social Sciences**: 21 hours from the list below with at least 6 hours in Arts and Humanities and 6 hours in Social Sciences: all courses must be outside the student's major department or program; (b) **Communication Proficiency** (same as GUR above); (c) **Sciences**: 12 hours from the list below with at least 3 hours in the biological sciences and 3 hours in the physical sciences and 2 hours credit for 6 clock hours of laboratory work; all courses must be outside the student's major department or program; and (d) **Foreign Language**: One year (2 semesters) of one foreign language at the university level or two years of one foreign language at the high school level. Demonstrated proficiency by means of the Foreign Language Placement Examination may substitute for actual course work.

Transfer students holding an approved Associate of Arts or Associate of Science degrees are responsible for the additional requirements of the College of Sciences and Arts.

**ARTS AND HUMANITIES.** Courses approved for General University Requirements for graduation in arts and humanities [H]:

- **Anthropology** 201, 304, 336, 355
- **Architecture** 120, 121
- **Asian American Studies** 315
- **Asian Studies** 315, 350, 352, 374
- **Black Studies** 102, 319, 320
- **Chicano Studies** 220, 321, 324, 325, 340
- **Cinema** 323
- **Communications** 101
- **Fine Arts** 101, 104, 201, 202, 203, 204, 300, 301, 302, 303, 304, 305
- **French Languages** 111, 352
- **French** 203, 304, 315, 316, 333, 334, 350, 425, 432, 441, 442, 451, 452
- **German** 203, 304, 315, 316, 333, 334, 350, 432, 433, 442
- **Japanese** 401
- **Russian** 203, 304, 315, 350
- **Spanish** 203, 304, 315, 316, 324, 325, 333, 350, 422, 472
- **Swedish** 303, 350
- **History** 340, 342, 343, 374, 440, 441, 444
- **Humanities** 100, 101, 198, 202, 204, 301, 350
- **Music** 160, 362, 363, 364
- **Philosophy** 101, 107, 198, 201, 220, 260, 300, 305, 310, 314, 315
- **Physical Education** 340
- **Speech** 112, 160, 250, 362, 365, 366, 425
SOCIAL SCIENCES. Courses approved for General University Requirements for Graduation in social sciences [S]:

Aging 356
Agricultural Economics 201, 301, 420
Anthropology 101, 198, 203, 230, 301, 303, 309, 320, 330, 331, 350
Asian American Studies 201, 203
Asian Studies 270, 275
Black Studies 101, 310, 311, 324, 370, 381
Chicano Studies 110, 248, 272, 313, 372, 383
Child and Family Studies 248, 442
Communications 373
Economics 102, 198, 201, 203
Electrical Engineering 300 [U]
Environmental Science 101 [U], 102 [U]
Foreign Language 350
Geography 102, 220
History 101, 102, 110, 111, 198, 210, 230, 231, 270, 275, 310, 311, 312, 341, 370, 381, 382, 385, 399, 487, 488, 489
Native American Studies 101, 320, 331
Political Science 101, 102, 198, 206, 222, 300, 310, 318, 324, 333, 434, 437, 438
Psychology 101, 102, 198, 230, 350, 355, 360
Social Science 101
Speech 325
Women Studies 150, 200, 230, 351, 384

COMMUNICATION PROFICIENCY.
Courses approved for General University Requirements for Graduation in communication proficiency [C]:

Agriculture 205
Speech 102, 235, 302, 330, 331
Courses that meet GUR in written communication proficiency [W]:

Business Administration 353
Chicano Studies 102
English 101, 102, 105, 198, 201, 301, 401

BIOLOGICAL SCIENCES. Courses approved for General University Requirements for Graduation in biological sciences [B]:

Anthropology 260
Bacteriology 101
Biological Science 101, 102, 103, 104, 298
Botany 201, 332
Environmental Science 303, 321
Forestry 303
Genetics 201
Plant Pathology 321
Zoology 135, 251, 330

PHYSICAL SCIENCES. Courses approved for General University Requirements for Graduation in physical sciences [P]:

Astronomy 135
Chemistry 101, 102, 105, 106, 111, 212, 383
Civil Engineering 403, 430
Environmental Science 402, 403
Geology 101, 102, 310, 322, 350, 402, 403, 430
Materials Science and Engineering 101
Mechanical Engineering 201
Physics 101, 102, 201, 202, 322, 371, 380

SCIENCES. Courses approved for General University Requirements for Graduation in sciences [Z]:

Aging 130
Chemical Engineering 174
Computer Science 200, 210
Electrical Engineering 300 [U]
Environmental Science 101 [U], 102 [U], 174
Food Science 170
Foods, Nutrition, and Institution Management 130
Materials Science and Engineering 103
Mathematics 103, 105, 116, 140, 141, 171, 198, 201, 205, 300
Certificates and Degrees Granted

CERTIFICATES
Provisional (for teaching)

ACADEMIC DEGREES

Accounting, B Acct
Adult and Continuing Education, MACEd
Agricultural Economics, BS, MA, PhD
Agricultural Education, BS
Agricultural Engineering, BS
Agricultural Mechanization, BS
Agriculture, BS
Agronomy, BS, MS, PhD
American Studies, BA, PhD
Animal Sciences, BS, MS, PhD
Anthropology, BA, MA, PhD
Architectural Studies, BS
Architecture, B Arch
Arts, BA
Asian Studies, BA
Bacteriology and Public Health, BS, MS
Bacteriology, PhD
Biochemistry, BS, MS, PhD
Biology, BS, MS
Black Studies, BA
Botany, MS, PhD
Business Administration, BA, MBA
Chemical Engineering, BS
Chemical Physics, PhD
Chemistry, BS, MS, PhD
Chicano Studies, BA
Child Development, MA
Civil Engineering, BS, MS
Communications, BA
Computer Science, BS, MS, PhD
Construction Management, BS
Criminal Justice, BA, MA
Economics, BA, MA, PhD
Education, BA, EdM, MA, EdD, PhD
Electrical Engineering, BS, MS
Engineering, BS, MS
Engineering Science, PhD
English, BA, MA, PhD
Entomology, BS, MS, PhD
Environmental Engineering, MS
Environmental Science, BS, MS
Fine Arts, BA, MFA
Food Science and Technology, BS
Food Science, MS, PhD
Foreign Languages and Literatures, BA, MA
Forest and Range Management, MS
Forest Management, BS
Genetics, MS, PhD
Geography, BA
Geology, BS, MS, PhD
History, BA, MA, PhD
Home Economics, BA, BS, MA, MS
Horticulture, BS, MS, PhD
Hotel Administration, BA
Industrial Education, BA
Interior Design, BA
Landscape Architecture, BS
Liberal Arts, B Lib A
Literary Studies, PhD
Materials Science and Engineering, MS
Mathematics, BA, MA, DA, PhD
Mechanical Engineering, BS, MS
Music, BA, B Mus, MA
Nursing, BS
Nutrition, MS, PhD
Pharmacy, B Phar
Pharmaceutical Science, MS, PhD
Philosophy, BA, MA
Physical Education BS, MS, PhD
Physical Metallurgy, BS
Physics, BS, MS, PhD
Plant Pathology, MS, PhD
Political Science, BA, MA, PhD
Psychology, BS, MS, PhD
Range Management, BS
Recreation and Park Administration, BA
Regional Planning, MRP
Science, BS
Social Studies, BA
Sociology, BA, MA, PhD
Soils, BS, MS, PhD
Speech, BA, MA
Teaching, MAT (of Physical Education, Speech)
Veterinary Medicine, DVM
Veterinary Science, BS, MS, PhD
Vocational Technical Education, MS
Wildlife Biology, BS, MS
Zoology, BS, MS, PhD
Zoophysiology, PhD
Tuition, Fees, and Financial Aids

Tax sources of the state finance the major portion of facilities and operation of the instructional program, student services, and related activities. Students share in the costs by paying tuition, fees, and other charges as established by the Board of Regents. Changes may be made at any time and are effective when established by the Board of Regents.

Tuition, fees, and other charges are subject to change by the Board of Regents.

Summary of Yearly Expenses

<table>
<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board and Room (approximate)</td>
<td>$1620.00</td>
<td>$1620.00</td>
</tr>
<tr>
<td>Registration Fees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td>686.00</td>
<td>2394.00</td>
</tr>
<tr>
<td>Graduate</td>
<td>770.00</td>
<td>2736.00</td>
</tr>
<tr>
<td>General University Damage Deposit (refundable)</td>
<td>15.00</td>
<td>15.00</td>
</tr>
<tr>
<td>Hospitalization Insurance Single Coverage (optional)</td>
<td>est. 70.00</td>
<td>est. 70.00</td>
</tr>
</tbody>
</table>

REGISTRATION FEES

per semester

Payment of registration fees for a semester is due on or before the fifth class day. Payment after that day will result in a late service fee of $15.00.

Registration Fees Per Semester

(includes tuition)

<table>
<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>FULL TIME (more than 6 hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td>$343.00</td>
<td>$1197.00</td>
</tr>
<tr>
<td>Graduate</td>
<td>385.00</td>
<td>1368.00</td>
</tr>
<tr>
<td>DVM</td>
<td>514.00</td>
<td>1879.00</td>
</tr>
<tr>
<td>WAMI</td>
<td>439.50</td>
<td></td>
</tr>
</tbody>
</table>

PART TIME (6 hours or less)

(per credit hour; minimum charge 2 credit hours)

<table>
<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>34.00</td>
<td>34.00</td>
</tr>
<tr>
<td>Graduate</td>
<td>39.00</td>
<td>39.00</td>
</tr>
</tbody>
</table>

ADVANCE PAYMENT (see p. 19) .......................................................... $50.00

DEPOSITS

General university damage deposit required of all students ..................... 15.00

Refund checks of all or balance of deposits are mailed within six weeks after the close of the school year.

1Required for all foreign students.

2Requirements for full time attendance are listed on page 21.
Tuition, Fees, and Financial Aids

SPECIAL REGISTRATION FEES

Resident Vietnam Veteran .................................................. $277.00
(S.E. Asian Theatre)

Directed Teaching (Educ 405 or 406 or ETE 407 only) .................. 256.00
Pullman High School Cooperative Program ............................... 43.00
Special off-campus fee for Bact 418 or Env H 480 or Psych 595 only 30.00
No-Credit Graduate Enrollment (annual) ................................. 12.00

Consult Annual Time Schedule for special fees related to specific courses.

SUMMER SESSION REGISTRATION FEES

Resident and Nonresident—per credit hour .................................. 27.00

OTHER FEES AND CHARGES

(Not necessarily applicable to all students)

  Entrance qualifying and graduates of unaccredited high  
schools test fee ................................................................. $ 10.00

Foreign Language reading examination fee ............................... 10.00
Graduate School application fee ............................................. 10.00
Graduation, bachelor’s degree ................................................ 5.00
Graduation, master’s and doctor’s degrees ................................. 9.00

Microfilming fee (applicable to PhD and Ed D degree  
candidates only) ............................................................... 35.00
Copyright fee ........................................................................ 20.00

Placement Bureau Credential Service fee  
(There is no fee before graduation.  
Thereafter fee assessed for each set of credentials.) .................. 3.00

Service charge for late registration or payment of fees  
(on or before 10th day of classes) ......................................... 15.00

Service charge for late registration  
(after 10th day of classes) ..................................................... 50.00

Service charge for dishonored checks ....................................... 5.00
Teacher’s Statutory Certification fee ......................................... 17.00
Transcript fee (each address) ................................................... 1.00
(For each additional copy sent to the same address at the same time,  
the fee is ten cents.)

Veterinary Medicine application fee ........................................ 15.00

Note: Overdue accounts owed the university will prevent release of  
transcripts and reenrollment. Registration is not complete until all of the  
student’s tuition and fees are paid.

Resident Status

A “resident student” is one who has been domiciled in the state of Washington at least one  
year prior to the commencement of the semester for which the student has registered and has  
established an intention to become a bonafide domiciliary of the state for other than educational  
purposes, or has met other specific requirements as stated in Chapter 273, Laws of  
1971 First Extraordinary Session (see Chapter 25B.15 RCW).
Unemancipated minors (under 18 years of age) share the resident status of the parent or legal guardian. Resident status is determined without regard to sex or marital status.

Failure to register motor vehicles, boats, or other personal property in Washington or acceptance of financial aid from another state shall constitute failure to establish resident status, while registering to vote or full time employment in the state tend to show intent to establish resident status.

Persons who work for a state institution of higher education 20 hours or more per week,¹ and veterans whose final duty station was in Washington and who are receiving federal veterans’ vocational or educational benefits, and military personnel and federal employees residing or stationed in Washington and their children and spouses, are entitled to enroll upon payment of resident tuition and fees, without regard to domiciliary requirements.

Once a student has been classified and registered, the classification shall remain unchanged until the student presents satisfactory evidence in writing showing cause for change. All changes will take effect at the next registration following determination of the change by institution authority.

Petitions for change of resident status should be submitted to the Office of Admissions.

Refund Policy
Full refund, fall and spring semesters: Tuition, operating, and student service and activity fees will be refunded in full if the student officially withdraws from the university prior to the sixth day of instruction of the semester for which fees have been paid.

Fifty percent refund, fall and spring semester: If the student withdraws on or after the sixth day of instruction but within thirty (30) calendar days from the beginning of instruction, 50 percent of tuition, operating, and student service and activity fees will be refunded.

After 30 days from the beginning of instruction, no portion of the fees will be refunded.

Summer Session registration fees will be refunded in full if the student officially withdraws during the first three days of the official start of the session. After the third day of instruction, no portion of summer session fees will be refunded.

For short courses and sessions of less than four weeks’ duration, the refund period is 24 hours after the official start of the session.

Financial Assistance
The main sources of student financial aid assistance are federal programs such as National Direct and Federally Insured Student Loans, Basic and Supplemental Educational Opportunity Grants, College Work-Study, Law Enforcement Education Program, and Health Professions and Nursing Loans; state-sponsored programs such as tuition and fee waivers, State Work-Study, State Need Grants; and university programs including scholarships, grants-in-aid, short-term loans, and part-time job placement. Financial Aid Forms and information are available from the WSU Financial Aid Office, Room 444, French Administration Building. Financial Aid Counselors are available to help students with questions about financing their college education.

A brochure is available upon request to the Financial Aid Office. It contains specific information about financial aid programs, the rights and responsibilities of students participating in the programs, and general information deemed useful for prospective financial aid recipients.

Processed Financial Aid Forms, received in the Financial Aid Office by April 1, will be considered for need-based academic scholarships as well as for all other types of aid. Full

¹Eligibility must be re-established prior to registration each semester through the Controller’s Office, Accounts Receivable Section.
consideration for all other types of aid will be given to those whose processed Financial Aid Forms are received by June 1. Students who cannot meet the June 1 deadline are encouraged to apply as soon as possible thereafter.

WSU Foundation
The WSU Foundation has been established for the purpose of soliciting and receiving gifts, grants, and bequests from alumni and friends of Washington State University and for the selection of projects such as faculty research, undergraduate scholarships, student grants-in-aid, student loans, graduate student programs, and other programs beneficial to the university where state funds are not available. Individuals wishing to make gifts and bequests in support of projects approved for this fund may address inquiries to the President, WSU Foundation, Washington State University, Pullman, Washington 99164.

Physically Impaired Students
The state of Washington administers several programs of assistance to needy physically impaired students.

Blind students who are residents of the state of Washington may have their entire registration fee paid and receive additional funds for books, readers, and other items under provisions of either RCW 28B.10.210 through 28B.10.220 or RCW 74.16.011 through 74.16.183. Inquiries concerning eligibility for and assistance under this program should be addressed to Services for the Blind, 3411 South Alaska Street, Seattle, Washington 98118.

Other students or prospective students who are residents and have a physical impairment may be eligible for assistance through rehabilitation programs administered by the state of Washington. Information concerning eligibility and level of assistance should be directed to the Department of Public Assistance, Division of Vocational Rehabilitation, Capitol Center Building, Olympia, Washington 98501.

Tuition Exemption for Children of Disabled or Deceased Veterans
Under RCW 28B.10.250 through 28B.10.260, Laws of 1947, resident students between the ages of 16 and 22 having a parent who was killed or totally incapacitated by reason of service in the armed forces of the United States may have the tuition portion ($58.50) of registration fees waived. This program is administered by the Council for Postsecondary Education, Division of Student Financial Aid, 908 East Fifth, Olympia, Washington 98504.

Veterans' Benefits
The Veterans' Affairs Office, 332 French Administration Building, cooperates with the Veterans' Administration in carrying out the provisions of the public laws established to give educational benefits to veterans and children of deceased or totally disabled veterans. These benefits are administered under the following chapters of Title 38 of the U.S. Code: Chapter 31 covers those on the VA Vocational Rehabilitation program; Chapter 32 governs Post-Vietnam Era veterans (those who initially entered military service on or after January 1, 1971); Chapter 34 pertains to Vietnam Era veterans who initially entered the service prior to December 31, 1976; and Chapter 35 covers the Dependents' Educational Assistance program, formerly termed War Orphans' and Widows' Educational Assistance.

Students should gain admittance to the university before making application for benefits. Application for benefits should be made to the Regional Veterans Administration Office or the Coordinator of Veterans' Affairs, WSU, at least two months prior to the student's expected enrollment.

Students attending under either Chapters 32, 34, or 35 should plan for at least two months between the approval of their application by the Regional Veterans Administration Office in Seattle and receipt of their first checks.

Veterans who (1) served in the Southeast Asian theatre of operation between August 5, 1964, and May 7, 1975, (2) qualify as a resident student under RCW 28B.15.012., and (3) were
enrolled in an institution of higher education in the state of Washington on or before May 7, 1993, may qualify for a Vietnam Veterans' Tuition increase Exemption as amended by the Washington State Legislature in 1979. Veterans claiming this special exemption should apply through the WSU Coordinator of Veterans Affairs.

Special Benefits for Children of Veterans
The children of any veteran who was a Washington domiciliary and who within the past eleven years has been determined by the federal government to be a prisoner of war (POW) or missing in action (MIA) in southeast Asia including Korea, or who shall become so hereafter, shall be admitted to Washington State University without the necessity of paying tuition or fees, provided that such student shall meet standard admission requirements. Prospective students who wish to qualify for this exemption should contact the Coordinator of Veterans Affairs.

Information contained in this publication is hereby certified as true and correct in content and policy as of the date of publication, in compliance with the Veterans Administration DVB Circular 20-76-84 and Public Law 94-502.

C. James Quann
Registrar

Waiver of Fees for Persons Aged 60 and Over
Pursuant to Chapter 157, Laws of 1975, First Extra Session, persons aged 60 and over may enroll at Washington State University without charge, on an audit basis, for up to two courses per semester or summer session provided space is available in the classes selected. To take advantage of this waiver, the applicant should report to the Office of the Registrar during the first two weeks of classes of fall or spring semester, or the first week of the summer session. Applicants may not enroll under this basis prior to the first day of classes. Applicants will complete the required enrollment forms designating course or courses desired, and sign a statement certifying they are at least 60 years of age, residents of the state of Washington, and that the course(s) audited will not be used for credentials or salary schedule increases.

Applicants will be given an audit approval card(s) to be signed by the instructor(s) and returned to the Registrar’s Office. Upon receiving this signature(s), the student may attend the class(es) without payment of tuition and fees. However, special course and studio fees, if any, must be paid by all auditors. Applicants will not be issued student I.D. cards nor will they be eligible for treatment by the Student Health Center.

Staff/Faculty Fee Waiver
A fee waiver option is available to full-time classified staff, faculty, and exempt employees who wish to enroll for six credits or less per semester or three credits in a Summer Session. Qualified personnel who wish to enroll under this program must follow regular admission procedures and present a completed Staff/Faculty Registration Authorization Card at the time of enrollment. Complete information on this fee waiver program is listed in the Annual Time Schedule.
Housing

Living Facilities
The university has residence hall space for 5,953 students. There are twenty-four residence halls, including a graduate center housing 300 students. Some halls are women-only halls, some are men-only, and some halls are coeducational. Facilities for use by handicapped students are provided. Residence hall information may be obtained by writing to the Housing and Food Service Office, French Administration Building, Pullman, Washington 99164.

Twenty-four national social fraternities and fourteen national social sororities currently maintain chapter houses at Washington State. The chapter houses vary in size, accommodating from thirty to sixty people. Membership in a fraternity or sorority is by invitation.

Students living in residence halls, fraternities, and sororities elect their own officers, and there are various executive and coordinating organizations through which cooperative projects may be pursued. Junior and Senior Panhellenic considers matters of common interest to sororities, while the Interfraternity Council represents the fraternities. The Residence Hall Association acts on behalf of the men’s and women’s residence halls.

Housing Regulations
All single undergraduate freshmen under twenty years of age are required to live in organized living groups which are officially recognized by the university (residence halls, fraternities, and sororities) their first semester unless they are residing with parents or legal guardians. Exemptions are granted when a student demonstrates to the Office of Student Affairs that (1) he or she has attended an institution of higher education as a regularly enrolled student for at least two regular semesters or three regular quarters (excluding summer sessions), (2) he or she is living with immediate family in a family situation (mother and/or father; legal guardian; married brother or sister; aunt or uncle; grandparents qualify as immediate family), (3) he or she has secured a statement from a physician that residence in a living group would have detrimental effects on the student’s physical health or emotional well being, (4) he or she is 20 years of age within 30 days after the beginning of classes.

Residence Halls and Dining Halls
Washington State University can normally provide space in its residence halls for most beginning students who request it. The estimated cost of room and board per person, multiple occupancy and 20 meals per week, for the 1981-82 academic year is estimated to be $1,980; for the 1982-83 academic year, $2,180. This amount is to be paid prior to registration or on an arranged installment basis. A security deposit and a signed room and board contract are required before space can be reserved.

A student desiring to cancel an advance room reservation and receive a partial refund of the security room deposit must notify the Residence Hall Secretary, French Administration Building, in writing prior to August 15 for fall term and January 15 for spring term. Once the applicant has been assigned to a hall, the security deposit is initially held to insure occupancy of the space, and then to guarantee against damage, breakage, and loss during a student’s stay in the halls. The deposit is held until the individual permanently leaves the residence hall system.

All students residing in residence halls must purchase meal tickets for use in university-operated dining halls. The dining halls are managed by trained food service personnel and are operated on a nonprofit basis.

The Board of Regents establishes rules for the use of residence halls and other university housing. The university reserves the right to use the unassigned beds in any of the residence halls at any time.

Washington State University is not liable for the loss of money or valuables by any person, or for the loss of, or damage to, any resident’s property, or personal injury sustained on the premises. It is urged that appropriate insurance be obtained prior to hall occupancy.
Family Student Housing
The university maintains approximately 700 apartments for married students. A rental request for such a unit will be considered when an application and a security deposit of $25 are received. Units for use by handicapped students are provided. For detailed information write to: Family Housing Office, Rogers Hall, Pullman, Washington 99164.

Single Student Apartments
The university operates 550 apartments that are available to unmarried students desiring apartment-type living. Sophomores and above are eligible for this type of housing. Apartments for use by handicapped students are provided. An application and $50 security deposit are required before a request will be considered. Most units are two bedroom, and are completely furnished except for linen, kitchen utensils, cleaning equipment, and study lamps. Normally two, three, and four students make up each living group. For further information, write to Apartments Secretary, Housing and Food Service, French Administration Building, Pullman, Washington 99164.
The Colleges

The Graduate School

Intercollegiate Center for Nursing Education

Joint Center for Graduate Study at Richland
The College of Agriculture is responsible for teaching, research, and extension in areas associated with agriculture and forestry throughout the state. This includes keeping our rural and urban environments productive and healthful.

A farm background is not a requirement for careers in agriculture and forestry. Agriculture is much broader than farming, though most agricultural careers are found in fields related to farming. A large number of careers in agriculture are available to young people from cities and towns. Those with interest and aptitude in the physical and biological sciences or the social sciences are needed in agricultural business, industry, services, teaching, or research.

College programs in agriculture are much broader than preparing people to farm, ranch, teach, manage forests, or to do government work. Students prepare for careers in food processing or manufacturing farm equipment or supplies, or pest management. Careers in economic aspects of agriculture are concerned with farm management, credit, marketing, and sale and distribution of farm products. Those who want to teach can become vocational agriculture teachers, extension workers, communications workers in radio, TV, and journalism or may serve as educators for firms and businesses. Those preferring scientific careers find them by preparing for research work, college teaching, and highly technical pursuits in industry and government.

Extension work, carried on by workers in every county, is concerned with the broad field of agriculture and forestry, home economics, environmental quality, improved community and family life, and youth. It serves both rural and urban audiences. Washington State University, the United States Department of Agriculture, and the counties cooperate in this effort.

Research scientists attack problems and seek new knowledge relating to a quality environment, wise use of natural resources, and the production, processing, marketing, and utilization of agricultural and forest products. They are also concerned with nutrition, conditions for better home living, and social and economic problems.

Research takes place at the following locations in the state: The Agricultural Research Center (Pullman); Coastal Washington Research and Extension Unit (Long Beach); Colockum Multiple Use Research Center (Malaga); Dry Land Research Unit (Lind); Irrigated Agriculture Research and Extension Center (Prosser); Northwestern Washington Research and Extension Unit (Mt. Vernon); Southwestern Washington Research Unit (Vancouver); Tree Fruit Research Center (Wenatchee); Western Washington Research and Extension Center (Puyallup).

The College of Agriculture offers many choices in fields of study to fit the interests and goals of students. Its functions and objectives are:

1. To educate professional agriculturists for public agencies and private firms engaged in agricultural and forestry business, communications, conservation, resource management, and services.
2. To prepare research scientists and technologists for agricultural experiment stations, colleges, the United States Department of Agriculture, other government agencies, and private industry.
3. To provide prospective young farmers with a college education in agriculture embracing scientific, business, and practical training designed to help them become better farmers.
4. To train high school and college teachers of agriculture and cooperative extension workers.
5. To provide each student with a liberal education and an opportunity to develop leadership ability.

Admission
The requirements for admission to the College of Agriculture are the same as those for WSU. High school students planning to enroll in the College of Agriculture are urged to take as many science, mathematics, and agricultural courses as possible.
Degrees
The degrees listed below may be earned in the College of Agriculture:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Science in Agriculture</td>
<td>General Agriculture, Plant Pathology</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>Agricultural Economics, Agricultural Education,¹ Agricultural Engineering,² Agricultural Mechanization, Agronomy, Animal Sciences, Entomology, Environmental Science, Food Science and Technology, Forest Management, Horticulture, Landscape Architecture, Range Management, Soils</td>
</tr>
<tr>
<td>Master of Arts</td>
<td>Agricultural Economics</td>
</tr>
<tr>
<td>Master of Adult and Continuing Education</td>
<td>Education, General Agriculture</td>
</tr>
<tr>
<td>Master of Regional Planning</td>
<td>Regional Planning</td>
</tr>
<tr>
<td>Master of Science</td>
<td>Agronomy, Animal Sciences, Entomology, Environmental Science, Food Science, Forest and Range Management, Genetics,³ Horticulture, Nutrition, Plant Pathology, Soils</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>Agricultural Economics, Agronomy, Animal Sciences, Entomology, Food Science, Genetics,³ Horticulture, Nutrition, Plant Pathology, Soils</td>
</tr>
</tbody>
</table>

Transfer Students
Transfer students who have completed one year in another college or university ordinarily will have no difficulty in completing the requirements for one of the Bachelor of Science degrees in Agriculture in three additional years.

Students who have completed two years before transferring may have some difficulty in completing requirements in two additional years because of required courses and course sequences. To avoid this difficulty, students enrolled in other colleges or universities but planning to transfer to the College of Agriculture at Washington State University should concentrate as much as possible on General University and College of Agriculture requirements normally scheduled during the freshman and sophomore years, with particular attention to those subjects required for the intended major (as an example, see the Schedule of Studies under General Agriculture).

Requirements for Graduation
Requirements for graduation in the College of Agriculture vary according to the major and the degree to be granted as described in the component departmental sections of this catalog. The student and the adviser jointly have the responsibility of selecting courses to fit the student’s native ability and vocational interests consistent with departmental and General University Requirements.

A university education should provide the basis for understanding and appreciating the complex environment in which we live. In view of this and as a part of preparation for an occupational goal, a student is encouraged to do more than satisfy the minimum requirements in general education.

¹Administered by the College of Education
²Administered by the College of Engineering
³Administered by the College of Sciences and Arts
Majors

In the College of Agriculture the student has a choice of seventeen undergraduate majors, seven with separate curricula, as shown below and a choice of a minor in many of the departments.

<table>
<thead>
<tr>
<th>Major</th>
<th>Administering Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Communications</td>
<td>General Agriculture</td>
</tr>
<tr>
<td>Agricultural Economics</td>
<td>Agricultural Economics</td>
</tr>
<tr>
<td>Separate curricula in</td>
<td></td>
</tr>
<tr>
<td>Agribusiness Management,</td>
<td></td>
</tr>
<tr>
<td>Technical Agriculture and</td>
<td></td>
</tr>
<tr>
<td>General Agricultural Economics</td>
<td></td>
</tr>
<tr>
<td>Agricultural Education</td>
<td>College of Education¹</td>
</tr>
<tr>
<td>Agricultural Engineering</td>
<td>College of Engineering²</td>
</tr>
<tr>
<td>Agricultural Mechanization</td>
<td>Agricultural Engineering</td>
</tr>
<tr>
<td>Agronomy</td>
<td>Agronomy and Soils</td>
</tr>
<tr>
<td>Separate curricula in technical,</td>
<td></td>
</tr>
<tr>
<td>business and industry, and science</td>
<td></td>
</tr>
<tr>
<td>Animal Biology</td>
<td>Animal Sciences</td>
</tr>
<tr>
<td>Animal Nutrition</td>
<td>Animal Sciences</td>
</tr>
<tr>
<td>Animal Production</td>
<td>Animal Sciences</td>
</tr>
<tr>
<td>Separate curriculum in Animal Business</td>
<td></td>
</tr>
<tr>
<td>Entomology</td>
<td>Entomology</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>Colleges of Agriculture, Engineering, and Sciences and Arts</td>
</tr>
<tr>
<td>Food Science and Technology</td>
<td>Food Science and Technology</td>
</tr>
<tr>
<td>Forest Management¹</td>
<td>Forestry and Range Management</td>
</tr>
<tr>
<td>Separate curriculum in</td>
<td></td>
</tr>
<tr>
<td>Wildland Recreation Management</td>
<td></td>
</tr>
<tr>
<td>General Agriculture</td>
<td>General Agriculture</td>
</tr>
<tr>
<td>Separate curriculum in</td>
<td></td>
</tr>
<tr>
<td>Integrated Pest Management</td>
<td></td>
</tr>
<tr>
<td>Horticulture</td>
<td>Horticulture and Landscape Architecture</td>
</tr>
<tr>
<td>Separate curricula in fruit</td>
<td></td>
</tr>
<tr>
<td>and vegetable production,</td>
<td></td>
</tr>
<tr>
<td>ornamental horticulture</td>
<td></td>
</tr>
<tr>
<td>Landscape Architecture²</td>
<td>Horticulture and Landscape Architecture</td>
</tr>
<tr>
<td>Plant Pathology</td>
<td>Plant Pathology</td>
</tr>
<tr>
<td>Range Management</td>
<td>Forestry and Range Management</td>
</tr>
<tr>
<td>Soils</td>
<td>Agronomy and Soils</td>
</tr>
<tr>
<td>Separate curricula in science,</td>
<td></td>
</tr>
<tr>
<td>soil management, and soil inventory</td>
<td></td>
</tr>
</tbody>
</table>

¹Degree and administration by College of Education
²Degree and administration by College of Engineering
³Accredited by the Society of American Foresters
⁴Accredited by the American Society of Landscape Architects
The programs of the College of Business and Economics relate to instruction, research, and public service. The two principal objectives of these programs are (1) to promote an understanding of the business environment and (2) to educate students to deal with the complexities of that environment. The College offers courses of study leading to a variety of careers in the areas of business management, government, business and economics research, and the teaching of business and economics.

Research efforts within the college are concerned largely with topics of interest to both the general populace and the business communities of the state of Washington and the nation. The results of this research are disseminated in the classroom, through publications, at business seminars, and at professional conferences.

The Business Development Program, advised by business leaders from throughout the state, provides a direct means by which the faculty and staff of the college can work with the business community to identify and to solve business problems.

Faculty members of the college make valuable contributions to the university and to their professional areas through teaching undergraduate and graduate students; pursuing substantial research efforts; assuming leadership roles in regional and national professional organizations; and performing consulting activities in business, industry, and public administration agencies. These activities enhance the realism and relevance of the instructional programs within the college.

The long-term growth of economic activity in the state of Washington, the Pacific Northwest, and the nation generally has resulted in a strong demand for students who have completed the curricula offered by the College of Business and Economics. The growing complexity and sophistication of the business environment makes it increasingly imperative that today's students understand the economic and business systems that surround them. Such an understanding is a vital prerequisite to more intelligent citizenship and good government. To be educated today, one must have a solid understanding of economic structures, business practices, business philosophies, and business institutions. The basic courses of the college are structured to give students an understanding of major problems in the business world and the economy; but more importantly, the instruction focuses upon the careful and systematic analysis of the problems of the business firm, the understanding and mastery of the management and decision-making processes, and the overall planning and control of business activity. The courses are also designed to foster an understanding of the chief problems of public policy in business and economic matters. The instructional programs are designed for students who eventually expect to become business executives, to assume research or management positions in private or governmental organizations, and to become teachers of business and economics. The close relationship between the business and economics programs within the college and the interdisciplin ary cooperation with departments throughout the university, provide carefully integrated educational experiences for students.

The curricula leading to degrees in business administration at both the graduate and undergraduate level are accredited nationally by the American Assembly of Collegiate Schools of Business. Each major option embraces a core of courses that provides a common body of knowledge and advanced study in a particular field. The three business departments, Accounting and Business Law, Business Administration, and Management and Administrative Systems, offer the following major specializations:

- Accounting
- Administrative Management
- Business Education
- Computer Systems
- General Business Management
- Hotel and Restaurant Administration
- Insurance
- Management
- Marketing
- Office Administration
- Quantitative Methods
- Real Estate
- Transportation and Physical Distribution
The Colleges

Within the Department of Economics, students may specialize in such areas as:

Consumer Economics
Econometrics
Economic Development
Economic History
Economic Theory
History of Economic Thought
Industrial Organization and Government Regulation
International Trade
Labor Economics
Labor Relations and Collective Bargaining
Mathematical Economics
Money and Banking
Public Finance and Taxation
Public Utility
Transportation

To meet the demand for graduates with training in both business administration and one or more technical fields such as agriculture, chemistry, engineering, forestry, journalism, and industrial psychology, special programs are available for persons with a bachelor of arts degree in the specialized field to earn a second bachelor of arts degree in business administration.

Graduate work may be taken in business administration and economics in most of the areas of specialization listed within these two major fields.

All curricula in the College of Business and Economics are designed to fulfill two major objectives. The first is to develop within students a broad understanding of the business system as a whole and an appreciation of that system in the cultural, economic, and political framework of society. The second is to enable students to pursue more intensive study in specialized areas during the latter part of their educational programs.

Admission Requirements
Admission requirements to the programs of the College of Business and Economics may vary. Requirements for specific programs are shown elsewhere in this catalog. Interested students are advised to contact the departments for the latest requirements for major certification. Because of unusually high enrollments and limited space in classes, transfer students, Curriculum Advisory Program students, or certified majors from other departments may certify as business administration majors only after earning 45 or more semester credits (or 67 quarter credits) and a cumulative g.p.a. of 2.6 or higher.

For exact information regarding the acceptability of professional courses taken at other institutions in areas of study offered by the departments of the College of Business and Economics, prospective students should communicate with the appropriate department chairperson.

Degrees
The curricula of the College of Business and Economics lead to the following degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Accounting</td>
<td>Business Administration</td>
</tr>
<tr>
<td>Bachelor or Arts</td>
<td>Business Administration, Economics, Hotel Administration</td>
</tr>
<tr>
<td>Master of Arts</td>
<td>Economics</td>
</tr>
<tr>
<td>Master of Business Administration</td>
<td>Business Administration</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>Economics</td>
</tr>
</tbody>
</table>
George B. Brain, Dean

The College of Education consists of the Departments of Education, Physical Education for Men, Physical Education for Women, Vocational Technical Education, and the program in Adult and Continuing Education.

The College of Education prepares teachers for elementary school, secondary school and college instruction; specialists in a variety of educational fields; and administrators for schools, colleges, and universities. The college provides professional training in physical education, recreation, prephysical therapy, industrial education, home economics, agricultural education, vocational technical education, and adult and continuing education as well as for the community colleges, and offers a variety of educational services to local school systems.

Teacher education is greatly strengthened by virtue of the program being in a multi-purpose university with a land grant tradition. Not being gifted with prophetic vision of what the future holds, the departments of the College of Education have elected to place their trust in people—students and teachers. The college holds that people of courage, idealism, and intellectual promise, nurtured in the elements of disciplined liberal education, through professional training, and imbued with a respect for their calling and for high standards of professional performance, will themselves rise to the demands of new circumstances, exercising discriminating choice in the options before them. The college educates persons not only for adaptability, but also for responsibility in making decisions.

The General University Requirements provide a foundation for professional work in the College of Education through offerings in the humanities and in the social and natural sciences.

In accord with approved professional trends the College of Education has made provision for performance based programs leading to degrees and professional certification. The mission of the graduate programs in the College of Education is to furnish intensive preparation for persons serving in teaching, supervisory, special services, or administrative fields in elementary, junior high, senior high, community colleges, or for others who contemplate such work or who are interested in related areas of professional service.

Teacher education curricula at all degree levels in the College of Education are accredited by the National Council for Accreditation of Teacher Education. The College of Education is a member of the American Association of Colleges for Teacher Education and the University Council on Education Administration. State departments of education throughout the United States recognize and accept for certification purposes the professional work completed in the College of Education.

The College of Education also functions as a service institution for the schools and communities in the state of Washington. The College provides research services to education agencies throughout the United States and internationally. Services of its faculty are available for consultant purposes, school studies, professional development programs, school seminars, and community conferences in the departmental specialties.

**Degrees**

The degrees offered by the College of Education are as follows:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts</td>
<td>Education (Elementary majors), Industrial Education, Recreation and Park Administration</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>Agricultural Education, Physical Education</td>
</tr>
<tr>
<td>Master of Adult and Continuing Education</td>
<td>Education, General Agriculture</td>
</tr>
<tr>
<td>Master of Science</td>
<td>Physical Education, Vocational Technical Education</td>
</tr>
<tr>
<td>Master of Arts</td>
<td>Education, Recreation and Park Administration</td>
</tr>
<tr>
<td>Master of Education</td>
<td>Education</td>
</tr>
</tbody>
</table>
College of Engineering

Carl W. Hall, Dean

The College of Engineering has responsibilities for instruction, research, and extension in most fields of engineering and architecture. These responsibilities are carried out through a variety of activities. Included are formal classroom instruction at both the undergraduate and graduate levels and informal instruction which may take the form of seminars, individual directed studies, and counseling. The fundamental and applied research programs conducted by faculty and staff of the college provide engineering work opportunities for undergraduate students, for graduate student thesis research, and for services to the industries of the state. The research and extension projects are designed to enhance the sound use of our material resources both economically and ecologically and to promote well-balanced industrial development. The collection and dissemination of technical information to industries and to the public in general is accomplished through short courses, symposia, technical publications and other means.

To perform these varied functions, the College of Engineering is organized into several degree-granting departments and research branches, and an Engineering Extension Service. The faculty of the college participate in all three areas.

Engineering practice is based on a sound fundamental knowledge of chemistry, physics, and mathematics. Courses in engineering are designed to give thorough preparation in engineering sciences and in the solution of engineering problems.

The following undergraduate curricula in the college are accredited by the Engineers Council for Professional Development (ECPD): agricultural engineering, chemical engineering, civil engineering, electrical engineering, mechanical engineering, and physical metallurgy. The curriculum leading to Bachelor of Architecture is accredited by the National Architectural Accrediting Board (NAAB).

The professional engineer translates ideas, designs and physical concepts into systems, processes, structures, machines and products. It is also the responsibility of the engineer and architect to consider the economic and environmental impact of their activities on our culture and society.

It is the policy of the college to offer programs of such breadth that graduates may choose with confidence employment from the greatest possible number of specialties in their general field. The opportunity for specialization and training for higher-level performance is made available to qualified students in graduate programs in the various departments.

All majors in the College of Engineering must include a minimum of 18 credit hours in social sciences and humanities in their degree program. Twelve of the total hours must be selected from courses meeting the General University Requirements for Graduation. A student is encouraged to take from this group at least one course above the introductory level. Individual departments may require three credit hours in biological science. In architecture, six of the nine required hours of architectural history help fulfill the humanities and social science requirement.

Students desiring special areas of study, combining various fields of engineering, or incorporating specialized areas outside the College of Engineering, should explore these possibilities with the department chair or Associate Dean for Instruction of the college.

Admission

For information concerning admission and enrollment, the attention of the student is directed to the sections on admission and selection of a major in the introductory portion of this catalog. Some departments may have special entrance procedures. Students are encouraged to check with the department head for the latest requirements regarding certification into the department.
In order to achieve normal progress in the engineering program, the student should have completed in high school a minimum of one year of chemistry, three semesters of algebra, one semester of plane geometry, one semester of trigonometry, and one year of physics. Lack of this background may lengthen the engineering program of study.

Many students complete the first two years of engineering study at one of the many community colleges.

**Bachelor of Science in Engineering**

The Bachelor of Science degree in Engineering is a bi-disciplinary degree program for students who wish to enter a field for which an engineering background may be desirable such as medicine, law, or business administration.

The student will learn the fundamental principles common to most engineering disciplines although the program is not associated with a particular engineering department.

A minimum of 120 hours is required for the degree. The schedule of studies will normally include 15 hours mathematics; 15 hours sciences; 18 hours basic engineering in mechanics of solids and fluids, thermodynamics and heat transfer, materials, and electrical circuits; 5 hours technical skills; 20 hours engineering electives at the upper-division level; 24 hours related electives, and 18 hours humanities and social sciences.

Students interested in studying engineering as a background to combine with another nonengineering area should contact the College of Engineering for detailed information. Students with this degree who are planning graduate work in a specific field of engineering will normally be required to complete an additional year of study upon entering graduate school.

**The Doctor of Philosophy in Engineering Science**

The College of Engineering offers a program of study and research leading to the degree of Doctor of Philosophy in Engineering Science. The program is research oriented with course content drawn from all departments of the college, and from related physical sciences departments. Admission is open to qualified students with a recognized degree in engineering, mathematics, a physical science, or a biological science. This program should be of special interest to those who plan to teach and conduct research in engineering schools or industry.

Research projects may be undertaken in hydraulics, hydrology, fluid mechanics, mechanics of solids, heat transfer, thermodynamics, nature and behavior of metallic and non-metallic solids, electrical sciences, environmental science, computer-related studies, and other specialized fields of engineering sciences. Excellent laboratories are available for work in these areas.

Strong supporting work is available from the Departments of Mathematics, Physics, Chemistry, and Biological Sciences. The program is also supported by many excellent special university facilities such as the Nuclear Reactor, Computing Center, Spectrographic Laboratory, and the Electron Microscope Center.

**Degrees**

The curricula offered by the various departments of the College of Engineering lead to the following degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Science</td>
<td>Agricultural Engineering, Architectural Studies, Chemical Engineering, Civil Engineering, Construction Management, Electrical Engineering, Engineering, Mechanical Engineering, Physical Metallurgy</td>
</tr>
<tr>
<td>Bachelor of Architecture</td>
<td>Architecture</td>
</tr>
<tr>
<td>Master of Science</td>
<td>Civil Engineering, Electrical Engineering, Engineering, Environmental Engineering, Materials Science and Engineering, Mechanical Engineering</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>Engineering Science</td>
</tr>
</tbody>
</table>
The Graduate School

C. J. Nyman, Dean

Graduate Study
A graduate school has been described as a select community of scholars, faculty, and students dedicated to the extension of scholarship and the advancement of knowledge for the ultimate common good of mankind. The fields of intellectual and scholarly activity are numerous, and the student who contemplates graduate study should select a graduate school that offers a superior program in the chosen field. The student should study the accomplishments of the members of the graduate faculty, the adequacy of the research facilities, and the appropriateness of the curricula. For many, the Graduate School of Washington State University will provide advantageous and attractive opportunities.

Prospective graduate students should prepare themselves adequately, both in the fundamental subject matter necessary for their advanced work and in the other branches of learning, so that they may intelligently fulfill their responsibilities of leadership and service to society.

In a graduate program a student is required to complete appropriate advanced courses, to participate in seminars, and to make an original contribution to knowledge. At least one academic year of full-time graduate study, or the equivalent, is necessary for the completion of a program leading to a master's degree. A doctor's degree is awarded in recognition of distinctive scholarship. A candidate should expect to devote at least three years of full-time graduate work, or the equivalent, beyond a recognized bachelor's degree (two years beyond a recognized master's degree) in fulfilling the requirements for this degree. Most advanced degree programs emphasize the preparation of students for careers as productive scholars, and accomplishments in research constitute an important part of the training. This is true at Washington State University. It is recognized also that those who earn advanced degrees often become the teachers in our institutions of learning. For this reason, in many departments special attention is given to the preparation of students for careers in the teaching profession.

Except as they apply to undergraduate students only, graduate students are subject to the usual procedures and regulations of the institution and to such Graduate School rules and procedures as outlined on the following pages and in the Graduate Study Bulletin.

Organization and Administration
Opportunities for advanced study and research under members of the Graduate Faculty are offered in the Graduate School. Graduate instruction and research are carried on in most of the regularly organized departments. Programs of study leading to advanced degrees are under the general supervision of the Graduate Studies Committee.

The Graduate Faculty consists of the President of Washington State University, the deans of the various academic units, the chairpersons of the academic departments and programs in which advanced degree programs are offered, and selected members of the faculty. Members of the Graduate Faculty have the responsibility of offering courses limited to graduate students, guiding graduate seminars, serving as thesis advisers and members of thesis committees, administering Graduate School examinations—master's, preliminary, and doctor's—and, from time to time, serving as members of the Graduate Studies Committee. Graduate students have opportunities for studying and working with the members of the Graduate Faculty who have been selected because of their special competence and interest in an intimate professional relationship.

Degrees Granted

Doctor of Philosophy
Programs leading to this degree are available in the following fields of study: agricultural economics, agronomy, American studies, animal sciences, anthropology, bacteriology, biochemistry, botany, chemical physics, chemistry, computer science, economics, education, engineering science, English, entomology, food science, genetics, geology, history, horticulture, interdisciplinary studies, literary studies, mathematics, nutrition, pharmaceutical science, physical education, physics, plant pathology, political science, psychology, sociology, soils, veterinary science, zoology, and zoophysics.

Doctor of Arts
The program of study leading to the degree Doctor of Arts is offered in interdisciplinary studies and the Department of Mathematics.
Master of Arts and Master of Science
The appropriate degree may be earned in most departments. (See the paragraph on degrees under the descriptive material for each department or other unit of the institution.)

Other Degrees
Courses of study leading to the Doctor of Education and Master of Education degrees are offered in the Department of Education.

A student may undertake a program for the Master of Fine Arts degree, Master of Business Administration, Master of Adult and Continuing Education, or Master of Regional Planning.

Programs of study leading to the degree of Master of Arts in Teaching (MAT) are offered in physical education, science, and speech.

Admission
Graduates of Washington State University and other colleges and universities whose degrees are recognized by this institution and who meet the requirements for admission to the Graduate School may be admitted to the Graduate School. For necessary interpretations, inquiries should be directed to the Dean of the Graduate School. Prospective graduate students who have established superior academic records and whose degree interests are compatible with the programs offered at Washington State University are invited to apply for admission to the Graduate School.

Students who contemplate entering the Graduate School should obtain application forms from the Office of the Graduate School. Applicants for admission must have completed official transcripts of all prior college and university work sent directly from the registrar of the institution at which the work was done to the Graduate School and to the major department. Complete credentials should be on file at least one month before registration. Transcripts from other institutions cannot be returned. Records of previous work at Washington State University need not be submitted.

In general, admission to the Graduate School on regular student status requires at least a B (3.00) average for the last half of undergraduate work. If admission is to be on the basis of graduate study elsewhere, it must have been accomplished in a recognized graduate school with at least a B (3.00) average in 12 or more semester hours of graded graduate course work. Provisional admission may be granted to those students recommended by a department whose average is below 3.00, provided their total record indicates a high probability of success.

Admission of a student from a foreign university may be approved by the Dean of the Graduate School if the student presents a superior academic record, furnishes satisfactory evidence of adequate ability in English, and has sufficient financial resources. Such applications should be completed at least six months in advance of the proposed date of enrollment in the Graduate School. Foreign students who have undertaken graduate study in other institutions will be accepted only after evaluation of their undergraduate records as well as their performance in graduate study and the minimum criteria, as described above, will apply.

Because of limitations within certain departments, it may be necessary to deny admission to some qualified applicants. Students who come to Washington State University before receiving the Admission Certificate do so at their own risk. For further details the Graduate Study Bulletin should be consulted.

Transfer of Graduate Credits
Appropriate credits (with a grade of B or higher) earned in other accredited graduate schools may be applied to a limited extent toward an advanced degree; however, they may not be substituted for residence requirements. For necessary interpretations, inquiries should be sent to the Dean of the Graduate School.

Summer Sessions
Credit earned during summer sessions of Washington State University may be applied in the same manner and subject to the same rules and regulations as credit earned during regular semesters.

In a number of departments there are unusually good opportunities for research during the summer months. Summer work in the Department of Education is planned especially to meet the needs of teachers and administrators.

Graduate Work through Continuing University Studies
Credit earned in graduate level courses taken through the WSU Office of Continuing University Studies will be accepted on graduate student programs without limit subject only to customary program approvals.

No extension credits from other institutions, or work done by correspondence with this or any other institution, or credit earned by special examination may be used to meet advanced degree requirements.
Graduate Study by Seniors
Seniors who have at least a 3.00 grade point average in the last half of their undergraduate work at Washington State University may register for up to six semester hours of work in the Graduate School in excess of the number of hours required to complete the bachelor’s degree. Graduate School is required at the time of registration. Work done by an undergraduate under other conditions may not be applied toward an advanced degree.

Seniors who wish to enroll in 500-level courses for undergraduate credit must obtain approval of the major adviser and the chairperson of the department or program in which the course is offered.

Registration
All graduate students must maintain continuous enrollment in the Graduate School, registering for each semester and summer session from the time of first enrollment until all requirements for the degree are completed. Continuous enrollment may be maintained by registering in one of the following categories: 1. Full-time enrollment (more than 6 credits); 2. Part-time enrollment (6 credits or less); 3. Graduate leave status enrollment.

Enrollment in categories 1 or 2 automatically will grant graduate leave status enrollment for the ensuing two terms (semester or summer session) at no charge. Further graduate leave status enrollment may be granted for a fee of $12.00 per calendar year. Graduate leave status enrollees who wish to enroll for credit must give the Graduate School one month notice prior to the enrollment date. Graduate students who fail to maintain continuous enrollment will be dropped from the university.

Special Projects or Independent Study (600), Master’s Research, Thesis, and/or Examination (700), Master’s Special Problems, Directed Study, and/or Examination (702), and Doctoral Research, Dissertation, and/or Examination (800) shall have as prerequisite regular student status in the Graduate School. Research or special problems done through an enrollment by mail basis must be accomplished without utilizing the facilities of Washington State University. Inquire at the Registrar’s Office concerning procedures for enrollment by mail registration.

Scholarship Standards
A student must earn a 3.00 grade point average for all course work (including all courses listed on the program and other graduate upper- and lower-division courses). No work of C grade or less may be dropped from a program, nor can a course be repeated for a higher grade if the final grade is C or higher. Any course listed on the program in which a grade of D or F is earned must be repeated.

Any graduate student who fails to maintain a cumulative grade point average of 3.00 or higher for all course work subsequent to admission to the Graduate School will be dropped from the university. A student who is dropped may be permitted to re-enroll if a special recommendation is made by the chairperson of the major department with the concurrence of the Dean of the Graduate School.

Requirements for a Graduate Degree
The graduation requirements of the Graduate School as published in the Graduate Study Bulletin in effect at the time of the student’s initial admission as a regular or provisional graduate student are those which must be met for completion of a graduate degree program. Departmental requirements for graduation are those in effect at the time the student files a program.

Subsequent changes in degree requirements of the Graduate School or in departmental requirements may be substituted at the option of the student upon approval by the master’s or doctoral committee, by the departmental chairperson, and by the Dean of the Graduate School.

If a student is dropped from the university for failure to maintain continuous enrollment, the graduation requirements of the Graduate School are those in effect at the time of readmission to the Graduate School.

Time Limit
The time limit for the use of graduate credits toward a master’s degree is six years from the beginning date of the earliest course applied toward the degree.

Each program for a doctor’s degree is considered individually. In all cases, work for the degree must be completed within three years of the date of the satisfactory completion of the preliminary examination. At least four months must elapse between preliminary and final examinations for doctoral degrees.

Assistantships, Fellowships, and Scholarships
Teaching and research assistantships are available in most departments offering advanced degrees and research fellowships are granted in some departments. For the student personnel program, staff
assistants are appointed each year. The Graduate Study Bulletin should be consulted concerning qualifications, eligibility, and application procedures.

Assistantship appointments require part-time service. Students on appointment must maintain regular enrollment in Graduate School for the duration of their appointments. Stipends vary according to the amount of required service, the extent of the student’s training, and other factors. Graduate students appointed to assistantships of one-half time service or more by the Board of Regents are exempt from nonresident registration fees but are required to pay the resident tuition and fees. Forms for assistantship or fellowship applications are included as part of the general application for admission to Graduate School.

As most appointments are made by April 1, it is desirable to have applications completed by March 15.

Washington State University subscribes to the following resolution of the Council of Graduate Schools in the United States regarding scholars, fellows, trainees, and graduate assistants. “Acceptance of an offer of financial aid (such as a graduate scholarship, fellowship, traineeship, or assistantship) for the next academic year by an actual or prospective graduate student completes an agreement which both student and graduate school expect to honor. In those instances in which the student accepts the offer before April 15 and subsequently desires to withdraw, the student may submit in writing a resignation of the appointment at any time through April 15. However, an acceptance given or left in force after April 15 commits the student not to accept another offer without first obtaining a written release from the institution to which a commitment has been made. Similarly, an offer by an institution after April 15 is conditional on presentation by the student of the written release from any previously accepted offer. It is further agreed by the institutions and organizations subscribing to the above Resolution that a copy of this Resolution should accompany every scholarship, fellowship, traineeship, and assistantship offer.”

For information about special scholarships and fellowships write to the Dean of the Graduate School or the chairperson of the department concerned.

College of Home Economics

Alberta D. Hill, Dean

The goal of the College of Home Economics is to prepare men and women for careers and leadership roles in human services, education, business and research. Curricula include work in arts and humanities, and natural and social sciences basic to home economics courses. Home Economics courses synthesize relevant knowledge from basic disciplines and apply it to problems and decisions of the individual and family.

Transfer Students

Students who plan to transfer to Washington State University should concentrate on the General University Requirements during the freshman and sophomore years in order to have time to complete their professional courses in the last two years.

Departments and Areas

The College of Home Economics, located in White Hall, is staffed and equipped to offer instruction in three departments: Child and Family Studies; Clothing, Interior Design and Textiles; Foods, Nutrition and Institution Management. A student may select a major from one of the three departments or home economics education program. The home economics education curriculum is made up of courses in each area of home economics plus courses in the Department of Education that meet certification requirements for provisional and vocational certification.

The laboratory facilities in the College of Home Economics include infant and preschool laboratories for the Department of Child and Family Studies; foods and nutrition laboratories for research and instruction; residence hall facilities for food-service systems management; household equipment laboratories; clothing laboratories with individual work units; textile laboratories for textile analysis including a conditioning room; and interior design laboratories.
Opportunities for Graduates
Graduates are employed in positions such as parent education, consumer and family management consultants and directors of aging programs. Persons with appropriate majors enter fields of interior design, retail merchandising, consumer services, commercial food service and journalism. There are opportunities for graduates in teaching in junior and senior high schools, community colleges and for work in cooperative extension and adult education, and administration and supervision of preschool and child care centers. Those who are granted master's degrees are educationally qualified to fill positions in research, cooperative extension, governmental agencies, foreign service, college teaching and business.

Degrees
The curricula listed in the College of Home Economics lead to the following degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts in Home Economics</td>
<td>Child and Family Studies; Clothing</td>
</tr>
<tr>
<td>Bachelor of Science in Home Economics</td>
<td>Textiles; Foods, Nutrition and Institution Management;¹ Home Economics Education</td>
</tr>
<tr>
<td>Bachelor of Arts in Interior Design</td>
<td>Interior Design²</td>
</tr>
<tr>
<td>Master of Arts in Home Economics</td>
<td>Clothing, Interior Design and Textiles; Child and Family Studies</td>
</tr>
<tr>
<td>Master of Arts in Child Development</td>
<td>Child Development</td>
</tr>
<tr>
<td>Master of Science in Food Science</td>
<td>Food Science and Technology; Foods, Nutrition, and Institution Management</td>
</tr>
<tr>
<td>Master of Science in Home Economics</td>
<td>Foods, Nutrition and Institution Management</td>
</tr>
<tr>
<td>Master of Science in Nutrition</td>
<td>Nutrition; Foods, Nutrition, and Institution Management</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>Food Science and Technology; Nutrition</td>
</tr>
</tbody>
</table>

¹Dietetics—Accredited by the American Dietetics Association  
²Accredited by the Foundation for Interior Design Education Research
Laura C. Dustan, Dean

Washington State University is the coordinator of a unique four-institution program in nursing education, the first of its kind in the United States. Other institutional participants in the program are Eastern Washington University, Cheney; Fort Wright College and Whitworth College, Spokane.

The program is designed to prepare practitioners and leaders in nursing who will be self-directing and responsible for making continuing contributions to the health care of individuals, families and communities in collaboration with other health professionals. To achieve these goals, the professional curriculum is built upon a foundation of physical, biological, and psychosocial sciences as well as the humanities. During the upper-division courses of instruction, emphasis is placed on the acquisition and implementation of the knowledge and skills essential for professional nursing practice. Teaching, as a major component of all aspects of nursing practice, and the continuing learner role of the nurse are also stressed.

The program is accredited by the National League for Nursing and approved by the Washington State Board of Nursing. The Intercollegiate Center for Nursing Education is a member of the Council on Baccalaureate and Higher Degree Programs of the National League for Nursing and of the American Association of Colleges of Nursing.

The curriculum prepares graduates for a wide variety of professional careers in many settings. A large number of nurses practice in hospitals, community health agencies, extended care facilities, nursing homes, clinics, industry and psychiatric and mental health institutions and centers. Others are developing roles in new settings in the community. Graduates of the program have a foundation for pursuing graduate study and preparing for careers in advanced and specialized clinical nursing practice, nursing education, administration, research and consultation.

Many men seeking a role in the health professions have found that nursing provides a most rewarding career. Members of ethnic minority groups are actively recruited and assisted to pursue a career in nursing. The program is also open to registered nurses who wish to obtain a baccalaureate degree in nursing.

In keeping with its belief that nurses are accountable to the consumer and to their colleagues for acquiring and maintaining competencies which will insure excellence in nursing practice, the Intercollegiate Center for Nursing Education provides continuing education offerings for practicing registered nurses.

Admission

The curriculum in nursing consists of lower- and upper-division components and is four academic years in length. The length of the program for registered nurses varies depending upon previous education and the course load carried at the University.

The first two years of the curriculum (lower-division component) are completed on the Pullman campus or may be taken at any institution having courses equivalent to those taught at Washington State University. Applicants to the nursing program must meet the admission requirements of Washington State University. The following high school subjects are recommended for students planning a career in professional nursing: English, mathematics, science (chemistry, biology and/or physics), social sciences, and foreign language. (If two years of one foreign language are not completed in high school, the student must complete one year of a foreign language on the college level.)

The last two years of professional study (upper-division component) are conducted at the Intercollegiate Center for Nursing Education in Spokane. Students seeking admission to the upper division are advised to have a minimum cumulative grade point average of 2.75 in all course work and a minimum grade point average of 2.50 in the courses prerequisite to the upper-division major. They must submit an "Application for Admission to the Intercollegiate Center for Nursing Education."

Applications can be obtained from and must be returned to the Office of Admissions at Washington State University between December 1 and February 15 preceding the fall term or July 15 and October 1 preceding the spring term in which the applicants plan to enroll.

Transfer Students

Upon successful completion of the first two years of required course work, and admission to Washington State University, the student is eligible to apply for entrance to the upper-division clinical program at the Intercollegiate Center.
Applicants for admission to the Center must present 60 semester hours or 90 quarter hours of acceptable credit from an accredited college or university. A minimum cumulative GPA of 2.75 is advised for students applying for admission to the Center. The credits must include courses that will meet General University Requirements for Graduation and the additional requirements of the College of Sciences and Arts as listed in this catalog. The registered nurse applicant must be a graduate of an approved community college or hospital school of nursing and be currently licensed or eligible for licensure to practice in the state of Washington at the time of application. Transfer students and registered nurses must apply to the Office of Admissions at WSU by December 1 or July 15 and fill out the “Uniform Undergraduate Application for Admission to Four Year Colleges,” as well as an “Application for Admission to the Intercollegiate Center for Nursing Education,” both of which can be obtained from that office. These and a separate official transcript from each college institution attended should be filed between December 1 and February 15 for the fall term or July 15 and October 1 for the spring term. Students enrolled in colleges on the quarter system must also send a transcript immediately after winter term and no later than April 1 or after fall term and no later than January 1. A final transcript must be in the Office of Admissions before July 1 or February 1.

It is advisable that students who wish to transfer check early in their program, preferably during their freshman year, with the Nursing Adviser, Room 101 Administration Annex, Washington State University, Pullman, Washington 99164. The latest date for receipt of intention to apply is December 1 or June 1. Students are accepted to the Center twice a year.

Determination of admission to the Intercollegiate Center for Nursing Education will be based upon the student’s academic record, letters of reference, and evaluation of the entire application. Because the number of applicants to the Center exceeds the number that can be admitted, no assurance can be given that all applicants admitted to the University and successfully completing the lower-division work will be admitted to the Center.

Degree
The program of study leads to the degree of Bachelor of Science in Nursing.

Joint Center for Graduate Study at Richland

Peter K. Shen, Dean

The Joint Center for Graduate Study at Richland, Washington is a multi-institutional education center administered jointly by Washington State University and the University of Washington. Oregon State University also participates in the academic program. The Center provides for these universities a means of delivering graduate and upper-division education to the Hanford area professionals, and to the public in the Tri-Cities region.

Through the Center, with approval by the university, students can earn an advanced degree in biology, business administration, chemistry, computer science, education, mathematics, physics, radiology, and in chemical, electrical, mechanical, metallurgical, and nuclear engineering. The Department of Energy Hanford Laboratories are available for research purposes on an individual arrangement basis and provide an exceptional opportunity to do research requiring facilities not available at most institutions of higher learning. Graduate and postdoctoral fellowships and faculty appointments are available for qualified persons who wish to do research at Richland. These are administered through the Center.

Graduate students who plan to use course work and research undertaken through the Center as a part of a program for a graduate degree at Washington State University must be admitted to the WSU Graduate School. Requirements and regulations are generally identical with those applicable to graduate students on the campus in Pullman.
Residence Requirements
Credit earned at the Joint Center for Graduate Study will be considered as Washington State University credit. Students who are candidates for the master’s degree in biology, computer science, education, electrical engineering, or materials science and engineering may petition the Dean of the Graduate School for permission to be excused from the residency requirement. Students not in degree-sponsored programs must earn 10 credits toward a master’s degree or work one academic year toward a doctoral degree on campus at Pullman. During this year the student must be actively engaged in coursework and seminars or research. Petitions for being excused from the residency requirement, which must be completed when applying for a degree, must be approved by the student’s adviser and the sponsoring program coordinator prior to being presented to the Graduate School.

Requests for information concerning the activities and the programs of study and research at the Center, availability of facilities, admission to activities, and for copies of the Center’s bulletin containing general information and course offerings should be addressed to: Dean, Joint Center for Graduate Study at Richland, Richland, Washington 99352.

College of Pharmacy

Larry M. Simonsmeier, Acting Dean

The College of Pharmacy has as its objective the development of students for a lifetime of responsible service in the pharmaceutical profession. To achieve this goal, the professional curriculum is built upon a solid foundation of general sciences and mathematics and is integrated with courses in the humanities and social sciences. During the professional years of instruction, special attention is given to developing in students concern for the total health care of patients and the general public. The clinical pharmacy program on campus and in cooperating hospitals of the area emphasizes the role of the pharmacist in patient care both in institutions and in community practice. The preclinical basic science courses are carefully designed to prepare students for such experience. The College of Pharmacy is accredited by the American Council of Pharmaceutical Education and is a member of the American Association of Colleges of Pharmacy.

The curriculum of the College of Pharmacy is designed to prepare graduates for a variety of professional careers. A majority of pharmacists practice the profession in community pharmacies. Successful community pharmacists particularly enjoy meeting the public and looking after and advising them of their health needs. The hospital pharmacist is becoming an increasingly important person on the health care team. The hospital pharmacist, as well as the community pharmacist, is accepting new responsibilities in assuring that patients receive the best possible drug therapy. Other pharmacists hold responsible positions in the manufacturing industry as production supervisors, researchers, and medical service representatives; in government positions; in teaching and in institutional research.

The College of Pharmacy operates an active program for the recruitment of students who are members of minority groups. Special programs of financial aid, academic advising and tutorial services are available for such students needing help.

Admission
The schedule of studies in pharmacy at Washington State University is divided into one prepharmacy or preprofessional year, and four professional years.

The year of preprofessional studies may be taken at WSU, or at any accredited college or university having equivalent courses. Not less than 30 semester credit hours or 45 quarter credit hours should be completed during the preprofessional year; these should include courses equivalent to the WSU courses in the following list. Information concerning the acceptability of course credits may be obtained from the Office of Admissions.
The Colleges

Requirements:

<table>
<thead>
<tr>
<th>WSU Courses</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bio S 103, 104 Introductory Biology</td>
<td>8</td>
</tr>
<tr>
<td>Chem 105, 106 General Chemistry</td>
<td>8</td>
</tr>
<tr>
<td>Math 140 Math for Life Scientists</td>
<td>4</td>
</tr>
<tr>
<td>Engl 101 Composition</td>
<td>3</td>
</tr>
<tr>
<td>Humanities or Social Science Electives</td>
<td>6</td>
</tr>
<tr>
<td>Other Electives</td>
<td>2-4</td>
</tr>
</tbody>
</table>

Students entering WSU as freshmen with an intent to major in pharmacy are advised to indicate this fact when enrolling as students in the Curriculum Advisory Program. Prepharmacy students are counseled and advised by members of the pharmacy faculty. In special cases a student who has completed all of the non-professional courses scheduled for the prepharmacy and first professional years of study may be admitted directly into the second professional year of study.

All students seeking admission to the College of Pharmacy, including WSU students as well as students from other institutions, must file an Application for Admission with Advanced Standing which may be obtained from and should be returned to the Office of Admissions during the period of December 1 to March 1. Students who wish to make special inquiries about the College of Pharmacy program should contact the Dean of the College.

Determination of admission to the College of Pharmacy will be based upon the student’s academic record, test results, recommendations, and a personal interview. Students who may find it difficult to come to Pullman for an interview may make arrangements through the College of Pharmacy for an interview with a representative of the College of Pharmacy in the area in which they live. The race, sex, religion, age, color, creed, national or ethnic origin, marital status, and handicap of the applicant is not considered in the admission process. Because the number of applicants to the professional program exceeds the number that can be admitted, no assurance can be given that those who successfully complete the prepharmacy program will be admitted to the College.

A student applying for admission with advanced professional standing from another accredited pharmacy college must present evidence of good standing in the previous school and an acceptable cumulative grade point average and at least a 2.00 grade point average in pharmacy subjects. In addition, the student must present a letter of recommendation from the dean of the pharmacy college previously attended.

Degrees
The college of Pharmacy offers programs of study leading to the degrees of Bachelor of Pharmacy, Master of Science in Pharmaceutical Science, and Doctor of Philosophy (Pharmaceutical Science).

It is possible by special arrangement of courses and by careful selection of electives for a candidate for a Bachelor of Pharmacy degree to be concurrently a candidate for a Bachelor of Science degree. Such a student must fulfill the requirements of the second department as well as those of the College of Pharmacy.

College of Sciences and Arts

Thomas L. Kennedy, Acting Dean, Division of Humanities and Social Sciences
Robert A. Nilan, Dean, Division of Sciences

As a bearer of the tradition of liberal education, the College of Sciences and Arts places much importance upon soundly conceived and well-taught courses so developed as to give a properly balanced presentation of the basic areas of human endeavor. Students are assured a nucleus of courses in humanities, social sciences, biological sciences, and physical sciences, a knowledge of at least one foreign language and a concentration of subject matter in the major and minor fields. As the interests of students develop, they
are encouraged to supplement their programs with elective courses of special cultural values such as those in art, literature, and music.

The College of Sciences and Arts offers a number of programs that prepare students for various professions and vocations. Graduate, as well as undergraduate, work is offered by most departments.

Students who plan to do advanced work beyond the bachelor's degree should plan their programs so as to meet the requirements for admission to a graduate school.

The college has the responsibility to provide course work in the humanities, sciences, and social sciences for students who major in the other colleges on the campus. In this respect an important service function is fulfilled.

A number of curricula are offered to give preprofessional training to students who then will enter professional schools. At the same time these curricula are designed to provide a basic liberal education.

Washington State University is on the approved list of the American Chemical Society. The graduate training program in clinical psychology is accredited by the American Psychological Association. The environmental option in bacteriology and public health was the first approved by the National Association of Environmental Health. The Department of Music is a member of the National Association of Schools of Music.

The college, in cooperation with the Department of Education, prepares teachers for all levels of educational work. Students preparing for teaching at the elementary, secondary, and college levels usually have the course work in their chosen subject-matter fields within the College of Sciences and Arts. The specific requirements for certification and teaching majors and minors are listed under the Department of Education.

**Admission**

The requirements for admission to the College of Sciences and Arts are the same as those for Washington State University.

High school students should include the following subjects as preparation for work in the College of Sciences and Arts: four years of English, two years of one foreign language, two years of mathematics, two years of science, two years of social studies. Students interested in the biological, physical, or social sciences should have a third year of mathematics and a third year of science. For students interested in the humanities, participation in music, art, speech and communications is recommended.

**Requirements for Graduation**

The requirements for graduation include the General University Requirements for Graduation, plus additional Sciences and Arts requirements in the humanities, social sciences, and sciences. See graduation requirements on pages 29-30 of this bulletin.

**Departments and Programs**

The College of Sciences and Arts is organized by departments and programs under two divisions.

**The Division of Humanities and Social Sciences**

Anthropology, communications, criminal justice, English, fine arts, foreign languages and literatures, history, music, philosophy, political science, psychology, sociology, and speech. In addition, several special curricula are offered and are listed alphabetically in this catalog as follows: aging, American studies, Asian American studies, Black studies, Chicano studies, East and South Asia, general studies (classics, humanities, social science, liberal arts, linguistics, religious studies), literary studies, Native American studies, prelaw, social studies, social work and women studies.

The Prelaw Advising Center is located in the Department of Political Science. Other prelaw curricula are offered through such departments and programs as English, history, and classics.

**The Division of Sciences**

Bacteriology and environmental health, basic medical science, biochemistry and biophysics, botany, chemistry, computer science, general biology, genetics, geology, pure and applied mathematics, physics, and zoology (including physiology and wildlife biology). In addition, several special curricula are offered and are listed alphabetically in this catalog as follows: general studies (physical science, biological science, mathematics), chemical physics, pre-dental, premedical, and environmental science, several of which are offered jointly with other colleges of the university.
### Degrees

The College of Sciences and Arts offers programs of study leading to the following degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Music</td>
<td>Music</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>General Studies</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>Bacteriology and Public Health, Biochemistry, Biology, Chemistry, Computer Science, Environmental Science, Geology, Physics, Psychology, Wildlife Biology, Zoology</td>
</tr>
<tr>
<td>Master of Arts</td>
<td>Anthropology, Criminal Justice, English, Foreign Languages &amp; Literatures, History, Mathematics, Music, Philosophy, Political Science, Sociology, Speech</td>
</tr>
<tr>
<td>Master of Arts in the Teaching of</td>
<td>Speech</td>
</tr>
<tr>
<td>Master of Fine Arts</td>
<td>Fine Arts</td>
</tr>
<tr>
<td>Master of Science</td>
<td>Bacteriology and Public Health, Biochemistry, Biology, Botany, Chemistry, Computer Science, Environmental Science, Genetecis, Geology, Physics, Psychology, Wildlife Biology, Zoology</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>American Studies, Anthropology, Bacteriology, Biochemistry, Botany, Chemical Physics, Chemistry, Computer Science, English, Genetics, Geology, History, Literary Studies, Mathematics, Physics, Political Science, Psychology, Sociology, Zoology, Zoophysiology</td>
</tr>
<tr>
<td>Doctor of Arts</td>
<td>Mathematics</td>
</tr>
</tbody>
</table>

### College of Veterinary Medicine

Leo K. Bustad, Dean

The curriculum of the College of Veterinary Medicine prepares students for positions in the many fields of veterinary medicine, e.g., private practice, U.S. Public Health Service, federal and state disease regulatory programs, industry, teaching, research, and military medicine. Areas studied include animal
health, disease eradication, comparative pharmacology and toxicology, environmental sciences, laboratory animal medicine, and comparative biomedical studies to help resolve human disease problems.

The professional degree, Doctor of Veterinary Medicine, is recognized by all state and territorial licensing boards, as well as those in foreign countries.

The College of Veterinary Medicine is accredited by the American Veterinary Medical Association.

**Admission**

Seven years are usually required to obtain the degree of Doctor of Veterinary Medicine. However, an exceptional student may complete the preprofessional requirements in two years. The first two years of preprofessional training can be taken at any institution having courses equivalent to those taught at Washington State University. Additional work must be taken at an accredited four-year institution and the last four years are professional study directed by the College of Veterinary Medicine.

Applicants for admission to the College of Veterinary Medicine must present at least 75 semester hours of acceptable credits from an accredited college or university exclusive of military training and physical education. The 75 semester hours should include: 6 semester hours of social science and 6 semester hours of humanities; 6 hours communications proficiency (general university requirements for graduation); 45 hours including zoology or general biology, inorganic and organic chemistry, biochemistry, physics, mathematics, applied animal nutrition and 12 hours of electives. The 60 semester hours can be taken at a community college.

Information regarding the acceptability of course credits should be obtained from the Director of Admissions.

Courses designed to fit these requirements are offered by Washington State, and the number of students admitted to preprofessional work is not limited. Since the number of applicants for admission to the professional course exceeds the number that can be admitted, no assurance can be given that all applicants who successfully complete the preprofessional curriculum will be admitted.

A major in veterinary medicine is not declared until admission to the College of Veterinary Medicine has been granted.

Students seeking to enter the four-year professional program must fill out a "Uniform Undergraduate Application for Admission," as well as a WOI Program application, both of which may be obtained from, and should be returned to, the Office of Student Services, College of Veterinary Medicine, Washington State University, Pullman, Washington 99164. These, plus a $15 application fee and two separate official transcripts from each collegiate institution attended should be filed with the Office of Student Services between September 1 and November 30 preceding the fall semester in which the applicant wishes to enroll. A transcript of the spring semester's credits must be in the Office of Student Services before July 1. The records of all qualified applicants are submitted to the WOI Admissions Committee. The committee, with the approval of the Board of Regents, selects those students to be admitted to the first year of the professional program. Applicants will be notified of their acceptance or denial on or before April 15. Unsuccessful applicants who wish to be considered the next year must present new applications.

In accordance with policies adopted by the Board of Regents, preference for admission to the College of Veterinary Medicine is as follows:

1. To qualified students coming from homes in the states of Washington, Idaho, and Oregon.
2. To qualified students certified and financed by compact states.
3. To all other qualified students.

**Western Regional Higher Education Compact**

The College of Veterinary Medicine at Washington State University has entered into a regional educational program with the states of Alaska, Arizona, Hawaii, Montana, Nevada, New Mexico, Utah, and Wyoming. Under the terms of this compact, a certified student admitted from one of these states is sponsored financially by the home state and is subject to the same fees as Washington resident students.

Students must apply to their home state for certification in addition to making application to the Director of Admissions, Washington State University. Additional information regarding regional veterinary education may be obtained from the following:

The Executive Director
Western Interstate Commission for Higher Education
P.O. Drawer P
Boulder, Colorado 80302
WOI Program in Veterinary Medical Education
Washington State University has agreed to engage in a regional program in veterinary medicine with the University of Idaho and Oregon State University. The regional program involves instruction on the WSU campus, at the Caldwell Station (Idaho), and on the Oregon State University campus. Specific quotas of students from Idaho and Oregon have been established under the terms of this agreement.

Fees
Students enrolled in the College of Veterinary Medicine pay a special fee of $157 per semester in addition to regular (resident) registration fees.

Degrees
The College of Veterinary Medicine offers courses of study leading to the degrees of Doctor of Veterinary Medicine, Bachelor of Science in Veterinary Science, Master of Science in Veterinary Science, and Doctor of Philosophy (Veterinary Science).
Courses listed in this catalog are subject to change through normal academic channels. New courses and changes in existing course work are initiated by the cognizant departments or programs, approved through the appropriate academic dean, the Academic Vice President and Provost, the Catalog Subcommittee, the Academic Affairs or Graduate Studies Committee, and the University Senate. Additions to the curriculum for the ensuing year are published each fall in the Catalog Supple-ment.

SYMBOLS

210 (101) indicates number change, the old number in parenthesis.

3 number following course title indicates the hours of credit.

(2-3) numbers in parenthesis following the credit hours indicate the contact hours of lecture, followed by laboratory, or studio hours required each week during a semester.

I, II, S I indicates the course is normally taught the first semester; II the second semester; S, summer session. This is a guideline only. See Annual Time Schedule for current course offerings.

a/y alternate years.

c// concurrent enrollment

V 1-4 the letter “V” preceding the credit indicates the course is approved for variable credit within the semester.


Department of Aerospace Studies

Professor and Department Head, Colonel A. D. Setlow; Assistant Professors, Major P. F. Madera, Captain D. Clark, Captain W. F. Spenst.

The Department of Aerospace Studies (Air Force ROTC) offers eligible students education and training which leads to a commission as a second lieutenant in the U.S. Air Force. Air Force ROTC students may major in any degree program offered at Washington State University; they supplement their major curriculum with the specialized Aerospace Studies courses in order to prepare for active commissioned service.

Students may participate in either the four-year program or two-year program. The four-year student completes the General Military Course (two years), four-week field summer training (Aero 291), and the Professional Officer Course (two years). The two-year student attends a special six-week summer field training (Aero 292) and then completes the Professional Officer Course. The two-year program is designed for any student having two years left in the University, but who has no previous AFROTC or military service.

General Military Course (GMC). This sequence of courses consists of four one-credit courses normally taken during the freshman and sophomore years. The GMC sequence prepares the student for field training and the POC, and forms the basis for the four-year program. The sequence may be adapted to fit individual schedules.

Professional Officer Course (POC). This sequence, beginning with Aero 311 consists of four three-credit courses normally taken during the student’s last two years in the university. Entry into the POC is competitive. Four-year students compete for entry during their last semester in the GMC. Students interested in the two-year program should begin application by the end of the fall semester before they plan to enter the POC. Four- and two-year students selected for entry will be scheduled to attend Aero 291 or 292 during the summer before enrolling in Aero 311.

Flight Instruction Program (FIP). This is a two-credit course that covers the ground phase of flying; it is open to all university students but with the approval of the instructor. AFROTC cadets who are eligible for and designated to become pilot candidates will take Aero 456, Air Force
ROTC Flight Instruction Program including both ground school and 25 hours of flying at no cost to the student, during the POC sequence.

Financial Aid and Scholarships. Air Force ROTC offers enrolled GMC students the opportunity to compete for three- and two-year scholarships which pay tuition, fees, and textbooks as well as a $100 per month stipend during Fall and Spring Semesters. Two-year program applicants can compete for a two-year scholarship. All Air Force ROTC students regularly enrolled in the POC receive the $100 per month stipend.

Description of Courses

For explanation see Index under “Symbols”

General Military Course

Aero

101 United States Aerospace Forces 1 (1-1) I Structure and capabilities of the U.S. aerospace strategic and defensive air forces; relationship of the individual to the Air Force.

102 United States Aerospace Forces 1 (1-1) II Structure and capabilities of the U.S. aerospace general purpose and support forces; responsibilities and opportunities of the Air Force officer.

201 Evolution of Aerospace Power 1 (1-1) I Growth and development of airpower doctrine and concepts from the origins of manned flight through World War II.

202 Evolution of Aerospace Power 1 (1-1) II Development of airpower, doctrine, concepts from the Berlin Airlift to today; peaceful employment of airpower as a force for stability.

Field Training

Aero

291 Four-Week Field Training Course 2 S Prereq junior standing; Aero 101, 102, 201, 202. By interview only. Intensive study of military education, experience in leadership and management at an active Air Force installation.

292 Six-Week Field Training Course 6 S Prereq junior standing. By interview only. Applicants must apply at least six months in advance. Intensive study of academic core course work and military education at an active Air Force installation.

Professional Officer Course

Aero

311 (401) Air Force Leadership 3 (3-1) I Prereq Aero 292 or 291. Professional leadership, responsibilities and functions required of career Air Force officers; communicative skills.

312 (402) Air Force Management 3 (3-1) II Prereq Aero 311. Management principles and functions pertaining to command and supervision; case histories and case studies.

411 (301) The Professional Military Officer 3(3-1) I Prereq Aero 312. Military officer-ship as a profession, the role of national security forces in the U.S., and military law.

412 (302) National Security Forces in Contemporary American Society 3 (3-1) Prereq Aero 411. Defense strategy and conflict management; formulation and implementation of U.S. defense policy, including case studies; communicative skills.

456 Flight Instruction Program V 2 to 3 (2-3) II Ground phase; flight theory, meteorology, FAA regulation, navigation. For AFROTC pilot cadets only; flight phase 25 hours flying time.

Department of Agricultural Economics


Agricultural economics is frequently referred to as the business side of agriculture. In agricultural economics courses, students learn to use economic and business concepts along with technical production information to solve problems of agricultural business firms and organizations. They also obtain knowledge and skills relevant to solving broader economic and social problems facing agriculture and society in general.

The major fields of emphasis in agricultural economics include agricultural policy, economic development, resource economics, production
economics, farm and agricultural-business management, quantitative methods and agricultural marketing.

Students majoring in agricultural economics may emphasize one or more of the fields within agricultural economics, or may obtain a general background in agricultural economics. Also, a wide variety of courses is available to nonmajors who want to take selected courses to support their programs in other departments.

Majors in agricultural economics find employment in private industry, in government agencies, and with universities. Opportunities to work in foreign countries are also often available. Graduates find a wide variety of career opportunities such as farm operators, professional farm or agri-business managers, county agricultural agents, agricultural representatives for financial institutions, market analysts, field representatives for agri-business firms, economists for state and federal agencies, and foreign agricultural specialists. An increasing number of students are taking graduate work to broaden their career opportunities.

The department offers courses of study leading to the degrees of Bachelor of Science in Agricultural Economics, Master of Arts in Agricultural Economics, and Doctor of Philosophy.

Description of Courses

Ag Ec For explanation see Index under "Symbols"

201 [S] Economics in Agriculture 3 General introduction to economics appropriate for production, consumption and ecological issues in the agricultural and rural sector of the economy.

210 Agricultural Information Systems 1 (0-3) I Sources of data used in agricultural economics; basic methods of interpreting, analyzing, and presenting economic information.

301 [S] Structure and History of the American Agricultural Economy 3 II Agriculture in evolution toward a modern economy; organizational nature of firms, land settlement, and farmer participation in national affairs.

335 Legal Problems of Agriculture 3 II An introduction to the nature and extent of common legal problems confronting Washington farmers and ranchers.

340 Introduction to Farm Management 3 Prereq Ag Ec 201 or Econ 203. Appraisal, organization, and management of selected types of farms and ranches.

350 Introduction to Agricultural Marketing 3 Prereq Ag Ec 201 or Econ 203. Problems of marketing farm products; functions and institutions surrounding market operations.

360 (350) Introduction to Agricultural Supply and Marketing Businesses 3 I Prereq Ag Ec 201 or Econ 203; one accounting course. Product combinations, resource allocations, personnel, finance, and related problems in the operation of agri-business firms.

361 Farm and Natural Resources Appraisal 3 II Prereq Econ 102, 203; Ag Ec 340. Factors affecting value of land; valuation for loans, sales assessment and condemnation. Field trips required. Cooperative course taught at the University of Idaho.

370 Agricultural Prices 3 I Prereq Ag Ec 201 or Econ 203; one statistics course. Factors determining levels and movements of prices in agricultural commodities.

380 Introduction to Resource Economics 2 II Prereq Ag Ec 201 or Econ 203. Introduction to resource scarcity, use, and control; resource problems as they relate to rural areas.

408 Mathematics for Economists 3 I Same as Math 408.

410 Applied Statistical Methods in Agricultural Economics 3 I Prereq Math 201, 202; one statistics course. Application of sampling techniques, linear regression and analysis of variance and covariance to agricultural economics research problems.

411 Applied Operations Research Techniques in Agricultural Economics 3 II Prereq Math 201, 202; one statistics course. Quantitative methods used by agricultural economists; linear programming; transportation, models.

420 [S] International Agriculture and Economic Development 3 II Prereq Ag Ec 201 or Econ 203. Nature and roles of agricultural development, trade and institutions.

430 Financial Arrangements in Agriculture 3 I Prereq Ag Ec 201 or Econ 203; Ag Ec 340; one accounting course. Personal and business finance in the agricultural economy, insurance, retirement, amortization and interest.

440 Advanced Farm Management 3 II Prereq Ag Ec 340 or Econ 301; one statistics course. Economic principles applied to organization and operation of farms and ranches.

450 Advanced Agricultural Marketing 3 II Prereq Ag Ec 350 or 370 or Econ 301; one statistics course. Institutions, practices, policies, and problems in agricultural input and output marketing.
460 (351) Advanced Agricultural Supply and Marketing Business 3 I Prereq Ag Ec 360; Econ 301. Alternatives in the market behavior of firms that handle, process and trade in agricultural inputs and outputs.

480 Advanced Resource Economics 3 I Prereq Ag Ec 380 or Econ 301. Economic principles applied to problems of natural resource utilization, development, and conservation.

490 Agricultural Policy 3 I Prereq Ag Ec 201 or Econ 203. Public policy issues related to commercial agriculture and rural areas.

497 Agribusiness Internship V 1-4 May be repeated for credit. S By interview only. Off-campus work-study in the agribusiness industry.

498 Seminar I May be repeated for credit. I For seniors. Current problems.

499 Special Problems V 1-4 May be repeated for credit.

502 Economics of Public Choice in Agriculture and Natural Resources 3 II Prereq Econ 401, 501. Basic concepts of economics of public choice and their application to public policy in agriculture, rural areas and natural resources.

510 Agricultural Statistics 3 I Theory of statistical inference in the context of regression analysis in agricultural economics research.

511 Matrix Research Techniques 3 I Mathematical programming applications of duality, parametric programming, inverse matrix methods, transportation problems, game theory, quadratic, integer, separable and dynamic programming.

512 Advanced Topics in Applied Problem Analysis of Agricultural Economics Data 3 II 1980-81 a/y. Prereq Ag Ec 410, 411 and 510 or 511. Model construction and estimations for analysis of agricultural supply and demand problems.

520 Economic Development and Trade in Agriculture 3 II 1981-82 a/y. Nature and roles of agricultural development and trade; concepts of sectors, regions, and interregional relationships.

521 Seminar in Agricultural Economics 2 May be repeated for credit; cumulative maximum 4 hours. Current topics in agricultural development, marketing, farm management, and agricultural policy.

540 Agricultural Production Economics 3 II Theoretical economic concepts applied to analysis of agricultural problems, production intensity, factor and product combination, uncertainty and technological change.

550 Market Organization and Structure 3 I 1980-81 a/y. Analysis of marketing research tools and applications; theoretical concepts of marketing as modified by cultural, institutional and economic systems.


590 Public Policy and Agriculture 3 I 1981-82 a/y. Agriculture's role in public economic policy.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

**General Departmental Requirements**

The following schedules set forth the general requirements for the three departmental undergraduate curricula. General University Requirements are met in the department requirements listed for all three degrees. Students should consult their advisers for the appropriate sequencing of courses as well as for the selection of electives that best suit their needs and interests. Illustrative programs are available from the department.

At least 40 of the total hours required for the bachelor's degree in these programs must be in upper-division courses.

**Management Curriculum**

This option has been developed for the student who wants to specialize in management. Emphasis is placed on the principles of management for both farm and nonfarm agri-business firms. The program permits in-depth inquiry into management and decision-making tools, and flexibility enough to permit an integrated complement of courses to fulfill an individual student's needs.

**Requirements**

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 hours from Ag Ec 340, 350, 360; 3 hours from Ag Ec 440, 450, 460 that follow a 300-level choice; 3 hours from Ag Ec 410, 411, 430; 3 hours from 400-level; 6 hours from 300-level or above</td>
<td>21</td>
</tr>
</tbody>
</table>
Department of Agricultural Economics

Ag Ec 335 or B A 210 3
B A 215, Biom 310, or Biom 412 3-4
Stat, Cpt S elective, or Ag Ec 410, 3
411
B A 230, 231 7
Junior-level accounting or Cpt S 220 3
Econ 102, 203, 301, and 320 or 340 12
Engl 101 and 201 or 301; Spe 102, 12
250, 302, 330 or 331 and Com 12
skills course
Hum and Soc S (one from B A 301, 12
Psych 306, 307 and 3 hours of
200-level or above)*
Bio S and Ph S electives (include 1 12
hour credit for lab)**
Math 201 and 202 6
Ag elective, excluding Ag Ec 12
Total hours specified 100
Other electives 20

*May not include Econ, but must meet the 6
hours General University Requirement in Arts
and Humanities.
**In addition to Math 201

General Curriculum
This option permits the student to obtain both breadth and depth in agricultural economics without a high degree of specialization in any one field. However, the program does have sufficient flexibility to permit the student to emphasize special interest areas such as policy, resource economics, development, or marketing. Although any one of the three curricula offered in the department will prepare the student for graduate work in agricultural economics, this program is especially well suited for that purpose.

Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
</table>
| Ag Ec: 9 hours from 340, 350, 9
460, six of which must be in the 24
same sequence: 410 or 411; 6 6
hours 300 or above electives; 6 6
hours 400-level electives |       |
| B A 215, Biom 310, 412         | 3-4   |
| Stat, Cpt S elective or Ag Ec 2-3 |
410, 411
| B A 230                       | 4     |
| Econ 102, 203, 301, 320 or 401 15 |
or 402
| Ag Electives, excluding Ag Ec 12 |
| Engl 101 and 201 or 302       | 6     |
| Spe 102, 250, 302, 330, 331   | 3     |
| Communications skills elective| 3     |
| Hum and Soc S (9 hours must be 15 |
200-level or above)*

Total Hours Specified 95
Other electives 25

*May not include Econ, but must meet the 6
hours General University Requirement in Arts
and Humanities.
**Students must meet the 10 hours General
University Requirements in the Bio S and Ph S
fields and may substitute appropriate math
courses in this requirement.

Minor in Agricultural Economics
A minor is offered in agricultural economics which requires that a student complete 16 hours of course work in the department of which 12 hours must be in upper-division courses. Students must also complete one of the four junior-senior
program sequences, e.g. farm management, marketing, agri-business management, or resources. Students wishing to declare a minor should consult with an adviser as early as possible to develop the required program.

**Transfer Students**

Students planning to transfer to Washington State University from other institutions should take courses which will meet the 100- and 200-level course requirements in economics, accounting, English, speech, and General University Requirements in the natural and social sciences. All students planning to major in agricultural economics are encouraged to take intermediate algebra prior to entering Washington State University.

**Preparation for Graduate Study**

Students who plan to do work in agricultural economics beyond the bachelor's degree should consult their advisers as early as possible to develop a study program directed toward their goals.

**Department of Agricultural Engineering**

Professor and Chair, L. G. King; Professors, L. L. Boyd, P. K. Fanning, J. E. George, R. E. Hermanson, C. A. Pettibone, A. E. Powell, G. T. Thompson, H. Waelti; Associate Professors, D. L. Bassett, G. M. Hyde, D. K. McCool, K. E. Saxon, J. B. Simpson; Assistant Professors, D. C. Davis, L. G. James, G. A. Kanzler, W. B. Symons.

**Agricultural Engineering**

Agricultural engineering is the application of engineering science to agriculture. Basic knowledge from almost all fields of engineering is utilized and the whole of agriculture is encompassed. Agricultural engineers may become involved in any of the many activities necessary for or in support of the production, processing, storage, transportation, and marketing of agricultural commodities. The technical divisions of agricultural engineering include: electric power and processing, food engineering, power and machinery, soil and water, and structures and environment. Agricultural engineering graduates find a variety of employment opportunities where their training and talents are in demand. Many graduates are employed as design or development engineers for private industries or governmental agencies. Others prepare for teaching and/or research careers, or seek self-employment in farming, consulting, or other agriculturally oriented enterprises.

The department offers an optional engineering internship program whereby the student gains work experience in the engineering profession through off-campus employment as a part of the undergraduate engineering education.

The curriculum leading to the Bachelor of Science degree in Agricultural Engineering is accredited by the Engineers Council for Professional Development. The department also participates in the College of Engineering interdepartmental programs in engineering science leading to the degrees of Master of Science in Engineering and Doctor of Philosophy.

**Description of Courses**

- **Ag E 110 Engineering Orientation** 1 (0-3) I For freshmen only. Activities, employment, professional ideals, and ethics in engineering.
- **154 Creative Engineering 1** (0-3) II Prereq Ag E 110. Engineering imagination, origin, and development of design ideas, and conversion of ideas to meaningful reality.
- **354 Agricultural Engineering Analysis 2** (1-3) II Prereq Cpt S 203; Math 315 or c//. Mathematical description of physical and biological systems; analysis by analog and digital methods.
- **361 Principles of Farm Machinery 2** I Prereq C E 212. Operation, functional requirements, power and motion transmission, and force analysis of power machinery.
- **362 Internal Combustion Engines 2** II Prereq M E 301. Theory and design; effect of compression ratio, fuel, weight transfer, traction, and hitch location on tractor performance.
- **363 Power and Machinery Laboratory** 1 (0-3) II Prereq c// in Ag E 362. Strain gages, hydraulics, dynamics and analysis, factors affecting engine performance.
- **385 Processing 3** II Prereq C E 315; M E 301 or c//. Theory of food and fiber processing systems; principles of heat and mass transfer applied to processing agricultural products.
- **393 Conservation Engineering 2** II Prereq C E 315. Conservation engineering in agriculture, hydrology, channel flow, channel
stabilization, terracing, and small earth-fill dams.

Seminar 1 May be repeated for credit; cumulative maximum 2 hours. II Prereq junior or senior. Readings and interviews, research, and oral presentation of professional subjects.

Farm Structures 3 II Prereq C E 330. Engineering theories and practices applied to problems involving structural design in wood, steel, and plywood.

Design of Agricultural Engineering Systems 2 (0-6) II Prereq Ag E 385 or c//; c// in Ag E 471. Design projects; structural, thermal, and environmental aspects of production, processing, and storage systems.

Electric Power Laboratory 1 (0-3) II Prereq E E 301, 302. Design and specification of electrical wiring systems, motor control circuits and lighting systems.

Irrigation Engineering 2 I Prereq C E 315; Soils 201. Theory and design of on-farm irrigation systems; soil-plant-water relationships and applied hydraulics.

Irrigation and Conservation Laboratory 1 (0-3) Prereq Ag E 393, 491 or c//. Continuation of Ag E 391, 491. Instruments and equipment applied in soil and water systems.

Internship in Agricultural Engineering 2 May be repeated for credit; cumulative maximum 4 hours. Prereq junior or senior. Students work full time in industrial assignments with prior approval of adviser and industrial supervisor.

Special Problems V 1-4 May be repeated for credit.

Advanced Agricultural Engineering Topics 1-4 May be repeated for credit; cumulative maximum 6 hours. Directed group study of selected advanced topics in agricultural engineering.

Natural Channel Flow (2-3) Prereq C E 451. Hydraulics of non-uniform flow in irregular channels; unsteady flow, flow routing, sediment transport and density currents. Cooperative course taught at the University of Idaho.


Instrumentation and Measurements 3 (1-6) II Prereq Math 172; Phys 102 or 202. Instrumentation systems and measurement concepts, electronic signal-conditioning components and circuitry, digital electronics and microprocessor basics.

Advanced Theory of Irrigation Water Requirements 3 I Prereq Ag E 491. Design and development of irrigation water application systems.

Drainage Engineering 3 (2-3) II Prereq Soils 201; C E 315 or Ag M 344. Engineering principles applied to surface and sub-surface drainage problems; investigation, design, materials, and construction of drainage systems.

Drainage Investigation and Design 3 (2-3) I Prereq Ag E 593. Systematic study of drainage investigation, design, materials, and construction. Continuation of Ag E 593.

Water Resources Seminar 1 May be repeated for credit; cumulative maximum 2 hours. II Prereq senior or graduate standing. Oral presentations and discussions of leading research on water resources and water policies.

Special Projects or Independent Study Variable credit.

Master's Research, Thesis, and/or Examination Variable credit.

Master's Special Problems, Directed Study, and/or Examination Variable credit.

Doctoral Research, Dissertation, and/or Examination Variable credit. (For PhD in engineering science only)

Schedule of Studies

The Bachelor of Science degree in Agricultural Engineering requires a total of 124 semester hours. At least 45 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

Freshman Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Ag E 110 Orientation</td>
<td>1</td>
</tr>
<tr>
<td>Engl 101 Composition</td>
<td>3</td>
</tr>
<tr>
<td>M E 101 Graphic Design</td>
<td>2</td>
</tr>
<tr>
<td>Math 171 Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>Chem 105 Prin of Chemistry</td>
<td>4</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag E 154 Creative Engr</td>
<td>1</td>
</tr>
<tr>
<td>Arts and Hum Elective</td>
<td>3</td>
</tr>
<tr>
<td>C E 101 Intro Survey</td>
<td>3</td>
</tr>
<tr>
<td>Math 172 Calculus II</td>
<td>4</td>
</tr>
</tbody>
</table>
Math 220 Linear Algebra
Soc S Elective

Sophomore Year
First Semester
Cpt S 203 Cpt Prog for Engrs 2
Econ 201 Contemp Econ 4
C E 211 Statics 3
Phys 201 Classical Physics 4
Math 273, 340 or Stat 429 2-3

Second Semester
Phys 202 Classical Physics 4
Ag E 354 Ag Engr Analysis 2
Math 315 Diff Eq 3
C E 212 Dynamics 3
Bio S 103 or Bio S Elective 4

Junior Year
First Semester
C E 314 Mech of Materials 3
C E 315 Mech of Fluids 3
M E 301 Thermodynamics 3
Soils 201 Soils 3
Ag E 361 Prin of Farm Mach 2
Arts and Hum Elective 3

Second Semester
Ag E 451 Seminar 1
E E 301 Electrical Engr Fund 3
E E 302 Laboratory 1
Ag E 363 Power & Mach Lab 1
Ag E 362 Intern Comb Eng 2
Ag E 385 Processing 3
Ag E 393 Conservation Engr 2
Comm Elective 3

Senior Year
First Semester
Ag E 491 Irrigation Engr 2
Ag E 492 Irrig & Conserv Lab 1
C E 330 Mech Struct 4
C E 463 Engr Administration Elective 3
Engr or Sci Elective 3

Second Semester
Ag E 486 Electric Power Lab 1
Ag E 471 Farm Structures 3
Ag E 472 Design Lab 2
Engr Design Elective 2-3
Engr or Sci Elective 3
Soc S or Arts and Hum Elective 3

Transfer Students
Students who plan to transfer to Agricultural Engineering at Washington State University from other institutions should coordinate their programs early with the Department Chair to select
courses that will be applicable to degree requirements. A strong preparation in mathematics
and physics, and proper selection of electives will minimize the time required to complete
bachelor's degree requirements.

Agricultural Mechanization
The Department of Agricultural Engineering prepares students in agricultural mechanization
for the application of technology to operations or management in agriculture. The areas of application
are: mechanized farming, services, management of agriculturally oriented businesses, sales,
and promotional work in agricultural communities.

Emphasis is placed upon the practical application of technology to agricultural enterprises
through engineering methods. This prepares the student to own, operate, and manage his own
enterprise or provide services for private or governmental entities.

A wide variety of agricultural mechanization courses is available to non-majors in support of
programs in other departments. Many courses can be used as electives by students who wish to
explore the field or use the information for other personal reasons.

The curriculum leading to the Bachelor of Science degree in Agricultural Mechanization is
approved by the American Society of Agricultural Engineers. The department also offers a
minor in Agricultural Mechanization.

Description of Courses
Ag M For explanation see Index under
"Symbols"

110 Orientation 1 (0-3) I Agricultural mechanization and its relationship to other
agricultural professions, ethics, and skills for analyzing, solving, and presenting
mechanization problems.

201 Metals Shop Practices 3 (1-6) Theory, applications, and practices of welding,
machining, and associated skills in using metals.

203 Building Construction 3 (2-3) Principles and practices in farm building construction;
foundations, frames, materials, tools, and plans; experience with tools and
materials.

210 Agricultural Mechanics 3 II Prereq Math
101. Theory of agricultural mechanics, including elements of basic physics, the
energy concept, angles, and distance.

211 Agricultural Machinery 3 (2-3) I Principles, materials of construction, care, capacity of
tillage, planting, spraying, harvesting, and materials handling machinery.

312 Engines and Tractors 3 (2-3) II Principles of engine operation, fuels, combustion, efficiency, power transmission, energy conversion, power measurement, tractor safety and costs.

313 Small Engine Repair 1 (0-3) II Prereq Ag M 312 or c/c/. The repair, adjustment, protective maintenance, operation, and safety of the small gasoline engine.

321 Agricultural Building Design 3 (2-3) I Prereq Ag M 203. Building location and layout; design of structural members and connections; heat and moisture relationships, ventilation.

331 Agricultural Electrification 3 (2-3) II Basic electricity, wiring, and electrical applications in agricultural production.

344 Irrigation and Drainage 3 Prereq Math 101; Soils 201. Principles of irrigation and drainage, water measurement, irrigation methods and practices, selection of irrigation system components.

345 Irrigation Laboratory 1 (0-3) I Prereq Ag M 344 or c/c/. Principles of soil moisture measurement techniques, water measurement, pumps and pump efficiencies, conveyance and distribution systems.

346 Turf Irrigation Systems 1 (0-3) II Design, construction and operation of irrigation systems for turf and landscape plantings.

402 Methods, Materials, and Machines for Teaching Ag Mechanics 3 (1-6) Prereq Ag M 201, 203; 9 hrs Educ. Development of shop programs in project planning, demonstrations and skills performance; safety and management of materials, tools, and machines.

403 Laboratory Projects Teaching Techniques 1 (1-3) May be repeated for credit; cumulative maximum 2 hours. Teaching techniques for laboratory projects in agricultural mechanics.

433 Agricultural Processing 3 II Same as F S 433.

451 Seminar 1 May be repeated for credit. I Same as Ag E 451.

481 Advanced Agricultural Mechnization Topics V 1-4 May be repeated for credit; cumulative maximum 8 hours. By interview only.

490 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 4 hours.

499 Special Problems V 1-4 May be repeated for credit.

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Schedule of Studies

The Bachelor of Science degree in Agricultural Mechanization requires a total of 120 credit hours for graduation. Of these, at least 40 credit hours must be courses numbered 300 or above.

**Freshman Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag M 201 Metals Shop</td>
<td>3</td>
</tr>
<tr>
<td>Ag M 110 Orientation</td>
<td>1</td>
</tr>
<tr>
<td>Chem 101 Intro Chem</td>
<td>4</td>
</tr>
<tr>
<td>Engl 101 English Composition</td>
<td>3</td>
</tr>
<tr>
<td>Math 101 Intermediate Algebra</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag M 210 Ag Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>Chem 102 Chemistry Related to Man</td>
<td>4</td>
</tr>
<tr>
<td>Bio S 103 Intro Biology</td>
<td>4</td>
</tr>
<tr>
<td>Arts and Hum Elective</td>
<td>3</td>
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</tbody>
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**Sophomore Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag M 203 Ag Bldg Construct</td>
<td>3</td>
</tr>
<tr>
<td>Chem 240 or Phys 101</td>
<td>4</td>
</tr>
<tr>
<td>Bio S 104 or Bot 201</td>
<td>4</td>
</tr>
<tr>
<td>Ag Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag M 211 Farm Machinery</td>
<td>3</td>
</tr>
<tr>
<td>B A 230 Principles of Acct</td>
<td>4</td>
</tr>
<tr>
<td>Comm Elective</td>
<td>3</td>
</tr>
<tr>
<td>Soc S Elective</td>
<td>3</td>
</tr>
<tr>
<td>Ag Ec 201 Econ Mgmt Ag</td>
<td></td>
</tr>
</tbody>
</table>

**Junior Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag M 321 Ag Building Design</td>
<td>3</td>
</tr>
<tr>
<td>Ag Ec 340 Farm Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>Soils 201 Soils</td>
<td>3</td>
</tr>
<tr>
<td>Ag Elective</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Hum Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag M 312 Engines and Tractors</td>
<td>3</td>
</tr>
<tr>
<td>Ag M 331 Ag Electrification</td>
<td>3</td>
</tr>
<tr>
<td>Ag M 451 Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Cpt S 220 Computer in Bus</td>
<td>4</td>
</tr>
<tr>
<td>Ag Ec 335 or B A 210</td>
<td>3</td>
</tr>
<tr>
<td>Ag Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Senior Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag M 344 Irrigation &amp; Drainage</td>
<td>3</td>
</tr>
<tr>
<td>Ag M 345 Irrigation Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Ag Ec 350 or B A 360</td>
<td>3</td>
</tr>
<tr>
<td>Ag Elective</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

71
Department of Agronomy and Soils

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag M 433 Ag Processing</td>
<td>3</td>
</tr>
<tr>
<td>Ag Electives</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

The Department of Agronomy and Soils offers courses of study in two major fields—agronomy and soils. (See Soils section.) Students interested in this general area may register for either major and elect courses in the other. Curricula and options are available in various special areas in both agronomy and soils.

Students are encouraged to participate as part-time employees on agronomic or soils research programs. Departmental scholarships are also available based on ability, need, and interest. Students gain professional and social contacts with faculty and other students through the Crops and Soils Club.

Agronomists examine plant and soil processes, develop improved crop varieties and management practices, and investigate environmental problems of air, soil and water quality. Turf management opportunities include golf courses and playfields. Graduates are qualified for careers in agri-business, corporate and technical farm management, and research, sales and service positions. Positions are available in government and commercial agencies such as Agricultural Research Centers, Agricultural Extension Services, State Departments of Agriculture, Agricultural Research Service, Natural Resources and the Soil Conservation Service as well as in food processing companies, insurance agencies, and commercial concerns dealing with farm products, fertilizers, and agricultural chemicals and seeds.

Opportunities also exist for employment and further study in other countries. Teaching, research and extension careers are available in community colleges and universities for graduates with advanced degrees.

The department offers courses of study leading to the degree of Bachelor of Science in Agronomy, Bachelor of Science in Soils, Master of Science in Agronomy, Master of Science in Soils, and Doctor of Philosophy.

Description of Courses

Agron For explanation see Index under “Symbols”

101 Introductory Field Crop Science 3 I Production and adaptation of cultivated crops; principles affecting growth, development, management, and utilization.

201 Crop Growth and Development 3 (1-6) Prereq Bio S 103 or Agron 101 or c//. Principles and techniques related to growth, development, and culture of crop plants.

250 Crop Identification and Grading 1 (0-3) Identification and grading of agronomic crops.

301 Turfgrass Culture 2 II Principles of establishment and management of turf for lawns, playfields, parks, cemeteries, and golf courses.


303 Grain Crops 3 II Prereq Bot 201 or Bio S 104. Adaptation, production, and utilization of cereals and alternate crops. Field trip required.

305 Weeds 3 (2-3) I Prereq Bot 201 or Bio S 104. Principles of control; identification and economic significance.

345 Plant Breeding 3 (2-3) II Prereq Genet 301. Genetic principles applied to the improvement of plants. Field trip required.

405 Seed Processing 1 (0-3) I Prereq Agron 250, 410. Principles and processes of separating seeds of different physical characteristics. Field trip required.

410 (310) Seed Production and Technology 3 (2-3) II Prereq Bio S 104 or Bot 201; Bot 320. Principles of seed production, physiology and quality evaluation. Field trip required.

411 Physiological Crop Ecology 3 I Prereq Bot 320. Effects of environment, nutrition, and management on crop growth and development.
Department of Agronomy and Soils

412 Seminar I May be repeated for credit. Current literature and reports on research or special topics.

469 Vegetable Seed Production I II 1980-81 a/y. Survey of vegetable seed industry, production methods and quality evaluation. Cooperative course taught at the University of Idaho.

474 Grain Products 3 II Same as F S 474.

499 Special Problems V I-4 May be repeated for credit.


507 Hormones and Herbicides 3 (2-3) II 1981-82 a/y. Prereq Bot 320. Regulation of plant growth, tissue differentiation, and development by herbicides and auxins.

508 Seed Physiology 3 II 1980-81 a/y. Prereq Chem 364. Physiology of seed development; physiology and biochemistry of germination; mechanisms of dormancy, inhibition and stimulation.

509 Physiology in Plant Breeding 3 I 1981-82 a/y. Prereq Genet 301; Bot 320. Theory and methodology associated with the use of physiological and biochemical techniques in plant breeding programs.

510 Seminar I May be repeated for credit. II Literature review; preparation and presentation of reports in crop science.

512 Topics in Agronomy V I-2 May be repeated for credit. I Concepts of plant breeding, seed physiology, and technology; crop physiology and management.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

General Departmental Requirements

At least 40 of the total hours required for this degree must be in upper-division courses.

Core Requirements

The core courses are common to all agronomy majors and include General University Requirements and supporting courses. The three departmental undergraduate curricula offer flexibility in courses and selection of electives that best suit the individual student's needs and interests in consultation with the adviser.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron 201, 250, 305, 345, 411, 412, and 499 (2)</td>
<td>16</td>
</tr>
<tr>
<td>Bot 320</td>
<td>3</td>
</tr>
<tr>
<td>Genet 301</td>
<td>3</td>
</tr>
<tr>
<td>Soils 201</td>
<td>3</td>
</tr>
<tr>
<td>PI P 329</td>
<td>3</td>
</tr>
<tr>
<td>Chem 105, 106 (or 101, 102) and 240</td>
<td>12</td>
</tr>
<tr>
<td>Entom 340 or 343</td>
<td>3</td>
</tr>
<tr>
<td>Math elective</td>
<td>3</td>
</tr>
<tr>
<td>Biol elective</td>
<td>3</td>
</tr>
<tr>
<td>Com Prof electives (including Spe)</td>
<td>6</td>
</tr>
<tr>
<td>Bio S 103 and 104 or Bot 201</td>
<td>8</td>
</tr>
<tr>
<td>Humanities electives</td>
<td>6</td>
</tr>
<tr>
<td>Soc S electives (incl. Econ or Ag Ec 201)</td>
<td>6</td>
</tr>
</tbody>
</table>

In addition to core courses students must select either the technical, business and industry, or science curriculum.

TECHNICAL

Emphasis is on basic principles and application techniques for production and management. The courses are concerned with the production of field crops processing and marketing agronomic products. Students in this curriculum must complete one of the listed options.

Production and Management Option. For the student who wishes to engage in farming or corporate farm management and field agronomy positions.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron electives</td>
<td>10</td>
</tr>
<tr>
<td>Ag Ec 340</td>
<td>3</td>
</tr>
<tr>
<td>Soils 301, 401 or 402</td>
<td>4</td>
</tr>
<tr>
<td>Ag M 344</td>
<td>3</td>
</tr>
<tr>
<td>Cpt S 201 or 210 recommended</td>
<td></td>
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</tbody>
</table>

Plant Protection Option. For students who wish to study pest control and environmental quality (agricultural chemicals).

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron electives</td>
<td>5</td>
</tr>
<tr>
<td>Bact 101 or 201</td>
<td>4-5</td>
</tr>
<tr>
<td>Bio S 372, or Soils 407, or Hort 417</td>
<td>4-8</td>
</tr>
<tr>
<td>PI P 501 or Entom 452</td>
<td>2-4</td>
</tr>
<tr>
<td>Soils 400 or 301, 401 or 402</td>
<td>7-8</td>
</tr>
<tr>
<td>Ag M 344</td>
<td>3</td>
</tr>
<tr>
<td>Cpt S 201 or 210 recommended</td>
<td></td>
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</tbody>
</table>
Turf Management Option. For the student who wishes to specialize in golf course supervision and similar recreation positions involving agronomic management techniques and personnel relations.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron 301, 302, 499</td>
<td>8</td>
</tr>
<tr>
<td>L A 264</td>
<td>3</td>
</tr>
<tr>
<td>Ag M 346</td>
<td>1</td>
</tr>
<tr>
<td>B A 301</td>
<td>3</td>
</tr>
<tr>
<td>PL P 501 or Entom 450 or Hort 417</td>
<td>3-4</td>
</tr>
<tr>
<td>Ag M 312 or 313</td>
<td>3</td>
</tr>
<tr>
<td>Ag M 344</td>
<td>3</td>
</tr>
<tr>
<td>Soils 301, 401 or 402</td>
<td>4-5</td>
</tr>
<tr>
<td>Cpt S 201 or 210 recommended</td>
<td></td>
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</tbody>
</table>

Soils Option. For students seeking training in soil and land management and plant/soil relationships.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron Electives</td>
<td>5</td>
</tr>
<tr>
<td>Geol 101 or 102</td>
<td>4</td>
</tr>
<tr>
<td>Geog 311</td>
<td>3</td>
</tr>
<tr>
<td>Soils 400 and 415 or 411 or 417</td>
<td>5-6</td>
</tr>
<tr>
<td>Soils 301, 401 or 402</td>
<td>4-5</td>
</tr>
<tr>
<td>Ag M 344</td>
<td>3</td>
</tr>
<tr>
<td>Cpt S 201 or 210 recommended</td>
<td></td>
</tr>
</tbody>
</table>

BUSINESS AND INDUSTRY
For students wishing to specialize in management with agri-business agencies.

For a minor in agricultural economics, see the Ag Ec adviser.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Agron electives</td>
<td>5</td>
</tr>
<tr>
<td>Soils 301</td>
<td>2</td>
</tr>
<tr>
<td>Ag Ec 340, 350 or 370 and elective</td>
<td>12</td>
</tr>
<tr>
<td>B A 230</td>
<td>4</td>
</tr>
<tr>
<td>Econ 320 or 301</td>
<td>3</td>
</tr>
<tr>
<td>B A 210 or Ag Ec 335</td>
<td>3</td>
</tr>
<tr>
<td>Cpt S 201 or 210 recommended</td>
<td></td>
</tr>
</tbody>
</table>

SCIENCE
This curriculum prepares students for advanced studies as scientists in the areas of crop physiology, plant breeding, and environmental quality. Students may prepare for research careers with industry, as technicians and experimental aides, or for teaching and research positions in colleges, universities, and governmental agencies. Emphasis is given to basic principles and techniques related to plant morphology and metabolism. Students in this curriculum must complete:

Hours

Agron Electives 5
Chem 217 or 221 8
BC/BP 364, 366, or 563, 564 4-8
Math 171 3
Phys 101, 102 8
Bact 101 or 201 4-5
BC/BP 417, Bio S 305 or Bot 332 2-4
Genet 302 or FS 371 2-4
Biom 412 3

MINOR
A minor in agronomy may be obtained by students from other departments. See Agronomy adviser.

Transfer Students
Students planning to transfer to Washington State University should take courses which meet the agronomy core requirements.

Program in American Studies

Professor and Program Head, R. O. Johnson,
English; Advisers: D. L. Ashby, History; J. R.
Elwood, English; M. G. Land, English; D. H.
Stratton, History; M. E. Wingate, Speech.

At the M.A. and Ph.D. levels, the interdisciplinary program in American Studies is offered jointly by the Department of History and English, with the assistance of the Department of Speech. The Bachelor of Arts degree in American Studies is offered by the participating departments listed below. The American Studies program is integrative: it investigates the literary historical, sociological, mythological, ethnic and intellectual backgrounds of the United States. It is a study of why, in the words of Henry James, it is a complex fate to be an American.

The bachelor's degree program, in addition to preparing students for graduate work in the fields of American literature and history, as well as American Studies, offers excellent preparation for law school, and for the fields of mass communications and government service.

Degree Requirements

The program consists of a core of 39 hours, plus various 12-hour areas of concentration listed below. Courses in the core and areas of concentration may also be used to satisfy general university requirements, where applicable.
Core Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Hist 110, 111 American History</td>
<td>6</td>
</tr>
<tr>
<td>Engl 245, 246 American Literature</td>
<td>6</td>
</tr>
<tr>
<td>Engl/Hist 316 Introduction to American Studies</td>
<td>3</td>
</tr>
<tr>
<td>Two upper-division courses in American history</td>
<td>6</td>
</tr>
<tr>
<td>Two upper-division courses in American literature</td>
<td>6</td>
</tr>
<tr>
<td>Two courses, taken in two different departments from:</td>
<td></td>
</tr>
<tr>
<td>Phil 435, Pol S 300, 318, 427, 434, 455; Soc 331, 342, 251, 415; Spe 424, 468</td>
<td>6</td>
</tr>
<tr>
<td>F A 320 or Mus 361</td>
<td>3</td>
</tr>
<tr>
<td>Engl 470, American Culture Series (Senior Seminar)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>39</strong></td>
</tr>
</tbody>
</table>

Areas of Concentration

One option not listed below is to be considered "open." Superior students, with the approval of their advisers, may be permitted to investigate other areas by designing their own programs and taking courses that will aid in their research. Thus, certain students may wish to investigate the effects of, e.g., engineering, science, the graphic arts, theatre, cinema, or mass communications on American culture.

ANTHROPOLOGY AND NATIVE AMERICAN STUDIES

(1) Two courses (6 hours) from:
- Anth 101, 350; Na Am 101, 201, 302;
- Anth/Na Am 320, 331

(2) Two courses (6 hours) from: Anth 427, Anth/Na Am 422, 451; Na Am/Anth 420; Anth 446

BLACK STUDIES

B I St 101, 310, and 311
B I St 324 or 381

CHICANO STUDIES

Ch St 110 and 372
Two courses from: Ch St 163, 220, 248, 272, 313, 321, 383, 411

HISTORY

12 hours from: Hist 210, 310, 311, 315, 322, 370, 411, 412, 413, 416, 417, 418, 419, 420, 421, 422, 423, 429, 486, 487

LITERATURE

12 hours from: Engl 319, 320, 368, 369, 442, 470, 471, 472

POLITICAL SCIENCE

Pol S 101 and 434
One course from: Pol S 300, 402, 404
One course from: Pol S 318, 417, 427, 450, 455

SOCIOLOGY

12 hours from: Soc 330, 331, 340, 342, 351 or 450, 361 or 362, 370 or 373, 384, 415

Preparation for Graduate Study

Students interested in the Master of Arts degree program in American Studies should offer preparation approximating the undergraduate program described above, or bachelor's degree in English or History. Students with degrees in other humanities or social sciences areas may be accepted. Students interested in the Ph.D. degree program must have the M.A. in English, History or American Studies. Every student should be well grounded in at least one modern European-foreign language.

Department of Animal Sciences


The department offers courses of study leading to the degrees of Bachelor of Science in Animal Sciences, Master of Science in Animal Sciences, and Doctor of Philosophy. The department also participates in the graduate programs in Nutrition and Genetics which offer Master of Science and Doctor of Philosophy degrees.

Bachelor's Program

The curriculum is designed to prepare students for positions in animal agriculture, for positions with industrial and commercial firms and government agencies related to animal agriculture and to prepare students for advanced study programs involving research, teaching or veterinary medicine. The department offers undergraduate majors in animal production, animal nutrition, and animal biology.

Core courses are required for all majors of the department. Early in enrollment students select a
major, or an option within a major, to further their interest. This selection should be made before the junior year.

The Animal Production major emphasizes commercial animal agriculture operations for students intending to work directly in farm production or in closely related industries. Specialization within animal commodities is permitted by option in livestock, dairy or poultry production. A business option prepares students for management situations in which economic and business knowledge is desirable along with livestock training. Students in the four options take basic courses in genetics, physiology and nutrition followed by applied courses in production applicable to the specific animal commodities.

The Animal Nutrition major is designed for students interested in the nutrition and feeding of animals.

The Animal Biology major is designed for students interested in animal physiology and genetics.

Graduates of the Animal Nutrition and Animal Biology major are in demand by medical laboratories, chemical and pharmaceutical companies, feed industries and federal and state governments. Students within these majors are urged to take courses in the physical and biological sciences in addition to those offered by the department. The Animal Nutrition and the Animal Biology majors prepare students for advanced study leading to teaching and research positions in colleges and universities. The two majors also prepare students for subsequent study in Veterinary Medicine.

Description of Courses

For explanation see Index under "Symbols"

Animal Production

A S

101 Farm Animals That Serve Mankind 3 I Genetic, physiological, and nutritional principles of animal production; importance of farm animals in the food supply of modern society. Field trip required.

168 Basic Equitation 1 (1-1) Same as MPE-WPE 168.

204 General Poultry Science 3 (2-3) II Breeds, breeding, physiology, incubation, brooding, nutrition, products technology, housing, equipment, and management.

212 Dairy Cattle Traits 2 (1-3) I Evaluating form and function in dairy cattle; measurement of production and evaluation of type.

250 Live Animal and Carcass Evaluation 3 (1-5) I Basic principles of live animal and carcass evaluation.

268 Intermediate Equitation 1 (1-1) Same as MPE-WPE 268.

269 English Equitation 1 (1-1) Same as MPE-WPE 269. Prereq A S 268.

270 Western Equitation 1 (1-1) Same as MPE-WPE 270. Prereq A S 268.

280 Beef Cow-Calf Management Laboratory 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. Approved management practices associated with a beef cow-calf enterprise for student without experience.

282 Sheep Management Laboratory 1 (0-3) II Management practices associated with a farm flock sheep enterprise.

283 Swine Management Laboratory 1 (0-3) Management practices associated with a swine enterprise.

284 Dairy Cattle Management Laboratory 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. I Management practices associated with a dairy enterprise.

288 Horses and Horsemanship 3 (2-3) I Not open to first-semester freshmen. History and evolution; anatomy and physiology; principles of selection; care and handling of horses.

315 Meat Science 3 (2-3) II Anatomy, slaughter, classification, and processing of red meat animal species.

322 Sheep Science 3 (2-3) II Breeding, feeding, management, and marketing of commercial and purebred sheep; wool studies. Cooperative course taught at the University of Idaho.

381 Commercial Poultry Operation 2 (1-3) II 1980-81 a/y. Prereq A S 204. Field observations of poultry farm operations, feed manufacturing, hatchery operations, marketing agencies, and poultry processing.

382 Beef Cattle Production 3 (2-3) II Prereq A S 301; Genet 301. Principles of breeding, feeding, management, and marketing of purebred and commercial beef cattle. Field trip required.

383 Dairy Cattle Production 3 (2-3) II Prereq A S 301; Genet 301. Principles of breeding, feeding, and management of dairy cattle. Joint course taught with the University of Idaho.

387 Swine Production 3 (2-3) I Prereq A S 301; Genet 301. Principles of breeding, feeding, management, and marketing of swine.
Horse Production 3 (2-3) Prereq A S 301; Genet 301. Principles of breeding, feeding, and management of horses.

Advanced Livestock and Meat Selection and Evaluation 2 (0-6) May be repeated for credit. Prereq A S 212 or 250. Principles and practices of livestock and meat selection and evaluation.

Practicum V 1-8 Directed experience in livestock production and related fields.

Animal Nutrition

A S 213 Applied Animal Nutrition 3 II Prereq one sem Chem; one sem Bio S. Not open to A S majors. Characteristics of nutrients, nutritional requirements, ration calculations and feeding practices for farm animals. Credit not granted for both A S 213 and 313.

Principles of Nutrition 3 Prereq Chem 102, 240; Bio S 102 or 104. Nutritive evaluation of feedstuffs and the use of nutrients by animals.

Feeds and Feeding 3 (2-3) Prereq A S 301. Practices, requirements, nutritive characteristics and calculations of rations for animals. Credit not granted for both A S 213 and 313.

Non-Ruminant Nutrition 3 (2-3) I Prereq A S 301, 313. Physiology of digestion, nutrient requirements, and metabolism deficiency signs; ration formulations and mixing.

Ruminant Nutrition 3 (2-3) II Prereq A S 301, 313. Anatomy, physiology, and metabolism in ruminant nutrition.

Animal Nutrition Laboratory 1 (0-3) I Prereq A S 301. Quality control, proximate analysis, and other laboratory methods related to nutritional experiments with animals.

Vitamins 2 II 1981-82 a/y. Prereq A S 404 or 410; Chem 364. Role of vitamins in the nutrition of animals; emphasis on fat soluble vitamins.

Seminar in Nutrition 1 May be repeated for credit.

Experimental Nutrition 3 (1-6) I 1980-81 a/y. Prereq Chem 217, 364. Laboratory techniques used in nutritional research; modern biochemical methods of analysis; introduction to physiological chemistry.

Microbiology and Physiology of Ruminant Nutrition 3 II Physiology and microbial aspects of ruminant digestion and their influence on the metabolism of extra-ruminal tissues. Cooperative course taught at the University of Idaho.

Mineral Metabolism 3 II 1981-82 a/y. Prereq A S 404 or 410; Chem 364. Dietary levels, absorption, excretion, metabolism, and interactions of minerals.


Protein and Amino Acid Metabolism 2 I 1981-82 a/y. Prereq A S 404 or 410; Chem 364. Biochemical physiological and nutritional aspects of protein and amino acid metabolism.

Animal Physiology and Breeding

A S 364 Genetics of Farm Animals 3 (2-3) Prereq Genet 301. Genetic principles applied to the breeding of farm animals.

Reproduction of Farm Animals 3 II Prereq V An 308 or Zool 251. Anatomy and physiology of reproductive organs; hormones of reproduction; production of gametes; artificial insemination; fertilization; prenatal development; fertility and infertility.

Reproduction of Farm Animals Laboratory 1 (0-3) II Prereq A S 366 or c/. Laboratory and field techniques used in animal reproduction involving hormones, artificial insemination, semen evaluation and pregnancy.

Physiology of Domestic Animals 3 I Prereq V An 308. Basic animal functions; relationship and difference between domestic mammals and birds; measurement of functional processes of mammals and birds.

Physiology of Domestic Animals Laboratory 1 (0-3) I Prereq A S 403 or c/. Measurement of functional processes in mammals and birds.

Physiology of Lactation 2 II 1981-82 a/y. Prereq V An 308. The physiology of milk secretion, including bovine mammary anatomy, development, endocrine control, and synthesis of milk.

Environment Aspects of Animal Management 3 (2-3) II Prereq A S 301, Zool 251 or A S 403. Relations of the thermal, social and disease environments to animal function and performance.

Topics in Animal Breeding 2 May be repeated for credit; cumulative maximum 4 hours. II Prereq A S 364. Systems of selection and mating for genetic improvement in farm animals.

Artificial Insemination and Pregnancy Detection 2 (0-6) Prereq A S 366, 368.
Techniques in semen collection, processing, insemination and pregnancy detection of farm animals.

520 Seminar in Animal Physiology 1 May be repeated for credit. Current developments in animal physiology. Joint course taught with the University of Idaho.


526 Advanced Reproduction 4 (3-3) II 1980-81 a/y. Prereq A S 366. Physiology of sexual maturation; gametogenesis; sexual cycle; fertilization; embryonic development; physiological, chemical and immunological characterization of hormones of reproduction.

Problems, Seminar, and Research and Thesis
A S 325 (425) Seminar I May be repeated for credit. For juniors.

398 Special Topics in Animal Sciences V 1-5 S Current topics in animal sciences.

499 Special Problems V 1-4 May be repeated for credit.

598 Advanced Topics in Animal Sciences V 1-2 May be repeated for credit. Recent research in various disciplines of animal sciences.

600 Special Projects or Independent Study Variable credit

700 Master's Research, Thesis and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Schedule of Studies

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

All students are required to take these core courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and Hum Elective</td>
<td>6</td>
</tr>
<tr>
<td>Ag Ec 201 or Econ 203</td>
<td>3</td>
</tr>
<tr>
<td>Soc S Elective</td>
<td>3</td>
</tr>
<tr>
<td>Engl 101</td>
<td>3</td>
</tr>
<tr>
<td>Ag 205 or Spe 102</td>
<td>3</td>
</tr>
<tr>
<td>Engl or Com Elective</td>
<td>3</td>
</tr>
<tr>
<td>Math 107 or 201</td>
<td>3</td>
</tr>
<tr>
<td>Bio S 103 and 104</td>
<td>8</td>
</tr>
<tr>
<td>Chem 101 and 102 or 105 and 106</td>
<td>8</td>
</tr>
<tr>
<td>Chem 240</td>
<td>4</td>
</tr>
<tr>
<td>Genet 301</td>
<td>3</td>
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<tr>
<td>A S 364</td>
<td>3</td>
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<tr>
<td>A S 301</td>
<td>3</td>
</tr>
<tr>
<td>A S 313</td>
<td>3</td>
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<tr>
<td>A S 366 and 368</td>
<td>4</td>
</tr>
<tr>
<td>A S 325</td>
<td>1</td>
</tr>
<tr>
<td>V An 308</td>
<td>3</td>
</tr>
<tr>
<td>A S 403 and 405 or Zool 251</td>
<td>4</td>
</tr>
</tbody>
</table>

One of the following majors must be chosen, and the courses within that major are required in addition to the above core. The Animal Production major requires selection of an option.

Animal Production Major

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biom 310 or 412</td>
<td>3</td>
</tr>
<tr>
<td>Ag Ec 340</td>
<td>3</td>
</tr>
</tbody>
</table>

General Agricultural Sciences

- Plant sciences, ag mechanization, entomology, food science

In addition to these 15 hours required of all students in the Animal Production major, additional specified hours are required for each option.

Livestock Production Option: A S 250 and 315; V MS 261; two additional courses from A S 322, 382, 383, 387, or 388; electives approved by adviser.

Dairy Cattle Production Option: A S 212, 383 and 413; FS 305; V MS 261; electives approved by adviser.

Poultry Production Option: A S 204, 381 and 404; F S 102; electives approved by adviser.

Animal Business Option: One additional course from A S 212, 250 or 315 or F S 102 or 305; two additional courses from A S 322, 382, 383, 387 or 388; two additional courses from Ag Ec 350, 351, 440 or 450; Ag Ec 335 or B A 210; B A 230; Ag Ec 430; electives approved by adviser.

Animal Nutrition Major

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A S 322, 381, 382, 383, 387, or 388 (select one)</td>
<td>3</td>
</tr>
<tr>
<td>A S 404 or 410</td>
<td>3</td>
</tr>
<tr>
<td>Math 202</td>
<td>3</td>
</tr>
<tr>
<td>Bio S 310 or 412</td>
<td>3</td>
</tr>
<tr>
<td>Phys 101 or 102</td>
<td>4</td>
</tr>
<tr>
<td>Chem 217</td>
<td>4</td>
</tr>
<tr>
<td>Chem 364</td>
<td>3</td>
</tr>
<tr>
<td>A S 212, 250 or 315; F S 102 or 305 (select one)</td>
<td>2-3</td>
</tr>
</tbody>
</table>

General Agricultural Sciences (plant sciences, ag economics, ag mechanization, entomology, food science) 6
Animal Biology Major
Requirements for this major are the same as for the Animal Nutrition major with these exceptions: A S 404 or 410 is not required; Blom 412 is required.

Minor in Animal Sciences
A minor requires a minimum of 16 semester hours, half of which must be in upper division work. Students wishing to declare a minor should consult the department as early as possible to develop an approved schedule of courses.

Transfer Students
Students planning to transfer to the Department of Animal Sciences, Washington State University, from community colleges or other institutions should complete as many of the required courses in chemistry, biological sciences, physics, and mathematics as possible.

Department of Anthropology

The courses in anthropology are designed to familiarize the student with human evolution, the prehistoric development of culture, linguistics, and the role of cultural systems in contemporary Western and non-Western societies. The major in anthropology receives training in anthropological theory, archaeology, human development, human society and culture, linguistics and linguistic anthropology. Positions in anthropology include those in teaching, research, museum work, state and federal agencies, and private consulting firms. In addition, anthropology provides a strong option for a liberal arts education.

Courses within archaeology are designed to broaden opportunities for students interested in interdisciplinary problems relating to human prehistory by integrating traditional course work with courses in Quaternary geomorphology, chronology, and paleoecology. Courses are taught by staff members with specialties in geology, paleontology, and vertebrate paleontology. Additional work in related fields is encouraged at WSU and through exchange courses with the University of Idaho. The interdisciplinary emphasis is enhanced by the diverse environmental settings of the state and emphasis on field work.

The extensive anthropological collections in the library include the Human Relations Area Files and the Peabody Museum Catalog of anthropological publications. The collections of the Laboratory of Anthropology are also available for study. The department maintains a small museum which contains displays on human evolution, archaeology, and the material cultures of non-Western peoples. This museum is open to the public and special tours can be arranged.

The department offers a course of study leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy in Anthropology.

Description of Courses
Anth For explanation see Index under "Symbols"
198 [S] Anthropology Honors 3
201 [H] Art and Society Art as an expression of social and cultural systems in preliterate societies.
203 [S] Peoples of the World 3 Principles of cultural anthropology through study of various ethnic groups from different parts of the world.
230 [S] Introduction to Archaeology 3 (2-3) Development of a dynamic picture of past human behavior from archaeological evidence.
250 Introduction to Linguistics 3 Introduction to the scientific study of language.
256 The Organization of English 3 1 Same as Engl 256.
260 [B] Introduction to Physical Anthropology 3 Evidences for human evolution; processes of racial diversification; techniques of physical anthropology.
300 Field Methods V 6-8 S Prereq permission by application. Practice in methods of archaeological, ethnological, or linguistic field research.
301 [S] Culture and Personality 3 Prereq Anth 101 or Soc 101. The individual as the product and carrier of culture; personality development in selected world societies; anthropological concept of personality types.
[S] Religion in Culture 3 Prereq Anth 101 or 203. Preliterate and modern religious concepts, practices, and practitioners; origin and function of religion.

304 [H] Anthropology and World Problems 3 Prereq Anth 101 or 203. Data and techniques of physical and cultural anthropology applied to the solution of social and political problems.

309 [S] Cultural Ecology 3 Prereq 3 hrs Anth. Major findings of ecological anthropology relating to problems of population, resources, and environment in primitive cultures.

320 [S] Native Peoples of North America 3 Culture areas of North America; comparison of representative aboriginal cultures.


331 [S] Archaeology of the New World 3 Prereq Anth 101 or 230. Archaeology of the New World and culture history of the American Indian.

336 [H] Classical Archaeology 3 Classical Mediterranean civilizations: effects on Western art, architecture, social processes.

350 [S] Speech, Thought and Culture The role of language in social situations and as a reflection of cultural differences.

355 [H] Language in History 3 Writing systems, language in reconstruction of culture history, language families, evolution, and parallels.

390 Introduction to Museology 3 History, theory and practice of museums; field trips. Cooperative course taught at University of Idaho.

401 History of Anthropological Theory 3 Prereq 6 hrs Anth. Development of theories in cultural anthropology; contributions of specific individuals; representative classics. Credit not granted for both Anth 401 and 501.

402 Introduction to Kinship Studies 3 II Prereq Anth 101, Soc 101, or Psych 350. The sociology of kinship and social structure, social forms and processes in a comparative perspective.

403 Economic Anthropology 3 I 1981-82 a/y. Prereq Anth 101; Soc 101; Econ 101. Introduction to economic organization and processes in comparative perspective; tribal (primitive) and peasant economies. Credit not granted for both Anth 403 and 503.

405 Anthropology and Education 3 Anthropological perspectives on enculturation bicultural/bilingual education; anthropology and public. Credit not granted for both Anth 405 and 505.

420 Native American Perspectives on the Environment 3 Same as Na Am 420.

422 Native Peoples of the Pacific Northwest 3 Prereq Anth 101. Aboriginal cultures of the Northwest Coast and Plateau regions of North America. Credit not granted for both Anth 422 and 522.

424 Peoples of the Pacific 3 Prereq Anth 101 or 203. Culture areas of the Pacific; the major cultural types of Polynesia, Micronesia, Melanesia, and New Guinea. Credit not granted for both Anth 424 and 524.

426 Native Peoples of Middle and South America 3 II Prereq Anth 101, 203. Culture history, culture areas and typologies; the impact of Europeans; theoretical problems and current research. Credit not granted for both Anth 426 and 526.

429 Peoples of Asia 3 May be repeated for credit; cumulative maximum 6 hours. Traditional and/or contemporary cultures of South, Southwest, Southeast, East and Central Asia.

430 Introduction to Archaeological Method and Theory 3 II Prereq Anth 230 and 330 or 331. Archaeological theory in anthropological perspective; current trends in method and theory in American archaeology. Credit not granted for both Anth 430 and 530.

431 Intermediate Museology 3 Prereq Anth 390. Rudiments of museography by actual work with specimens from acquisition to exhibit; preservation, record making, and research. Cooperative course taught at University of Idaho.

432 Advanced Museology V 1-4 Prereq Anth 390, 431. Internship providing the student with opportunity to work in a museum of history, science, or art under direct supervision. Cooperative course taught at University of Idaho.

435 Cultural Resource Management 3 II Role of archaeology in preserving the nation's cultural heritage; environmental impact statements, antiquity laws, public involvement; the archaeologist as a cultural resource manager. Credit not granted for both Anth 435 and 535.

436 Ethnoarchaeology 3 II Multidisciplinary approach (archaeology, ethnography and history) to the interpretation of man's past cultures. Credit not granted for both Anth 436 and 536.

450  Descriptive Linguistics 3 Introduction to analysis and description of natural languages; phonological, syntactic, and semantic analysis of data from a variety of languages. Credit not granted for both Anth 450 and 550.

451  Native American Language and Tradition 3 The Native American ethos and ethic in language, thought, culture, and tradition.

456  Historical Linguistics 3 I Prereq Anth 450. Historical study of language, sound change, grammatical change, semantic change. Credit not granted for both Anth 456 and 556.


465  Evolution of Man 3 Prereq Anth 260. Human origins in the light of the fossil record and evolutionary theory. Credit not granted for both Anth 465 and 565.

466  Human Osteology 3 (2-3) I Prereq Anth 260. Observations and measurements of human skeleton; variations based on age, sex and race; comparisons with fossil man and higher primates. Credit not granted for both Anth 466 and 566.

471  Man's Past Environments 4 (3-3) II Quaternary problems and interpretation of Quaternary environments involving integration of geological, archaeological, botanical, and zoological data.

499  Special Problems V 1-4 May be repeated for credit.

500  Field School 4 (1-9) S Training in gathering and analyzing field data.

501  History of Anthropological Theory 3 Graduate level counterpart of Anth 401; additional requirements. Credit not granted for both Anth 401 and 501.

503  Economic Anthropology 3 Graduate level counterpart of Anth 403; additional requirements. Credit not granted for both Anth 403 and 503.

504  (505) Culture Change and Modernization 3 Culture change through the processes of innovation, diffusion, and acculturation.

505  Anthropology and Education 3 Graduate level counterpart of Anth 405; additional requirements. Credit not granted for both Anth 405 and 505.

506  (503) Research Methods 3 Prereq 9 hrs Anth. Socio-cultural anthropological field research design; field community study, and applied techniques; grant proposal writing; data analysis.

507  Advanced Studies in Culture Theory 3 May be repeated for credit; cumulative maximum 6 hours. Prereq 6 hrs Soc S. Evaluation of major theories and methods and their relationship to problems in cultural-social analysis.

509  Ecological Anthropology 3 Ecological principles applied to problems involving human populations.

510  Seminar in the Synthesis of Cultural Anthropology 3 I Major developments and issues in cultural and social anthropology.

513  Kinship and Social Organization 3 Description and interpretation of kinship terminologies and social organization: residence, residence units, descent, descent groups, marriage, family.

515  Theory and Method in Ethnohistory 3 Ethnohistorical research: theoretical assumptions and methodologies; evaluating primary and archival materials; ethno- graphic inference.

517  Seminar in Symbolic Systems and Behavior 3 II Prereq Anth 101. Symbolic systems as structures and processes, and cognition; perception and exploitation of natural world; symbolic linguistics and psychological anthropology.

520  Area Seminars 3 May be repeated for credit. Ethnology of areas such as Southeast Asia, Africa, or specific countries such as Canada, China, Indonesia.

522  Native Peoples of the Pacific Northwest 3 Graduate level counterpart of Anth 422; additional requirements. Credit not granted for both Anth 422 and 522.

524  Peoples of the Pacific 3 Graduate level counterpart of Anth 424; additional requirements. Credit not granted for both Anth 424 and 524.

526  Native Peoples of Middle and South America 3 Graduate level counterpart of Anth 426; additional requirements. Credit not granted for both Anth 426 and 526.

530  Introduction to Archaeological Method and Theory 3 Graduate level counterpart of Anth 430; additional requirements. Credit not granted for both Anth 430 and 530.

532  Pro-Seminar in North American Archaeology 3 May be repeated for credit. Integration of field data with problem approaches in archaeology, generation of
theoretical constructs; development of new orientations.

535 Cultural Resource Management 3 Graduate level counterpart of Anth 435; additional requirements. Credit not granted for both Anth 435 and 535.

536 Ethnoarchaeology 3 Graduate level counterpart of Anth 436; additional requirements. Credit not granted for both Anth 436 and 536.

537 Analytic Archaeology 3 May be repeated for credit; cumulative maximum 6 hours. Analytic techniques used in modern archaeology.

538 Prehistory of Selected Areas V 1-3 May be repeated for credit; cumulative maximum 9 hours.

540 Prehistory of Northwest Coast 3 Archaeology of Northwest Coast.

542 Prehistory of Alaska and Eastern Siberia 3 Prehistoric cultural developments in the Arctic and sub-Arctic zones of Asia and North America.

543 Plateau Prehistory 3 Archaeology of the interior Northwest.

545 Historical Archaeology 3 II Excavation and analysis of historical archaeological sites; acculturational implications. Cooperative course taught at the University of Idaho.

546 Prehistory of the Desert West 3 Graduate level counterpart of Anth 446; additional requirements. Credit not granted for both Anth 446 and 546.

549 Lithic Technology 2 (1-3) Manufacture of stone implements, theory of rock fracture, non-human production of pseudo-artifacts.

550 Descriptive Linguistics 3 Graduate level counterpart of Anth 450; additional requirements. Credit not granted for both Anth 450 and 550.


553 (550) Socio-Cultural Linguistics 3 II 1981-82 a/y. May be repeated for credit; cumulative maximum 6 hours. Prereq Anth 450. Language is analyzed for its multiple roles in cultural systems.

556 Historical Linguistics 3 Graduate level counterpart of Anth 456; additional requirements. Credit not granted for both Anth 456 and 556.

557 Seminar in Language Structure 3 May be repeated for credit; cumulative maximum 9 hours. Linguistic study of structures of selected languages or language groups.

559 Seminar in Linguistics 3 May be repeated for credit. Prereq Anth 450. History of theory of linguistics; social linguistics; linguistics and reconstruction of culture history; mathematics and computer linguistics.


563 Human Races 3 Graduate level counterpart of Anth 463; additional requirements. Credit not granted for both Anth 463 and 563.

565 Evolution of Man 3 Graduate level counterpart of Anth 465; additional requirements. Credit not granted for both Anth 465 and 565.

566 Human Osteology 3 (2-3) Graduate level counterpart of Anth 466; additional requirements. Credit not granted for both Anth 466 and 566.

569 Seminar in Physical Anthropology 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Anth 260. Investigations of selected areas of research in modern physical anthropology.

570 Sediments and Quaternary Environments 4 (3-3) I Sediment-forming processes, sedimentological techniques, reconstruction of quaternary environments, and paleoecological analysis of archaeological sediments. Field trip required.

571 Archaeological and Quaternary Stratigraphy 4 (3-3) II Prereq Anth 570. Stratigraphic classification, field procedures, presentation of data, stratigraphy and quaternary environments; the quaternary record, and case studies of archaeological sites. Field trip required.

573 Identification of Faunal Remains 4 (2-6) I Prereq Anth 471; Soils 404. The relevance of faunal remains in archaeological context; excavating, preserving, and identifying bones commonly encountered in archaeological sites. Field trip required.

574 Introduction to Quaternary Vertebrates 4 (3-3) II Prereq Anth 471. Ecological and paleoecological techniques as tools for enhancing interpretation of problems in prehistory; importance of faunal changes through time. Field trip required.

576 Palynology 4 (3-3) I Pollen and spore morphology, evolution, production, dispersal,
and preservation; index fossils, dating, archaeology, and vegetational history. Field trip required.

577 Quaternary Vegetation and Climate 4 (2-6)
II Prereq Anth 576. Reconstruction of Quaternary environments and climatic change through studies of fossil pollen, plant macrofossil assemblages, tree rings. Field trip required.

580 Paleocology 3 II Past environments, stressing the interrelations of physical and biological factors. Cooperative course taught at the University of Idaho.

591 Special Topics in Anthropology 3 May be repeated for credit; cumulative maximum 9 hours. Examination of current areas of anthropological theory and research.

592 Special Topics in Anthropology 3 May be repeated for credit; cumulative maximum 9 hours. Examination of current areas of anthropological theory and research.

600 Special Projects or Independent Study
Variable credit.

700 Master's Research Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Schedule of Studies

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses. A student majoring in this curriculum is required to take a minimum of 30 hours in anthropology. A student minoring in anthropology is required to take a minimum of 16 hours in anthropology, half of which are to be in upper-division courses.

The anthropology major will take two courses from each of the following series:
(a) Anth 203, 320, 323, 403, 422, 424, 426, 427, 428; (b) Anth 260, 461, 465, 466; (c) Anth 230, 330, 331, 336, 430, 435, 436, 446, 471; (d) Anth 250, 350, 355, 450, 456; (e) Anth 101 or 198, 201, 301, 303, 304, 309, 401, 402, 446, 471.

Majors in anthropology are advised to take advanced work in two supporting fields. In addition it is suggested that students in archaeology take Anth 471.

Preparation for Graduate Study

As preparation for work toward an advanced degree a student should have completed not less than 18 hours in anthropology.

Department of Architecture


The Department of Architecture offers courses of study in three fields—architecture, construction management, and architectural studies. The degrees offered are: Bachelor of Architecture, Bachelor of Science in Construction Management, and Bachelor of Science in Architectural Studies.

Architects work at many levels, depending on interests and abilities. They may be practitioners, educators, or researchers. They may work for themselves, in a partnership, for a corporation, or for the government. They work on items as small as a piece of hardware or as large as a design of an entire city or region. In any case the architect is required to have a high level of intuitive ability, combined with a deep understanding of people and the analytical and technical skills expected of a professional.

The constructor is expected to be conversant in a wide variety of structures that make up man's physical environment. This includes properties of materials and construction systems and how they are fabricated to produce buildings. The student is expected to have developed an inquisitive and inventive mind to deal with new construction methods and management techniques. It is also mandatory that the person in construction management be very knowledgeable of the very important field of business. Courses are offered in a variety of departments to assure this breadth of understanding.

The department is a member of the Association of Collegiate Schools of Architecture and the Associated Schools of Construction. Student chapters of the American Institute of Architects and the Associated General Contractors provide a professional link with their professional counterparts. The professional Bachelor of Architecture degree program is accredited by the National Architectural Accrediting Board.

Description of Courses

Arch For explanation see Index under "Symbols"

101 Architectural Communications I 3 (1-6)
Drawing to perceive three-dimensional space; freehand (architectural) drawing,
102 Architectural Communications II 3 (0-6) Prereq Arch 101. Continuation of Arch 101. Three-dimensional work; color application to diazo prints of drawings.

110 Orientation 2 Introduction to design professions, faculty, department, university; role of the architect in society, past, present, future.

120 [H] Architectural History I 3 I Structure and materials; decoration of Egyptian, Western Asiatic, Greek, Roman, Early Christian, Byzantine, and Romanesque architecture.

121 [H] Architectural History II 3 II Development of American architecture; cave dwellings, Native American progress, colonial styles to contemporary architecture; effects of European styles upon America.

201 Basic Design 4 (0-9) Prereq Arch 101, 102. Two- and three-dimensional basic designs as visual and structural phenomena.

202 The Built Environment 3 II Planning and design of the built environment; individuals, interiors, structures, cities, region, earth; factors and processes which effect environmental quality.

207 Space Enclosure Systems 3 (0-6) Prereq Arch 101, 102. Determinants of traditional, contemporary and future space enclosure systems.

301 Architectural Design 4 (0-12) I Prereq major in Arch; c// in Arch 307. Small to large-scale physical planning and architectural design problems with both natural and urban contexts.

303 Architectural Design 4 (0-12) II Prereq Arch 301; c// in Arch 309. Continuation of Arch 301. Program analysis; conceptual and definitive design of small-to-medium scale architectural projects within the contemporary social and technological context.

307 Architectural Design Determinants 2 I Prereq major in Arch; c// in Arch 301. Natural and human systems and technical factors affecting physical planning and architectural design.

309 Architectural Design Determinants 2 II Prereq Arch 307; c// in Arch 303. Factors affecting the design of small-to-medium scale architectural projects within contemporary and technological context.

323 Twentieth Century Architecture 2 I Prereq major in Arch. Survey from c. 1880 (Chicago School) to present: European and American development.

324 Ancient Architecture 2 II Prereq major in Arch. Social, technical, scientific and economic influences; spatial, structural, material, decorative aspects; Egyptian, Mesopotamian, Greek cultures.

331 Building Materials 3 Prereq major in Arch or Cst M. Properties of building materials; methods of manufacture; historical and contemporary applications.

342 Urban Theory 3 II Prereq junior in Arch or Cst M. Principles and theories of urban and regional planning since c. 1880; architectural site planning.

351 Structures and System Determinants I 4 (3-2) Prereq major in Arch or Cst M; Phys 101, 102. Principles of parts and wholes of structural systems; introduction to statics, mechanics, analysis and synthesis of wood, steel and concrete systems.

352 Structures and System Determinants II 4 (3-2) II Prereq Arch 351. Continuation of Arch 351.

355 Light Construction Theory and Communication 3 (2-3) Prereq major in Arch or Cst M; Arch 101. Theory and application of light construction principles utilizing a theoretical model and contemporary communication methodologies.

386 Junior Summer Reading Examination V 1-3 I Examination of summer reading from lists prepared by department.

401 Architectural Design 5 (0-10) I Prereq Arch 303; c// in Arch 407. Program analysis; conceptual and definitive design of medium-to-large scale architectural projects within contemporary social and technological context.

403 Architectural Design 5 (0-15) II Prereq Arch 401; c// in Arch 409. Contextual analysis; planning; conceptual and definitive design of community- or city-scale projects or institutions.

407 Architectural Design Determinants 2 I Prereq Arch 309; c// in Arch 401. Factors affecting the design of medium-to-large scale architectural projects within contemporary social and technological context.

409 Architectural Design Determinants 2 II Prereq Arch 407; c// in Arch 403. Factors affecting the planning and design of community- or city-scale projects or institutions.

411 Architectural Design 6 (0-18) I Prereq Arch 403; c// in Arch 415. Integration of architectural determinants; programming, space and site plans, physical science, interiors and landscaping.

413 Terminal Design Project 7 (0-21) II Prereq Arch 411, 415. Architectural project
selected by the student and approved by the faculty.

415 Programming and Decision Theory 2 I
Prereq c// in Arch 411. Issues involved in
organizing the information necessary to
design; collection, organization, and
preparation of program for terminal pro-
tect.

423 Western Architecture 2 I Prereq Arch 324
or 4 hrs art or arch history. Roman,
Romanesque, Byzantine, Early Christian
and Gothic methods of architecture.

424 Renaissance and Baroque Architecture 2 II
Prereq Arch 423 or 6 hrs art or arch history.
Renaissance, early Baroque architecture;
contributions, influences on social develop-
ment.

425 Architecture from Baroque to c. 1880 2 I
Prereq Arch 424 or 6 hrs art or arch history.
Baroque, Neo-classicism, and 19th century
development of iron, skeletal structure.

426 Theory of Architecture 2 II Prereq Arch
425 or 8 hrs art or arch history. Twentieth
century, third generation architecture, in-
dividual presentations by students.

432 Architectural Science I 3 (2-2) II Prereq ma-
jor in Arch or Cst M; Phys 101, 102.
Building heating, ventilating, air condition-
ing systems, large and small scale; heat flow
concepts; plumbing and water supply systems.

433 Architectural Science II 3 (2-2) I Prereq
Arch 432. Building lighting, performance
criteria and design; electrical distribution
for large and small buildings, vertical transpor-
tation; building communication systems.

434 Acoustics 1 Prereq major in Arch or Cst M;
Phys 101, 102, Math 107. Sound theory,
control, acoustics, and reinforcement
systems as applied to architectural prob-
lems.

437 Energy Use in Buildings 2 I Prereq Arch
432. Energy use in contemporary buildings;
conservation and alternate energy sources.

451 Construction Practice Management 3 (2-3)
I Prereq senior in Cst M. Construction indus-
try organization and ethics; contract
documents, their relationships, meanings,
and significance in construction.

452 Construction Practice Management 3 (2-3)
II Prereq Arch 451. Continuation of Arch
451.

455 Critical Path Management Techniques 1 I
Prereq senior in Cst M or Arch. Architect-
tural and construction applications for net-
work programming and scheduling tech-
niques.

470 Architectural Economics 3 I Prereq senior
in Arch or Cst M. Theory and practice of
cost benefit analysis applied to architec-
tural systems.

472 Construction Communications 2 I Prereq
major in Arch. Techniques for and ra-
tionale of architectural specifications and
other construction documents.

473 Office Practice and Ethics 2 II Prereq Arch
472. Ethical base for practice; business
methods as applied to the architectural
practice.

480 Architecture Field Experience V 1-16
Placement in an industrial, professional, or
governmental situation for specialized or
general experience.

490 Seminar in Architectural Design 1 May be
repeated for credit; cumulative maximum 4
hours. Prereq senior in Arch. Advanced
study in architectural design.

491 Seminar in Architectural Communications
1 May be repeated for credit; cumulative
maximum 4 hours. Prereq senior in Arch.
Advanced study in graphic communication.

492 Seminar in Architectural History 1 May be
repeated for credit; cumulative maximum 4
hours. Prereq senior in Arch; Arch 426.
Advanced study in architectural history.

493 Seminar in Architectural Science 1 May be
repeated for credit; cumulative maximum 4
hours. Prereq senior in Arch or Cst M. Ad-
vanced study in architectural science.

494 Seminar in Urban and Regional Planning 1
May be repeated for credit; cumulative
maximum 4 hours. Prereq Arch 342. Ad-
vanced study in urban and regional plan-
ing.

495 Seminar in Construction Management 1
May be repeated for credit; cumulative maximum 4 hours. Prereq senior in Cst M.
Advanced study in construction practice
management.

496 Seminar in Computer Application 1 May be
repeated for credit; cumulative maximum 4
hours. Prereq Cpt S 201. Architectural and
construction applications of computers in
graphics, management, structures.

497 Seminar in Professional Practice 1 May be
repeated for credit; cumulative maximum 4
hours. Prereq senior in Arch. Advanced
study in architectural practice manage-
ment.

498 Seminar in Industrialized Building 1 May
be repeated for credit; cumulative max-
imum 4 hours. Prereq senior in Arch. Ad-
vanced study in industrialized building.

499 Special Problems V 1-4 May be repeated for
credit.
General Requirements

1. Students who wish to transfer from another institution may find it possible to take some or all of the first two years elsewhere. See the WSU bulletin, Transfer Programs for Community Colleges, for information.

2. A student may not take any courses required by the department on a pass-fail basis without written permission of the adviser.

3. Under no circumstances may a student be enrolled in 300- or 400-level architecture courses without acceptance into and certification as a major in either Architecture or Construction Management.

4. Due to limitations of space, faculty, and budget, admission to the department can be granted to only the most qualified students based on experience, demonstrated abilities, motivation, and academic performance.

Prospective students must acquaint themselves with the specific procedures for department certification.

Schedule of Studies

PRE-ARCHITECTURE

Students who enter WSU as freshmen and have an interest in architecture should obtain an adviser in the Department of Architecture through the Curriculum Advisory Program. Specific requirements of the pre-architecture program are:

Completion of 60 hours and 2 years of college-level work including the following:

Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch 110 Orientation or Elective</td>
<td>2</td>
</tr>
<tr>
<td>Math 107 or 205</td>
<td>3</td>
</tr>
<tr>
<td>Com Prof GUR</td>
<td>3</td>
</tr>
<tr>
<td>Arch 101 Arch Communication</td>
<td>3</td>
</tr>
<tr>
<td>Hum GUR</td>
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</tr>
<tr>
<td>Soc S GUR</td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 171 or 206</td>
<td>4-3</td>
</tr>
<tr>
<td>Arch 102 Arch Communication</td>
<td>3</td>
</tr>
<tr>
<td>Com Prof GUR</td>
<td>3</td>
</tr>
<tr>
<td>Hum GUR</td>
<td>3</td>
</tr>
<tr>
<td>Soc S GUR</td>
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Sophomore Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 201 or 101</td>
<td>4</td>
</tr>
<tr>
<td>Arch 201 Basic Design</td>
<td>4</td>
</tr>
<tr>
<td>Arch Elective</td>
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<td>Electives</td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 202 or 102</td>
<td>4</td>
</tr>
<tr>
<td>Arch Elective</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>8</td>
</tr>
</tbody>
</table>

BACHELOR OF ARCHITECTURE

This five-year course of study is divided into three segments. These are pre-architecture, third- and fourth-year pre-professional program and fifth-year professional program. Completion of the five-year program totaling 159 semester credits leads to the degree of Bachelor of Architecture and allows the student to enter the profession. At least three additional years of professional experience and successful completion of the architectural license examination are necessary for registration as a licensed architect in the state of Washington.

Pre-professional entry requirements:

1. Completion of all pre-architecture requirements including 60 semester credits total.

2. Submission of application for entry (see note below).

Professional entry requirements:

1. Successful completion of all required courses in the pre-professional program. A grade of C or better must be received in all architectural design and determinants courses in the third and fourth years. A total of 128 semester credits must be completed.

2. Satisfactory completion of an approved summer internship program in an architectural or engineering firm, with a construction firm, or in an approved travel program. This program normally will be undertaken in any summer between the second and fifth years.

3. Submission of application for entry (see note below).

NOTE: Application forms for both the pre-professional and professional programs are available from the Admissions Office and must be submitted prior to March 1. Final selection will be made not later than May 1.
Senior Year

First Semester
Arch 401 Design 5
Arch 407 Determinants 2
Arch 423 History 2
Arch 433 Science 3
C E 431 Structures 4

Second Semester
Arch 403 Design 5
Arch 409 Determinants 2
Arch 424 History 2
Arch Elective 3
C E 471 Structures 4

Fifth Year

First Semester
Arch 411 Design 6
Arch 415 Programming 2
Arch 425 History 2
Arch 470 Economics 3
Arch 472 Const Comm 2
Approved Elective 3

Second Semester
Arch 413 Design 7
Arch 473 Ethics 2
Approved Electives 6
Arch 426 Theory 2

BACHELOR OF SCIENCE IN CONSTRUCTION MANAGEMENT

The degree of Bachelor of Science in Construction Management is for those students who wish to work in the profession of construction management or in a management capacity in other facets of the construction industry.

Students wishing to certify into the Construction Management curriculum must fulfill the following minimum requirements:

1. Complete a minimum of 45 semester hours, including those courses listed in the first three semesters below.
2. Submit the supplementary application form and other required data by December 1.
3. Must be accepted into the program. (Final selection will be made no later than the beginning of spring semester.)

Freshman Year

First Semester
Com Prof GUR 3
Math 205 Finite 3
Arch 101 Arch Comm I 3
Humanities GUR 3
Phys 101 General 4

Second Semester
Com Prof 3
Math 206 Math Arch 3
Econ 102 Economics 3
Humanities GUR 3
Phys 102 General 3

Sophomore Year

First Semester
B A 230 Accounting 4
Econ 203 Economics 3
Cpt S 220 Cpt in Bus 4
Elective 3

Second Semester
B A 231 Accounting 3
B A 210 Business Law 3
Arch 331 Materials 3
C E 101 Surveying 3
Arch 355 Lt Const 3

Junior Year

First Semester
Arch 351 Structures 4
B A 305 Real Estate 3
Program in Asian American Studies

Asian American Studies offers an interdisciplinary study of Asian/Pacific Americans, with an emphasis on their lives, role, and achievements. The curriculum is designed to provide a broad, systematic understanding of Asian/Pacific Americans, quite distinct and apart from the traditional cultures of their origins.

This program serves the following objectives:

1. An understanding of the historical, social, economic, cultural, psychological and political forces which have shaped the Asian American cultural heritage;
2. A review of the issues confronting contemporary Asian American communities;
3. The development of resource materials for further in-depth research and study of the Asian American experience;
4. A furthering of university and societal goals of ethnic equality.

A minor in Asian American Studies is offered. The minor requires 16 hours of credit chosen from the list below, including: (1) a minimum of 8 hours at the 300-level and above; and (2) 9 hours from the following core courses: AAS 201, 205, 301, 311, 405, 406, 595.
Astronomy

Associate Professors, J. H. Lutz, T. E. Lutz.

Astronomy is the study of celestial bodies including the sun, planets, satellites, stars and galaxies. The various courses offered in astronomy are intended to provide background for both liberal arts and science majors. The astronomy faculty are part of the Department of Pure and Applied Mathematics. The WSU Planetarium and the Jewett Observatory are used as instructional aids in the astronomy courses.

Description of Courses

Astr For explanation, see Index under "Symbols"

135 [P] Descriptive Astronomy 3 Physical characteristics and motions of the bodies of the solar system, stars, nebulae, and galaxies. Credit not granted for both Astr 135 and 345.

345 Principles of Astronomy 3 I Prereq Phys 102 or 202. Planets, the sun, stars and galaxies; current topics in astrophysics and planetary research. Credit not granted for both Astr 135 and 345.

435 Astronomy and Astrophysics 3 II 1981-82 a/y. Prereq Math 273, 315 or c/c/. Advanced topics in modern astronomy and astrophysics.

499 Special Problems V 1-4 May be repeated for credit.

538 Topics in Modern Astrophysics 3 May be repeated for credit; cumulative maximum 9 hours. II Prereq Math 315. Problems of current astrophysical interest in the areas of stellar atmospheres, stellar interiors, gaseous nebulae, the interstellar medium and galaxies.

600 Special Projects or Independent Study Variable credit.

Department of Bacteriology and Public Health

Professor and Department Head, H. M. Nakata; Associate Professors, J. B. Conway, D. J. Hinrichs, R. E. Hurlbert, L. P. Mallavia, K. L. McIvor, W. R. Rayburn, K. D. Spence; Assistant Professors, W. T. Charnetzky, M. L. Kahn, G. G. Meade, J. L. Paznokas.

Bacteriology, often and properly called microbiology, is both a basic and an applied science. In addition to general bacteriology the Department of Bacteriology and Public Health offers courses of study in several specialized fields of basic and applied microbiology. The objectives of the department are to confer undergraduate and advanced degrees in bacteriology and public health; to train students in the applied fields of bacteriology, environmental health, and medical technology; and to provide a service program that helps fulfill basic science requirements for graduation. Students majoring in the department may also complete premedical requirements in a four-year course.

The department offers courses of study leading to the degrees of Bachelor of Science in Bacteriology and Public Health, Master of Science in Bacteriology and Public Health, and Doctor of Philosophy.

Description of Courses

Bacteriology

Bact For explanation see Index under "Symbols"

101 [B] Elementary Bacteriology and Public Health 4 (3-3) Students who receive a B grade in this course may substitute it for Bact 201 as a prereq for advanced courses. Biology of bacteria with special reference to man. Credit not granted for both Bact 101 or 201.

201 General Microbiology 5 (3-6) Prereq 1 yr college chem; 1 sem college biology. The classification, physiology, and techniques for cultivation of microorganisms, especially bacteria; applications to agriculture, medicine, and industry.

310 Medical Bacteriology 3 I Prereq Bact 201; Chem 240. The bacterial pathogens and their relationship to disease.

311 Diagnostic Medical Bacteriology 2 (0-6) I Prereq Bact 310 or c/c/. Techniques and tests for the identification of bacteria pathogenic for man.

350 Clinical Laboratory Procedures 4 (2-6) II Prereq Bact 201; Org and Quant Chem. Techniques, interpretations, and theory.

365 Microbiology and Chemistry of Waters 3 (1-6) II Prereq Bact 201; Chem 217. Major microbiological and chemical water pollutants; detection and removal.

410 Advanced Medical Microbiology 3 II 1980-81 a/y. Prereq Bact 310, 412. Viruses, mycoplasmas, L-forms, rickettsia, and spirochaetes; biological and pathogenic characteristics.

412 Immunology 4 (2-6) I Prereq Bact 310; Org Chem. Principles.

415 General Virology Laboratory 2 (0-6) II Prereq Bact 414 or c//. Laboratory techniques concerning cultivation and characterization of viruses.

416 Microbiology of Foods 3 (2-3) I Prereq Bact 201; Org and Quant Chem. Microorganisms important in food; reference to spoilage processes and their control.


428 Advanced Microbiology 2 I Prereq Bact 201; Chem 364. Physiological and genetic characteristics of microbes; basic and applied studies.

451 Higher Bacteria and Fungi 3 (2-3) II 1980-81 a//y. Prereq Bact 310. Occurrence and activities of the higher bacteria and fungi as free living and parasitic organisms.

499 Special Problems V 1-4 May be repeated for credit.

505 Microbial Ecology 2 I 1981-82 a//y. Prereq 1 yr biological science including Bact 201. Interaction of bacteria and the environment; the effect of each upon the other.

510 Molecular Biology of Microbial Morphogenesis 2 I 1981-82 a//y. Current literature dealing with the molecular biology of microbial systems; models of eucaryotic differentiation.

514 Selected Topics in Microbiology 2 May be repeated for credit. II Prereq 9 hrs upper-division Bact.


529 Research Techniques in Microbiology 3 (1-6) I By interview only. Modern biochemical and physiological techniques for research studies in microbiology.

541 Seminar 1 May be repeated for credit. Literature reviews and research reports.

550 Mechanisms of Pathogenesis 2 II 1981-82 a//y. Prereq Bact 310. Specific bacterial products and unique bacterial capabilities which enhance the virulence of individual organism.

560 Molecular Genetics 3 I Same as Genet 560.

570 Advanced Immunology 3 II Prereq introductory course in immunology. Regulation of the immune response by cells and cell products.

571 Research Techniques in Immunology V 2 (0-6) to 4 (0-12) II 1981-82 a//y. Prereq introductory course in immunology. Introduction to commonly employed techniques in immunology and immunochemistry.

592 Advanced Topics in Cell Biology 1-3 May be repeated for credit; cumulative maximum 7 hours. Same as Genet 592.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Environmental Health

Env H

250 Introduction to Environmental Health 2 II Prereq 1 yr college chemistry; 1 sem college biology. Environmental health; relation to the total spectrum of public health.

299 Environmental Health Problems V 1-3 May be repeated for credit.

350 Principles of Environmental Health 3 I Prereq Bact 201. Environmental health; water quality control, waste disposal methods, food sanitation and vector control.

360 Environmental Health Laboratory 1 (0-3) I Prereq c// in Env H 350. Techniques and methodology used by the environmental health worker for sampling in the field.

410 Environmental Health Resources and Administration 3 II 1980-81 a//y. Public health organization and administration; public health law and community services.


490 Field Training for Environmental Health Specialists 8 (lectures, laboratory, and field work 40 hrs per week for 12 weeks) Prereq Bact 310, 311; Env H 350, 360. Practical field training in environmental health with participation in an organized public health program.

492 Field Training Seminar 1 I Prereq Env H 490. Professional aspects of environmental health; student presentations on field training experiences and problems.

499 Special Problems V 1-4 May be repeated for credit.
Schedule of Studies

At least 40 of the total hours required for the bachelor's degree in this department must be in upper-division courses. For majors, a total of 28 credit hours must be in departmental courses. The core requirements for the freshman and sophomore years are the same for bacteriology, medical technology, and environmental health options.

Core Requirements
Bact 201; Bio S 103 and 104; Chem 105, 106, 217, 240, 364 and 366; Math 107; Phys 101 and 102. For Env H option majors, Bact 365 is required and M E 324 strongly recommended. These should be taken the second semester of the sophomore year.

Bacteriology Option

Bact 310, 311, 412, 414, 415, 9 additional semester hours of Bact courses and one advanced lecture-laboratory course outside the department are required as a minimum. Genet 301 is strongly recommended. Those contemplating graduate study are urged to take the Chem 340-343 series in lieu of 240, Chem 371 and 372; Math 171 and 172.

Pre-Medical Technology Option

Same as for Bact option except that Bact 350 and Zool 417 are required. Genet 301 and Zool 251 are strongly recommended.

Environmental Health Option

Bact 310, 311, 365, 416, 420; Env H 350, 360, 410, 450 and Entom 448 are required. Biom 412, Engl 201, Spe 112 and Soils 407 are strongly recommended. Additional electives recommended include F S 426, Zool 251 and 417.

Transfer Students

Students transferring from other institutions as juniors should have taken the equivalent of Bact 201; Chem 105, 106 and 217 or 240 (preferably both); Engl 101; Bio S 103, 104; one year of one modern foreign language in college or two years in high school; and part of the required 21 hours in social sciences and humanities. The other required courses normally taken in the first two years may be taken in the upper-division program.

Preparation for Graduate Study

For admission to graduate study in bacteriology a student should have a bachelor's or master's degree and should present evidence of proficiency in academic work. Normally the applicant should have an undergraduate major in bacteriology, biological science, or chemistry; however, candidates with a good record in related fields may be well prepared for certain areas of advanced study in bacteriology.

Program in Biochemistry and Biophysics

Professor and Program Head, B. A. McFadden; Professors, R. W. Brosemer, P. E. Kolattukudy, F. Loewus, J. A. Magnuson, C. A. Ryan, C. M. Stevens, R. G. Yount; Associate Professors, R. Croteau, A. K. Dunker, R. J. Foster, M. L. Pall, O. R. Reeves; Assistant Professor, M. D. Griswold.

Biochemistry and biophysics are interdisciplinary sciences which involve the application of methods and theories of chemistry and physics to the study of biological phenomena. The Program in Biochemistry and Biophysics includes faculty from chemistry and agricultural chemistry as well as those from genetics. Its purpose is to provide the specialized guidance and training necessary for students who wish careers in these modern areas of science. In addition, special options are available for students interested in premedicine, pre-dentistry, and pre-veterinary science.

Program members are all active in research and have interests in: function and mechanism of contractile proteins, nuclear magnetic resonance studies of membranes and proteins, amino acid metabolism, the structure and function of membrane components, control of eucaryotic gene expression, reaction of macromolecules, the biosynthesis and metabolism of waxes, inositol, monoterpenes, and other plant components, the structure and function of plant protease inhibitors, microbial metabolism and its regulation, evolution and function of the enzyme isocitrate lyase, nematode development, the role of metabolites in animal diseases, mechanisms of hormonal control in animal systems, basic processes of the immune response, cell regulation by cyclic nucleotides, photosynthesis, structure and biosynthesis of glycoproteins, structure and function of fatty acid synthetase.

Undergraduate students interested in biochemistry should obtain a general background in biology, physics, chemistry, and mathematics during the freshman and sophomore years.

Students interested in biophysics should obtain similar basic preparation and during the junior and senior years add advanced courses in a related field, e.g., physics, chemistry, or biochemistry. Within the major of biochemistry, pre-medical, -dental, or -veterinary medicine options are available.

The program offers courses of study leading to the degrees of Bachelor of Science in Biochemistry, Master of Science in Biochemistry, and Doctor of Philosophy.
Description of Courses

BC/BP For explanation see Index under "Symbols"

364 Introductory Biochemistry 3 Prereq Chem 106 or 212; Chem 240 or 340. Modern biochemistry for undergraduates in the biological sciences.

366 Biochemistry Laboratory 1 (0-3) Prereq Chem 364 or c//. Basic biochemical techniques.

371 Principles of Biophysical Chemistry 4 (3-3) I Prereq Chem 106 or 212; 1 yr elem phys; Math 171 or c//. Foundation course for students in biology and related fields. Molecular structure, thermodynamics, equilibria, electrochemistry, kinetics.

372 Principles of Biophysical Chemistry 4 (3-3) II Prereq BC/BP 371; Math 172 or c//. Continuation of BC/BP 371. Kinetics, structure, and behavior of macromolecules, colloidal state, membrane structure, photochemistry and photobiology, physical functioning of cells.

417 Introduction to Environmental Biophysics 2 II Prereq Phys 102; Math 107. Physical principles of biological environments, radiative energy transfer, turbulent transfer of momentum, heat, and water vapor in the lower atmosphere.

418 Environmental Biophysics Laboratory 1 (0-3) II Prereq BC/BP 417 or c//. Experimental methods and procedures in environmental measurements; temperature, wind, radiation, and humidity measurements in biological environments.

499 Special Problems V 1-4 May be repeated for credit.

560 Molecular Genetics 3 I Same as Genet 560.

561 Biochemistry of Hormones and Hormone Receptors 2 II 1980-81 a//. Prereq BC/BP 563. Mechanisms of action of steroid and peptide hormones; methodology used in hormone research.

563 General Biochemistry 3 I Prereq Chem 212 or 217; 342. Structure and function of proteins and nucleic acids; fundamental principles of enzymology; chemical aspects of molecular biology.

564 General Biochemistry 3 II Prereq BC/BP 563. Carbohydrate, amino acid and lipid metabolism and its control; biochemistry of vitamins; bioenergetics; photosynthesis; dinitrogen fixation.

565 Physical Chemistry of Biological Macromolecules 3 I 1980-81 a//. Prereq BC/BP 563. The forces determining structure; applications of equilibrium and nonequilibrium thermodynamics.

566 Biochemical Techniques 3 (1-6) II Prereq BC/BP 564 or c//. Advanced research methods.

567 Protein and Enzymes 3 II 1981-82 a//. Prereq BC/BP 563. Enzyme mechanisms; protein structure and function; protein evolution.

568 Advanced Topics in Biochemistry V 1-3 May be repeated for credit. II Prereq BC/BP 564. Recent research in selected areas of biochemistry.

569 Nucleic Acid Biochemistry 3 II 1981-82 a//. Prereq BC/BP 563. Chemical and biological properties of DNA and RNA; enzymes acting on nucleic acids and current experimental methods.

572 (532) Magnetic Resonance 3 II Prereq Chem 332. Basic theory and application of NMR and ESR.

591 Biochemistry Seminar 1 Required of all graduate students in biochemistry.

592 Advanced Topics in Cell Biology 1-3 May be repeated for credit; cumulative maximum 7 hours. Same as Genet 592.

600 Special Projects or Independent Study Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Schedule of Studies

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

Freshman Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 105 Principles¹</td>
<td>4</td>
</tr>
<tr>
<td>Bio S 103 Introductory</td>
<td>4</td>
</tr>
<tr>
<td>Engl 101 Composition</td>
<td>3</td>
</tr>
<tr>
<td>Hum or Soc S Elective</td>
<td>5</td>
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</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 106 Principles¹</td>
<td>4</td>
</tr>
<tr>
<td>Bio S 104 Introductory</td>
<td>4</td>
</tr>
<tr>
<td>Hum or Soc S Elective</td>
<td>3</td>
</tr>
<tr>
<td>Math 107 Precalculus</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>2</td>
</tr>
</tbody>
</table>

Sophomore Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 340 Organic</td>
<td>3</td>
</tr>
<tr>
<td>Chem 341 Organic Lab</td>
<td>2</td>
</tr>
<tr>
<td>Phys 201 Class Phys</td>
<td>4</td>
</tr>
<tr>
<td>Math 171 Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>Hum or Soc S Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

¹Chem 105 and Bio S 103 are required for the freshman year.
The introductory biological science courses provide background in the concepts common to life sciences and an overview of the diversity of animals, plants, and microorganisms. They meet General University Requirements and may be prerequisite for courses in bacteriology, botany, and zoology. Advanced biological science courses probe specific areas in depth.

This program leads to the degrees of Bachelor of Science in Biology and Master of Science in Biology.

Four options are available for the Bachelor of Science degree: botany, general, genetics, and biology education. A minor in biology is offered.

<table>
<thead>
<tr>
<th>Description of Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bio S For explanation see Index under “Symbols”</td>
</tr>
<tr>
<td>101 (B) An Integrated Course in the Biological Sciences 3 Not open to students who have taken a college-level course in general biology, or botany. Credit not granted for more than one of Bio S 101, 102, 103.</td>
</tr>
<tr>
<td>102 (B) General Biology 4 (3-3) Not open to students who have taken a college-level course in general biology or botany. Nature of living things, methods, and function of diverse organisms. Credit not granted for more than one of Bio S 101, 102, 103.</td>
</tr>
<tr>
<td>103 (B) Introductory Biology 4 (3-3) Prereq 1 sem Chem or c//. First semester of a one-year sequence. Recommended for pre-professional students. The nature of life, structure, function, genetics, growth, and development. Credit not granted for more than one of Bio S 101, 102, 103.</td>
</tr>
<tr>
<td>104 (B) Introductory Biology 4 (3-3) Prereq Bio S 103 (Bio S 101 or 102 with a grade of A or B may be substituted); 2 sem Chem or c//. Continuation of Bio S 103. Biology of organisms: plants, animals, bacteria, ecology, and evolution.</td>
</tr>
<tr>
<td>298 (B) Biological Science Honors 4 (3-3) II Prereq Sci 298.</td>
</tr>
<tr>
<td>402 Identification of Plants 3 (1-6) S Prereq teaching minor or teaching experience. Theoretical studies of the basis for classification; field and laboratory experience in plant identification.</td>
</tr>
<tr>
<td>405 The Electron Microscope-Theory and Use 2 I Prereq 1 yr general Chem; 1 yr biology. Theory and use of transmission and scanning electron microscopes; specimen</td>
</tr>
</tbody>
</table>
preparation and interpretation especially in biology demonstrations.

420 **Vertebrate Zoology** 4 (2-6) S Prereq teaching minor or teaching experience. Identification, habits, and ecological distribution; birds and mammals of southeastern Washington.

423 **Invertebrate Zoology** 4 (2-6) S Biology of the major invertebrate groups; common local species as observed in the field.

430 **Methods of Teaching Science** 3 (2-3) Prereq 12 hours science. Methods, philosophy, and structure of science with reference to their application in teaching secondary school science courses.


450 **Cell Biology** 4 Same as Genet 450.

474 **Human Ecology** 3 I Prereq Bio S 104. Biological basis of interdisciplinary human ecology; applicability of ecological principles to Homo sapiens; emergence of man as the ecological dominant.

490 **Natural History of Salmon River Canyon** 2 S Field course involving a guided raft trip with emphasis on the ecology, limnology, and vegetation of the main Salmon River Canyon.

491 **Natural History of Hell's Canyon** 2 S Field course involving a guided raft trip with emphasis on the ecology, limnology, and vegetation of the Hell's Canyon.

492 **Natural History of Upper Main Salmon River** 2 S Field course involving a raft trip and emphasizing the ecology, limnology, and vegetation of the Upper Main Salmon River Canyon.

499 **Special Problems** V 1-4 May be repeated for credit.

506 **Electron Microscope Laboratory** 3 (0-9) I Prereq 1 yr biology; 1 yr Chem; c/ in Bio S 405; Org Chem. By interview only. Use of electron microscope, photographic recording, and various specimen preparation techniques; autoradiography and cytochemistry.

530 **Statistical Ecology** 3 I 1981-82 a/y. Same as Zool 530.

548 **Teaching Advanced Biology Topics** 2 May be repeated for credit. Prereq Ph D post exam candidate. Individually supervised teaching; lecturing experience in advanced level work in the major field.

597 **Seminar in Advanced Biology Teaching Techniques** 1 I Techniques for analyzing lectures, tests, and objectives through use of audio-visual equipment, statistical and computerized methods, and motivational principles.

600 **Special Projects or Independent Study** Variable credit.

700 **Master's Research, Thesis and/or Examination** Variable credit.

702 **Master's Special Problems, Directed Study, and/or Examination** Variable credit.

**Schedule of Studies**

At least 40 of the total hours required for the bachelor's degree must be in upper-division courses. A student majoring in biology is required to take a minimum of 40 hours in biological science courses.

All majors are required to take the following courses: Bio S 103, 104, Bact 101 or 102, Bot 201, an appropriate Zool course. Chemistry through one semester of organic; 8 semester hours of physics, and Math 140 and 141 or 171.

In addition to the above requirements, students selecting the option must take:

**General Option:** Bio S 372, plus 15 additional hours, including one course in taxonomic or structural biology (e.g., Bact 310, Bot 332, Entom 343, Zool 423, Zool 428) and one course in physiology (e.g., Bio s 450, Bot 320, Zool 352); Zool 305 and 330 recommended.

**Botany Option:** Bio S 372, plus 15 additional hours in botany or related courses including: Bot 332, 320, 411 or 511, 460 or 462; at least one of Bot 410, 421, 436, 440, 456, 552, PL P 329; Zool 305 recommended; 1 year of calculus or Math 171 plus Biom 412 or Cpt S 210.

**Genetics Option:** Genet 302, Chem 364 required plus 15 additional hours in Genetics or related courses including: at least 6 hours from Genet 330, 501, 502, Hort 345, A S 364 or Zool 305; at least one of Bio S 450, Bot 329, Zool 352, or Bact 310; Chem 217, Stat 429, Biom 412, BC/BP 372, Bio S 372 recommended.

**Biology Education Option**

See Department of Education listing for schedule of studies.

**Transfer Students**

Transfer students must satisfy the program requirements for graduation. Science courses taken at other institutions will be evaluated and credits accepted where possible. Inquiries should be directed to the Program Head.

**Preparation for Graduate Study**

Students with undergraduate majors in such fields as bacteriology, biology, botany, zoology, and plant or animal sciences in the College of Agriculture may be prepared for graduate study in biology. Graduate Record Examination scores
Program in Black Studies

Associate Professor and Director, T. Anderson; Assistant Professors, H. Wilson, H. Siwundha, F. Boateng.

The Black Studies Program examines from an interdisciplinary approach the historical, social, political behavior and economic experience of Afro-Americans and people of African descent throughout the world. The program teaches the history of Afro-Americans and their contemporary status; the form and meaning of the artistic expression of Afro-Americans and Africans; and the similarities, distinctions, and interaction between people of European and of African descent in America.

The program is committed to the functions of teaching, research and community service which serves to prepare the student for career opportunities in the social and behavioral sciences, and in the arts and humanities. Students majoring in Black Studies and minoring in another area can move professionally into related fields of graduate study offered by the university.

Elected Black Studies courses provide non-majors the opportunity to acquire knowledge of Black people in the Americas, Africa and the Caribbean. The courses might also provide teachers with the background and training to teach Black oriented courses.

The course of study leads to the degree of Bachelor of Arts in Black Studies.

Description of Courses

Bl St For explanation see Index under "Symbols”

101 [S] Introduction to Black Studies 3 Historical, cultural, sociological, and political experiences of black people in American and Africa.

102 [H] Black Visual Arts 3 Survey of visual art from prehistoric African through modern black artist.

230 Food and Cultures of African Peoples 3 Same as FNIM 230.

262 Music of Black Americans 2 II Same as Mus 262.

301 Spoken Swahili I 4 I Conversational Swahili designed to give basic knowledge of the spoken language.

302 Spoken Swahili II 4 II Continuation of Bl St 201. Leads toward fluency in conversational Swahili.

310 [S] Afro-American History I 3 I Historical experiences of Blacks in America from 1619 to 1899.

311 [S] Afro-American History II 3 I Same as Hist 311.

313 Civil Rights Movement in America 3 Historical development and analysis of the Civil Rights Movement in the United States from 1900 to present.

314 African History and Cultures 3 II Historical development of Africa from the era of conquest to colonialism and independence.

319 [H] Black Literature in America, 1700-1900 3 I Survey of black literature covering the 18th century to early 1900.

320 [H] Black Literature in America, 1900 to Present 3 Same as Engl 320.

321 African Literature in English 2 II Literature of Africa beginning with the Swahili poetry of the 18th century through the modern period.

324 [S] Black Politics 3 I Same as Pol S 324.

325 Race, Poverty, and the Economics of Discrimination 3 I Same as Econ 325.

370 [S] History of Blacks in the Western U.S. 3 II The role and contributions of blacks in the development of the Western United States.

381 [S] Sociology of Black Americans 3 Same as Soc 381.

384 Topics in Afro-American Politics 3 Contemporary social, political, and economic issues and influences affecting the black population and the American polity.

410 Ethnic Groups and Public Education 2 or 3 I Same as Educ 410.

415 Government Policy and Black Americans 3 Federal and state governmental policies in relation to black equal opportunity goals and human rights objectives.

420 Pan-Africanism and Black Ideology 3 II Philosophical development, structure, and movement toward African unity.

424 (414) South Africa: From Pre-European Settlement to Present 3 II Prereq junior or senior standing. The political, social, and economic history of South Africa in relation to current international events and affairs.

454 The Black Family 3 II Unique cultural aspects of love, courtship, marriage, and family styles of black people as affected by institutional racism in America.

491 Education and Social Change in Africa 3 The role of education in the social, political and economic changes in African countries; African education and the modernization process.
498 Seminar 2 May be repeated for credit.
499 Special Problems V 1-4 May be repeated for credit.

Schedule of Studies

A Bachelor of Arts degree in Black Studies may be obtained by completing a minimum of 37 hours of credit in Black Studies and a supporting minor of at least 20 hours. At least 40 of the total hours required for the bachelor's degree in this program must be upper-division courses. Students planning to transfer to this program should have completed all General University Requirements and as many credits as possible toward equivalent courses for a minor in black studies prior to the junior year.

Majors are advised to complete the following courses during the freshman and sophomore years in addition to General University Requirements:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BL St 101</td>
<td>Introduction to Black Studies</td>
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<tr>
<td>BL St 102</td>
<td>Black Visual Arts</td>
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<td>BL St 262</td>
<td>Music Black Am</td>
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In addition, majors are required to take the following upper-division courses:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BL St 310</td>
<td>Afro-American History I</td>
<td>3</td>
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<tr>
<td>BL St 311</td>
<td>Afro-American History II</td>
<td>3</td>
</tr>
<tr>
<td>BL St 313</td>
<td>Civil Rights Movement</td>
<td>3</td>
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<tr>
<td>BL St 314</td>
<td>African Hist Cult</td>
<td>3</td>
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<tr>
<td>BL St 319</td>
<td>Black Lit Amer</td>
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<td>BL St 320</td>
<td>Black Lit Amer</td>
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<tr>
<td>BL St 324</td>
<td>Black Politics</td>
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<tr>
<td>BL St 370</td>
<td>Hist Blacks West</td>
<td>3</td>
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<tr>
<td>BL St 381</td>
<td>Soc Black Amer</td>
<td>3</td>
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<tr>
<td>BL St 410</td>
<td>Ethnic Groups Pub Educ</td>
<td>3</td>
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<tr>
<td>BL St 424</td>
<td>South Africa</td>
<td>3</td>
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<tr>
<td>BL St 498</td>
<td>Seminar</td>
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<tr>
<td>BL St 499</td>
<td>Special Problems</td>
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Recommended electives for program majors and minors: BL St 301, 302, 325, 384, 415, 434; Soc 220, 321; and Educ 410.

Department of Botany


Botany is the basic plant science. The courses offered in the department are designed to meet the needs of three groups of students: (1) those planning to specialize in an applied science such as agronomy, bacteriology, forestry, horticulture, pharmacy, plant pathology, range management, and wildlife biology; (2) those wishing to study a biological science for its cultural or educational value; and (3) those who plan to specialize in botany. Those in the first group will desire to obtain as comprehensive a knowledge of the field as time will permit. The second group may find one year of introductory work sufficient. For the third group the department offers courses leading to advanced degrees in botany.

The department has laboratories and equipment suitable for graduate study in the major areas of botany, and special facilities for work in the fields of biochemistry, biophysics, physiology, chemotaxonomy, cytology, anatomy, developmental morphology, ecology-population biology, paleobotany, and ultrastructure.

The department offers courses of study leading to the degrees of Master of Science in Botany and Doctor of Philosophy.

Description of Courses

Bot For explanation see Index under "Symbols"


320 Introductory Plant Physiology 3 (2-3) Prereq Bio S 104 or Bot 201; Org Chem. Experimental course covering water relations, mineral nutrition, photosynthesis, respiration, and growth of plants.

329 General Plant Pathology 3 I Same as PI P 329.


410 Microtechnique 4 (2-6) II Prereq Bot 201. Methods of preparation of plant material for microscopic study.

411 Plant Morphology 4 (3-3) I 1980-81 a/y. Prereq Bio S 104 or Bot 201. The morphology and phylogeny of the algae, fungi, bryophytes and vascular plants.

421 General Mycology 3 (2-3) I 1980-81 a/y. Same as PI P 421.

430 Principles of Plant Systematics 3 II Prereq Bio S 104; 8 hrs biological science. Systatics of vascular plants; description, evolution, classification, nomenclature and current theory.

436 Agrostology 3 (1-6) I 1980-81 a/y. Prereq Bot 232. Grasses and grass-like plants; economic importance of those in the West.
448 Evolutionary Ecology of Populations 3 II
Same as Zool 448. Credit not granted for both Bot 448 and 548.

450 Cell Biology 4 1 Same as Genet 450.

460 Ecophysiology 3 I Prereq Bot 320; Bio S 372. Relationships of biotic and abiotic environment to plant distribution and evolution through study of physiological processes. Credit not granted for both Bot 460 and 560.


463 Field Ecology 2 (0-6) Prereq Bot 462. Structure, environmental relations, and dynamism of local semidesert, grassland, and forest communities. Field trips required. Credit not granted for both Bot 463 and 563.

499 Special Problems V 1-4 May be repeated for credit.

500 Seminar 1 May be repeated for credit. Prereq 20 hrs Bot.

508 Transport in Plants 3 I Prereq Bot 320; BC/BP 364. Membrane transport: apoplastic, symplastic transport; xylem, phloem transport; relationships between transport processes.


512 Growth and Development 3 II Prereq Bot 320. Physiology of growth; metabolism during development and reproduction.

514 Photosynthesis, Photorepiration and Plant Productivity 3 II Prereq Bot 320 or BC/BP 364. Photosynthesis, photorepiration and the interrelationship of those biochemical, physiological, and environmental factors which determine plant productivity.


524 Lower Fungi 2 (1-3) II 1981-82 a/y. Same as PI P 524.

527 Radioactive Tracer Techniques 2 (1-3) II 1980-81 a/y. Use of radioisotopes in biological research.


540 Cytogenetics 3 I 1981-82 a/y. Same as Genet 540.

548 Evolutionary Ecology of Populations 3 Same as Zool 548. Graduate level counterpart of Bot 448; additional requirements. Credit not granted for both Bot 448 and 548.

551 Plant Anatomy 4 (2-6) I Prereq Bot 201. Developmental anatomy and morphology of vascular plants; economic forms.

552 Bryology 2 (1-3) II 1980-81 a/y. Prereq Bot 201, 411. Systematics, evolution, and natural history of mosses and liverworts worldwide: history, literature, methods; field and laboratory experience.

553 Biology of Lichens 2 (1-3) II 1981-82 a/y. Prereq Bio S 104; Bot 201. Morphology, taxonomy, and ecology of lichens with emphasis upon identification. Cooperative course taught at the University of Idaho.

556 Phylogeny 4 (3-3) I 1980-81 a/y. Prereq Bot 201; one course in physiology. Biology of the algae; systematics, morphology, physiology, cytology, and ecology of algae with emphasis on freshwater forms.

560 Ecophysiology 3 Graduate level counterpart of Bot 460; additional requirements. Credit not granted for both Bot 460 and 560.

562 Synecology 3 Graduate level counterpart of Bot 462; additional requirements. Credit not granted for both Bot 462 and 562.

563 Field Ecology 2 (0-6) Graduate level counterpart of Bot 463; additional requirements. Credit not granted for both Bot 463 and 563.

564 Plant Geography 3 II 1981-82 a/y. Prereq Bot 332, 460 or 462. Origin and distribution of major units of terrestrial vegetation; emphasis on North America.

565 Advanced Range Ecology 3 II 1980-81 a/y. Prereq Bot 462. Relationship of ecological principles to the classification and use of range lands; grazing effects. Cooperative course taught at the University of Idaho.

576 Palynology 4 (3-3) I Same as Anth 576.

577 Quaternary Vegetation and Climate 4 (2-6) II Same as Anth 577.

590 Advanced Topics in Botany 2-4 May be repeated for credit. Recent research in plant science.

592 Advanced Topics in Cell Biology 1-3 May be repeated for credit; cumulative maximum 7 hours. Same as Genet 592.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.
702 Master’s Special Problems, Directed Study, and/or Examination Variable credit.
800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Preparation for Graduate Study
Before undertaking graduate study, a student should have completed substantially the equivalent of the schedule of studies shown under the General Biology Program for the Botany option.

Undergraduate majors in such subjects as the applied plant sciences, the biological sciences, and the physical sciences may be well prepared for graduate study in this department. Students having deficiencies are given adequate opportunity to fulfill departmental requirements. Applicants should submit scores of the general aptitude and the advanced test in biology of the Graduate Record Examination.

Departments of Business

DEPARTMENT OF ACCOUNTING & BUSINESS LAW
Professor and Department Head, G. Johnson; Professors, J. Fertakos, J. McConnell, T. Saldin, J. Tarbet; Associate Professors, B. Budge, A. Frakes, H. Johnson; Assistant Professors, A. Bancroft, R. Elfin, L. Etherington, J. Harkins, M. Jolly, A. Lau, J. Truitt.

DEPARTMENT OF BUSINESS ADMINISTRATION

DEPARTMENT OF MANAGEMENT & ADMINISTRATIVE SYSTEMS
Professor and Acting Department Head, E. A. Perkins, Jr.; Professors, R. Hoskinson, L. Johnson; Associate Professors, B. Christensen, R. Daily, M. Hammer, H. Lau; Assistant Professors, W. Muhs, N. Suzuki, G. Whitney.

The study of business administration involves the understanding and application of knowledge developed in fields of accounting, administrative management, business education, computer systems, finance and banking, management, marketing, office administration, quantitative methods, real estate, and transportation. Concepts from mathematics, sociology, psychology, anthropology, economics, and other disciplines are integrated in order to provide the individual with both a practical and theoretical understanding of business organization and its functions in our society. The broad education offered by this curriculum permits the student an almost unlimited range of employment opportunities in business, industry, and government.

The curricula leading to degrees in business administration at both the undergraduate and graduate levels are accredited by the American Assembly of Collegiate Schools of Business.

The business departments offer courses of study leading to the degrees of Bachelor of Arts in Business Administration, Bachelor of Arts in Hotel Administration, Bachelor of Accounting, and Master of Business Administration.

To be eligible for certification of a major in business administration a student must have earned at least 45 semester hours with a 2.00 gpa. For General Departmental Requirements, see page 103.

Placement in Typewriting and Shorthand
Students who are majoring in fields that require typewriting and/or shorthand or who select typewriting and/or shorthand as elective courses must follow a specific placement procedure, depending on previous preparation. Students with one or two semesters of high school typewriting are required to enroll in B A 152; those with three or four semesters are required to enroll in B A 251. Students with two or three semesters of high school shorthand enroll in B A 255 and 257; those with four semesters enroll in B A 256 and 258.

Description of Courses

B A  For explanation see Index under "Symbols"

151 (Of Ad 101) Beginning Typewriting 2 (1-3)
For beginning students only. Keyboard mastery; technique, speed, and accuracy development; elementary typewriting problems.

152 (Of Ad 102) Intermediate Typewriting 2
(1-3) Prereq B A 151. Keyboard and technique review; speed and accuracy development; business letters, tabulations, and manuscripts.

155 (Of Ad 105) Beginning Shorthand 4 (3-3)
For beginning students only. Theory of Gregg shorthand; reading and recording skills.

201 Business Organization and Management 3
For nonmajors. Not open to freshmen. Major business areas; management theory and practice; organization structure.
210 Law and Business I 3 Legal concepts in the business environment.

215 Statistics 4 (3-3) Prereq Math 202 or c/c. Data presentation, probability, distributions, hypothesis testing, estimation, time series, and simple linear regression as applied to business.

230 Principles of Accounting I 4 Freshmen permitted if specializing in accounting. The structure and interpretation of accounts and financial statements.


251 (Of Ad 203) Advanced Typing 2 (1-3) Prereq B A 152. Manuscript and letter styles; statistical tabulations; production proficiency.


256 (Of Ad 208) Advanced Shorthand 3 (2-3) Prereq B A 255; c/c in 258. Sustained dictation at higher speeds; continuation of theory development.

257 (Of Ad 209) Beginning Transcription 2 (1-3) Prereq B A 151, 155. Transcription techniques; fundamentals to be observed in mailable transcripts.

258 (Of Ad 210) Advanced Transcription 2 (1-3) Prereq B A 152, 255. Continuation of B A 257. Production of mailable transcripts.

259 (Of Ad 215) Calculating Machines 1 (0-3) Not open to freshmen. Applications of electronic calculators to basic business and statistical computational problems.

301 Principles of Management and Organization 3 Principles of management and administration aimed at improving effectiveness of all types of organizations.

305 Real Estate 3 Prereq B A 210; Econ 102 or 201. Relationships between location and value; patterns of urban land use; legal, financial, and organizational framework of the real estate business.

320 Risk and Insurance 3 Prereq B A 210; Econ 102 or 201. Types of risk and methods of protection; life, property, and liability insurance.

325 Finance 3 Prereq B A 231 or c/c; Econ 201 or 203. Financial decision making, financial strategies, investment in current and fixed assets, financial instruments, and capital markets.

330 Intermediate Accounting I 4.1 Prereq B A 231. Theory underlying the determination of income; analysis of financial statements.


338 Cost Accounting 3 Prereq B A 231. Management uses of cost information; cost systems and system design; cost analysis.

340 Operations Management 3 Prereq B A 215. The management of operations in business organizations; planning and control of work flow; resource allocation and utilization.

344 Principles of Optimization 3 Same as Math 364.

350 (Of Ad 320) Office Services 3 (1-6) Prereq B A 152. Not open to freshmen. Filing principles and systems; transcribing and duplicating machines; proportional-spacing typewriters; services as related to office systems; supervised work experience.

353 (Of Ad 323) [W] Business Communication 3 Prereq Engl 101. Not open to freshmen and sophomores. Analysis of business communication process; application of writing principles to solve typical communication problems in professional and personal business affairs.

357 (Of Ad 370) Management of Word Processing Systems 1 Planning, organizing, implementing, managing, and controlling word processing systems; current and future system technological capabilities.

358 (Of Ad 371) Word Processing Laboratory I 3 Prereq B A 251, 350; c/c in B A 357. Laboratory practice and practical applications with stand-alone magnetic media and CRT text-editing systems.

360 Marketing 3 Functions, methods, and middlemen used in marketing the principal types of goods; price policies, cost of marketing; government regulation.

367 Consumer Behavior 3 Prereq B A 360. The investigation of social-psychological phenomena affecting consumer decision processes; learning theory and communication.

401 Organizational Behavior 3 Prereq B A 301. Organizational behavior, organizational design, motivation, leadership, communications, decision-making.

405 Valuation and Location Theory 3 Prereq B A 305. Principles and practices of real property valuation; factors affecting real property values and income; appraisal and location theory.
Real Estate Administration 3 Prereq B A 305. The case method of analyzing management policies, practices, and decision making in real estate firms.

Real Estate Finance 3 Prereq B A 405. Instruments, techniques, and institutions of real estate finance with emphasis upon the financial decision-making process.

Law and Business II 3 Prereq B A 210. The impact of law and administrative and political subdivisions on the business environment.

Law of Commercial Transactions 3 Prereq B A 210. Law and business directed to the needs of the CPA, CLU, and the independent businessman.

Statistical Methods for Management 3 Prereq B A 215; Math 202 or 171. Chi-squared, analysis of variance, and non-parametric statistics as applied to business.

Law of Real Estate 1 I Prereq B A 210. Legal principles and precedents as they apply to the real estate environment.

Introduction to Simulation 3 Prereq introductory statistics and FORTRAN programming. Model formulation, simulation, simulation languages, and analysis of results with selected application.


Life and Health Insurance 3 Prereq B A 320. Management of the life, health, and disability insurance risks facing the individual and society; private and public solutions.

Commercial Bank Management 3 Prereq B A 325. Banking policies; regulatory activities; analysis of sources and uses of funds; estate planning; business development; earnings, expense, and dividend policies.


Cases in Financial Management 3 Prereq B A 325. Selected cases in finance; current and long-term financing; expansion; problems of small business.

Investments 3 Prereq B A 325. Determination of objectives; analysis of media; security prices; principles of sound policy.

Security Analysis and Portfolio Management 3 Prereq B A 427. Efficient capital markets; market theories, portfolio performance, management of portfolios; statement deficiencies; selection techniques; institutional analysis; investment timing.

Analysis of Financial Institutions 3 Prereq B A 325. Management of assets/liabilities of financial institutions—mutual savings banks, savings and loan associations, credit unions, finance companies, and investment companies.

Advanced Accounting 4 Prereq B A 331. Partnership equities and extended forms of corporate ownerships and entities.

Accounting Problems 3 Prereq B A 430. Emphasis on the CPA examination.

Accounting Systems 3 Prereq B A 330, 338; Cpt S 220. Accounting systems design; internal control and computerization.

Advanced Cost/Managerial Accounting 3 Prereq B A 330, 338; Cpt S 220. Information and reporting needs of contemporary management for planning and control of operations.

Auditing 3 (2-3) Prereq B A 331, 338; Cpt S 220.

Production Management 3 Prereq B A 340. Complex production problems; influence of the technological characteristics of an industry.

Decision Analysis 3 (2-3) Prereq B A 215. Introduction to Bayesian analysis, decision theory, utility, subjective probability and multiperson decision theory as applied to business.

Introduction to Management Information Systems 3 Prereq Cpt S 201 or 220; Math 202 or 171; B A 215. Theory and practice related to business systems and procedures as influenced by contemporary computer capabilities and systems design techniques.

Human Resources Management 3 Prereq B A 215, 301. Policy and practice in human resource utilization—selecting, training, motivating, evaluating, and compensating employees; labor relations; public manpower regulation.

Administrative Management 3 Not open to freshmen and sophomores. Analysis and design of administrative services and systems; application of production controls to administrative operations; management of human resources.

Information and Records Management 3 Not open to freshmen and sophomores. Planning, directing, organizing managerial activities for records disposition: correspondence, forms, vital records, storage facilities; forms analysis and design; procedures writing.
(Of Ad 447) Micrographic Systems 2 Prereq B A 456. Design and use of micrographic systems as applied to records management.

Marketing Management 3 Prereq B A 360. Use of the case method in the analysis of marketing policies; organization and control of marketing models activities.

Marketing Models and Analysis 3 Prereq Cpt S 201 or 220; Math 201; B A 215, 360. The theory and evaluation of marketing models and their significance to the analysis of marketing problems.

Channel Structure and Systems 3 Prereq B A 360. Channel choice, cooperation and conflict; warehousing, inventory control and transportation in physical distribution; wholesaling industrial and consumer products.

Marketing Research 3 Prereq B A 215, 360. Survey and experimental methods as they relate to marketing research.

Retailing Management 3 Prereq B A 360. Retailing system; organization, merchandising models, pricing, promotion, location, and control procedures; management decision processes.

Promotion Management 3 Prereq B A 360. Text and case approach to integrating promotion into the marketing plan; methods, organization, communications, media selection, and campaigns.

(Of Ad 450) Methods of Teaching Typewriting 1 Prereq 1 year typewriting. Problems, materials, methods, and evaluation in teaching typewriting; implications of research findings.

(Of Ad 451) Methods of Teaching Stenography 1 Prereq 1 year shorthand. Problems, materials, methods, and evaluation in teaching shorthand and transcription; implications of research findings.

(Of Ad 452) Methods of Teaching Bookkeeping and Basic Business 1 Prereq B A 230. Problems, materials, methods, and evaluation in teaching bookkeeping, accounting, and basic business education courses; implications of research findings.

(Of Ad 490) Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq Business Education majors and minors only. Supervised clinical experiences correlated with teaching-learning theory; teaching business education skills to college students.

Problems in Administration 3 Prereq B A 325, 340, 360, and a 400-level management course. Evaluation of overall company operations from the viewpoint of top management; decision-making and administrative planning.

Small Business Administration 3 Prereq B A 325, 340, 360, 400-level management course. Application of theory and practice to small firms; practical consulting experience with operating businesses in agreement with S.B.A.

(Of Ad 493) Problems in Administrative Operations 3 Prereq B A 152, 353, 455. Selected problems in administrative operations and management support procedures through case study methods, written reports, and simulated projects.

(Of Ad 495) Administrative Internship V 2-12 May be repeated for credit; cumulative maximum 16 hours. By interview only. Supervised administrative field experiences and seminars with prior approval of adviser and participating business organization.

Seminar 3 May be repeated for credit.

Internship in Business V 1-15 By interview only. Internship with a business organization in professional and managerial activities.

Special Problems V 1-4 May be repeated for credit.

Management in Organizations 3 1 Leading, organizing, decision making, planning, controlling, conflict management, and behavior in work organizations.

(526) Financial Management 3 1 Prereq B A 354; Econ 201 or 203. Financial management of the firm; capital budgeting, working capital management, capital acquisition, and dividend policy.

Survey of Marketing 3 Marketing management; relevance of marketing to company profitability and consumer satisfaction; decision regarding price, product, promotion, and distribution.

Marketing Management and Administrative Policy 3 Marketing management and administrative policies as they relate to concepts, strategies, and decision making.

Law for the Business Manager 3 Fundamentals of tort, contract, constitutional and administrative framework of government, and implementation of various forms of government regulations of business. Credit not granted for both B A 410 and 510.

Techniques of Sampling 3 Prereq B A 215. Sample surveys for business use; theory and application with emphasis on appropriate sample types and the estimation of their parameters.

Quantitative Methods I 3 Prereq B A 215. Review of elementary statistics, regression,
sampling, experimental design, analysis of variance, chi-squared, and nonparametric techniques applied to business.

516 Time Series 3 Prereq B A 215. Seasonal, cyclical, and trend analysis, index numbers, autoregressive, moving average and mixed models, model identification and forecasting.


520 Social Insurance 3 Economic security in our society; problems of death, old age, disability, accidents, illnesses and unemployment; private and public solutions.

521 Management of Financial Institutions 3 I Prereq B A 325. Institutional location and demand analyses; investment policies; trust departments; management of funds; analysis of services; operating problems; legislation; business trends.


527 Investment and Portfolio Management 3 A decision-making approach to the problems of asset management for personal and business portfolio.

530 Accounting Theory 3 Recent developments with respect to the determination of income and the valuation of assets.

532 Contemporary Accounting Cases and Problems 3 Accounting theory applied to external financial reporting practices.

533 Administrative Control 3 Managerial evaluation of budgeting, cost accounting, and financial analysis techniques; their utilization in control of operations.

534 Survey of Accounting 4 Fundamentals of financial and managerial accounting; primarily for graduate students who wish to meet the MBA core requirements in accounting.


538 Seminar in Cost/Managerial Accounting 3 Cost concepts, cost and managerial accounting systems; current issues and research in cost and managerial accounting.

539 Seminar in Public Accounting and Auditing 3 Prereq B A 439. Public accounting and auditing to present; emphasis on current issues including statistical sampling and computers.

540 Quantitative Methods II 3 Prereq B A 215. Decision analysis, linear optimization models, nonlinear models, network analysis including PERT, and dynamic programming as applied to business.


560 Research Methodology 3 Types of data needed and available, collection and analysis of data as they relate to decisional research.

565 Seminar in Marketing—Behavior/Economic Aspects 3 Marketing structure and behavior from economic and behavioral perspectives; social evaluation and behavioral implications of marketing strategy.

567 Consumer Behavior Theory 3 Prereq B A 505. Theory in consumer and buyer behavior; conceptual and empirical research role of purchase and consumption behavior on society and marketing.

568 Social Issues in Marketing 3 Prereq B A 505. Productivity and efficiency in marketing; public policies and marketing structure and performance; marketing policies and consumer welfare.

580 Management Information Systems 3 Systems concepts and computer capabilities as related to informational needs of the decision-maker.

581 Seminar in Operations Management 3 Prereq B A 501. Human resources and personnel administration; selection, training, compensation, performance appraisal, labor relations, health and safety.

582 Seminar on Human Resource Management 3 Prereq B A 501. Critical evaluation of selected current literature in the field of organization theory, development, and behavior.

583 Contemporary Management Thought 3 I Prereq B A 501. History and development of management thought and theory which has evolved into contemporary theory and practice.
Department of Business

584 Behavior in Business Organizations 3
Prereq B A 501. Theory and models of organizational behavior including individual, interpersonal and group dynamics; influence; motivation; communication; change; climate.

591 Business Policy and Administration 3
Theory and practice of administrative decision-making and policy formulation as affected by economic, legal, and personal factors.

596 Seminar 3 May be repeated for credit.
600 Special Projects or Independent Study Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

General Departmental Requirements

To be eligible for certification of a major in Business Administration a student must have earned at least 45 semester hours with a 2.60 GPA.

General course requirements, core courses and courses in fields of specialization are presented below. General courses include General University Requirements (GUR) and departmental requirements. Three-fourths, or 21 hours of the GUR’s, should be completed by the end of the sophomore year. Students must take a total of 48 hours of general courses not including military science, physical education, business administration, hotel administration, or economics. Math 171 may be substituted for Math 202, and Math 220 or Math 205 may be substituted for Math 201 for transfer students only. Psych 102 is required for those specializing in administrative management, business education, and office administration and is recommended for those specializing in insurance and marketing.

Core courses are required of all business administration students. B A 491 or 492 is taken during a student’s senior year. A field of specialization is usually selected by students in their junior year. Business or economics courses or courses in the general requirements shown with a course number cannot be taken on a pass/fail basis. The hotel and restaurant specialization is shown in another section of this catalog.

The Departments of Business require that a student’s senior year (last 30 hours) be in residence at Washington State University.

Schedule of Studies

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<tr>
<th>GENERAL COURSES</th>
<th>Hours</th>
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<tr>
<td>Engl 101 Composition</td>
<td>3</td>
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<tr>
<td>B A 353 or Engl 201 or 301 or 401</td>
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<tr>
<td>Math 201 Intro Finite Math</td>
<td>3</td>
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<tr>
<td>Math 202 Intro Math Analysis</td>
<td>3</td>
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<tr>
<td>Cpt S 220 Computers in Bus</td>
<td>4</td>
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<tr>
<td>Science (10 hours if Math 201 not included)</td>
<td>7</td>
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<tr>
<td>Social Science</td>
<td>3</td>
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<tr>
<td>Pol S or Hist</td>
<td>3</td>
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<tr>
<td>Psych 102 or Soc 101 or Anth 101</td>
<td>3</td>
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<tr>
<td>Humanities</td>
<td>6</td>
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<tr>
<td>Electives</td>
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Total 48

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<tr>
<th>CORE COURSES</th>
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<tbody>
<tr>
<td>B A 210 Law and Business</td>
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<tr>
<td>B A 215 Statistics</td>
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<tr>
<td>B A 230 Accounting</td>
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<tr>
<td>B A 231 Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Econ 102 Fundamentals</td>
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</tr>
<tr>
<td>Econ 203 Fundamentals</td>
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</tr>
<tr>
<td>B A 301 Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>B A 325 Finance</td>
<td>3</td>
</tr>
<tr>
<td>B A 340 Production</td>
<td>3</td>
</tr>
<tr>
<td>B A 360 Marketing</td>
<td>3</td>
</tr>
<tr>
<td>Econ 301 Intermediate</td>
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<td>B A 491 or 492</td>
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Total 38

1 Required for Adm Mgt, Bus Ed-A/B, and Of Ad.
2 Not required for Bus Ed-A/B and Of Ad.
3 Bus Ed-A/B will substitute Econ 201.
4 Adm Mgt, Bus Ed-A/B, and Of Ad will substitute B A 455.
5 Not required for Adm Mgt, Bus Ed-A, and Of Ad.
6 B A 492 required for Bus Ed-B; Adm Mgt, Bus Ed-A, and Of Ad will substitute B A 495.

Fields of Specialization

Accounting

Preparation for careers in public accounting, corporation accounting, and for accounting positions in government service.

Junior and senior years: B A 330, 331, 335, 338, 410, 433, 439; one of Econ 320, 340 or Cpt S 320; one of B A 425, 440, 450, 460.

Accounting Five-Year Curriculum

This curriculum permits the student to obtain greater proficiency in accounting than does the regular four-year program, while at the same time permitting a supplement to and broadening of the educational experience.

When a Bachelor of Arts degree in Business Administration with a specialization in accounting has been obtained, the following sequence of courses and a total of 150 hours of credit will

1 Recommended for CPA
enable a student to receive the five-year Bachelor of Accounting degree: B A 330, 331, 335, 338, 411, 433; two of Econ 320, 340 or Cpt S 320; one of: 440, 450 or 460; B A 425 or 427; B A 430, 438, 439; one of B A 431, 444 (40 percent of the 150 semester hours must be outside of B A and Econ).

Administrative Management
Preparation for careers in the emerging fields of information management, management technology, and information processing systems in business, government, and professional organizations.


Business Teacher Education
Preparation for careers in teaching business subjects on the high school or junior college level. The program fulfills the requirements for the Provisional Teaching Certificate, and it meets most requirements for the Vocational Certificate in Business and Office Education. Students will choose either option A or B below:

A. Comprehensive (preparation to teach all business subjects)

B A 152, 155, 251, 255, 256, 257, 258, 259, 330, 456, 480, 481, 482; Educ 300, 301, 303, 358 or 359, 402, 403 or 404, 405 or 406; H Ed 480 or 481; VTE 440 or 441.

B. Bookkeeping-General Business-Clerical (preparation to teach all business subjects except shorthand/transcription and office practice)

B A 152, 251, 259, 450, 480, 482; Educ 300, 301, 303, 358 or 359, 402, 403 or 404, 405 or 406; H Ed 480 or 481; VTE 440 or 441.

Computer Systems
Preparation in computer programming and for careers in the analysis and design of information systems in organizations where computers are an integral management tool.

Junior and senior years: B A 417, 448; Cpt S 215, 320; B A 330 or 338; one of B A 344, 412, 444; one of B A 425, 440, 450, 460.

Finance
Preparation for careers in financial departments of business, commercial and investment banks, governmental financial agencies, and other financial institutions.


General Business
Preparation for careers in business for the student who does not wish to specialize in any of the other options. Students looking forward to being proprietors of their own business frequently desire a general business course.

Junior and senior years: B A 338; two B A 400-level electives; one B A 300-400-level elective; one B A or Econ 300-400-level elective; one of B A 425, 440, 450, or 460.

Hotel and Restaurant Administration (Pullman)
Preparation for careers in hotel and/or restaurant management.

Junior and senior years: B A 301, 325, 340, 360, Econ 301; H A 320, 356, 357, 381, 483, 495 plus electives from 300-400-level H A courses.

Hotel and Restaurant Administration (Seattle)
Preparation for careers in hotel and/or restaurant management.

Junior and senior years: (Seattle Center numbers): Bus 340, 350, 380, 480; Econ 374; HAS 320, 355, 356, 357, 370, 381, 483, 495, plus electives from 300- and 400-level HAS courses.

Insurance
Preparation for careers in insurance-agency, actuarial science, claims, corporate risk management, investment, and underwriting.

Junior and senior years: B A 320, 411, 420, 421, 455, 460; one of B A 330, 335, 338.

Management
Students may emphasize preparation for one of two careers in this option: 1) careers in personnel and industrial relations and the personnel aspects of government service and business; 2) careers as production executives in manufacturing and enterprises and for other administration positions in business and government for which production management training is useful and desirable.

Junior and senior years: B A 401, 440, 450; four of B A 338, 344, 448; Econ 350, 450, 451; and B A 400-level elective.

Marketing
Preparation for careers in marketing management, manufacturers’ and wholesalers’ sales, retailing, and marketing research.

Junior and senior years: B A 367, 460, 462 or 463, 467, 477; one of B A 338, 444, 462, 463, 470; one of Econ 312, 320, 364, 445, 460, 470.

Office Administration
Preparation for careers in office management and general administration in business, industry, and government.


Quantitative Methods
Preparation for careers in business and government research.
Transfer Students
Students planning to transfer to Washington State University at the end of the freshman or sophomore year should follow the general and core course requirements set forth above. If this is done, there should be no difficulty in completing the requirements for the bachelor's degree within the normal period of four years. It should also be noted that courses taken at community colleges which are numbered at the 300-level or above at WSU will not be accepted toward meeting major requirements.

Preparation for Graduate Study
Programs of study leading to the Master of Business Administration degree may be taken in several fields with limited specialization: accounting, finance, management, marketing, and quantitative methods. If the following courses are not completed prior to entering the graduate program, they may be taken after entering the program but will be considered deficiency courses and not part of the regular degree program: B A 210, 215, 230, 231, 301, 325, 340, 360; Econ 201 or 102 and 203; Econ 301; Cpt S 220; Math 201 and 202.

Department of Chemical Engineering


The curriculum in chemical engineering provides thorough knowledge of basic science and engineering. This includes material and energy balances, chemical and physical equilibria, rate processes, and economic balances. With such training, graduates may participate in the design of large-scale equipment for chemical manufacturing plants or they may engage in research leading to new or improved chemical processes, products, and uses. Graduates may also find rewarding work in plant operation, plant management, university teaching, sales-service, and other functions requiring chemical engineering training. A major effort of the department is in air pollution academic training and research. The curriculum in chemical engineering is accredited by the Engineers Council for Professional Development.
The total number of majors in the department is restricted at the junior level.

The department offers courses leading to the degrees of Bachelor of Science in Chemical Engineering and Master of Science in Engineering. The department participates in the interdisciplinary program in engineering science leading to the degree of Doctor of Philosophy.

**Description of Courses**

**Ch E** For explanation see Index under “Symbols”

110 Engineering Orientation 1 (0-3) Engineering as a profession; career opportunities; general orientation for freshman engineers.

174 [Z] Introduction to Meteorology and the Atmospheric Environment 3 (2-3) I Introduction to meteorology, the atmospheric processes; weather, air pollution, and environmental topics.

221 Chemical Process Principles and Calculations 4 Prereq Chem 106 or 212; Math 172 or c//. Fundamental concepts of chemical engineering; problem-solving techniques and applications in stoichiometry, material and energy balances, and phase equilibria.

304 Chemical Process Simulation 2 (1-3) Prereq Math 315 or c//; major in Ch E. Use of analog devices; the analog computer; process simulation with analog devices.

406 Industrial Chemical Processes 3 I Prereq Chem 342 or c//; major in Ch E. The chemistry, chemical engineering, and economics involved in modern chemical process industries.

407 Chemical Engineering Thermodynamics 3 II Prereq Ch E 221; Chem 331; major in Ch E. Definitions, basic concepts and laws; property relationships; construction of thermodynamic charts and tables; compression and liquefaction of gases, power cycles, refrigeration.

409 Industrial Instruments 3 II Prereq Math 172; Phys 202. Measuring instruments, automatic control, process and instrument characteristics and theory applied to industrial control problems.

412 Kinetics and Reactor Design 3 II Prereq major in Ch E. Chemical reaction kinetics applied to the design of reactors, non-ideal flow, mixing, catalysis.

414 Introduction to Nuclear Engineering 3 I Prereq junior in Engr or Ph S. Nuclear physics and radiation calculations; conceptual design of a nuclear reactor core and shielding using basic formulations of nuclear engineering.


423 Process Development, Design and Evaluation 3 Prereq senior in Engr or Ph S. Development, design and economic evaluation of chemical and related processes as practiced in industry.

430 (301) Unit Operations I 4 I Prereq Ch E 221; major in Ch E. Design calculations, operation, and evaluation of equipment used in fluid flow, heat transfer, and evaporation.

431 (302) Unit Operations II 3 II Prereq Ch E 430; major in Ch E. Design calculations, operation and evaluation of equipment used in distillation, extraction, absorption, and adsorption.

432 (401) Unit Operations III 3 I Prereq Ch E 431; major in Ch E. Design calculations, operation and evaluation of equipment used in filtration, solids handling, humidification, and drying.

433 (402) Unit Operations Laboratory 2 (0-6) May be repeated for credit; cumulative maximum 4 hours. Prereq Ch E 430; major in Ch E. Experiments in fluid flow, heat transfer, evaporation, distillation, drying, absorption; design calculations and report writing.

470 Fundamentals of Air Pollution 3 I Prereq Chem 102. Sources, magnitude, and impact; chemistry of urban atmospheres, photochemistry of smog, and meteorological factors.

474 Meteorology 2 I Prereq Phys 101 or 201. Meteorology and atmospheric science applied to problems in physical, environmental, agricultural, and engineering sciences; weather modification, climate change, energy problems.

495 Chemical Engineering Internship 2 May be repeated for credit; cumulative maximum 4 hours. Students to work full time in engineering assignments in approved industries with prior approval of adviser and industrial supervisor.

498 Technical Seminar I May be repeated for credit; cumulative maximum 2 hours. For juniors and seniors in Ch E.

503 Heat Transmission 3 I Prereq Ch E 430 or Math 315. Conduction, radiation, convection in flowing fluids, condensing vapors, boiling liquids, packed and fluidized beds, design of equipment.
Advanced Topics in Nuclear Engineering 2
Prereq Ch E 414. Design, licensing, construction, safety, operation, environmental impact and administration of nuclear power systems.

Mass Transfer Operations 3 II Prereq Ch E 431 or Math 315. Molecular diffusion, convective mass transfer, contacting between phases, and industrial mass transfer.

Air Pollution Control Engineering 2 II Prereq senior in Engr or Ph S. Measurement and control of air pollution; engineering equipment and processes, absorption, combustion, gravity separators, cyclones, filters, scrubbers and precipitators.

Transport Processes 3 or 4 I Transport of mass, energy, and momentum; unsteady and steady states as applied to chemical processing; macroscopic and microscopic analyses. Joint listing with the University of Idaho.

Air Pollution Control Calculations 1 II Prereq Ch E 221; c/ in Ch E 508. Engineering design calculations for air pollution control equipment, processes, sampling instruments, filters, scrubbers, electrostatic precipitators, and cyclones.

Special Topics in Air Pollution V 1-3 May be repeated for credit; cumulative maximum 6 hours. Advanced topics in the area of industrial and urban air pollution problems and air pollution control engineering.

Advanced Nuclear Engineering 3 II Prereq Ch E 414. Fuel preparation and configuration materials, fluid flow, heat removal, product separation, reactor theory, control, waste treatment, safety, and economics. Cooperative course taught at the University of Idaho.

Air Pollution Meteorology 3 II Prereq Math 315; Phys 102 or 202; Ch E 474. Weather and climate; atmospheric turbulence; transport and diffusion related to air pollution problems by modeling, statistical, and graphic treatment.

Air Pollution Measurement Techniques 2 (1-3) I Prereq Chem 217 or 221; Phys 102. Survey design and site selection; identification and determination of air pollutants by chemical and physical methodology; data reduction and presentation.

Air Pollution Abatement and Administration 3 III Air quality management, criteria, and standards; administration of air pollution control agencies; the enforcement process; inspection and surveillance; APEX simulation.

Air Pollution Seminar I May be repeated for credit; cumulative maximum 2 hours. Recent advances in air pollution research.

Advanced Topics in Chemical Engineering I V 1-3 I Filtration, reaction engineering, two-phase flow, non-Newtonian fluids, interfacial phenomena, nuclear design, fluidization, thermodynamics.

Advanced Topics in Chemical Engineering II V 1-2 II Nuclear engineering, coal conversion processes, biochemical engineering, biomedical engineering, plant design, process simulation, electrochemical engineering, waste management, distillation.

Special Projects or Independent Study Variable credit.

Master's Research, Thesis, and/or Examination Variable credit.

Master's Special Problems, Directed Study, and/or Examination Variable credit.

Doctoral Research, Dissertation, and/or Examination Variable credit. (for Ph D in engineering science only)

Schedule of Studies

The Bachelor of Science degree in Chemical Engineering requires a total of 128 semester hours. At least 61 of the total hours required for this degree must be in upper-division courses.

Freshman Year

First Semester
Ch E 110 Orientation 1
Chem 105 Principles 4
Math 171 Calculus I 4
Engl 101 Composition 3
Hum Elective 3

Second Semester
Chem 106 Principles 4
Math 172 Calculus II 4
Phys 201 Class Phys 4
Cpt S 203 Cpt Prog Engr 2
Soc S Elective 3

Sophomore Year

First Semester
Chem 217 or Chem 221 4
Math 220 Int Lin Alg 2
Phys 202 Class Phys 4
Hum and Soc S Electives 7

Second Semester
Ch E 221 Ch Proc Prin 4
Chem 340 Organic 3
Chem 341 Org Chem Lab 2
Math 273 Calculus III 2
Math 315 Diff Equats 3
Bio S Elective 3

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bachelor's degree requirements. Inquiries concerning specific questions are welcomed. Since there is a restriction on the total number of majors in the department, transfer students should make application for admission as soon as possible.

**Preparation for Graduate Study**
As preparation for work toward an advanced degree, a student should have completed substantially the equivalent of the above schedule of studies. A Bachelor of Science degree in Chemical Engineering from an institution accredited by ECPD normally will satisfy this requirement.

Special programs are also available for students with bachelors degrees in chemistry or other areas of science who wish to obtain the Master of Science degree in Engineering with a concentration of course work in chemical engineering including many air pollution courses.

**Program in Chemical Physics**

Professor and Program Head, G. A. Crosby; Professors, J. T. Dickinson, H. W. Dodgen, R. D. Poshusta, R. D. Willett, M. W. Windsor; Associate Professors, P. C. Malte, D. S. Sandstrom; Assistant Professor, K. W. Hipps.

Chemical physics is the interdisciplinary area which covers the extensive research and professional activity carried out in the overlapping regions of chemistry and physics. Included in chemical physics are topics such as theoretical and experimental studies of the electronic structure of atoms, ions, and molecules, their interactions with each other and with surfaces, study of the relationship of the equilibrium and dynamic properties of matter in bulk to the nature of its molecular constituents, and study of the absorption of energy by and transfer between molecules. Use is made of quantum theory and statistical mechanics in the theoretical studies. Typical experimental techniques are those of electron and x-ray spectroscopy; spectroscopic methods covering most of the range of the electromagnetic spectrum; magnetic susceptibilities, and molecular, ionic, and electron beams. Computers are often used in both the theoretical and experimental investigations.

The interdisciplinary nature of the program is stressed and allows students maximum flexibility to meet their needs and interests; however, all students are expected to complete courses in thermodynamics, statistical mechanics, quantum theory, group theory, and atomic and molecular structure.

**Transfer Students**

Students who are planning to transfer to Chemical Engineering at Washington State University from other institutions should coordinate their programs with the department chairman to establish a schedule of studies leading to the bachelor's degree. This is desirable because of sophomore professional requirements and course sequences. A strong preparation in chemistry, mathematics, and physics is necessary prior to transfer to minimize the time required at Washington State University to complete

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**Junior Year**

**First Semester**
- Ch E 304 Proc Simln: 2
- Chem 342 Organic: 3
- Chem 331 Phys Chem: 3
- Chem 333 Physical Lab: 1
- C E 211 Statics: 3
- Ch E 430 Unit Oper I: 4

**Second Semester**
- Ch E 431 Unit Oper II: 3
- Ch E 407 Ch E Thermo: 3
- C E 314 Mech of Mat: 3
- Engl 201 Expos Writg: 3
- E E 301 E E Fund: 3
- E E 302 E E Fund Lab: 1

**Senior Year**

**First Semester**
- Ch E 432 Unit Oper III: 3
- Ch E 433 Unit Op Lab: 2
- Ch E 406 Ind Ch Proc: 3
- Ch E 498 Tech Seminar: 1
- Ch E Elective\(^1\): 3
- Technical Elective\(^2\):

**Second Semester**
- Ch E 433 Unit Op Lab: 2
- Ch E 412 Kinetics: 3
- Ch E 498 Tech Seminar: 1
- Ch E Electives\(^1\): 6
- Adv Hum or Soc S Elective\(^2\): 3

\(^1\)Highly qualified students are encouraged to take Chem 111, 212 in place of Chem 105, 106, 217 (221).

\(^2\)A technical subject approved by the department before enrollment.

\(^3\)Select from Ch E 409, 414, 416, 423, 495, 499, 503, 505, 508, 510, 518, 581, 582, or MSE 402, 543. Ch E electives must include Ch E 423 or 3 hours of Ch E 499. At least 5 hours of graded Ch E elective course work are required.

\(^4\)Must be an upper-division course continuing some prior field of study.

\(^5\)Pass/fail enrollment limited to these courses unless they are GURs.
The research interests of the current members of the chemical physics program encompass a broad spectrum of theoretical and experimental methods. There are investigations involving NMR and NQR, fast reactions, laser Raman spectroscopy, surface physics and chemistry, interactions in crystals, photophysics and photochemistry of excited states using pulsed and continuous lasers, molecular quantum mechanics, computation of physical properties of small molecules, x-ray crystallography, magnetic and optical properties of solids, investigations of surfaces, and electron tunneling spectroscopy.

Students may obtain a Bachelor of Science degree in Chemistry or Physics with a concentration in chemical physics. Students in their senior year are given the opportunity to perform experiments with research apparatus through 499 projects. A student planning graduate study in chemical physics is advised to obtain a strong undergraduate preparation in physics, chemistry, and mathematics, although deficiencies in these areas may be rectified after graduate study has been undertaken.

The course of study leads to the degree of Doctor of Philosophy.

**Description of Courses**

Ch P For explanation see Index under "Symbols".

461 Atomic and Molecular Phenomena 3 I Same as Phys 461.

499 Special Problems V I-4 May be repeated for credit.

538 Special Topics in Chemical Physics 2 or 3 May be repeated for credit. I Selected subjects in molecular structure, spectroscopy, solid state, and surface physics.

562 Theoretical Methods in Chemical Physics 3 I 1980-81 a/y. Operator techniques; molecular dynamics; many electron theory; molecular applications of quantum electrodynamics; magnetism; photophysical and photochemical processes; nonlinear optical phenomena.

564 Atomic and Molecular Phenomena 3 II 1981-82 a/y. Prereq Ch P 461; Chem 535, 539. Phenomena which yield information on structures, energy levels, and interactions of molecules in solid, liquid, and gaseous phases.

590 Seminar 1 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

**Department of Chemistry**


Chemistry is the fundamental science that deals with the nature of substances and the changes occurring in them. Chemical reactions are the basis of all life on Earth. Everything we are or do depends on one way or another on chemistry. A major in chemistry or biochemistry prepares you for a variety of careers in industry, education, ecology, and public service, or for graduate study and research in chemistry and many related fields.

The department has excellent facilities and special equipment for undergraduate study and research. There are active research programs in analytical chemistry (neutron activation analysis, environmental trace metals, ion selective electrodes, electroanalytical chemistry); biochemistry (enzyme kinetics; fluorescence, ORD/CD, isotope tracer and substrate analog studies of enzyme mechanisms; NMR studies of ion binding to biological compounds; metabolic pathways in microorganisms; biochemical control mechanisms; protein biosynthesis and regulation of plant growth; biophysical chemistry of macromolecules); inorganic chemistry (kinetic and isotopic studies of reaction mechanisms; stereochemistry of coordination compounds; synthetic chemistry; transition metal compounds with olefins and acetylenes; NMR studies of stereochemistry and the nature of metal-ligand bonds); bioinorganic chemistry; organic chemistry (boron-carbon compounds; mechanisms of molecular rearrangements; secondary deuterium isotope effects; metal isocyanide complexes; polypeptide chemistry; reaction kinetics and stereochemistry; ring-chain tautomerism; synthetic medicinal chemistry; novel synthetic reactions; alkyl-transition metal intermediates and physical chemistry (theories of valence and
chemical bonding; molecular and crystal structure by infrared, Raman, x-ray and neutron spectroscopy; nuclear magnetic and nuclear quadrupole resonance; photochemistry of dyes and studies of photosynthesis using picosecond laser pulses; EPR: study of fast reactions by NMR, tracer, and angular correlation techniques; magnetic susceptibility studies; colloid science; sedimentation potentials; molecular quantum mechanics, mechanisms of inter- and intramolecular energy transfer; molecular electronic spectroscopy of solutions and solids.

The department is on the approved list of the American Chemical Society.

The department offers courses of study leading to the degrees of Bachelor of Science in Biochemistry, Master of Science in Chemistry, and Doctor of Philosophy (Biochemistry, Chemistry).

The Department of Chemistry offers a program leading to both the Bachelor of Science and Master of Science in Chemistry within a period of five years. Students wishing to enroll in the program must declare their intentions at the end of the junior year and begin research for the MS thesis while still an undergraduate.

The program is designed so that the BS degree will normally be awarded at the end of four years and the MS approximately 15 months later. In order to enter this program, the student's undergraduate record must show that the final transcript will satisfy the requirements for admission to the WSU Graduate School. Further information on this program can be obtained from the Department of Chemistry.

A student will begin the study of chemistry with Chem 104, 105 or 111, depending on preparation. (A new student must take the Placement Examination in chemistry prior to registration.) In order to take most courses in chemistry above the 100-level, the student must complete one of the following sequences: Chem 104, 105, and 106; 101, 105, and 106; 101, 102, and 106; 105 and 106; 111 and 212.

An interdisciplinary program in Chemical Physics has been established, providing special opportunities for those students whose interests span the area of chemistry and physics. See the Chemical Physics section in this bulletin.

For students with strong overlapping interests in chemistry and biology, the biochemistry-biophysics program may be of interest. See the Biochemistry/Biophysics section in this bulletin.

**Minor in Chemistry**

Minimum requirements for a minor in chemistry are: At least 17 credit hours from 200-level and above chemistry courses. Not more than 2 credit hours of Chem 499 may be counted toward the required 17 hours.

**Credit Limitations**

Credit in only one of the chemistry courses in each of the following groups will be given: (a) Chem 105, 111; (b) 106, 212; (c) 217, 221; (d) 240, 340.

**Lab Charges**

A charge for expendable laboratory supplies is made in each laboratory course.

**Description of Courses**

*For explanation see Index under "Symbols"*

**General and Inorganic Chemistry**

**Chem**

101 [P] Introductory Chemistry 4 (3-3) Prereq satisfactory Chem Placement Test score. Basic terms, atomic structure, stoichiometry, periodic behavior of elements and compounds, gases, liquids, solids, solutions, water, and simple equilibria.

102 [P] Chemistry Related to Man 4 (3-3) Prereq Chem 101 or 105. Chemical phenomena in systems important to man and his environment; aqueous solutions, nutrients, nuclear chemistry and abundance of elements, metals and complexes, aspects of organic and biological chemistry.

104 Quantitative Preparation for Chemistry 2 Problem-solving techniques needed for Chem 105. For students showing weak arithmetical preparation on Chem Placement Test.


106 [P] Principles of Chemistry 4 (2-6) Prereq Chem 105 or 111. Ionic, molecular, solubility, and redox equilibria; electrochemistry; coordination compounds; systematic chemistry of the elements; qualitative analysis; nuclear chemistry and radiochemistry.

111 [P] General Quantitative Chemistry Honors 5 (3-6) I Prereq 1 yr high school Chem with grade of B or better; superior Chem Placement Test score. A combined course covering general chemistry and quantitative analysis.


<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>217</td>
<td>Analytical, Environmental, and Radiochemistry</td>
<td>Prereq Chem 106</td>
<td>Quantitative Analysis 4 (2-6)</td>
</tr>
<tr>
<td>221</td>
<td>Analytical, Environmental, and Radiochemistry</td>
<td>Prereq Chem 106</td>
<td>Quantitative Analysis 4 (2-6)</td>
</tr>
<tr>
<td>305</td>
<td>Introduction to Radiochemistry</td>
<td>Prereq Chem 106 or 212; Phys 202</td>
<td>Introduction to Radiochemistry 3 (2-3)</td>
</tr>
<tr>
<td>405</td>
<td>Nuclear Chemistry</td>
<td>Prereq Chem 332 or C/</td>
<td>Nuclear Chemistry 3 II 1980-81 a/y</td>
</tr>
<tr>
<td>424</td>
<td>Activation Analysis</td>
<td>Prereq Chem 305 or 331</td>
<td>Activation Analysis 2 (1-3)</td>
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<tr>
<td>425</td>
<td>Advanced Analytical Chemistry</td>
<td>Prereq Chem 212, 217, or 221; 332</td>
<td>Advanced Analytical Chemistry 2</td>
</tr>
<tr>
<td>426</td>
<td>Advanced Analytical Chemistry</td>
<td>Laboratory experience in modern analytical methods.</td>
<td>Advanced Analytical Chemistry Laboratory 2 (0-6)</td>
</tr>
<tr>
<td>480</td>
<td>Environmental Chemistry</td>
<td>Prereq Chem 212, 217 or 221; Chem 240 or 340</td>
<td>Environmental Chemistry 2 II Prereq</td>
</tr>
<tr>
<td>502</td>
<td>Advanced Inorganic Chemistry</td>
<td>Prereq Chem 401</td>
<td>Advanced Inorganic Chemistry 3 II</td>
</tr>
<tr>
<td>503</td>
<td>Advanced Topics in Inorganic Chemistry</td>
<td>Prereq Chem 502</td>
<td>Advanced Topics in Inorganic Chemistry 1-3</td>
</tr>
<tr>
<td>504</td>
<td>Experimental Inorganic Chemistry</td>
<td>Prereq Chem 332</td>
<td>Experimental Inorganic Chemistry 2 (0-6)</td>
</tr>
<tr>
<td>581</td>
<td>Chemistry of Natural Waters</td>
<td>Prereq C E 415 or Chem 217; Chem 331 or C/</td>
<td>Chemistry of Natural Waters 3 I</td>
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**Physical Chemistry**

<table>
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<th>Course Code</th>
<th>Title</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>331</td>
<td>Physical Chemistry</td>
<td>Prereq Chem 212, 217, or 221; Math 172; Phys 202, C/</td>
<td>Physical Chemistry 3 Prereq Chem 331; C/</td>
</tr>
<tr>
<td>332</td>
<td>Physical Chemistry</td>
<td>Prereq Chem 331; C/</td>
<td>Physical Chemistry 3 Prereq Chem 331; C/</td>
</tr>
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<td>333</td>
<td>Physical Chemistry Laboratory</td>
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<td>Physical Chemistry Laboratory 1 (0-3)</td>
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<td>334</td>
<td>Physical Chemistry Laboratory</td>
<td>Prereq Chem 332 or C/</td>
<td>Physical Chemistry Laboratory 1 (0-3)</td>
</tr>
<tr>
<td>372</td>
<td>Principles of Biophysical Chemistry</td>
<td>Prereq Chem 212, 217, or 221; 332</td>
<td>Principles of Biophysical Chemistry 4 (3-3)</td>
</tr>
</tbody>
</table>
Department of Chemistry

409 Chemical Group Theory 3 I 1981-82 a/y. Prereq Chem 332. Mathematical definitions of groups and representations, applications to chemical structure and spectra, ligand field theory, chemical reactions and selection rules. Credit not granted for both Chem 409 and 509.

430 Photochemistry and Optical Spectroscopy 2 I Prereq Chem 332. Quantum description of absorption and emission of light by molecules; photophysical and photochemical behavior of complex molecules; instrumental techniques.


509 Chemical Group Theory 3 Graduate level counterpart of Chem 409; additional requirements. Credit not earned for both Chem 409 and 509.

531 Advanced Physical Chemistry I 3 I Prereq Chem 332. Chemical thermodynamics, phase equilibria, chemical equilibria, critical phenomena, solution thermodynamics, non-ideal mixtures, colligative effects, surface thermodynamics, and electrochemistry.

532 Advanced Physical Chemistry 3 II Prereq Chem 332. Methods of quantum chemistry, atomic and molecular structure and spectra, chemical bonding, statistical mechanics, and kinetic theory, chemical kinetics.


534 Statistical Mechanics 3 II 1980-81 a/y. Same as Phys 534.


537 Advanced Topics in Physical Chemistry 1-3 May be repeated for credit. I Selected subjects; irreversible thermodynamics; chemical bonding; NMR: ligand field theory; x-ray diffraction; neutron diffraction.

539 Group Representation Theory and Applications 3 Same as Math 539.

Organic Chemistry


340 Organic Chemistry 3 Prereq Chem 106, or 212; c// in Chem 341.

341 Organic Chemistry Laboratory 2 (0-6) Prereq Chem 106, or 212; c// in Chem 340.


343 Organic Chemistry Laboratory 2 (0-6) Prereq c// in Chem 342.

344 Organic Chemistry Honors Laboratory 2 (0-6) II Prereq c// in Chem 342. Synthesis and identification of organic compounds by modern techniques and instrumental methods; individual or small group experiments.

445 Organic Reactions 3 I Prereq Chem 342. Selected organic reactions including mechanisms at an intermediate level.

541 Advanced Organic Chemistry 3 I Prereq Chem 332, 343. Reactions of organic compounds; fundamental theory and reaction mechanisms.

542 Advanced Organic Chemistry 3 II Prereq Chem 541. Synthesis of organic compounds; recent development from current literature.


Problems, Seminar, and Research and Thesis

Chem 398 Undergraduate Seminar I II For Chem or Biochem majors only.

499 Special Problems V 1-4 May be repeated for credit.

591 Seminar I May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

602 Teaching Internship V 2-12 May be repeated for credit. Prereq completion of preims for D A degree. A structured teaching internship of no less than one
quarter or semester nor more than one academic year.

700 Master's Research, Thesis, and/or Examination Variable credit.
702 Master's Special Problems, Directed Study, and/or Examination Variable credit.
800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Biochemistry
For course descriptions traditionally listed in Biochemistry, see Program in Biochemistry and Biophysics.

Schedule of Studies

For Schedule of Studies in Biochemistry, see Program in Biochemistry and Biophysics.

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

A student undertaking this curriculum after the beginning of the freshman year should consult with the department chair to arrange a schedule which will permit completion of required courses in proper sequence.

Freshman Year
First Semester
Chem 104 Principles 1  4
Math 107 Precalculus  3
Engl 101 Composition  3
Bio S Elective  3
Elective  2

Second Semester
Chem 106 Principles 1  4
Math 171 Calculus I  4
Hum or Soc S Elective  6
Elective  2

Sophomore Year
First Semester
Chem 221 Quant Analysis 1  4
Phys 201 Class Phys  4
Math 172 Calculus II  4
Hum or Soc S Elective  3
Elective  2

Second Semester
Chem 340 Organic  3
Chem 341 Organic Lab  2
Phys 202 Class Phys  4
Engl 201 Inter Comp  3
Math 220 Linear Alg  3
Elective  2

Junior Year
First Semester
Chem 331 Physical  3
Chem 333 Physical Lab  1

Chem 342 Organic  3
Chem 343 Organic Lab  2
Ger 101 First Semester  4
Hum or Soc S Elective  3

Second Semester
Chem 332 Physical  3
Chem 334 Physical Lab  1
Ger 102 Second Semester  4
Hum or Soc S Elective  5
Elective  3

Senior Year
First Semester
Ger 203 Third Semester  4
Chem 401 Inorganic  3
Chem 425 Adv Analytical  2
Chem 426 Adv Anal Lab  2
Elective  4

Second Semester
Elective  15

Highly qualified students are encouraged to take Chem 111, 212 in place of Chem 105, 106, 221. Students who have taken Chem 101 must take Chem 105, 106, 221, or 102, 106, 221.

Electives must include 6 hours from one of Chem 424, 446, 499, or 504 and one from Chem 405, 430, 432, 433, 435, 436, or 502; one course in physics or mathematics requiring the use of calculus may be substituted for an advanced course in chemistry.

Courses printed in Roman type are required for graduation; those in italics are optional.

Preparation for Graduate Study
As preparation for work toward an advanced degree, it is expected that the student shall have completed courses totaling 40 semester hours of chemistry including inorganic, qualitative, quantitative, organic, and physical chemistry. The student should also present 8 hours of physics, mathematics through calculus, and have a reading knowledge of scientific German.

It is desirable that students interested in inorganic, analytical, organic, or physical chemistry present advanced courses in chemistry, physics, computer science, or mathematics; advanced biological science courses are important preparation for students who propose to undertake graduate study in the field of biochemistry.

Program in Chicano Studies
Professor and Department Head, F. V. Padilla; Associate Professor, P. A. Rodriguez; Assistant Professor, R. Cisneros; M. Ramirez Stephens.
The curriculum of the Chicano Studies Program has been designed to present unique qualities of the Chicano cultural experience to all students of Washington State University. It brings to the student a meaningful and working knowledge through its courses in the social sciences and the fine arts.

For majors and non-majors Chicano Studies courses provide a broad interdisciplinary program at the undergraduate level that would equip graduates from many different specialized fields to play more effective educational roles in the Chicano community. Within this framework, students can augment their professional training and activities in business, education, social work, law, applied sciences, and community development.

In addition to the undergraduate degree requirements of the College of Sciences and Arts, the Chicano Studies major must complete 24 semester hours including 18 hours of upper division work.

Students graduating with a Chicano Studies major must demonstrate a minimal level of proficiency in the Spanish language to that of native speakers of Spanish. This proficiency may be demonstrated by oral and written examinations or by completion of appropriate courses. Further course work in Spanish is strongly urged.

A comprehensive term paper will be required of all Chicano Studies majors upon completion of Chicano Studies 495 Field Experience which will involve community-related activities. The student will participate in a modal learning process which will include three phases: the instructional mode, experimental mode, and the expressive mode under the supervision of the director.

A minor is offered in Chicano Studies and the program offers courses for the teaching major leading to the Bilingual Education (Spanish-English) Certificate Endorsement.

The course of study leads to the degree of Bachelor of Arts in Chicano Studies. Although some upper-division courses could apply as support work for graduate studies in some departments, this program does not offer an advanced degree.

**Description of Courses**

Ch St For explanation see Index under "Symbols"

102 [W] English Composition for Chicanos 3 Composition taught within the context of the Chicano linguistic and cultural experience in a pluralistic society.

110 [S] Introduction to Chicano Studies 3 Chicano culture and peoples (Americans of Mexican descent); historical backgrounds and contemporary conditions.

200 Careers in Chicano Studies and Bilingual Education 2 I Important issues and career opportunities in Chicano Studies and bilingual-bicultural education.

220 [H] Chicano Art History 3 Same as F A 204.

248 [S] Patterns of Chicano Family 3 Same as CFS 248.

263 Afro-Chicano Drum Ensemble 1 (0-3) May be repeated for credit; cumulative maximum 8 hours. Drumming of Third-World peoples.

272 [S] Chicano Ethnohistory 1521-1910 3 I The development of La Raza from 1521 to 1910; major historical and cultural aspects of the La Raza peoples.

313 [S] Social Psychology and the Chicano Community 3 2 Psychological problems facing the Chicano in society; development of the Chicano child to adulthood.

321 [H] Chicano Art 3 II Prereq F A 220. Survey of the artistic expression of the Chicano community from early Spanish settlement to present day in the U.S.

324 [H] Spanish for Chicanos I 3 Same as Span 324.

325 [H] Spanish for Chicanos II 3 II Prereq fluency in Spanish; Span 324. Grammar, composition, and readings of Chicano writers.

329 Seminar in Contrastive Linguistics: Spanish-English 3 1 Prereq Ch St 324, 325. Contrastive Spanish and English language structures; prepares teachers to predict language-learning problem areas in either language.

332 Chicano Art Seminar 3 Prereq Ch St 220 or 321. Chicano art production; discussion, projects, presentations, and research papers.

335 Bilingual Methods in the Classroom: Social Science, Science, Mathematics 3 I Prereq Educ 305; Ch St 329. Social science, science, and math methods for the bilingual-bicultural classroom; development and implementation of units in Spanish.

340 [H] Chicano Dance and Theater 2 II Historical and present day images of the Chicano through dance and oral reading performance: beginning and intermediate level.

372 [S] Chicano Ethnohistory 1910 to Present 3 II The Chicano in the U.S. from 1910 to present.

375 Chicano Community Political Organizations 3 II Literature on the character, role,
and function of Chicano community political organization from 1846 to present.


411 Bilingual Methods in the Classroom: Reading and Language Arts 3 II Same as Educ 411.

493 Special Topics in Chicano Studies 3 May be repeated for credit.

495 Field Experience 3-9 May be repeated for credit. Required for majors.

499 Special Problems V 1-4 May be repeated for credit.

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Department of Child and Family Studies

Professor and Department Head, D. Z. Price; Professors, M. O. Gallwey, A. D. Hill; Associate Professors, M. P. Ray, A. S. Richarz, Assistant Professors, J. J. Dillman, J. M. Gingles, B. K. Pasley, M. L. Roberts, B. C. Scott

This curriculum is designed for the student whose major concern is the development and welfare of the individual within a family setting and of the family as a unit. The program focuses on the normal physical, social, cognitive, and affective development and understanding the individual, and on the functioning of the family in its various social, economic, legal, and political environments. The content of the program is derived from and integrates relevant knowledge in many basic fields such as anthropology, biology, economics, philosophy, psychology, and sociology.

The department offers four major options: Consumer Studies, Family Studies, Child Development, and Preschool Education. An interdisciplinary option in Housing is offered in cooperation with the Department of Clothing, Interior Design and Textiles. The option in Consumer Studies prepares a student for work with consumer-oriented private and government agencies. Employment possibilities also exist with business firms as consumer representatives and consumer liaison people. With selected electives in communication and/or journalism, a variety of consumer-oriented positions in the media are also available. The option also prepares one for credit and financial counseling services with various agencies.

The course of study in Family Studies combined with appropriate electives prepares students for a variety of positions with public and private social welfare and community agencies and junior research positions in the government.

When combined with relevant electives, either the Consumer Studies or Family Studies option can prepare a student to work with health organizations, recreation centers, probation centers, gerontology groups, or with agencies concerned with the handicapped. Both options also provide preparation for graduate work leading to teaching, research, or administrative positions in welfare, government, or education.

The Preschool Education Option offers training for professional work in preschool education programs and education for a variety of social services concerned with children. These can include work with foster parent programs, adoption agencies, and various day care or home start programs. The Child Development Option provides basic preparation for graduate study and research in child development leading to a variety of positions in higher education, government, and social agencies in teaching, research, or administration.

The Housing Option prepares a student to represent interests of individuals and families regarding dwellings. Careers relate to needs of people in respect to design and layout, financing, planning of housing developments, and impact of new residences on housing production by communities. Positions for graduates are available in planning, advising, teaching, management, sales and more specific technical areas through business and industry, government agencies and non-profit community based organizations.

Minors are offered in consumer studies, family studies, and child development. For a description of the child studies major in elementary education, refer to the listing of the Department of Education.

The department offers courses of study leading to the degree of Bachelor of Arts in Home Economics. The department participates in offering a course of study leading to the degree of Master of Arts in Home Economics with a specialization in consumer studies or in family studies (family relationships or family resource management) and also participates in an interdepartmental program leading to the degree of Master of Arts in Child Development.

Description of Courses

CFS For explanation see Index under "Symbols"

240 **Human Development I 3 Prereq Psych 101 or 102, Soc 101; c// in CFS 242 for majors in CFS or Home Econ Educ. Major theories of human development; important factors in development and guidance of children from birth into adolescence.**
242 Directed Observation I (0-3) Prereq Psych 101 or 102, Soc 101; c// in CFS 240. Observation of children ages 1-5 years.

247 Human Development II 3 Prereq Psych 101 or 102; Soc 101. Basic structure and processes of all human relationships, developmental processes in adulthood, adolescence through old age, contemporary American family.

248 [S] Patterns of Chicano Families 3 Prereq Psych 101; Soc 101 or Anth 101. Social, cultural, and economic factors affecting interaction of Chicano family members; influences on individual development and functioning.

320 Perspectives on Aging 3 Interdisciplinary examination of aging and the aging process; implications for the quality of life.

342 Curriculum for Young Children's Programs 3 Prereq CFS 240. Curriculum theory, development, implementation and evaluation for early childhood programs for children ages 1-5 year.

344 Guidance of Young Children 3 (2-3) Prereq CFS 240. Application of theories of guidance to children ages 1-5 years; participation in preschool laboratories.

350 Decision Making in Families 3 Prereq CFS 247 or 9 hrs Soc S. Integrated nature of management in families; role of values in decision making.

352 Families as Consumers 3 Prereq Econ 102 or 201; CFS 350. Family's relation to consumer movement; consumer issues; interaction of consumers, government and market; evaluation of consumer information and protection.

353 Family Housing Decisions 3 Prereq Soc 101; Psych 101 or 102. Housing alternatives which meet human and family needs as affected by social, economic, political and technical environment.

401 Practice in Preschool Education I 2 (0-6) Prereq CFS 342 or 344. Theory applied to teaching in the preschool.

402 Practice in Preschool Education II (0-6) Same as CFS 401.

435 History and Philosophy of Child Development II Prereq CFS 240 and Psych 101 or Soc 101. Cooperative course taught at the University of Idaho.

440 Theories of Human Development 2 or 3 Prereq CFS 240, 247. Theories of human development and application to programs for children and families.

442 [S] The Child and Family in Poverty 3 Prereq Psych 101; Soc 101. Extent and distribution of poverty and deprivation; social psychology of poverty; effects on individual development and family functioning; compensatory programs.

446 Practice in Preschool Education II 2 (0-6) or 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq CFS 342, 344. Theory applied to teaching in the preschool.

447 Families in Crises II Prereq CFS 247, 450; S W 395. Crises in family life; range of intervention techniques for helping families.


449 Seminar in Child and Family Studies 1 Prereq 9 hours CFS.

450 Management Experiences with Families 2 (0-6) Prereq CFS 350. Integration and application of management principles and processes concerning individuals, families, and community/service agencies.

452 Family Financial Problems I Prereq Econ 102 or 203; CFS 350. Role of the family in the economy; effect of social, economic, and political changes on the family's financial management.

453 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 8 hours. By interview only.

498 Field Experience V 1-10 May be repeated for credit; cumulative maximum 10 hours. By interview only. Prereq CFS 450. Supervised individual experiences with related businesses, organizations, or government agencies. Preparation begins two semesters prior to placement.

503 Early Childhood Education I II Development of on-going programs in early childhood education. Cooperative course taught at the University of Idaho.

505 Current Consumer Issues 2 May be repeated for credit. S Prereq Econ, consumer or finance course; 3 hrs Psych or Soc. Major problems facing consumers; theoretical and practical implications for families.

541 Perspectives in Child and Family Studies I Research methodologies, relevant professions and problem areas in child and family studies.

542 Seminar in Methods of Developmental Research 3 II Prereq 6 hrs child development. Methodology in developmental research; applications to current problems.
Family Relations 3 S Prereq 9 hrs social science. Contemporary family life; implications for family life education.

Organization and Administration of Child Care Programs 3 Organization and administration of developmental child care programs: legislation and standards, programming, personnel, resources, relationships with other agencies.

Topics in Child and Family Studies 3 May be repeated for credit. S Current topics in child development theory and research.

Seminar in Child and Family Studies 1 May be repeated for credit; cumulative maximum 4 hours.

Family Life Styles 3 II 1980-81 a/y. Prereq 12 hrs Soc S. Effects of varying value patterns and decision styles on development of family members.

Family Consumption Behavior 3 II 1981-82 a/y. Prereq Econ 201 or 203; CFS 352, 452, or Econ 312. Consumer decisions as affected by psychological, sociological and economic factors.

Sex Roles in Society 3 I Examination of changing roles of males and females in terms of sociological theories of social and institutional change.

Social Policy, Law, and the Family 3 II Implications of social policy; law for family structure and function, individual development; effects of policy alternatives.

Social and Personality Development in Children 3 II Prereq 12 hrs child development and/or Psych. Behavioral, cognitive approaches to selected topics, e.g. parent-child relations, modeling, aggression; implications for research and application to natural settings.

Seminar in Developmental Research Topics 3 II 1981-82 a/y. Prereq 6 hrs child development.

Professional Internship V 1-8 By interview only. Supervised individual practicum with business, organizations, and government agencies; opportunities for interaction with professionals in related fields.

Special Projects or Independent Study Variable credit.

Master's Research, Thesis, and/or Examination Variable credit.

Master’s Special Problems, Directed Study, and/or Examination Variable credit. (for master’s in C D or H E only)

Schedule of Studies

At least 45 of the total hours required for the bachelor’s degree in this program must be in upper-division courses. A major in the department requires Soc 101, Psych 101 and 102, Eng 101, FNM 130, CFS 350, 442, and 450.

In addition, specific options include the following requirements:

CONSUMER STUDIES OPTION
CFS 240 or 247; Pol S 101 and 318 or 450; Econ 102, 203, 301 and 312; B A 210, 360, 367; Cpt S 210 or 220; Soc 342 or 350; CFS 352, 353, 452, and 498; and a course in statistics. Com 101, Spe 235, Env S 101 recommended.

FAMILY STUDIES OPTION
Pol S 101 or 206; Econ 201; Soc 270, 330, 351, and 350 or 371; SW 394, 395; Soc 362 or 355 or Psych 360; CFS 240, 242, 247, 352, 353, 447, 448, 452 and 498.

PRESCOLL OPTION
Zool 251; Genet 201; Soc 351; Mus 388 or 390; CFS 240, 242, 247, 342, 344, 440, 446, 447, and 448.

CHILD DEVELOPMENT OPTION
Zool 251, Genet 201; Soc 351; Psych 285, 311, 431, and 490; CFS 240, 242, 247, 342, 344, 440, 446, 447, and 448.

HOUSING OPTION
See Housing Option as described under options in Department of Clothing, Interior Design and Textiles.

Child Development


The degree of Master of Arts in Child Development is offered through an interdepartmental committee including representatives from the Departments of Child and Family Studies, Education, Psychology, Sociology, and Speech. The curriculum is designed to provide a broad background through course work in each of several areas contributing to an understanding of the development and functioning of children and families in a variety of settings.

Students enrolled in the curriculum may concentrate in any one of the areas represented by the cooperating departments. It is expected that students who have not had undergraduate courses in statistics, introductory child development, and preschool experiences will remove these deficiencies by course work or examination.
Course work will include a required core of CFS 440, 541 and 542. Other courses will be selected from the five cooperating departments.

Department of Civil and Environmental Engineering


The objective of the degree program in civil engineering is to give thorough training in the fundamental principles that form the basis of the profession, care being taken to make the foundation broad enough to prepare the student to pursue to advantage any line of civil engineering practice. The broad fields of civil and environmental practice are paralleled by the options offered in environmental, geological, hydraulic, structural, and transportation engineering. In addition, combinations of course work from these areas can lead to specialization in water resources, municipal engineering, and construction engineering.

The curriculum leading to the Bachelor of Science degree in Civil Engineering is accredited by the Engineers Council for Professional Development.

The courses in surveying for civil engineers are taught during an extensive summer program on the WSU Campus in Pullman. Attendance at this summer session is required unless equivalent course work has been completed in an accredited curriculum. The summer program should be taken as early as possible so that students may benefit by being able to obtain better summer jobs due to their surveying skills. In addition, surveying skills have been found to be of value in the intern program. Usually after the junior year students wishing to go on internship with an agency or firm can arrange to work for seven months through the departmental intern program coordinator. Valuable practical experience and contacts developed during the internship are beneficial during the last year of undergraduate classwork and in shaping the student’s professional career.

Because of the ever-increasing knowledge required to practice at high levels of competence in the specialized branches of civil engineering, an educational preparation of five or more years of college study is becoming more important. By an appropriate choice of electives the undergraduate curriculum can be integrated with a graduate program to provide a continuous five-year schedule of studies leading to both the bachelor’s and master’s degrees.

The department offers courses of study leading to the degrees of Bachelor of Science in Civil Engineering, Master of Science in Civil Engineering, and Master of Science in Environmental Engineering. The department participates in the interdepartmental programs leading to the degrees of Master of Science in Engineering, Master of Science in Environmental Science, and Doctor of Philosophy.

Description of Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Description</th>
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<tbody>
<tr>
<td>101</td>
<td>Introduction to Surveying</td>
<td>3 (2-3)</td>
<td>Prereq Math 107; Arch 101 or M E 101. Service course in elementary surveying for non-majors.</td>
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<tr>
<td>211</td>
<td>Statics</td>
<td>3 Prereq Math 172; Phys 201 or c/. Introductory course to static force systems and future dynamics and mechanics courses.</td>
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<tr>
<td>212</td>
<td>Dynamics</td>
<td>3 Prereq C E 211.</td>
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<tr>
<td>299</td>
<td>Civil Engineering Systems</td>
<td>3 Prereq C E 211 or C E major. Civil engineering overview, systems approach, project scheduling, problem modeling, optimization, decision making.</td>
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<tr>
<td>301</td>
<td>Principles of Surveying</td>
<td>3 (1-6) S Prereq Math 171; M E 101. Basic principles for using instruments and equipment in conducting engineering surveys.</td>
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<tr>
<td>302</td>
<td>Engineering Surveys</td>
<td>3 (1-6) S Prereq C E 301. Field work in application of principles presented in C E 301.</td>
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<tr>
<td>304</td>
<td>Land Surveying</td>
<td>2 Prereq C E 302. History and development; laws; preparation and filing of property descriptions and plats; subdivision planning; methods for property surveys. Cooperative course taught at the University of Idaho.</td>
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<tr>
<td>305</td>
<td>Photogrammetry and Photo-Interpretation</td>
<td>3 (2-3) Prereq C E 302. Geometry of single and stereoscopic pairs of aerial photographs; stereoplotters; photo-interpretation; applications to engineering problems. Cooperative course taught at the University of Idaho.</td>
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<tr>
<td>314</td>
<td>Mechanics of Materials</td>
<td>3 Prereq C E 211.</td>
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</table>
317 Soil Mechanics 3 Prereq C E 310, 314, or c/c; Geol 102. Characteristics and properties of soils; soil pressure and bearing stresses in earth masses; identification tests and strength determination.

322 Transportation Engineering 3 Prereq B A 215; junior in C E. Technology and planning; design criteria; materials identification; cost analysis; topography and drainage influences; equipment, operator, and operation characteristics.

330 Mechanics of Structures 4 Prereq Cpt S 203; Math 220; C E 314. Determine and indeterminate structures; deflections of structures; influence lines and moving loads.

331 Structural Analysis for Architects 4 (3-3) I Prereq Arch 352. Shear and moment diagrams; moment-area and conjugate-beam methods; consistent deformation; moment distribution; settlement analysis.

341 Water Supply and Wastewater Engineering 2 Water supply development; wastewater collection systems, water transportation and distribution; engineering aspects of water quality.

342 Water and Wastewater Treatment 2 Prereq C E 341. Water and wastewater treatment processes and operations; sludge handling and disposal, wastewater reclamation and reuse.

351 Hydraulic Engineering V 2 or 4 Prereq C E 315. Principles; hydrology, fluid mechanics, structures, and economic analysis applied to problems of hydraulic engineering.

352 [P] Environmental Geology 3 Same as Geol 403.

354 Structural Engineering Laboratory 1 (0-3) II Prereq C E 431, 433. Senior design lab on the integration of course work into comprehensive designs.

355 Environmental Measurements 3 (1-6) I Theory and analytical techniques used in evaluating environmental problems.

356 Hydraulic Engineering Laboratory 2 (0-6) II Prereq C E 315. Experiments related to fluid flow principles and their application to hydraulic engineering.

357 Advanced Soil Mechanics 3 (1-6) II Prereq C E 317. Theories of behavior of ideal soils; soil knowledge applied to engineering problems; physical properties of real soils.

358 Transportation Laboratory 1 (0-3) I Prereq C E 322. Field work to provide practical application experience in transportation problems.

359 Design of Airports and Pavements 3 II Prereq C E 322. Airport location and layout; structural design of flexible and rigid pavements.

360 Traffic and Transportation Planning 3 (2-3) II Introduction to urban transportation planning; traffic theory; flow and control.

361 [P] Quantitative Geomorphology 3 Same as Geol 430.


365 Reinforced Concrete Design 3 Prereq C E 330. Loads: dead, live, wind, earthquake; design of reinforced concrete structures with emphasis on ultimate strength design; ACI Code.

367 Design of Concrete Structures 3 II Prereq C E 433 or 471. Continuation of concrete design. Limit design; prestressed concrete.

368 Foundations 3 II Prereq C E 317, 433, or 471. Analysis and design of foundation elements; retaining walls, sheet piling, coffee dams and waterfront structures. Joint listing with the University of Idaho.

369 Design of Timber Structures 2 I Prereq C E 330 or c/c. Analysis and design.

370 Statically Indeterminate Structures 3 I Prereq C E 330. Indeterminate structures, multistory frames, and haunched beams.

371 Hydraulic Design 3 (2-3) I Hydraulic problems in planning and design of gravity and pressure systems; introduction to unsteady flow. Cooperative course taught at the University of Idaho.

372 Open Channel Flow 3 I Prereq C E 315. Steady, non-uniform flow; controls and transitions in fixed-bed channels.

373 Contracts and Specifications 2 Development of law, courts, and ethics; laws on contracts, agency, sales, property, and patents; specifications; preparation of contract documents. Cooperative course taught at the University of Idaho.

374 Engineering Administration 3 Engineering economy; annual cost, present worth, rate of return, and benefit-cost ratio in engineering decision making; basic contract law.

375 Construction Management 3 I Job scheduling, job planning, project control, records and policies, and construction equipment.

376 Structural Design for Architects 4 I Prereq C E 330 or 331. Structural design in steel and reinforced and prestressed concrete; specifications and building codes.

377 Senior Seminar 1 Professional aspects of civil engineering.
495 Engineering Internship V 1-4 May be repeated for credit; cumulative maximum 4 hours. By interview only. Placement in a professional, governmental, or industrial situation for specialized or general experience.

499 Special Problems V 1-4 May be repeated for credit.

512 Dynamics of Structures 3 I 1981-82 a/y. Behavior of structures under impact, impulse, and seismic loads. Joint listing with the University of Idaho.


514 Advanced Mechanics of Materials 3 I Elastic stress-strain relations, shear center, unsymmetrical bending, curved beams, elastic stability, elastically supported beams, energy methods, thin plates, shells.

524 Geophysical Engineering 4 (3-3) II Theory and application of exploratory geophysical procedures in engineering and geological investigations; review of techniques.

527 Advanced Soil Mechanics I 3 I Prereq C E 317. Effective stresses and lateral earth pressures; interrelationships of applied stresses, permeability, strain and shear strength of soils. Cooperative course taught at the University of Idaho.

528 Advanced Soil Mechanics II 3 II Prereq C E 317. Consolidation and seepage; theory, design and construction of shallow and deep foundations and embankments; slope stability analysis and control. Cooperative course taught at the University of Idaho.

530 Advanced Theory of Structures 3 II 1981-82 a/y.


532 Finite Elements 3 I Theory of finite elements; applications to general engineering systems considered as assemblages of discrete elements. Joint listing with the University of Idaho.


537 Theory of Plates and Shells 3 II 1981-82 a/y. Mathematical theories of plate and shell solutions; plates of various shapes; large deflections; buckling of plates; membrane theory of shells.

540 Instrumental Analysis of Environmental Contaminants 2 (0-6) II 1981-82 a/y. Prereq C E 415. Theory and methods of analysis of water, waste-water and air; electrometric, spectrophotometric, and chromatographic techniques.

541 Environmental Engineering Unit Operations 3 I Prereq C E 341, 342. Analysis and design of physical and chemical operations of water and wastewater treatment. Joint listing with the University of Idaho.

542 Environmental Engineering Unit Processes 3 II Prereq C E 541. Biochemical energetics and kinetics; biological waste treatment processes; nutrient removal; advanced wastewater treatment design. Joint listing with University of Idaho.

543 Advanced Topics in Environmental Engineering Practice 3 I 2-6 May be repeated for credit; cumulative maximum 8 hours. Analysis and evaluation of water and wastewater systems; problems associated with solid waste, radiological health, environmental health or air pollution.

544 Wastewater Treatment System Design 2 II Prereq C E 542 or c/c. Application of unit operations and processes to design of integrated treatment systems; critical review of designs. Cooperative course taught at the University of Idaho.


546 Water Quality Management 3 I Prereq C E 341. Principles of systems analysis applied to management of water quality problems including economic, political, and sociological aspects.

547 Radiological Health 3 (2-3) I Sources and units of radiation and radioactivity, radiological health, radiation detection, and radioactive waste disposal.

550 Intermediate Fluid Mechanics 3 I Prereq C E 315. Basic flow equations; Navier-Stokes equations; similitude; potential flow, boundary layers, turbulence, and diffusion; uniform and non-uniform conduit flow; drag and lift.

551 Turbulent Flow and Diffusion V 1-3 I 1981-82 a/y. Prereq C E 315 or M E 303. Theories of turbulent motion; statistical description and numerical models.

552 Advanced Hydraulic Engineering 3 (2-3) II Water hammer, flow establishment, surge tanks, transient flow in open channels, introduction to hydraulic machinery.
<table>
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<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Hydraulic Design 3 (2-3) II Dams, spillways, and outlet works; design of a major structure. Cooperative course taught at the University of Idaho.</td>
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<tr>
<td>Natural Channel Flow V 2 or 3 II Hydraulics of non-uniform flow in irregular channels; unsteady flow; flow routing, and density currents. Cooperative course taught at the University of Idaho.</td>
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<tr>
<td>Numerical Modeling in Fluid Mechanics 3 II 1981-82 a/y. Fundamentals underlying fluid mechanical modeling; physical basis of the techniques being used.</td>
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<tr>
<td>Stochastic Hydrology 3 I 1981-82 a/y. Prereq C E 351. Applications of probability in hydrology; analyses and evaluation of hydrologic data; regression analyses and simulation techniques.</td>
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<tr>
<td>Advanced Hydrology 3 (2-3) II 1980-81 a/y. Prereq C E 351. Occurrence and disposal of precipitation, basin characteristics, streamflow, with emphasis on hydrographic analysis, frequency analysis, and routing methods.</td>
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<tr>
<td>Water Resources Systems 3 I Concepts in water development; coordination of development of other natural resources; systems approach and optimization techniques. Cooperative course taught at the University of Idaho.</td>
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</tr>
<tr>
<td>Water Resources Planning 3 II Prereq C E 351. Design and feasibility studies in water supply, power, flood problems, navigation, irrigation, recreation. Cooperative course taught at the University of Idaho.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology of Underground Water 3 Same as Geol 575.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil and Environmental Engineering Seminar I May be repeated for credit. Lectures and reports on current developments in research and practice.</td>
<td></td>
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</tr>
<tr>
<td>Sanitary Engineering Analysis 2 (1-3) Theoretical and laboratory methods for development of design criteria for sanitary engineering systems. Cooperative course taught at the University of Idaho.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Schedule of Studies**

A Bachelor of Science degree in Civil Engineering ordinarily requires a total of 134 hours. At least 50 of the total hours required for this degree must be in upper-division courses.

**Freshman Year**

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 171 Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>Chem 105 Principles</td>
<td>4</td>
</tr>
<tr>
<td>Engl 101 Composition</td>
<td>3</td>
</tr>
<tr>
<td>M E 101 Graphic Design</td>
<td>2</td>
</tr>
<tr>
<td>Hum Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 172 Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>Phys 201 Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Econ 102 Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>M E 102 Descriptive Geom</td>
<td>2</td>
</tr>
<tr>
<td>Geol 102 Physical Geology</td>
<td>4</td>
</tr>
</tbody>
</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 220 Linear Alg</td>
<td>3</td>
</tr>
<tr>
<td>Math 273 Calculus III</td>
<td>2</td>
</tr>
<tr>
<td>Phys 202 Engineering</td>
<td>4</td>
</tr>
<tr>
<td>C E 211 Statics</td>
<td>3</td>
</tr>
<tr>
<td>Cpt S 201 Computer Prog</td>
<td>2</td>
</tr>
<tr>
<td>Bact 101 Introduction</td>
<td>4</td>
</tr>
</tbody>
</table>

**First Semester**

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 315 Diff Eq</td>
<td>3</td>
</tr>
<tr>
<td>M E 320 Materials Lab</td>
<td>1</td>
</tr>
<tr>
<td>C E 212 Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>C E 314 Mech of Materials</td>
<td>3</td>
</tr>
<tr>
<td>C E 299 C E Systems</td>
<td>3</td>
</tr>
<tr>
<td>Soc S Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 315 Diff Eq</td>
<td>3</td>
</tr>
<tr>
<td>M E 320 Materials Lab</td>
<td>1</td>
</tr>
<tr>
<td>C E 212 Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>C E 314 Mech of Materials</td>
<td>3</td>
</tr>
<tr>
<td>C E 299 C E Systems</td>
<td>3</td>
</tr>
<tr>
<td>Soc S Elective</td>
<td>3</td>
</tr>
</tbody>
</table>
Department of Clothing, Interior Design and Textiles

### Summer Engineering Program

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 301 Prin of Surveying</td>
<td>3</td>
</tr>
<tr>
<td>C E 302 Engineering Surveys</td>
<td>3</td>
</tr>
</tbody>
</table>

### Junior Year

#### First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 315 Mech of Fluids</td>
<td>3</td>
</tr>
<tr>
<td>C E 317 Soil Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>B A 215 Statistics</td>
<td>4</td>
</tr>
<tr>
<td>C E 330 Mech of Structures</td>
<td>4</td>
</tr>
<tr>
<td>C E 341 Environ Qty</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 322 Transportation</td>
<td>4</td>
</tr>
<tr>
<td>C E 342 Pollution Control</td>
<td>2</td>
</tr>
<tr>
<td>C E 351 Hydraulic Engr</td>
<td>4</td>
</tr>
<tr>
<td>C E 433 Reinforced Concrete Des</td>
<td>3</td>
</tr>
<tr>
<td>Hum Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

### Senior Year

#### First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 431 Structural Steel Design</td>
<td>3</td>
</tr>
<tr>
<td>C E 463 Administration</td>
<td>3</td>
</tr>
<tr>
<td>E E 301 E E Fund</td>
<td>3</td>
</tr>
<tr>
<td>M E 301 Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>Com Prof Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept Elect ¹</td>
<td>9</td>
</tr>
<tr>
<td>Engl 402 Prof Writing</td>
<td>3</td>
</tr>
<tr>
<td>C E 480 Senior Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Hum or Soc S Elective²</td>
<td>3</td>
</tr>
</tbody>
</table>

¹The student may emphasize a particular branch of civil engineering but is encouraged to take courses in several branches to establish a broad, flexible base prior to entering the profession. One lab is required.

²Departmental requirement, not a GUR. Recommended courses are in personnel management, Psych 306 or 307.

### Transfer Students

Students who are planning to transfer to civil engineering at Washington State University from other institutions should coordinate their program with the department chairperson to establish an integrated program leading to the bachelor's degree. This is desirable because of sophomore professional requirements, course sequences, and the need for engineering physics and good preparation in mathematics.

### Preparation for Graduate Study

As preparation for work toward an advanced degree in civil engineering, a student should have completed substantially the equivalent of the above schedule of studies.

### Department of Clothing, Interior Design and Textiles

Professor and Department Head, M. Perry; Associate Professors, J. Klopfen, C. Sherman; Assistant Professors, K. Hatch, J. Rogers.

The focus of the study in Clothing, Interior Design and Textiles is understanding the influence of the near environment on behavior and on improving the use and aesthetic appreciation of clothing, textiles, and interior spaces. Concepts from sociology, psychology, economics, aesthetics, and the natural sciences are applied in departmental courses to achieve these goals.

The Interior Design option prepares students for residential and commercial interior design positions. Students may become design consultants with interior design studios, architectural offices and retail stores. The course of study is accredited by the Foundation of Interior Design Research (FIDER) and provides a balanced program in the humanities as well as in interior design. With advanced study the program prepares students for positions in college teaching or as extension specialists. Students who complete this option receive a B.A. in Interior Design.

The merchandising options, Fashion and Interior Design, combine courses in clothing and textiles or interior design with economics and business administration, family life education, and fine arts. Courses from a wide range of disciplines enable the student to assess the needs and wants of the consumer in relation to the capabilities of the market and the industries.
which supply them. Emphasis is placed on application of theory and principles to merchandising apparel or interior furnishings. Students who complete these options receive a B.A. in Home Economics.

The C T Design option provides opportunities for developing competence in art, clothing and textiles as well as a general university background prior to entering professional or technical apparel design schools. Elective hours are selected in relation to the student's interest in costume design for the industry or theater, or in fashion illustration, fabric design, and display. Students who complete this option receive a B.A. in Home Economics.

The Textile option prepares students for positions in textile testing laboratories, in consumer agencies, as well as for advanced study in textile science. The emphasis is a combination of textile science, related natural sciences, and consumer studies. Students who complete this option receive a B.A. in Home Economics.

The Social Science option prepares students for positions with social service institutions and for graduate study in the social psychological aspects of clothing. The option combines clothing and textiles with related courses in the social sciences. Students who complete this option receive a B.A. in Home Economics.

The Housing option includes courses in home economics, interior design, landscape architecture, architecture, sociology, and business administration which apply to the problems and concerns in planning or providing adequate housing for individuals and families. This option also prepares students for graduate study in housing. Students who complete this option receive a B.A. in Home Economics.

The department offers courses of study leading to the degrees of Bachelor of Arts in Home Economics, Bachelor of Science in Home Economics, Bachelor of Arts in Interior Design, and Master of Arts in Home Economics.

**Description of Courses**

**Clothing and Textiles**

C T For explanation see Index under "Symbols"

107 Design Awareness 3 Design experience and analysis applied to the home and self.

215 Consumer Textiles 3 (2-3)


217 Introduction to Clothing 2 Prereq C T 215; Soc 101; Psych 101. Introduction to aesthetic, social, psychological, and economic aspects of clothing.

314 Tailoring 3 (1-6) Prereq C T 216. Tailoring techniques in suit and coat making.

315 Textile Products 3 Prereq C T 215; Chem 101. Application of basic textile concepts to selection and use of textiles; new developments, fundamental concepts of textiles care.

378 Batik and Tie Dye 2 (0-4) May be repeated for credit; cumulative maximum 4 hours. S Prereq F A 103. Experimentation in the application of design to fabrics through media of batik and tie dye.

410 History of Costume and Fabrics 3 1 1981-82 a/y. Prereq C T 215; 3 hrs F A history.


Original Apparel Design 3 (1-6) II Prereq C T 311 or 312. Design and construction of wearable.

413 Clothing Consumption 3 II Prereq Econ 201 or 203; CFS 352; B A 360; C T 417. The economic and social conditions which influence clothing consumption.

Social Psychological Aspects of Clothing 3 I Prereq 12 hrs social science. Research and theory. Credit not granted for both C T 417 and 517.


Seminar I Prereq senior standing.

495 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq senior standing. By interview only.

499 Special Problems V 1-4 May be repeated for credit.

513 Experimental Clothing V 2-3 S Prereq 6 hrs clothing; 9 hrs social science; C T 215. Concepts and theories in teaching textiles and clothing.


517 Social Psychological Aspects of Clothing 3 I Prereq 12 hrs social science. Research and theory. Credit not granted for both C T 417 and 517.

518 Topics in Clothing and Textiles 2 May be repeated for credit; cumulative maximum 8 hours. S Current topics in clothing and textile theory and research.

600 Special Projects or Independent Study Variable credit.
700 Master’s Research, Thesis, and/or Examination Variable credit. (for master’s in H E only)

702 Master’s Special Problems, Directed Study and/or Examination Variable credit. (for master’s in H E only).

Schedule of Studies

At least 40 of the total hours required for the bachelor’s degree in these programs must be in upper-division courses. Courses required for the completion of an option cannot be taken on a pass/fail basis. Course requirements for each option are listed below.

C T CORE REQUIREMENTS
All students in any of the clothing and textile options are required to take:
C T 107, 215, 216, 217, 410 or 411, 417, 419
CFS 247, 350
Fine Arts history course (201 or above)
Psych 101 or 102, Soc 101 or Anth 101, Chem 101 or 105, Speech elective.

Fashion Merchandising Option
C T 315, 418
12 hours from C T 311, 312, 313, 314, 378, 412, 410 or 411 if not used for core requirement above.
Econ 102, 203; B A 201, 210, 301, 360, 470
3 hours from Econ 312, B A 367, or CFS 352
20 hours electives

Design Option
C T 311, 312, 313, 412; I D 477
3 hours from C T 314, 315, 418, 410 or 411 if not used for core requirement above.
F A 103, 110; F A 331 or Com 382 or VTE 426; F A 340 or 350 or 360.
9 hours F A or Com electives
Econ 201; B A 360
CFS 352
14 hours electives

Social Science Option
C T 315, 418
12 hours from C T 311, 312, 313, 314, 378, 412, 410 or 411 if not used for core requirement above.
CFS 353 or 3 hours C T electives
CFS 442, 452; Anth 301
Psych 201; Soc 320 or Psych 285; Soc or Psych 350, Soc 321 or Stat elective
Econ 102, 203
CFS 352
15 hours electives

Textile Option
C T 315

6 hours from C T 311, 312, 313, 314, 378, 412, 418, 410 or 411 if not used for core requirement above.
Phys 101, 102; Biom 412; Econ 201
Chem 106, 217, 340, 341, 342, 343
3 hours Math 107, 109, or 202
18 hours electives

Interior Design

I D For explanation see Index under “Symbols”

170 Interior Design I 3 (2-3) I Prereq F A 103 or C T 107. Visual elements and principles of design in relation to contemporary living.

202 The Built Environment II Same as Arch 202.

270 Designation 3 (0-6) I Prereq Arch 101 or c//. Rendering techniques and media; preparation of professional presentation.

271 Interior Design II 3 (2-3) I Prereq I D 270. Interior design problems; understanding fabrication of furnishings; individual furnishing projects.

370 Interior Design III 3 (1-6) I Prereq I D 271. Design of contemporary furniture for fabrication.

371 Interior Design IV 3 (1-6) I Prereq junior in I D. Design elements and principles of interiors.

372 History of Interiors and Furnishings 3 I Prereq F A history or Arch 120. Ancient to 1700.

373 History of Interiors and Furnishings 3 II Prereq I D 372. From 1700 to present.

375 Interior Design Field Service 3 (1-6) S Design for special groups emphasizing the designer’s responsibility within the community.


471 Interior Design VI 4 (1-9) II Prereq I D 470. Professional procedures.

472 Preservation/Restoration of Interiors and Furnishings 3 (2-3) S Prereq Arch 101 and 102 or I D 271 and 372 or 373. Renovation of historic buildings and adaptation of older buildings to future needs.

475 Advanced Home Furnishings 3 (2-3) I Prereq C T 107 or F A 105; CFS 247, 350. For nonmajors only. Elements and principles of design as they relate to home furnishings.

477 Display Design 2 (1-3) I Prereq C T 107 or F A 105. Design principles and elements as they relate to display.

479 Seminar I May be repeated for credit; cumulative maximum 4 hours.

495 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 4
hours. Prereq senior standing. By interview only.

499 Special Problems V 1-4 May be repeated for credit.

570 Furnishings and Accessories 3 (2-3) I Prereq I D 470 or 475. Detailed areas of interior design.

573 Advanced Interior Design II 3 (2-3) II 1980-81 a/y.

600 Special Projects or Independent Study Variable credit.

700 Master’s Research, Thesis, and/or Examination Variable credit. (for master’s in H E only)

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. (for master’s in H E only)

**Schedule of Studies**

At least 40 of the total hours required for the bachelor degrees in these programs must be in upper-division courses. Courses required for the completion of an option cannot be taken on a pass/fail basis. A review of the student’s portfolio is held prior to entrance into junior courses. Course requirements for each option are listed below.

**I D CORE REQUIREMENTS**

All students in any of the interior design options are required to take:

- I D 170, 270, 271, 479
- C T 107, 215
- Arch 101
- Soc 101 or Anth 101; Psych 101 or 102; Phys 101 or 380
- 6 hours Arch history or Fine Arts history (201 or above)
- Speech elective

**Interior Design Option**

- I D 370, 371, 372, 373, 470, 471
- F A 103 or 110, 331 or VTE 426; CFS 353; VTE 121, 221
- Arch 102, 331, 355, 433 or 434 and 435
- 3 hours in Econ 102, B A 201 or 210
- 23 hours electives

**I D Merchandising Option**

- I D 370, 371, 372, 373; C T 417, 418
- Arch 102, CFS 247, 350; F A 103 or 110
- Econ 102, 203; B A 201 or 231, 210, 301, 360, 470
- 3 hours in F A 331 or C T 315 or VTE 426
- CFS 352
- 13 hours electives

**Housing Option**

- I D 475; CFS 240, 247, 350, 352, 353, 452; FNIM 266

Arch 331, 342, 355; L A 264
B A 210, 305, 320; Econ 102 or 201
Soc 330, 431
15-16 hours electives

**Preparation for Graduate Study**

Normally the applicant for graduate study should have an undergraduate major in Clothing and Textiles or Interior Design. However, candidates with a good record in related fields may be well prepared for certain areas of advanced study. Students from related disciplines would be required to take some courses required of undergraduate majors in these fields.

**Department of Communications**

*Department Chair, T. H. Heuterman; Professors, C. O. Cole, H. A. Rundell; Associate Professors, E. W. Camron, V. E. Limburg, S. Unwin; Assistant Professors, P. H. Cheng, F. Feasley, G. Johnson, E. S. Lorimor, J. L. Salvaggio.*

The curricula in the Department of Communications are designed to prepare students for careers in the mass media and related fields. Although focus is placed on the knowledge and skills essential in these areas, the department builds on a firm base of liberal undergraduate education drawn from other academic disciplines.

Theoretical training and laboratory workshop methods are combined with practical experience on various student publications, including a daily newspaper, in the activities of campus-based television and radio stations, and in an internship program.

Students may follow a general course of study within the department, or may select a primary area of interest for specialized study: advertising, broadcasting, cinema and photography, journalism, or public relations.

The department offers courses of study leading to the degree of Bachelor of Arts in Communications. It also participates in an interdepartmental program leading to the degree of Master of Arts in Speech with emphasis on mass communications or on cinema aesthetics.

Teacher training is done in cooperation with the Department of Education, and a major in agricultural communications is offered in cooperation with the College of Agriculture.

**Description of Courses**

*For explanation see Index under “Symbols”*
Inter-Sequence Courses
Com
395 Communications Practicum V 1-6 May be repeated for credit; cumulative maximum 6 hours. By interview only. Credit not granted for both Com 395 and 495.
410 History of Mass Communications 3 II For seniors and graduate students.
415 Law of Mass Communications 3 For juniors, seniors and graduate students.
475 Seminar in Communications 3 May be repeated for credit; cumulative maximum 9 hours. By interview only. For seniors and graduate students.
481 Media Management 3 For seniors and graduate students.
490 Research Methods 3 II For seniors and graduate students.
495 Professional Internship 12 By interview only. Credit not granted for both Com 395 and 495.
499 Special Problems V 1-4 May be repeated for credit.

Advertising
Adver
280 Advertising Principles and Practices 3 Not open to freshmen.
380 Broadcast Advertising 3 (2-3) Prereq Bdct 165 or Jour 225; Adver 380. For juniors and seniors.
382 Print Advertising 3 (2-3) Prereq Bdct 165 or Jour 225; Adver 280. For juniors and seniors.
395 Communications Practicum V 1-6 By application only. Credit not granted for both Adver 395 and 495.
475 Seminar in Advertising 3 By interview only. May be repeated for credit; cumulative maximum 9 hours. For senior and graduate students.
480 Advertising Agency Operation and Campaigns 3 (2-3) Prereq Adver 380, 382.
495 Professional Internship 12 By interview only. Credit not granted for both Adver 395 and 495.
499 Special Problems V 1-4 May be repeated for credit.

Broadcasting
Bdct
165 Broadcast News Writing, Reporting, and Editing 3 (2-3) Prereq demonstrated proficiency in typing, grammar, spelling, and punctuation. The typing proficiency requirement will be waived on an individual basis for otherwise qualified handicapped students.
250 Introduction to Broadcasting 3 Not open to freshmen.
255 Audio Writing and Production 2 (1-3) Prereq Bdct 165, 250.
355 Television Writing and Production 4 (2-6) Prereq Bdct 255. For juniors and seniors.
395 Broadcasting Practicum V 1-6 By application only. Credit not granted for both Bdct 395 and 495.
455 Television Workshop 3 (1-6) Prereq Bdct 355. May be repeated for credit; cumulative maximum 6 hours.
465 News and Public Affairs for Television 3 (2-3) Prereq Bdct 365; Cine 253 or c/.
475 Seminar in Broadcasting 3 May be repeated for credit; cumulative maximum 9 hours. By interview only. For seniors and graduate students.
495 Professional Internship 12 By interview only. Credit not granted for both Bdct 395 and 495.
499 Special Problems V 1-4 May be repeated for credit.

Cinema and Photography
Cine
253 Photo-communications 3 (2-3) I
323 [H] History of the Cinema I 3 (2-3)
333 (393) History of the Cinema II 3 (2-3)
363 History of Film Design 3 Prereq Cine 323, 333.
368 Visual Communication in Theatre, Film, and Television 3 II Same as Spe 368.
393 (363) Film Scriptwriting 3 Prereq Cine 323, 333, 363.
395 Cinema and Photography Practicum V 1-5 By application only. Credit not granted for both Cine 395 and 495.
423 Film Theory 3 I Prereq Cine 323, 333.
433 (333) Film Criticism and Evaluation 3 Prereq Cine 323, 333. For juniors and seniors.
453 Color Photography 3 (2-3) II Prereq Cine 253.
463 Advanced Cinema Production 3 (2-3) I Prereq Cine 353.
475 Seminar in Cinema Studies 3 By interview only. May be repeated for credit; cumulative maximum 9 hours. For seniors and graduate students.
495 Professional Internship 12 By interview only. Credit not granted for both Cine 395 and 495.
Special Problems V 1-4 May be repeated for credit.

Journalism

225 Newswriting 3 (2-3) Prereq Jour 225.
225 Advanced Reporting 3 Prereq Jour 305.
320 News Editing 3 (2-3) Prereq Jour 325 or C+.  
395 Journalism Practicum V 1-6 By application only. Credit not granted for both Jour 395 and 495.
425 Reporting of Public Affairs 3 II Prereq Jour 325, 330. For seniors and graduate students.
430 Editorial Writing 2  
475 Seminar in Journalism 3 By interview only. May be repeated for credit; cumulative maximum 9 hours. For seniors and graduate students.
495 Professional Internship 12 By interview only. Credit not granted for both Jour 395 and 495.
499 Special Problems V 1-4 May be repeated for credit.

Public Relations

P R

312 Public Relations 3 Prereq Jour 225.
313 Public Relations Writing and Editing 3 (2-3) Prereq Jour 305; P R 312.
395 Public Relations Practicum V 1-6 By application only. Credit not granted for both P R 395 and 495.
413 Public Information 3 II Prereq P R 312. For seniors and graduate students.
475 Seminar in Public Relations 3 By interview only. May be repeated for credit; cumulative maximum 9 hours. For seniors and graduate students.
495 Professional Internship 12 By interview only. Credit not granted for both P R 395 and 495.
499 Special Problems V 1-4 May be repeated for credit.

General Departmental Requirements

The department’s requirements for certification of major are completion of two courses in the department, including one writing course (Bdct 165 or Jour 225, with at least a C grade); 45 credit hours of college-level work, and achievement of a 2.5 gpa in courses in this department, and a cumulative university gpa of 2.0.

Each student will complete the requirements of one of the following sequences and accumulate a minor of 18 hours in a second department. At least 81 of the 120 hours required for the B A in Communications must be taken in other departments. Transfer students, in meeting the requirements of their chosen sequence, must take a minimum of 15 credit hours in the department.

Sequences

Advertising

Bdct 165 or Jour 225; Adver 280, 380, 382, 480, 495; B A 360 OR: Bdct 165 or Jour 225; Adver 280, 380, 382, 480; B A 360, 12 hours electives in the department.

Broadcasting


Cinema

Production: Bdct 165 or Jour 225; Cine 253, 323, 333, 353, 363, 463, 495 OR: Bdct 165, 250, 255, 355, Cine 253, 323, 333, 363, 393, 463. Film Studies: Bdct 165 or Jour 225; Cine 253, 323, 333, 353, 363; plus three upper-level cinema courses and two approved elective courses, at least one of which must be within the Communications Department.

General Communications

A program of study in this major, acceptable to the department, of at least 30 hours in communications, advertising, broadcasting, cinema, journalism or public relations, is worked out by the student and the department chairperson prior to certification of major in this sequence.

Journalism

Jour 225, 305, 325, 330; Com 410, 415; Jour 495 OR: Jour 225, 305; Cine 253; Jour 325, 330; Com 410 and 415; Jour 475; 6 hours electives in the department.

Public Relations

Jour 225, 305; Adver 280; P R 312, 313, 413; Com 415 or other law course; Com 490 or Soc 320; P R 495 OR: Jour 225, 305; Adver 280; P R 312, 313; Jour 325; P R 413; Com 415 or other law course; Com 490 or Soc 320; 3 hrs electives in the department.

Departmental Minor

Students declaring a minor in communication must choose one of the following sequences and complete a minimum of 18 hours, including 9 upper-division hours and the following required

Agricultural Communications
This is a major in the College of Agriculture, in cooperation with the Department of Communications. The student declaring this major must complete the requirements of the general agriculture curriculum and accumulate a minimum of 30 hours in the Department of Communications, including any communications courses used to satisfy general agriculture requirements. Those electing this major should make that decision known as early as possible in their academic career. Agricultural communications majors should complete the following: Print Media: Jour 225, 305; Cine 253; P R 313, 413; Com 490, and 12 elective hours in the Department of Communications. Broadcast Media: Bcast 165, 250, 255, 355, 365; P R 312, 413; Com 490, and 7 elective hours in the Department of Communications. Recommended electives: The student should consult with a Department of Communications adviser before registering for elective courses. Specialized programs patterned for individual career aspirations may be developed in conjunction with the head of the Department of Communications or a designated representative.

Teacher Training
Students preparing to teach should consult the catalog listing of the Department of Education for certification requirements. Students majoring or minoring in communications for purposes of teacher certification should make that intent known to the head of the Department of Communications as early as possible in their academic career.

Department of Computer Science

Professor and Department Head, G. Marsaglia; Professors, D. B. Benson, N. Deo, J. S. Kowalkit, S. C. Lowell, C. B. Millham, R. A. Parker, K. C. Wang; Associate Professors, R. E. Lord, A. C. Satterthwait; Assistant Professors, D. S. Miller, R. J. Ross, J. D. Starkey, K. Winklmann; Adjunct Associate Professor, J. R. Kosorok; Adjunct Assistant Professors, D. W. Fraley, L. G. Niccoli; Adjunct Lecturers, K. Eckblaw, L. J. Gannon, J. L. Hockenhull, J. Lewis, R. E. Mahan, T. J. Mathiew, T. A. Selma, and J. J. Thomas.

Computer science encompasses the theory and techniques by which information is encoded, stored, communicated, transformed, and analyzed. It deals particularly with the theory of algorithms (i.e., effective procedures), with the structure of languages for the expression of algorithms, and with the design of efficient algorithms for the solution of practical problems. Of central concern is the study of computer systems (hardware and programs) for the automatic execution of these algorithms.

Computer science has its principal bases in mathematics and engineering. However, it draws upon concepts from a wide variety of other traditional disciplines such as linguistics, psychology, biology, philosophy, and economics. It has applications to these and other disciplines.

Facilities at the Washington State University Computing Center, available in support of the program, include an Amdahl 470 V6, a PDP 11/60 with a GT-40 graphics computer, and many microcomputer systems.

A digital techniques laboratory is used for research and instruction in high-speed logic circuits, and digital communications.

The department offers courses of study leading to the degrees of Bachelor of Science in Computer Science, Master of Science in Computer Science, and Doctor of Philosophy.

Description of Courses

Cpt 200 [Z] Computers and Society 3 Computer characteristics which portend major influences on society.

201 Introduction to FORTRAN Programming 2.1 FORTRAN programming language and its use in computational problems; practice in programming for the university's computer. Credit not granted for more than one of Cpt S 201, 203, 210, 220.

203 Computer Programming for Engineers 2 (1-3) Prereq Math 171. Use of FORTRAN in solving problems related to engineering applications; WSU Scientific Subroutine Library; laboratory practice in programming. Credit not granted for more than one of Cpt S 201, 203, 210, 220.

210 [Z] Introduction to Computer Science 4 (3-3) Formulation of problems and the design of procedures for their solution; programming languages; computer systems; laboratory practice in programming. Credit not granted for more than one of Cpt S 201, 203, 210, 220.
211 Advanced Programming 3 II Prereq Cpt S 201, 203, 210 or 220. Advanced programming techniques, stepwise refinement, elementary data structures, string and list processing, recursion.

215 Introduction to Computer Organization and Programming 3 (2-3) Prereq Cpt S 201, 203, 210, or 220. Organization of digital computers; concepts and examples in machine and assembly language programming; laboratory experience with a small computer.

220 Computers in Business 4 (3-3) Capabilities and applications of computers in organizational management; laboratory practice in programming. Credit not granted for more than one of Cpt S 201, 203, 210, 220.

235 Programming Language Topics V 1-3 May be repeated for credit; cumulative maximum 3 hours. Prereq Cpt S 201, 203, or 220. A computer programming language, e.g., COBOL, PL/1, or others offered on demand.

310 Survey of Numerical Methods 3 I Prereq FORTRAN programming; Math 172. Construction and programming of numerical algorithms and the use of standard programmed routines for solving numerical problems.

314 Microprocessor Systems 3 (2-3) Same as E E 314.

315 Introduction to Systems Programming 4 (3-3) Prereq Cpt S 211, 215. Implementation of systems programs, concepts of computer operating systems; laboratory experience in using operating system facilities.

316 Introduction to Discrete Structures 3 Prereq Cpt S 210 or 220; Math 220. Introduction to and applications of set theory, discrete structures, elementary logic, and combinatorics.

320 Business Data Processing 3 I Prereq Cpt S 210 or 220. Problems and principles in the automatic handling of large information files utilizing a variety of input-output and storage devices.

325 Data Structures and File Processing 3 II Prereq Cpt S 211. Arrays, lists, strings, trees; characteristics of storage media and file systems; sorting and searching.

364 Principles of Optimization 3 Same as Math 364.

400 Design and Analysis of Algorithms 3 I Prereq Cpt S 316, 325. Analysis of data structures and algorithms; computational complexity and design of efficient data-handling procedures.

401 Programming Languages 3 Prereq Cpt S 400. Concepts of high-level programming languages; syntax and semantics of several existing programming languages; compilers, interpreters, and formal syntax specification.

402 Operating Systems and Computer Architecture 3 I Prereq Cpt S 315. Operating systems, computer architectures, and their interrelationships in micro, mini, and large computer systems.

414 Fundamentals of Digital Systems 3 Same as E E 414.

417 Introduction to Simulation 3 II Same as B A 417.

448 Numerical Analysis 3 Same as Math 448.

470 Computer Methods in Probability and Statistics 3 Prereq Cpt S 201 or 210; Stat 429 or 433. By interview only. Extensive use of computers to generate random variables and use them to illustrate, develop and expand results in probability/statistics.

495 Consulting in Computer Programming 1 May be repeated for credit; cumulative maximum 2 hours. Prereq Cpt S 210. By interview only. Consulting for students in Cpt S 201, 210, 220.

498 Work-Study Internship V 3-9 May be repeated for credit; cumulative maximum 9 hours. By interview only. Experience in programming and systems analysis in a working environment under supervision of industrial or governmental professionals and faculty.

499 Special Problems V 1-4 May be repeated for credit.

500 Theory of Programming 3 II Prereq Cpt S 516 and programming knowledge. Credit not granted for Cpt S 500 and 400 or 401. Execution environments, storage management, data structures, searching, sorting, symbol tables, translators, string and list processing, block structured languages, programming theory.

501 Artificial Intelligence and Heuristic Programming 3 Normative and descriptive models of intelligent processes; programming languages used to specify these models.

502 Systems Programming 3 Prereq Cpt S 315, 401. Structure of multiprogramming and multiprocessing systems, efficient allocation of system resources, design, implementation and performance measurement of system modules.

503 Compiler Theory and Design 3 Prereq Cpt S 401, 516. Scanning, parsing, code generation, optimization; theory and practical limitations; problems with existing
compiler languages; proofs of correctness; meta-compilers.

510 Modeling and Simulation of Ecological Systems 3

514 Advanced Digital System Design 3 Same as E E 514.

516 Theory of Computing 3 I Prereq Cpt S 516. Discrete structures, automata, formal languages, recursive functions, theory of algorithms and computability.

520 Advanced Topics in Information Processing 3 May be repeated for credit.

530 Formal Languages 3 Prereq Cpt S 516 or Math 421. Algebraic structure of formal languages, relationships to parsing; formal syntactic and semantic specification of procedures.

540 Information Storage and Retrieval 3 I Prereq Math 443, Cpt S 400. Theory and practice in the storage and retrieval of information; file organization; database and index design; system design.

544 Computational Linear Algebra 3 Same as Math 544.

545 Advanced Numerical Analysis 3 Same as Math 545.

564 Topics in Optimization 3 Same as Math 564.

598 Seminar 1 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

The minor courses taken are subject to the approval of the student's adviser. They may be all selected from a single department or from a group of related departments. If mathematics is elected as the minor area, the student must complete 9 hours beyond the required upper-division courses.

An off-campus work-study internship program involves selected students in seven and one-half months (a summer plus one full semester) of practical work experience with cooperating Northwest industries and governmental computer installations. This experience takes place at the beginning of the senior year and is jointly supervised by the computer science faculty and the professional staff of the cooperating installation. A student selected for such an internship will be expected to enroll for 9 hours of Cpt S 498. The requirement of 3 hours of Cpt S 499 will be waived; however, only 3 of the 9 hours of Cpt S 498 may be applied toward the requirement of 30 hours of computer science courses.

The department also offers an undergraduate minor, which requires the completion of 16 semester credits in computer science, nine of which must be in formal upper-division work.

**Preparation for Graduate Study**

As preparation for work toward an advanced degree, students should have completed an undergraduate major in a field in which they have studied significantly complex physical, biological, or social systems, and have taken mathematics at least through elementary calculus and beginning linear algebra. Students should have completed courses equivalent to Cpt S 210, 310, 315, and 316. Students who have not been able to acquire an adequate background in computer science may enter the program providing they remove this deficiency by completing the above sequence.

**Department of Criminal Justice**

*Professor and Department Head, T. A. Johnson; Associate Professor, B. A. Menke; Assistant Professors, R. G. Frey, O. Marein, A. W. Pisciotta; Instructor, R. L. Miller; Visiting Professor, A. L. Smith.*

The objectives of this department are to offer students a broad liberal arts education in conjunction with intensive professional education in the criminal justice field; to prepare them for careers in this professional field; to develop the qualities for leadership; and to foster ideals of professional achievement in public service.

The educational philosophy of the department provides an orientation to the entire justice
system while at the same time allowing some concentration on specific components of that system. An emphasis is placed on analytical approaches to the study of the criminal justice system, processes, and program. The academic program is concerned with the larger social environment in which the criminal justice system operates.

Students will gain an awareness of the consequences for individuals affected by the criminal justice system; these include not only practitioners in the system, but also clients and the general public.

Specifically, at the bachelor's level the program has a general liberal arts orientation as its foundation. Individuals completing the program receive a general university education, as well as preparation for specific professional careers. All students are required to complete a core criminal justice curriculum and will choose one of the three options, law enforcement, juvenile justice-corrective services, and crime prevention.

Curricula in criminal justice provide basic professional, educational programs for career services in law enforcement and correctional services and juvenile justice. These professional courses are superimposed on collateral offerings in the social, behavioral, and physical sciences. This facilitates the accomplishment of a program that represents a multi-disciplinary preparation for professional careers in criminal justice public service.

The department offers courses of study leading to the degrees of Bachelor of Arts in Criminal Justice and Master of Arts in Criminal Justice. Students will determine, in consultation with the faculty, the most desirable schedule of studies to achieve their objectives.

**Description of Courses**

**Crm J** For explanation see Index under "Symbols"

101 Introduction to the Administration of Criminal Justice 3 Agencies and process involved in the administration of criminal justice.


210 Criminal Investigation 3 Prereq Crm J 101. Theory and practice of investigation through application of deductive and inductive reasoning; development and practice of field investigation.

320 Criminal Law 3 Prereq Crm J 101. Substantive criminal law; principles, functions, and limits; basic crime categories, state and national legal research materials.


375 The Philosopher and the Humanist: Their Impact on the Criminal Justice System 3 Prereq Crm J 101. The philosopher and the humanist: early thinkers, social contact thinkers, contemporary thought on totalitarianism and existentialism; assessment of impact on criminal justice.

400 Issues in the Administration of Criminal Justice V 1-3 By interview only. Special issues in criminal justice.

405 Comparative Criminal Justice Systems 3 II Prereq Crm J 101. Comparative study of criminal justice systems in the U.S. and selected foreign countries; legal, police and correctional practices.

420 Law of Evidence and Criminal Procedure 3 II Prereq Crm J 101. Principal court decisions concerning standards of conduct and rights in the criminal process; evidentiary principles and privileges.

425 Legal and Ethical Issues in Corrections 3 Prereq Crm J 101, 320. Impact of federal and state laws, court decisions; moral and ethical issues regarding adult and juvenile corrections.

450 Criminal Justice Research I 3 III Prereq Crm J 101. Review of social science research techniques and the use of social research in public policy making.

455 Criminal Justice Research II 3 III Prereq Crm J 101, 450. Issues in the evaluation of program and personnel in organizations.

465 Innovations in Corrections and Juvenile Justice 3 II Prereq Crm J 101. Innovative approaches to the treatment and rehabilitation of juvenile and adult offenders.

470 The Police and Society 3 Prereq Crm J 101. Community and selected social institutional factors as related to their influence on police enterprise.

490 Criminal Justice Internship 10-15 By interview only. Off-campus professional internship in selected criminal justice agencies.

499 Special Problems V 1-4 May be repeated for credit.

500 Seminar in the Administration of Criminal Justice 1 Current issues, problems, and critical concerns within the field of administration of criminal justice.

530 (501) Proseminar in Social Control 3 I History and evolution of various forms of social control in their institutional and interpersonal forms.
535 (520) Reform Models for Criminal Law 3 II
Over-reach of the criminal law, proposals for reform in the process of law, legal research.

540 (510) Proseminar in Social Intervention 3 II
Various models of social intervention with criminals and delinquent offenders; institutionalized intervention, diversion and community-based programming.

550 Proseminar in the Administrative Process 3 II
Processes and techniques of policy making and management within the criminal justice system.

560 (555) Proseminar in Research, Planning and Program Evaluation 3 II
Social research, strategies of program development, implementation, and evaluation in comprehensive planning in public agencies.

565 (570) Education and Criminal Justice 3 I
Education and training of criminal justice personnel and the effects of education on crime and criminals.

590 Criminal Justice Field Practicum 6
By interview only. Off-campus professional internship in selected criminal justice agencies.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study and/or Examination Variable credit.

Minor in Criminal Justice

The minor in criminal justice requires 16 credits of coursework in criminal justice, half of which must be taken at an upper-division level. Students wishing to declare a minor in criminal justice should contact the chairman of the Department of Criminal Justice as early as possible to develop the required program.

Schedule of Studies

Due to increasing enrollment demands and limitations of faculty and space resources, those students wishing to certify as criminal justice majors are requested to contact the chairperson of the Department of Criminal Justice. Since only a limited number of students may certify as criminal justice majors each year, admission will be granted to the most qualified students based on experience, demonstrated abilities, motivation, and previous academic performance.

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses. A minimum of 30 hours of courses in criminal justice are required for graduation within each option.

Prior to the beginning of the junior year, a student should have completed the required courses listed below and at least three-fourths of the graduation requirements of the College of Sciences and Arts. The electives may be adjusted, in consultation with the student's adviser, to meet the career objectives of each individual student.

GENERAL UNIVERSITY AND COLLEGE OF SCIENCES AND ARTS REQUIREMENTS

<table>
<thead>
<tr>
<th>Hours</th>
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<tbody>
<tr>
<td>Communications Proficiency</td>
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<tr>
<td>Humanities including Phil 101 or 260</td>
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<tr>
<td>Social Science including 9 hrs from Soc 101, Psych 101, Hist 110, 111, Anth 101, Econ 201, Pol S 101</td>
</tr>
<tr>
<td>Foreign Languages</td>
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<tr>
<td>Biological and Physical Sciences</td>
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CORE REQUIREMENTS
(Required of all majors)

<table>
<thead>
<tr>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Crm J 101, 150, 320, 425, 450, 470</td>
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<tr>
<td>Soc 361 Criminology</td>
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</tbody>
</table>

In addition to choosing one of the options listed below, students must also select at least 3 hours from each of the following areas: minorities, public affairs and social services, social problems, research methods and communications, and ethics, values and the legal order.

OPTIONS

I. Crime Prevention: Crm J 330, 210 plus 6 additional hrs Crm J.
II. Corrections—Juvenile Justice: Crm J 465 plus 9 additional hrs Crm J.
III. Law Enforcement: Crm J 210, 420 plus 6 additional hrs Crm J.

ADDITIONAL REQUIREMENTS
(At least 3 hrs from each category)

Minorities: Pol S 305, 324; Psych 324; Soc 356, 381, 383, 384; Anth 422; Econ 325; or 3 hrs in Asian Studies, Black Studies, Chicano Studies, Native American Studies, Women Studies.

Public Affairs and Social Services: S W 190, 390, 393, 394, 395, 493, 494; Econ 102, 201, 203; B A 201, 230, 301; Soc 446; Pol S 206, 440, 443, 445, 446.

Option II requires 3 additional hrs S W from the list above. Option I and III require 3 additional hrs Econ, B A, or Pol S from the list above.

Research Methods and Communications: Soc 320, 321; Psych 311; Spe 325; Engl 201, 301, 402; B A 215.

Ethics, Values and the Legal Order: Pol S 300, 402, 404; Bl St 313; Soc/Psych 355, Soc 364; Hist 420; B A 210; Phil 445.

**Transfer Students**

Students planning to transfer to Washington State University at the end of the freshman or sophomore year should follow as closely as possible the general and core course requirements set forth above. If this is done, there should be no difficulty in completing the requirements for the bachelor's degree within the normal period of four years. It should also be noted that courses numbered 300 or above at Washington State University and taken at other institutions during the freshman or sophomore years will not be accepted for major requirements.

**Preparation for Graduate Study**

Undergraduates who are pursuing their studies at other institutions or through other curricula at this institution and who contemplate graduate work in this department will do well to elect courses similar to those required in the above schedule of studies.

**Program in East and South Asia**

Associate Professor and Director, R. S. Ryland (History, South Asia); Professors, T. Akamine (Education, East Asia), V. Bhata (International Programs, South Asia), D. H. Bishop (Philosophy, Asia General), T. L. Kennedy (History, East Asia), T. Tsurutani (Political Science, East Asia); Associate Professors, F. W. Blackwell (Hindi, Sanskrit), A. Chang (Chinese, Japanese), John Donnelly (Economics); Assistant Professors, D. Messerschmidt (Anthropology, South Asia, Nepal), J. L. Salvaggio (Communications, East Asia), N. Suzuki (Business, East Asia), B. Winfield (Communications, East Asia).

The Program in Asian Studies is designed to provide a broad, systematic knowledge of Asia through interdisciplinary study and is intended to serve three major objectives:

1. to prepare students intending to teach courses on Asia in public schools,
2. to provide academic background for those planning to pursue graduate work on Asia,
3. to prepare students for business careers dealing with Asia, and
4. to train those interested in governmental and various private career opportunities related to Asia.

The flexibility of the program affords both an area concentration and a departmental specialization. The program offers the degree of Bachelor of Arts in Asian Studies.

**Description of Courses**

As St For explanation see Index under "Symbols"

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>270</td>
<td>[S] Introduction to South Asian Culture</td>
<td>3</td>
</tr>
<tr>
<td>275</td>
<td>[S] Introduction to East Asian Culture</td>
<td>3</td>
</tr>
<tr>
<td>303</td>
<td>Elementary Hindi</td>
<td>4</td>
</tr>
<tr>
<td>304</td>
<td>Elementary Hindi</td>
<td>4</td>
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<tr>
<td>315</td>
<td>[H] Philosophy and Religion of China and Japan</td>
<td>3</td>
</tr>
<tr>
<td>350</td>
<td>[H] Eastern Civilization: India, Buddhism</td>
<td>3</td>
</tr>
<tr>
<td>352</td>
<td>Literature and Lore of India</td>
<td>2</td>
</tr>
<tr>
<td>374</td>
<td>[H] Pre-Modern History of East Asia</td>
<td>3</td>
</tr>
<tr>
<td>429</td>
<td>Peoples of Asia</td>
<td>3</td>
</tr>
<tr>
<td>435</td>
<td>Politics of Developing Nations</td>
<td>3</td>
</tr>
<tr>
<td>436</td>
<td>Comparative Politics: China and Japan</td>
<td>3</td>
</tr>
<tr>
<td>470</td>
<td>India 1526-1947</td>
<td>3</td>
</tr>
<tr>
<td>471</td>
<td>Contemporary South Asia</td>
<td>3</td>
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<tr>
<td>475</td>
<td>Twentieth Century East Asia</td>
<td>3</td>
</tr>
<tr>
<td>476</td>
<td>Revolutionary China, 1800 to Present</td>
<td>3</td>
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<tr>
<td>477</td>
<td>Modern Japanese History</td>
<td>3</td>
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<tr>
<td>497</td>
<td>Seminar 3 May be repeated for credit</td>
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<tr>
<td>499</td>
<td>Special Problems V 1-4 May be repeated for credit</td>
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</tbody>
</table>

**Degree Requirements**

**Major:** A minimum of 42 hours of courses on Asia and in related fields including (1) two years of an Asian language or languages and (2) at least six hours in both East Asia and South Asia. Of these 42 hours, at least 40 must be at the 300-level or above.

**Minor:** Students wishing to minor in Asian Studies are required to take a minimum of 16 hours of course work chosen from the lists below, including (1) at least three hours in East Asia and
South Asia and (2) a minimum of eight hours at the 300-level and above. Students are encouraged, but not required, to take an Asian language.

East Asia

Anth 323 Peoples of East Asia 3
As st 275 Intro East Asia 3
As st 315 Phil of China, Japan 3
As st 374 Pre-Modern East Asia 3
As st 435 Politics SE Asia 3
As st 436 Politics of China, Japan 3
As st 475 20th C East Asia 3
As st 476 Revol China 3
As st 477 Mod Japan Hist 3
Chin 301 Chinese I 4
Chin 302 Chinese II 4
Chin 320 Chinese Conv 2
Chin 350 Lit in Trans 2
Japn 301 Japanese I 4
Japn 302 Japanese II 4
Japn 303 Intensive Japn 10
Japn 401 Japanese III 4

South Asia

As st 270 Intro South Asia 3
As st 350 Eastern Civ 3
As st 352 Lit of India 2
As st 470 India, 1526-1947 3
As st 471 Contemp South Asia 3
For L 300 Sanskrit I 4
For L 300 Sanskrit II 4
As st 303 Elem Hindi 4
As st 304 Elem Hindi 4
Phil 314 Phil Rel India 3

Asia, General

Arch 328 Hist Far Eastern Arch 3
As st 429 Peoples Asia 3
As st 497 Seminar 3
As st 499 Special Problems 1-4

Electives

B A 301 Bus Org 3
B A 452 Internat Bus Mgmt 3
B A 453 Com Mgmt U.S./Japan 3
Econ 416 Comp Econ Syst 3
Econ 470 Internat Trade/Fin 3
Econ 472 Develop Underdev 3

Relevant upper-division courses not mentioned above may be counted toward a major or minor if approved by the Director of Asian Studies.


The curriculum in economics is designed to serve all students interested in the study of economic relationships in the national and world economy. Some knowledge of economics is generally regarded as a useful supplement to the course work for all fields. The course of study for economic majors is sufficiently flexible to accommodate students with a variety of career interests, including business, law, government, education, public administration, and general economics. The undergraduate economics major is also excellent preparation for graduate study in many fields, such as business, law, and economics. Courses of study in economics allow sufficient time for electing courses outside the department while meeting all departmental and General University Requirements.

The department offers courses of study leading to the degrees of Bachelor of Arts in Economics, Master of Arts in Economics, and Doctor of Philosophy.

Description of Courses

Econ For explanation see Index under “Symbols”

102 [S] Fundamentals of Macroeconomics 3
Credit not granted for both Econ 102 and 201. First half of intensive introductory course. Theory and policy related to unemployment, inflation, and foreign trade; government spending, taxation, and commercial banks.

198 [S] Economics Honors 3

201 [S] Contemporary Economics and the American Economy 4
Credit not granted for both Econ 201 and 102. Political economy of American economic system: macroeconomic theory, unemployment and inflation; corporate power; distribution of wealth, pollution, economic growth.

203 [S] Fundamentals of Microeconomics 3
Second half of intensive introductory course. Theory and policy related to business competition, investment, income distribution.

301 Theory of the Firm and Market Policy 3
Prereq Econ 203, and 102 or 201. Price determination and market behavior under different market structures and the problems posed for public policy.
312 Economics of Consumption 3 I Prereq Econ 203, and 102 or 201. Consumption expenditures and problems; theory of consumer choice; public policy and consumer welfare.

316 Urban and Regional Economics 3 I Prereq Econ 201 or 203. Industry and population location within and among regions; city structure; growth and stagnation problems and policies of cities and regions.

320 Money and Banking 3 Prereq Econ 102 or 201. Principles of money, credit, banking, and national income analysis.

325 Women and Minorities in the Economy 3 I Prereq Econ 102, 201, or 203. Economic experiences of minorities and women within American society.

340 Public Finance and Taxation 3 Prereq Econ 102 or 201. Theory and practice at local, state, and federal levels.

350 Labor Economics and Problems 3 Prereq Econ 203, and 102 or 201. Functioning of labor markets; introduction to collective bargaining and labor law.

360 Government and Business 3 Prereq Econ 203. Regulations of utilities, transportation, banks, communications; antitrust law; protection of industries, consumers, environment, worker safety and rights.

364 Transport Economics 3 Prereq Econ 201 or 203. Characteristics of transportation systems; market structure; case for and progress of public control of transport agencies.

401 Intermediate Macroeconomic Analysis 3 Prereq Econ 320. Introduction to income, employment, and inflation theory with policy implications.

402 History of Economic Thought 3 I Prereq Econ 102 or 201. Development of economic thought; classical and neoclassical schools, forerunners, and critics considered in relation to their historical setting.

408 Mathematics for Economists 3 I Same as Math 408.

410 Elements of Mathematical Economics 3 I 1980-81 a/y. Prereq Econ 301; Math 202. Neoclassical economics and related subjects using the calculus as the primary analytical tool.


416 Comparative Economic Systems 3 II Prereq Econ 203, and 102 or 201. Alternative economic institutions; capitalism, socialism, fascism; Marxist and Maoist ideology; United States, Japan, Soviet Union, China, Yugoslavia and post-industrialism.


430 American Economic History 3 II 1980-81 a/y. Prereq Econ 203 and 102 or 201. Development and changes in the American economy from the colonial period to the present.

431 European Economic History 3 II 1981-82 a/y. May be repeated for credit; cumulative maximum 6 hours. Prereq Econ 203 and 102 and 201. Development and changes in the European economy from prehistorical times to the present.


445 Economic and Business Fluctuations 3 II Prereq BA 215; Econ 320. Business conditions and outlook analysis; explanations of economic fluctuations.

450 Collective Bargaining 3 I Prereq Econ 350. Legal status, current attitudes, and specific collective bargaining agreements with some emphasis given to Pacific Northwest industries.


460 Concentration of Corporate Power and Antitrust Policy 3 I Prereq Econ 203, and 102 or 201. Extent, causes, and effects of economic power held by U.S. corporations; antitrust laws and other legislation regulating business practices.

463 Current Transportation Problems 3 II Prereq Econ 364. Descriptive and analytical treatment of domestic and international transportation problems; emphasis on the Pacific Northwest.

464 Land Transportation Agencies 3 I Prereq Econ 364. Economic organization, costs, pricing, and policies of various land carriers including highway, pipeline, and railway carriers.

465 Air and Water Transport 3 I Prereq Econ 364. The economic organization, costs, pricing, and policies of air and water carriers.

468 Public Utility Economics 3 I 1981-82 a/y. Prereq Econ 201 or 203. Economic and
legal concepts; development of utility industries and regulation, pricing, and investment standards; public projects and other development programs.

470 International Trade and Finance 3 I Prereq Econ 203, and 102 or 201. Analysis and description of international specialization; commercial policy; multinational firms, monetary problems.

472 Economic Development and Underdevelopment 3 I Economic development and underdevelopment in low-income countries; development theories, policies, strategies, and country models; imperialism and economic dependency.

499 Special Problems V 1-4 May be repeated for credit.

500 Macroeconomic Analysis 3 I Prereq Math 201. Current research on consumption and investment functions, money supply and demand models, static general equilibrium relationships and theories of growth.

501 Microeconomic Theory 3 Prereq Econ 301; one year calculus or Math 408. Static optimization; theory of the consumer and the firm; markets and resource allocation.

502 Advanced Macroeconomic Theory 3 II Prereq Econ 500. Mathematical macro general equilibrium and disequilibrium.

503 Advanced Microeconomic Theory 3 I Prereq Econ 501; Math 408. Contemporary developments in micro theory and policy. Continuation of Econ 501.

504 History of Economic Thought 3 Ii Evolution of economic theory and thought in historical context; classical and neoclassical contributors, precursors, and critics.

510 Mathematical Models of Economics 3 II 1980-81 a/y. Prereq Econ 303; Math 408. Exposition of the mathematical structure of economic theories; the unity of mathematical theories underlying modern developments.

511 Econometrics 3 II 1981-82 a/y. Prereq BA 515; Math 201, 202. Use of mathematical, economic, and statistical research as a means of testing economic theories.


530 Economic History 3 May be repeated for credit; cumulative maximum 6 hours. Changes in the American economy; introduction to the New Economic History.

540 Advanced Public Finance 3 II 1981-82 a/y. Prereq Econ 340. Philosophies of taxation; economic effects of specific taxes; state and local financial problems; education, highways, and state and city government.

552 Labor Theory 3 May be repeated for credit; cumulative maximum 6 hours. II Developments in labor theory; wage theory and recent journal literature.

560 Seminar in Industrial Organization 3 May be repeated for credit; cumulative maximum 6 hours. II Prereq Econ 460. Industrial organization, market conduct, and performance; appraisal of antitrust legislation.

564 Transportation Theory and Policy 3 I


570 International Economics 3 II 1981-82 a/y. The basic nonmonetary theory; new theories of international trade; tariffs and commercial policy; effects of economic integration; international movements factor.

571 Monetary Aspects of International Economics 3 II 1980-81 a/y. Balance-of-payments accounting; methods of adjustment to payments imbalances; the foreign exchange market; international financial institutions.

572 Theoretical and Institutional Aspects of Economic Development 3 II Selected topics in the political economy of developing nations.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Schedule of Studies

During the freshman and sophomore years the Econ major should normally begin Econ courses and complete a major portion of the General University Requirements. In the junior and senior year the Econ major may choose from a variety of courses to prepare for employment or postgraduate education. Majors must have at least 40 hours of upper-division course work and courses in the following areas:

Core: Econ 102 and 203 or 201 (198 for honor students) and 203; 301; 401; 402 or 431

Fields: 12 hours or 4 courses from Econ 312, 316, 320, 325, 340, 350, 364, 402, 410, 411, 416, 431, 445, 460, 468, 470, 472
Electives: 6 hours or 2 courses from the field courses or from Econ 408, 420, 440, 450, 451, 463, 464, 465

Math: Math 107, 201, or 220; Math 202 or 171

Quantitative Methods: BA 215 or Stat 429; one course from Ag Ec 410, BA 230, 412, Cpt S 201, 210, 220, Econ 411, Stat 430

Related Work: 12 hours from courses outside Econ, typically in Ag Ec, BA, and the Social Sciences

*May not be used to satisfy other Econ requirements.
*May not be used as GUR courses.

Minor in Economics

A minor in economics is often a desirable complement to majors such as business administration, engineering, education, agricultural economics, forestry, political science and history. A minor in economics is offered to students who complete 18 hours of economics. At least 9 hours must be in the department's core courses. Consult the department for an acceptable program of study.

Special Programs of Study

Students planning to begin a career immediately after graduation will find openings in many areas of business and government. Special programs of study for particular areas can be developed with the departmental advisers.

Students planning graduate study, whether in economics, law, business or public administration, are advised to develop skills through courses in English composition and additional work in statistics. Recommendations for specific graduate areas include:

Law School: BA 210; 230; Pol S 300; and, depending on legal interests, elective Econ courses from the following: Econ 340, 364, 450, 451, 460, 468 and 470. BA 410, 411 suggested.

Business School: BA 214 and 230; Cpt S 201, 210 or 220. Additional courses in BA are not required for admission to most graduate schools of business. It might be useful, however, to take a second course in accounting, BA 231, and to take introductory courses in the major areas of business: BA 210, 301, 325, 340, 360.

Economics: Math 220 and 171 are recommended to satisfy the major's math requirements. Calculus through Math 273 and Econ 408 may also be useful.


Fields of Study

After the first two courses students will apply their knowledge of basic economic principles to more specialized areas: money and banking; business fluctuations; federal, state, and local finance; taxation; labor and collective bargaining, transportation and public utility economics; international trade and finance; government regulation and control of business; economic history; economic theory.

Transfer Students

Students planning to transfer into economics by the end of their sophomore year should have completed the introductory economics courses if they plan to complete the required work for a degree in two additional years.

Preparation for Graduate Study

Students interested in graduate study should have the approximate background of the undergraduate major shown above. However, students with supporting work in related areas may enter into graduate study with somewhat less training in economics. Such students are requested to communicate with the department for advice and assistance in the development of their plans.

Department of Education


The Department of Education, accredited by the National Council for Accreditation of Teacher
Education, prepares teachers, school administrators, and other specialists for schools and colleges.

The teacher-education program combines college courses, laboratory instruction, and opportunity to observe and work with children in the public schools. Faculty advisers consult with each student to help plan a program that best fits individual abilities and objectives.

The department offers courses of study leading to the degrees of Bachelor of Arts in Education, Bachelor of Arts in Industrial Education, Bachelor of Science in Agricultural Education, Master of Science in Vocational Technical Education, Master of Education, Master of Arts in Education, Doctor of Education, and Doctor of Philosophy.

Admission

1. A student may make application for admission to the Department of Education after having earned at least 30 hours credit. The student must be accepted as an education major (elementary) or as a double major (secondary) in education before taking any education courses. Application forms may be secured from the department.

2. An over-all C average, a C average in all education courses, and a C average in the teaching major or the combined teaching major and minor are required for admission to and continued enrollment in the department.

3. Admission or continuing enrollment may be denied an education major on the basis of review by the department.

4. Applicants for the Provisional Certificate who have a bachelor's degree from an accredited institution other than Washington State University must complete the teacher-education program and earn not less than 30 semester hours in residence. They shall apply for admission to the university to work toward a teaching certificate, usually as a Class 5 in the Graduate School.

5. Applicants who have had one or more years of experience as teachers and who wish to work for a Standard Certificate shall apply for admission to the Graduate School as a Class 5. Those who wish to prepare for supervisory or administrative positions in the schools shall apply for admission to the Graduate School to pursue the particular program.

Preparation for Teaching Certificates

Provisional Certificate—A Four-Year Program

Under the authority of the laws of the state of Washington and the regulations of the State Board of Education, Washington State University grants a Provisional Certificate to all candidates who meet the United States citizenship requirements of Washington certification, who have the personal qualifications to teach, and who meet the specified requirements. The certificate is valid for three years, the first year of which will be limited by the university as to grade level and subject matter, and may be renewed for a period of three years thereafter to teach in the public school of the state.

Students in agricultural education are referred to Agricultural Education for their certification requirements which vary somewhat from the program described later in this section.

Application for issuance of a Provisional Certificate should be submitted to the Department of Education prior to the beginning of the student's senior year.

Standard Certificate and the Fifth Year of Preparation

Experienced teachers may be recommended by Washington State University to the State Superintendent of Public Instruction for the Standard Certificate. Candidates for the certificate shall meet specific requirements dependent upon their present certificate status. The Standard Certificate is valid as long as the individual remains in the teaching profession and for a period of seven years thereafter.

Holders of the Provisional Certificate may be recommended for a Standard Certificate upon completion of three years of successful teaching experience and an approved fifth-year college program of studies (30 semester hours). A maximum of 10 semester hours of preteaching credit will be permitted on a fifth-year program at Washington State University. Additional preteaching credits may be approved in certain cases if they are a part of a planned fifth-year program. The fifth year of study, which should be planned with the recommending institution, provides an opportunity for specialization and to strengthen teaching competence. General regulations for the fifth year of study, which may be completed in summer sessions or in an academic year, may be secured from the Department of Education.
ESI Counselor Certification
The Department of Education at Washington State University is involved with southeastern Washington school districts in a Counselor Education Consortium. This consortium directed program has been approved by the State Board of Education and is a program of preparation leading to the certification of school counselors.

Further information may be obtained from the Department of Education counselor education faculty or officers of the consortium.

ESI Communication Disorders Certification
A program leading to ESI certification as a communication disorders specialist in the public schools is offered by the Department of Speech.

Preparation for Administrators and Other Specialists
The Department of Education in cooperation with other departments offers graduate training in the fields of education administration, curriculum and media, guidance and personnel, elementary education, community college and higher education, educational psychology, reading, and vocational technical education.

The Department of Education is authorized by the State Board of Education to prepare candidates for principals, program administrators, and superintendents' credentials for the state of Washington. Requirements for the various credentials may be secured from the Department of Education. Application for the desired credential should be made to the Department of Education after at least one year of teaching experience and prior to entering a program of preparation. Applicants must meet the same Graduate School admission requirements as graduate degree candidates.

Industrial Education
The Department of Education includes the field of industrial education which provides programs for both the teaching of industrial education in the public schools and collegiate institutions and a technical program such as might be used in industrial or commercial activities. Course work includes woodworking, drawing and design, metals, electronics, crafts, the professional areas of curriculum and instruction, and measurement and evaluation, as well as graduate work in the field of vocational technical education.

University Reading/Study Skills Center
The University Reading/Study Skills Center, located in Cleveland 242, offers students assistance in such areas as notetaking, organization of time for study, vocabulary and comprehension development, study reading, and test taking. Students who desire help in these areas should register for Edu 100. (See Education course descriptions.)

Transfer Students
Education majors are required to complete in residence at least one-half of the total hours required in professional education for the Provisional Certificate.

Course of Study
The State Board of Education has established guidelines and standards for teacher-preparation programs. All Provisional Certificates recommended by the Department of Education of Washington State University meet these standards.

The Provisional Certificate is limited as to grade level and subject-matter preparation for the first year of teaching. Each student will prepare to teach at one of three levels: elementary school, junior high school, or senior high school, and plan a program in accordance with the requirements of the preferred level. Those who wish to be certified to teach at more than one of the three levels should plan their programs with an education adviser as they will be expected to complete more than the minimum requirements listed below for any one level of preparation.

The following professional laboratory experiences are provided:

1. Edu 300 is required and is a prerequisite to Directed Teaching. The student participates in daily activities during the first two weeks of a public school term in September and attends orientation lectures. Arrangements are made for this experience with the Coordinator of Student Personnel Services in the Department of Education.

2. In Edu 303, 305, and 320 all students participate in required directed observations in public school classrooms one-half day per week.

3. Edu 405 or 406, Directed Teaching consists of approximately nine weeks of full-time participation in the teaching program of a public school. The directed teaching semester consists of especially planned
Department of Education

half-semester courses. It is not possible to enroll in regular full-semester courses during that time.

Requirements for the Provisional Certificate

Elementary School Preparation

1. General Education and General University Requirements for Graduation: 28 hours
   6 hours of communication proficiency; 6 hours of arts and humanities;
   6 hours of social sciences including Psych 102; 10 hours of science including one credit in laboratory and including Math 105.

2. Professional Education and Professionalized Subject-Matter Minor: 43 hours

   Educ 300 Intro Field Exp 1
   Educ 301 Educ Psych 4
   *Educ 305 El SS Sci Ma 6
   Educ 306 El Rdng & LA 4
   Educ 307 Sur Chil Lit 2
   Educ 320 El Read Meth 3
   *Educ 390 Elem Art Ed 2
   Educ 401 Eval Lrng El 2
   Educ 403 or 404 Curriculum 3
   Educ 405 or 406 Dir Teaching 10
   *H Ed 480 or 481 Sch Hth Prog 2
   *Mus 388 or 390 Mus for Tchr 2
   *PEP 379 or 380 Elem or Inter 2

3. Subject-Matter Preparation: approximately 30 semester hours. The student will select a teaching major of approximately 30 semester hours from the elementary school majors listed in this section of the catalog.

4. Degree: Those who are preparing to become elementary teachers will be granted a Bachelor of Arts degree in Education provided they meet the General University Requirements for Graduation and the program for elementary school preparation as determined by the department. They will certify their majors in education as soon as possible after earning 30 hours of credit but before they enroll in any education courses, they will then be assigned an adviser in the Department of Education.

*Required professionalized subject-matter minor courses.

Junior High School Preparation

1. General Education: approximately 45 semester hours including H Ed 480 or 481; Psych 102; and courses used to meet the General University Requirements for Graduation for the bachelor's degree (see item 4 below).

2. Professional Education: 28 semester hours

   Hours
   Educ 300 Intro Field Exp 1
   Educ 301 Educ Psych 4
   Educ 303 Teach Sec Sch 4
   Educ 358 or 359 Curr Issues 2
   Educ 402 Eval Lrng Sec 2
   Educ 403 or 404 Curriculum 3
   Educ 405 or 406 Dir Teaching 10
   Educ 450 or 451 Tch Rdg Cont 2

3. Subject-Matter Preparation: approximately 45 semester hours. The student will select a teaching major of approximately 30 semester hours and a teaching minor of approximately 15 semester hours from the junior high school majors and minors listed in this section of the catalog. The junior high candidate may select one of the following combinations of major and minor: Social Studies (language arts minor), Language Arts (social studies minor), Biological Science (physical science minor), Physical Science (biological science minor), Mathematics (physical or biological science minor). The following majors would be acceptable, providing the major is combined with a strong, unrelated minor field: fine arts, foreign language, industrial education, music, and physical education.

4. Degree: Students preparing to become junior high school teachers will secure their degrees in one of the subject-matter departments of the university or in General Studies. They will certify as a double major in both the degree department and the Department of Education before they take any education courses. They will have advisers in both departments.

High School Preparation

1. General Education: approximately 45 semester hours including H Ed 480 or 481; Psych 102; and courses used to meet the General University Requirements for Graduation for the bachelor's degree (see item 4 below).

2. Professional Education: 26 hours

   Hours
   Educ 300 Intro Field Exp 1
   Educ 301 Educ Psych 4
Educ 303 Teach Sec School 4
Educ 358 or 359 Curr Issues 2
Educ 402 Eval Lang Sec 2
Educ 403 or 404 Curriculum 3
Educ 405 or 406 Dir Teaching 10

3. Subject-Matter Preparation: approximately 45 semester hours. The student will select a teaching major of approximately 30 semester hours and a teaching minor of approximately 15 semester hours from the high school majors and minors listed in this section of the catalog. In a few specific fields, 45-hour majors are indicated and no minor is required.

4. Degree: Students preparing to become senior high school teachers will secure their degrees in one of the subject-matter departments of the university or in General Studies. They will certify as a double major in both the degree department and the Department of Education before they take any education courses. They will have advisers in both departments.

Description of Courses

Education courses may be taken by certifed Elementary or Secondary Education majors only.

100 Reading Efficiency and Study Skills 1-2
May be repeated for credit; cumulative maximum 2 hours. Strategies to augment such student capabilities as vocabulary, comprehension, rate flexibility, note-taking, test-taking, and study skills.

200 Careers in Chicano Studies and Bilingual Education 2 Same as Ch St 200.

300 Introductory Field Experience 1 A supervised field experience for preservice teachers designed as an orientation to education and the opening of school.

301 (300) Educational Psychology 4 Prereq Psych 102; Educ 300. Not open to freshmen or first semester sophomores. Theories and principles of psychology applied to teaching; human development, learning, motivation, and social/emotional adjustment of students.

303 (301) Teaching in Secondary Schools 4 (3-3) Prereq Educ 300, 301. Materials and general methods for teachers; observation to be scheduled in a 3-hour block once a week.

305 Elementary Social Studies, Science, Mathematics Methods 6 (5-3) Prereq Educ 301; Math 105 or c//. Methods and materials for teachers of social studies, science, and mathematics; observations and teaching in the public schools.

306 Survey of Elementary Reading and Language Arts 4 Prereq Educ 301. An introductory survey course focusing on the attitudes, knowledge, and skills needed for successful teaching of reading and language arts.


310 Reading Materials for Adolescents 3 Selection, evaluation, and use of reading materials for adolescents.


322 Topics in Student Personnel Work 2 or 3 Educational psychology, theories of human behavior, and legal and ethical considerations related to student personnel work.

329 Seminar in Contrastive Linguistics: Spanish-English 3 Same as Ch St 329.

335 Bilingual Methods in the Classroom: Social Science, Science, Mathematics 3 Same as Ch St 335.

358 Communication, Culture, and Careers 2 Prereq Educ 303. Social, psychological, multicultural issues: human relations, ethnic concerns, sexism, career education; teaching responsibilities.

359 Communication, Culture, and Careers 2 Same as Educ 358.

389 Art Media 3 (0-6) Same as FA 389.

390 Elementary School Art Education 2 (1-3) Prereq Educ 301. Creative methods for utilizing art media in the elementary classroom.

401 Evaluation of Learning, Elementary 2 Prereq Educ 305 or 320. Theory and methods of evaluating pupil progress in the elementary school.


403 Social Foundations of Curriculum 3 Prereq Educ 303 or 320; c// in directed teaching. Public school curriculum.

404 Social Foundations of Curriculum 3 Same as Educ 403.

405 Directed Teaching V 8 (1-21) to 12 (1-33) May be repeated for credit. Prereq Educ
303 or 320, 300; senior standing. By interview only. Supervised teaching in public schools (full day for one half semester). Includes a 2-hour weekly seminar in problems of teaching.

406 Directed Teaching V 8-12 Same as Educ 405.

410 Ethnic Groups and Public Education 2 or 3 Resources concerning ethnic groups in public education; relating curriculum and teaching to cultural backgrounds; current issues.

411 Bilingual Methods in the Classroom: Reading and Language Arts 3 II Prereq Educ 306; Ch St 329. Seminar on reading and language arts for the bilingual-cultural classroom; second language learning, teaching, and Spanish reading methods.

430 (453) Innovations in Reading 2 Prereq Educ 320 or 450/451. Aspects of teaching reading beyond basic methods course; individual diagnosis; current programs and trends; activities and materials for enrichment. Credit not granted for both Educ 430 and 530.

431 (454) Innovations in Reading 2 Same as Educ 430. Credit not granted for both Educ 431 and 531.

432 (460) Children's Literature in the Curriculum 2 Prereq Educ 305, 320 or teaching experience. Role, models, utilization of trade books and story-telling in language experience and individualized reading; content areas; and creative expression. Credit not granted for both Educ 432 and 532.

433 (461) Children's Literature in the Curriculum 2 Same as Educ 432. Credit not granted for both Educ 433 and 533.

434 (458) Introduction to Guidance 2 or 3 Prereq 12 hrs Educ. Guidance: history, philosophy and services. Credit not granted for both Educ 434 and 534.

435 (459) Introduction to Guidance 2 or 3 Same as Educ 434. Credit not granted for both Educ 435 and 535.

445 Preparation and Utilization of Audio-Visual Materials 2 (1-3) or 3 (2-3) Prereq 6 hrs Educ. Sources and evaluation of materials; practice in techniques with materials and equipment.

446 Preparation and Utilization of Audio-Visual Materials 2 (1-3) or 3 (2-3) Same as Educ 445.

447 Instructional Resources in Education 2 (1-3) or 3 (2-3) II Prereq Educ 445 or 446. Relevance of all media to the instructional process; development and production of educational materials.

450 Teaching Reading in the Content Areas 2 or 3 Prereq Educ 303 or c/. Development of reading and study skills; demands of various content areas and implementation.

451 Teaching Reading in the Content Areas 2 or 3 Same as Educ 450.

455 Education of Exceptional Children 3 Prereq 12 hours Educ. Classification, developmental characteristics, and etiology of exceptional children; research and methods of instruction in the classroom.

456 Seminar on Mental Retardation 2 Prereq Educ 455. Education of retarded children; legal, educational, and social problems associated with education of the retarded.

462 Corrective Reading in the Classroom 2 Prereq Educ 320. Investigation, formulation, application of informal and formal assessment for classroom grouping and instruction; specific skill needs of learning-delayed-readers.

463 Corrective Reading in the Classroom 2 Same as Educ 462.

464 (457) Analysis and Management of Exceptional Behavior 3 (2-3) Prereq Educ 301, 455. Intervention strategies and continuous progress measurement systems for dealing with academic, social problems in education settings. Credit not granted for both Educ 464 and 564.

485 Social Studies in the Contemporary School 2 Prereq junior standing. Bases, scope, and sequence of the social studies curriculum; problem analysis of timely issues.

486 Social Studies in the Contemporary School 2 Same as Educ 485.

490 Instructional Practicum V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 8 hours.

491 Education and Social Change in Africa 3 II Same as Bl St 491.

492 Designing Art Programs for the Public Schools 3 Prereq Educ 390, secondary arts major, or teaching experience. Preparation of preservice and in-service educators in the development of art programs (K-12) responsive to current needs and trends.

500 Foundations and Issues of American Education 3 II Open to non-majors. Development, scope, and main issues of public education in the U.S.

501 Philosophy of Education 3 Development of American educational philosophy.

502 Advanced Educational Psychology 3 Prereq Educ 301. The interpretation of fundamental psychological facts, theories, and principles applying to education.
507 Social Foundations of Education 3 II
Educational adaptations to the economic and social trends and forces.

508 Educational Statistics 3 Prereq Educ 401 or 402.
Descriptive statistics; measures of central tendency, variability, and techniques of correlation.

509 Educational Measurements 2 or 3 Prereq Educ 508.
Theory and use of standardized educational measurement devices; intelligence, aptitude, and achievement tests.

510 Improvement of Instruction 3 Prereq teaching experience.
Analysis and evaluation of instructional models with emphasis on information processing; implications for changing teaching style.

511 Seminar in Elementary School Education 2 or 3 May be repeated for credit; cumulative maximum 6 hours.
Prereq teaching experience. Curriculum problems involving the modern elementary schools.

512 Secondary School Curriculum 3 Prereq teaching experience.
Current approaches to problems and issues in secondary school programs.

513 Seminar in Middle School Education 3
Prereq teaching experience. Curriculum patterns and recent research regarding instruction and materials in the contemporary middle school.

514 Basic Principles of Curriculum Design 3 I
Prereq teaching experience. The application of theoretical concepts and approaches in the planning and designing of curricula.

515 Curriculum Implementation 3 Prereq teaching experience.
Research and practice; innovation and change in curricular organization emphasizing implementation.

516 Supervision 2 or 3 Prereq teaching experience.
Theory and practice of the supervision of instruction in elementary and secondary schools.

517 In-Service Programs 3 For directors, supervisors, specialized personnel, principals, and superintendents with responsibility for in-service programs; practices and procedures in in-service education.

518 Educational Technology 3 Prereq Educ 445 or 446.
Relates research and theory of communication to instructional resources and current educational technology; problems of planning and administering program.

519 Seminar in Teaching and Education 1 May be repeated for credit; cumulative maximum 4 hours. Problems and issues encountered in college teaching.

520 Seminar in Curriculum and Instruction 3-6
Prereq teaching experience. Contemporary issues, analyses and developments of educational programs.

521 Topics in Education V 1-4 May be repeated for credit; cumulative maximum 6 hours.
Prereq teaching experience. Recent research, developments, issues and/or applications in selected areas of education.

522 Topics in Education V 1-4 May be repeated for credit; cumulative maximum 6 hours.
Same as Educ 521.

523 Topics in Education V 1-4 May be repeated for credit; cumulative maximum 6 hours.
Same as Educ 521.

524 Topics in Education V 1-4 May be repeated for credit; cumulative maximum 6 hours.
Same as Educ 521.

525 Foundations of Community Education 3
History, purposes, basic concepts underlying contemporary community education programs.

526 Community Education Resources for Problem Solving 3 Identifying community needs and resources, facilitating inter-agency cooperation, organizing the community education program.

527 (530) Home Economics Curriculum 3 S
Prereq teaching experience in home economics. Selected topics and recent developments in home economics education.

528 Content Area Reading Instruction: Theory and Practice 3 S For teachers, supervisors, and administrators in elementary, middle, and secondary schools; influence of research on the design of reading strategies.

530 Innovations in Reading 2 Graduate level counterpart of Educ 430; additional requirements. Credit not granted for both Educ 430 and 530.

531 Innovations in Reading 2 Same as Educ 530. Graduate level counterpart of Educ 431; additional requirements. Credit not granted for both Educ 431 and 531.

532 Children's Literature in the Curriculum 2
Graduate level counterpart of Educ 432; additional requirements. Credit not granted for both Educ 432 and 532.

533 Children's Literature in the Curriculum 2
Same as Educ 532. Graduate level counterpart of Educ 433; additional requirements. Credit not granted for both Educ 433 and 533.

534 Introduction to Guidance 2 or 3 Graduate level counterpart of Educ 434; additional requirements. Credit not granted for both Educ 434 and 534.

535 Introduction to Guidance 2 or 3 Same as Educ 534. Graduate level counterpart of
Edu 435; additional requirements. Credit not granted for both Edu 435 and 535.

538 Integrating the Curriculum: Art and Language Arts 4 (3-3) S Prereq teaching experience. Designed to upgrade in-service teachers; skills in teaching and integrating language arts and art, K-12.

539 Innovations in Language Arts 2 or 3 S Prereq Edu 303 or 320 or teaching experience. The most recent developments in language arts instruction for pre-service and in-service teachers K-12.

540 Elementary School Social Studies 3 II Prereq teaching experience. Elementary structures of various social sciences; research findings related to instruction; classroom applications and materials.

541 Elementary School Science 3 I Prereq Edu 305; teaching experience. Theories and research underlying modern science programs with classroom implications.

542 Elementary School Mathematics 3 II Prereq Edu 305; Math 105; teaching experience. Classroom experiences and materials for helping children understand number properties and operations; research findings related to instruction.

544 Advanced Children's Literature 3 II Prereq Edu 307; teaching experience. Trends, issues, and research in children's literature.


546 Teaching Written Expression in Elementary School 3 II Prereq teaching experience. Research on children's written language development; application to elementary school classroom.

547 Teaching Folk Literature to Children and Adolescents 3 S Prereq Edu 307 or 310 or teaching experience. Folk literature as a genre in child and adolescent literature; curriculum applications; reading, language development, social studies, creative expression.

548 Early Childhood Language Arts 3 (2-3) Prereq Edu 306, Spe 371, 6 hrs CFS, or teaching experience. Cultural and developmental factors in language learning and early childhood language arts programs.

550 Research in Reading 2 or 3 Prereq Edu 320; teaching experience. Research applied to pertinent classroom problems in the teaching of reading.

551 Psychology of Reading 2 II 1981-82 a/y. Prereq Edu 320 or 450/451; teaching experience. Psychological, perceptual, motivational, developmental and physiological aspects of reading.

552 College Reading Practicum V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 3 hours. Prereq Edu 320 or 450/451; teaching experience. Clinical practice; teaching reading skills to college students; programs, materials, techniques, and readings; applicable secondary and college reading programs.

553 Diagnosis and Treatment of Reading Disability 4 (3-3) Prereq Edu 320. Remedial techniques for experienced teachers, remedial reading teachers, and reading consultants; causes of disability, testing, diagnosis, and remediation; tutoring.

554 Approaches to Reading Instruction 3 S Prereq Edu 320 or teaching experience. Approaches to teaching elementary school reading; theoretical bases, materials, evaluation, implementation strategies.

555 Education of the Gifted Child 2 or 3 Prereq 9 hrs Edu. Educational provisions for the gifted child.


558 Individual Appraisal 3 I Prereq Edu 509. Case study procedures in guidance; collecting, synthesizing, and interpreting test and non-test data.

559 Theoretical Foundations of Counseling 3 I Prereq Edu 459; Psych 102, 431. For beginning counselors.

560 Student Personnel Services in Higher Education 2 or 3 Prereq Edu 459. Philosophy, structure, functions, and organization of student personnel services.

562 Counseling Practicum V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq Edu 557, 558, 559. Supervised practice in individual counseling.

563 Seminar in Counseling and Student Personnel 2 or 3 May be repeated for credit; cumulative maximum 6 hours. Prereq 9 hrs guidance. Review of guidance, counseling, and student personnel research; newer developments.

564 Analysis and Management of Exceptional Behavior 3 (2-3) Graduate level counterpart of Edu 464; additional requirements. Credit not granted for both Edu 464 and 564.

565 Advanced Statistics in Psychology and Education 3 Same as Psych 511.
566 Evaluation Techniques 3 Prereq Educ 509. Theory of scaling; development of techniques for appraising attitudes, interests, and appreciation.

567 Test Construction 3 Prereq Educ 509. Test items construction; item analysis; development of norms.

568 Methods of Research and Thesis Writing 3 Research methods and design; collection, analysis, and interpretation of data.

569 Seminar in Quantitative Techniques in Education 2 or 3 May be repeated for credit; cumulative maximum 6 hours. II Prereq Educ 565. Analysis of variance and covariance and nonparametric statistics.

570 The Community and Junior College 3 For teachers and administrators. Development and function of the junior community college.

571 Undergraduate and Community College Teaching 3 Prereq Educ 570 or 572. Concepts, principles, issues, and procedures in undergraduate curriculum development; goal oriented educational strategies and delivery systems.

572 The American College and University 3 History, philosophy, objectives, and issues of colleges and universities as social institutions.

573 Recent Developments in Higher Education 3

574 Seminar in Higher Education 2 May be repeated for credit; cumulative maximum 6 hours. Prereq two courses in higher education.

575 College Students and Their Culture 3 Characteristics, subculture, development, and impact of the college experience.

576 Continuing and Adult Education 3 II Development and scope of continuing/adult education; basic concepts of administration, teaching, and curriculum development.

580 School Organization and Administration 2 or 3 Prereq teaching experience. Readings and discussions on the theories and practices of school organization and administration.

582 Policy Formation in Education 3 Prereq Educ 580. Policy formation and political aspects of administration; collective bargaining, voter behavior, bonds, ballots, resolutions of conflicts.

583 Community Relations in Education 2 or 3 Development of positive and constructive relationships between educational institutions and communities; specific methods and techniques in public relations.

584 Personnel Relationships in Public Schools 2 or 3 Prereq Educ 580. Human relations in education; problems involved and practical solutions considered.

585 School Finance 3 Prereq Educ 580.

586 School Plant Planning 2 or 3 Prereq Educ 585. To meet the needs of superintendents and principals interested in school building programs.

587 Seminar in School Administration 3-6 Prereq 6 hrs graduate work in administration. Interdisciplinary seminars; related studies; discussions in the several areas by specialists.

588 The Law and Education 3 I Prereq 6 hrs of school administration. Fundamental legal principles within which public education functions; applicable school codes of Washington and other states; review important court cases.

589 Educational Management Seminar 3 I Planning, decision making, operations research, and education resource management; budget development, cost/benefit analysis and systems analysis.

590 Internship V 3 or 6 May be repeated for credit; cumulative maximum 12 hours. By interview only. Internship in professional positions.

592 Theoretical Foundations of Group Counseling 3 I Prereq Educ 559, 562. History; philosophical and theoretical foundations; the group counselor, members, and issues in group counseling.

593 Group Counseling 3 II Prereq Educ 559, 562, 592. Group counseling; group process; and leadership in groups.

594 Practicum in Group Counseling 3 (0-9) May be repeated for credit; cumulative maximum 6 hours. Prereq Educ 592, 593. By interview only. Supervised experience.

595 Professional Problems in Counseling Psychology V 1-3 Prereq Educ 557, 558, 559. Seminar in professional problems: identify legal, ethical, training issues and new professional areas.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Learning Resources

Lib S
304 Learning Resources 3 Basic resources and reference materials, both print and non-print, for elementary and secondary schools.

305 Selection of Book and Non-Book Materials 3 Basic principles, criteria for selection, evaluation, and current issues in selection of materials for schools.


401 Organization and Administration of Learning Resources Programs 3 Professional standards for good library-media programs; traffic patterns, physical facilities, displays, and publicity; responsibilities of professionals and para-professionals. Credit not granted for both Lib S 401 and 501.

501 Organization and Administration of Learning Resources Programs 3 Graduate level counterpart of Lib S 401; additional requirements. Credit not granted for both Lib S 401 and 501.


Special Methods
Special methods courses dealing with the techniques of teaching different secondary school subjects are listed under the departments concerned.

Schedule of Studies
Students planning to complete a program in education must follow the requirements for the Provisional Certificate for the appropriate level, elementary, junior high or high school preparation, as listed in this section of the catalog and the schedule of studies of their degree department. General University Requirements including Psych 102 should be completed during the freshman and sophomore years. At least 40 of the total hours required for the bachelor's degree in this program (elementary school majors only) must be in upper-division courses.

The student's schedule should be planned so that directed teaching may be taken either the first or second semester of the senior year in either half of the semester. With special approval of the Coordinator of Student Teaching in the Department of Education, the directed teaching semester may be taken during the second semester of the junior year. Written application for directed teaching must be made by March 1 of the school year preceding enrollment in Educ 405 or 406.

Preparation for Graduate Study
As preparation for work toward an advanced degree in education, a student should have completed an acceptable teacher-education program.

Subject-Matter Requirements
for Majors and Minors

Agricultural Education
Senior High School Major: Teachers qualifying to teach agriculture have the choice of selecting from four options. These options are: (1) production agriculture-mechanics, (2) production agriculture-business, (3) agricultural resources-forestry, and (4) horticulture. Forty-five hours in agricultural sciences are needed with specific courses required depending upon the option selected. See Agricultural Education section of this catalog. Agriculture majors should consult with an adviser in Agricultural Education as the professional education requirements for a teaching certificate differ from the program for other education majors. When all requirements for graduation are completed, the student will qualify for a Bachelor of Science degree in Agricultural Education.

Bilingual-Bicultural Education
Elementary School Major: 34 hours (Spanish language proficiency required before teaching major is declared.) Ch St 329, 220, 272, 372, 375, 313, 411, 335, plus two blocks of student teaching (Educ 405 and 406). One block of student teaching will be conducted in a bilingual-bicultural classroom.

Biological Science
Senior High School Major: 34 hours, including at least 8 hours in botany and 8 hours in zoology. Bio S 103, 104, 430; Bact 101; at least one course from each of the following fields: (1) Physiology: Bio S 450, Bot 320, Zool 352; (2) Ecology or Conservation: Bio S 372, 374, Zool 330, 410; (3) Genetics: Genet 301; (4) Systematics and Evolution: Bot 201, 332, Zool 220, 222, 305; plus additional electives from the preceding fields or the following: Bact 414, 451; BC/BP 417; Bot 410, 411, 460, 462; Entom 340, 343, 441; Zool 308, 320, 353, 423, 428, 438. Required minor: 12 hours chemistry including organic; Phys 101 and 102; Math 107 or 140 or 171 or Biom 412. If additional courses are taken to satisfy the departmental requirements, the degree should be taken in
bacteriology, biology, botany, or zoology. If not, it should be in General Studies.

**Senior High School Minor: 18 hours.**
Bio S 103, 104 (prereq 2 sem Chem or c/+/), 430; plus two courses from Bact 101 or 201, Bot 201, 332, Zool 220, 222, 305.

**Junior High School Major: 28 hours.**
Bio S 103, 104, 430; at least one course from each of the following fields: (1) Physiology: Bio S 450, Bot 320, Zool 352; (2) Ecology or Conservation: Bio S 372, 374, Zool 330, 410; (3) Genetics: Genet 301; (4) Systematics and Evolution: Bot 201, 332, Zool 220, 222, 305, plus additional electives from the preceding fields or the following: Bact 101 or 201; BC/BC 417; Bot 411, 460, 462; Entom 340, 343, 441; Zool 308, 320, 353, 423, 428, 438. Required minor: 12 hours chemistry including organic; Phys 101, 102; Math 107 or 140 or 171 or Biom 412; Astr 135 or Geol 102. If additional courses are taken to satisfy the departmental requirements, the degree should be taken in bacteriology, biology, botany or zoology. If not, it should be in General Studies.

**Junior High School Minor: 16 hours.**
Bio S 103, 104 (prereq 2 sem Chem or c+/), and two courses from Bact 101 or 201, Bot 201, 332, Zool 220, 222, 305.

**Business Education**
It is recommended that individuals who intend to seek employment in the public schools of the state of Washington be vocationally certified. During the freshman or sophomore years, students should check with advisers in the Department of Management and Administrative Systems regarding the requirements for the Vocational Certificate in Business and Office Education.

**Senior High School Majors:**

**Comprehensive Major: 63 hours.**
BA 152, 155, 210, 215, 230, 231, 251, 255, 256, 257, 258, 259, 301, 325, 353, 360, 455, 456, 480, 481, 482, 495; Econ 102, 203. Required courses: Cpt S 220; Math 201; VTE 440 or 441. Students completing this program will receive the Bachelor of Arts degree in Business Administration.

**Bookkeeping-General Business-Clerical Major:**

49 hours.
BA 152, 210, 215, 230, 231, 251, 259, 301, 325, 353, 360, 450, 455, 480, 482, 492; Econ 201, 301. Required courses: Cpt S 220; Math 201; VTE 440 or 441. Students completing this program will receive the Bachelor of Arts degree in Business Administration.

**Senior High School Minors:**

**Secretary Minor:** 18-20 hours.
BA 152, 251, 259, 350, 480, 481, and any one of the following combinations: BA 155, 255, 257 or BA 255, 256, 257, 258 or BA 256, 258, 455.

**Bookkeeping-Clerical Minor:** 19 hours.
BA 152, 201, 230, 231, 251, 455, 480, 482.

**General Business-Clerical Minor:** 18 hours.
BA 152, 201, 251, 360, 455, 480; Econ 201.

**Junior High School Minor:**

**General Business-Clerical Minor:** 18 hours. Same as Senior High School Minor.

**Chemistry**

**Senior High School Major:** 30 hours.
Chem 105 and 106, or 111 and 212; 217 or 221; plus additional hours from 300- and 400-level courses. Required minor: Sci 430; at least 15 hours of mathematics and physics including either Phys 101, 102, or 201, 202, and Math 107. If additional courses are taken to satisfy the departmental requirements, the degree should be taken in chemistry. If not, it should be in General Studies.

**Senior High School Minor:** 18 hours.
Sci 430; at least 15 hours in chemistry from the courses listed under the major.

**Child Studies**

**Elementary School Major:** 28-30 hours.
Soc 101; CFS 240; 247 or 350; 342 or 344; 442; 448; plus four approved courses from at least 3 of the following fields.
Anthropology, Asian Studies, Black Studies, Chicano Studies, Child and Family Studies, Geography, Native American Studies, Psychology, Sociology, Speech, Women Studies. A maximum of one 100-level elective will be allowed. A minimum of two 300-400-level electives must be chosen.

**Communications**

**Senior High School Major:** 30 hours
(An approved teaching minor is required with this major)

**Journalism:** (Select one of the following groups)
Jour 225; 305; 325; 330; 495 (12 hours); Com 410; 415 plus 2 hours journalism electives approved by adviser in communications OR Jour 225; 305; 325; 330; 395; 425; 475; Com 410; 415; Cine 253.

**General Communications:** Student must certify such a program with the Chairperson of the Department of Communications, obtain approval from the Coordinator of Student Personnel Services in the Department of Education, and
file a copy of the plan with the Department of Education, preferably before the end of the sophomore year. Jour 395 or 495, Internships, should be included in the program. If these requirements plus those for the College of Sciences and Arts are met, the degree will be the Bachelor of Arts in Communications.

**Senior High School Minor:** 18 hours
Students must complete the courses listed for one of the following professional sequences plus additional work in Communications to total 18 hours:
(1) Advertising: Bcse 165 or Jour 225; Adver 280; 380; 382; (2) Broadcasting: Bcse 165; 250; 475; Com 415; (3) Cinema and Photography: Bcse 165; Cine 323; 353; 393; 433; 475; (4) Journalism: Jour 225; 305; 325; 330; Com 410; 415; (5) Public Relations: Jour 225; 235; PR 312; 313; 413. Elective courses are to be approved with an adviser in the Department of Communications.

**English**

**Senior High School Major:** 38 hours.
Engl 301; 308; 323; 401. At least three of the following: Engl 108, 209, 210, 245, 246. Two of the following: Engl 304, 305 or 306, 307, 407, 415. At least one course from each of the following groups: (1) Engl 332, 333, 334; (2) Engl 366, 367, 416, 417; (3) Engl 316, 320, 368, 369, 471, 472; (4) Engl 255, 256, 354, 458. If the above requirements plus the requirements for graduation of the College of Sciences and Arts are met, the degree will be Bachelor of Arts in English.

**Senior High School Minor:** 18 hours
Engl 209, 210; 245 or 246; 255 or 256; 301, plus 3 additional hours from courses numbered above 300.

**Environmental Science**

**Senior High School and Elementary School Majors:** (A new program is being developed. See an adviser in the Department of Education.

**Fine Arts**

**Senior High School Major:** 53 hours.
FA 102, 103, 110, 111, 201, 202, 203, 320, 331, 340, 350, 360, 370, 389, Educ 492 plus 8 hours of electives in fine arts selected in consultation with fine arts adviser. No minor is required with this major. If the above requirements plus the requirements for graduation of the College of Sciences and Arts are met, the degree will be Bachelor of Arts in Fine Arts. Beginning with class of 1981, FA 498 is required.

**Senior High School Minor:** 22 hours.
FA 102, 103, 110, 111, 303, 320, 350, 389. Educ 492 is recommended.

**Middle School Major:** 31 hours.
FA 102, 103, 110, 303, 320, 340, 350, 360, 370, 289, Educ 492. If additional elective hours can be taken to satisfy the departmental requirements for graduation, the degree should be in Fine Arts. If not, it should be in General Studies.

**Junior High School Minor:** 22 hours.
FA 102, 103, 110, 111, 303, 320, 350, 389. Educ 492 is recommended.

**Elementary School Major:** 31 hours.
FA 102, 103, 110, 111, 130, 303, 320, 350, 389, Educ 492.

**Foreign Languages and Literatures**

**Senior and Junior High School Majors:** A minimum of 24 hours in one language beyond 203 (or 20 hours past 304) plus For L 324.


German: 304; 315; 316; 322 or 323; 334; 420; For L 345; plus 7 hours from Ger 333, 401, (maximum 1 hr), 432, 433, 442, 451, 452, 460, 480. Recommended elective: For L 426.

Russian: 304; 315; 320; 321; 380; For L 324; plus 7-10 hours from Rus 471, 480, 499. Recommended elective: For L 426.

Spanish: 304; 315; 316; 321; 322; 323; 326; 333; For L 324; plus 7 hours from Span 320 (maximum 2 hrs), 422, 423, 425, 426, 442, 450, 451, 452, 472, 474, 480. Recommended elective: For L 426.

Students who intend to obtain a teaching major in a foreign language should begin course work in that language in the freshman year. For a teaching minor in a second language or, with the permission of the adviser and the department chair, a teaching minor in another field, the student should begin work on the requirements not later than the beginning of the sophomore year. If the major and minor course programs, the requirements for the Provisional Certificate, and the General University Requirements in the College of Sciences and Arts are met, the degree will be a Bachelor of Arts in Foreign Languages and Literatures.

**Senior and Junior High School Minors:** A minimum of 8 hours in one language (beyond the third semester) plus For L 324.

Requirements for specific languages: Fren, Ger, Rus, or Span 304; plus: Fren 322 and 401; Ger
History. For the non-history requirements, see the departmental adviser and/or the schedule of courses in the history section of this catalog.

Senior High School Minor: 21 hours
Hist 110, 111, or 140, 141; 6 hours from Hist 230, 231, 270, 275; Hist 422 plus 3 hours of upper-division courses in history; Pol S 206.

Home Economics

Senior High School Major: 42 hours
CFS 240; 242; 247; plus 2 hours from CFS 342, 344, 440, 446, 447, 448, 449; CFS 350; 353; 450; 352 or 452; CT 107; 215; 216; 217; FMIN 120; 130; 266; electives to make 42 hours in home economics; VTE 343; 345 or 346; 440 or 441; 434. Students completing the General University Requirements (including certain specified courses), the 42 hours of courses in home economics as outlined above, and the requirements for the Provisional certificate will receive a Bachelor of Science degree in Home Economics and be eligible for a Vocational Certificate.

Senior High School Minor: 19 hours.
CFS 242; 247; 350; CT 107; 217; FMIN 120; 130; or 15 hours in any one area of home economics as listed under the Senior High School Major.

Junior High School Minor: 19 hours.
CFS 242; 247; 350; CT 107; 217; FMIN 120; 130.

Industrial Education and Technology

Senior or Junior High School Major: 56 hours or 47 hours with an approved minor. Students enrolled in the 47 hour major will complete the following courses: VTE 110, 121, 130, 221, 250, 272, 316, 333, 350, 424, 426, 433, 464; Ag M 201; ME 101, 203; VTE 486. Students wishing the 56 hour major will take in addition to the above VTE 131, 325, 416. Students taking the 47 hour major will be required to complete an approved minor. If the above requirements plus the requirements for graduation in the College of Education are met, the degree will be Bachelor of Arts in Industrial Education.

Senior or Junior High School Minor: 22 hours.
VTE 110, 121, 130, 250, 333, 420, 426; Ag M 201; ME 101.

Language Arts

Senior High School Major and Minor: This consists of a major in English with a minor in speech or a major in speech with a minor in English; see under English and speech.

Junior High School Major: 35 hours.
Spe 101; 250; 102 or 200 or 301; 361; 364; Engl
323 or Spe 435; Engl 108; 255 or 256; 301; two of the following: Engl 210, 246, 320; Hum 100. If the above requirements plus the requirements for graduation of the College of Sciences and Arts are met, the degree will be Bachelor of Arts in General Studies.

**Junior High School Minor:** 15 hours.
Engl 108; 255 or 256; Engl 301 or Spe 301; Spe 200 or 205; 250.

**Elementary School Major:** 29 hours.
Engl 108; 210; 246 or 320; 255 or 256; 301; Hum 250; 364; one course from Spe 205, 235, 301, 325, 375.

**Learning Resources**

**Senior High School Major:** None.

**Senior High School Minor:** 20 hours
Lib S 304, 305, 306, 401; Educ 310; 445 or 446, 447; plus practicum, experience or directed teaching in Learning Resources.

**Elementary School Major:** 30 hours.
Lib S 304, 305, 306, 401; Educ 445 or 446, 447; Spe 206 or 250 or 364; with electives acceptable to adviser such as: Educ 310, 452, 457, Lib S 510, 520, approved courses in fine arts, theatre arts and drama, child and family studies; plus practicum, experience or directed teaching in Learning Resources.

Certification in the library science field is currently developing according to competency based programs which specify that candidates for certification demonstrate competencies in both classroom teaching and learning resources. To prepare for flexibility and security in placement, elementary students are advised to design programs which include a second academic teaching field in addition to learning resources. Learning resources specialists should consider strengthening their preparation during a fifth year program or completing a master's degree or equivalent in the field.

**Liberal Arts**

**Senior High School Major:** 45 hours.
Students will combine three fields, selecting sufficient courses from each to constitute at least the equivalent of a minor. At least two of these fields should be subject matter areas listing a senior high school major; one of the two ought to be intensive enough to be a teaching major. The program, when approved by the adviser in Liberal Arts, will be filed with the Department of Education, preferably before the end of the sophomore year. If these requirements plus those for the College of Sciences and Arts are met, the degree will be Bachelor of Arts in General Studies.

**Senior High School Minor:** None.

**Mathematics**

(An approved teaching minor is required with this major)

**Senior High School Major:** 32 hours.
Math 171, 172, 220, 273, 303, 315, 320, 330, Stat 429 or 443; Cpt S 201; plus 3 hours of mathematics electives numbered above 300. If the additional courses can be taken to fulfill the departmental requirements for graduation, the degree should be in mathematics. If not, it should be in General Studies.

**Junior High School Major:** 29 hours.
Math 171, 172, 220, 273, 303, 315, 320, 330, Stat 429 or 443; Cpt S 201. If the additional courses can be taken to fulfill the departmental requirements for graduation, the degree should be in Mathematics. If not, it should be in General Studies.

**Senior or Junior High School Minor:** 16 hours.
Math 171, 172, 220, 303, 320.

**Elementary School Major:** 28 hours.
Math 105, 171, 172, 220, 300, 303, 320, Stat 429 or 443; Cpt S 200. If Math 105 or 300 is challenged, one hour of special problems work (Math 499) on curricula should be completed.

**Music**

**Senior and Junior High School Major:** 42 Hours.
Mus 161, 161, 251, 252, 253, 254, 254, 351, 353, 360, 361, 381, 382, 383, 384, 386, 389, 480, 481, 482, 490. Select two from 451, 452, 453, or 455. In addition to the above, students must pass the piano proficiency examination, complete two hours credit at the 400-level in applied music, and enroll in an approved music performing group each semester. If the above requirements, along with graduation requirements of the College of Sciences and Arts are met, the degree will be Bachelor of Music.

**Elementary School Major:** 30 hours.
Mus 152, 161, 251, 252, 253, 254, 360 or 361, 383, 386, 481, and 490. In addition to the above, students must pass the piano proficiency examination and enroll for two hours ensemble experience and four hours applied music study in voice or piano. Remaining elective hours in music are to be chosen in consultation with the Department of Music.
Natural Science

Elementary School Major: 34-36 hours.
Astr 135 or 345; Bio S 102 or 103*; Chem 101* or equivalent; C E 174 or 474; Env S 101; For 303 or Zool 330; Geol 102; Math 105 and 300; Phys 101 or 201*; or Phys 372 and 380.

*It is recommended that the regular two-course sequence in these areas be completed. Additional courses may be chosen from the above and among Bact 101, Bio S 374, Bot 201, 332, Cpt S 200, 210, Env S 102, 103, FNIM 130, FS 170, Genet 201, Geog 374, Geol 120, ME 201, Phys 371, 380, PI P321, Zool 220, 222, 251.

Physical Education for Men

(H Ed 480 or 481 required of all students who pursue any of the majors or minors listed below.)

Senior or Junior High School Major: 30 hours minimum.
Required courses and competencies: PEP 195 or 197; MPE 229 or PEP 393; 261; 362; 382; 465; 482; 494; 496; H Ed 363. Select 6-5 courses from the following: MPE 111, 112, 120, 138, 141, 143, 148, 150, 158, 164; plus 2-4 hours from PEP 199, 220, 266, 300, 488, 489, H Ed 361, RPA 151. An approved teaching minor is required with this major. A minor in coaching and one in an unrelated field should be selected. If additional hours can be taken to satisfy the departmental requirements for graduation, the degree should be in physical education. If not, it should be in General Studies. Secondary majors desiring extra preparation for teaching physical education only in grades K-6 must complete the junior or senior high school major in physical education plus 13 hours: PEP 254, 379, 380, 381, 383, 389.

Senior or Junior High School Minors:

Physical Education: 20 hours minimum.
PEP 195; 197; MPE 229 or PEP 393; 261; 362; 382; plus 6 courses from MPE 111, 112, 120, 138, 141, 143, 148, 150, 158, 164; plus 5-6 hours selected on advice from the Department of Physical Education for Men. Zoology 251 recommended.

Coaching: 21 hours
Spe 102; PEP 220; 266; 330 or 465; 488; 489; plus 6 hrs selected from PEP 200-212; 300-312; 393. PEP 390 may be substituted for one PEP 300 course. A coaching minor must be approved by the Department of Physical Education for Men for each individual.

Health Education: 18-20 hours.
H Ed 361; 383; 480 or 481; Psych 102; one course from each of the following groups: FNIM 130, Env S 101, or equivalent community college course; CFS 247, Psych 230, or Soc 150; Phar 217, 417, or Psych 365.

Elementary School Major: 30 hour minimum.
PEP 195; 197; 254; 261; 362; 379; 380; 381; 383; 389; RPA 151; H Ed 363; plus 6 hours from PEP 199, 220, 389 (repeat), 393, 463, 465, 482, 494, RPA 351 and not more than 2 hours of coaching courses from PEP 200-212, 300-312.

Physical Education for Women

(H Ed 480 or 481 required of all students who pursue any of the majors or minors listed below.)

Senior or Junior High School Major: 30 hour minimum.
Required: PEP 199, 261, 362, 382, 482, 494, 496; WPE 104; Zool 251. Course work or competency in WPE 138 or 139; PEP 196 or PEP 198; two of PEP 190, 191, 192, 193; PEP 331 or PEP 332; RPA 351 or PEP 355; H Ed 363. Ten credits of course work or competency from the following specializations: Aquatics, Team Sports, Individual Sports, Gymnastics, Conditioning and Combatives, Dance. (See listing under Department of Physical Education for Women.) An approved teaching minor is required with this major. Majors are strongly urged to select a health education or coaching minor and one in an unrelated field. If additional hours can be taken to satisfy the departmental requirements for graduation, the degree should be taken in physical education. If not, it should be in General Studies.

Secondary majors desiring extra preparation for teaching physical education only in grades K-6 must complete the junior or senior high school major in physical education plus 13 hours: PEP 254, 379, 380, 381, 383, 389.

Senior or Junior High School Minors:

Physical Education: 18 hours.
PEP 261; 362; 382; and 8 hours from PEP 190, 191, 192, 193, 196, 331, 332, RPA 151. Zoology 251 recommended. Individuals who elect to concentrate in dance may substitute the following: WPE 120, 122, 124, 126, 220, 226; PEP 257, 261, 355, RPA 151; and 2 hours from PEP 356, RPA 351.

Coaching: 21 hours.
Spe 102; PEP 220; 266; 330 or 465; 488; 489; plus 6 hours selected from PEP 200-212, 211, 300-312, 393. PEP 390 may be substituted for one PEP 300 course. A coaching minor must be approved by the Department of Physical Education for Women for each individual.
Health Education: 18-20 hours.
H Ed 361; 383; 480 or 481; Psych 102; one course from each of the following groups: FNM 130, Env S 101, or equivalent community college course; CFS 247, Psych 230, or Soc 150; Phar 217, 417, or Psych 365.

Elementary School Major: 30 hours minimum.
PEP 190: 191; 192: 193; 196; 198; 254; 261; 362; 379; 380; 381; 383; 389; RPA 151; H Ed 363; plus 1 hour from PEP 199; 393; 355, 463; 482, 494, WPE 104, RPA 351.

In addition to the programs listed above, a competency based program (Teacher Education Standards in Physical Education) has been developed for the training of physical education teachers at the preparatory and initial levels of certification for elementary, middle school, secondary, and coaching. Specific information may be secured from the Department of Physical Education for Women.

Physical Science

Senior High School Major: 49 hours.
Chem 101, 102, or 105, 106, or 111, 212; Geol 102; Math 107 or 140; 171; 220; 320; Sci 430; Phys 101, 102, or 201, 202; plus at least 12 hours from Astr 135; Chem 217, 240, 340; Geol 120, 322; Math 172, 303; Phys 303. If the above requirements plus the requirements for graduation of the College of Sciences and Arts are met, the degree will be Bachelor of Science in General Studies.

Senior High School Minor: 19 hours.
Chem 101, 102, or 105, 106 or 111, 212; Sci 430; Phys 101, 102, or 201, 202.

Junior High School Major: 36 hours.
Chem 101, 102, or 105, 106, or 111, 212; Math 107 or 140; 171; 220; 320; Sci 430; Phys 101, 102, or 201, 202; plus at least one course from Astr 135; Chem 217, 240, 340; Geol 102, 120, 322; Math 172, 303; Phys 303. If the above requirements plus the requirements for graduation of the College of Sciences and Arts are met, the degree will be Bachelor of Science in General Studies.

Junior High School Minor: 16 hours.
Chem 101, 102, or 105, 106 or 111, 212; Phys 101, 102, or 201, 202.

Physics

Senior High School Major: 29 hours.
Phys 201, 202, 303, 310, 320, 330 or 341, 410, 499 (4 hours includes auditing Phys 101 and 102); Sci 430. If additional elective hours can be taken to satisfy the departmental requirements for graduation, the degree should be in physics. If not, it should be in General Studies. An approved teaching minor must be selected.

Senior High School Minor: 20 hours
Phys 201, 202, 303, 310, 499 (4 hours includes auditing Phys 101 and 102); Sci 430.

Political Science

Senior High School Major: It is possible for a student to take a degree in political science and also meet the requirements for the teaching major in social studies. The student should consult with the Departments of Political Science and Education concerning this program.

Senior High School Minor: 18 hours plus Hist 422. Pol S 101, 102, 206; 222; plus 6 hours of upper-division electives in political science, with Pol S 300 and 318 recommended.

Psychology

Senior High School Major: None.

Senior High School Minor: 15 hours.
Psych 101; 102; 285 or 390; electives from 300- or 400-level courses. Psych 321, 333, 350, or 490 recommended.

Reading

Elementary School Major (A new program is being developed. See an adviser in the Department of Education.)

Social Studies

Senior High School Major: 41 hours.
15 hours from the following including at least three fields: Anth 101, Econ 201, Geog 102, Hist 110, 111, 140, 141, Pol S 101, 102, Soc S 101, Soc 101; plus Hist 480, Pol S 206, and 21 hours from 300-400 level courses in the social studies are required. One-half of all the courses in the upper-division category must be in history and include Hist 422. For the other half, it is strongly recommended that the student select courses which give as much spread as possible in the fields normally taught in the secondary schools. The requirements for graduation of the College of Sciences and Arts should be used to strengthen, broaden, and supplement this major. A teaching minor is required with this major, and English is the suggested choice. If the above requirements plus the requirements for graduation of the College of Sciences and Arts are met, the degree will be Bachelor of Arts in Social Studies. It is possible for a student to take a degree in political
science or another social science and also meet the requirements for the teaching major in social studies. These persons must take a teaching minor in history and a second unrelated teaching minor such as English or a foreign language.

**Senior High School Minor:** 21 hours
Pol S 206; 12 hours from Anth 101, Econ 201, Geog 102, Hist 110, 111 or 140, 141, Pol S 101, Soc 101, Soc S 101; plus Hist 422 and three additional hours of upper-division social studies.

**Junior High School Major:** 35 hours.
Geog 102; Hist 110, 111; Pol S 206; 3 additional hours of lower-division social studies in addition to General University Requirements; Hist 480 and 15 hours of 300-400-level courses in the social studies placing major emphasis on geography and history. Hist 422 is required for this major. Language arts is suggested as the teaching minor. If the above requirements plus the requirements for graduation of the College of Sciences and Arts are met, the degree will be Bachelor of Arts in Social Studies.

**Junior High School Minor:** 21 hours.
Geog 102; Hist 110, 111; plus 6 hours from anthropology, history, geography, and political science; Hist 422; Pol S 206.

**Elementary School Major:** 30 hours.
Geog 102; Hist 110, 111; 9 hours from Anth 210, 320, 422, Econ 201, Geog 220, Hist 140, 141, 230, 231, Pol S 101, Soc 101, Soc S 101; plus 12 hours of upper-division courses in the social studies. Geog 345 is recommended.

**Sociology**

**Senior High School Minor:** 18 hours.
Soc 101, 102; Hist 422 or Pol S 206; and 9 hours from Soc 330, 340, 351, 362, 371, 373, 374, 410, 484.

**Special Education**

(Nota Enrollement in this major is limited. Make special application to the Department of Education.)

**Elementary School Major:** 30 hours.
Spe 371; 473; PEP 463; Educ 455; 456; 464; plus 15 hours selected from the following: Educ 458 or 459; 462 or 463; 475, 478; Psych 360; 361; 390, 464; CFS 440; RPA 435*; 464*; 483. (*Summer only.)

**Speech**

**Senior High School Major:** 30 hours
(An approved teaching minor is required with this major)

**General Speech:** Spe 200 or 205; 234; 235; 240 or 260; 263; 302; 405; 435; 495; 496; and at least 5 hours of courses numbered above 300. If the above requirements plus the requirements for graduation of the College of Sciences and Arts are met, the degree will be Bachelor of Arts in Speech.

**Communication Disorders**

A competency-based program leading to an Educational Staff Associate Certificate in Communication Disorders is offered through the Department of Speech. Students interested in this program should contact the communication disorders advisers in the Department of Speech rather than the Department of Education.

**Senior High School Minor:** 18-20 hours

**General Speech:** Spe 160; 234; 301; 302; 250 or 260; 435; and at least 3 hours from Spe 235, 330 or 331.

**Rhetoric and Communication Studies:** Spe 234; 301; 302; 401; 435; 495; and at least 3 hours from 235, 330, 331 or 425.

**Theatre Arts and Drama:** Spe 160; 260; 263; 264; 361; 435; and 2 hours of Spe 496. (Major in English is recommended.)

**Elementary School Major:** None, see Language Arts.

## Department of Electrical Engineering


The curriculum in electrical engineering, accredited by the Engineers Council for Professional Development, is designed to give the student a strong basic knowledge in the areas of general interest to all electrical engineers. The course of study is therefore oriented toward the basic theory and concepts which prepare one for entry into any of the multitude of activities which are open to members of the profession—research,
development, design, operations, management, teaching, sales, consulting. Also included is sufficient laboratory experience to provide for familiarity with electrical, electronic and computing equipment and with experimental techniques. Modern laboratories for electrical circuits, electronics, electrical measurements, energy conversion, and computers are available.

All students are expected to use the Amdahl 470 and Hewlett-Packard 1000 digital computers and the EAI 690 hybrid computer as tools to aid in their studies.

The present curriculum is designed so that the equivalent of the first three semesters may be transferred from the community colleges with minimal difficulty. Some professional courses at the sophomore level, however, are necessary for direct entry into the junior year. The additional basic material common to all branches of electrical engineering is concentrated in the junior year with maximum flexibility introduced into the senior year, allowing the student to pick an area of specialty or to develop a breadth of interest. The specialty areas include electrical power, electronics, computers, systems, and electromagnetics. Special programs may be designed for students planning to continue on to advanced study in law, medicine, or business administration or who wish to pursue undergraduate study in more than one field.

Cooperative education agreements exist between the College of Engineering and certain industries. The student should consult the department chair if interested in the type of program that involves part-time attendance in the university and part-time work in industry. Students should be prepared to extend their studies somewhat in order to complete this program.

The department offers courses of study leading to the degrees of Bachelor of Science in Electrical Engineering and Master of Science in Electrical Engineering. The department participates in the interdepartmental program in engineering science leading to the degree of Doctor of Philosophy. Opportunities for graduate study in these fields are also provided through the Joint Center for Graduate Study in Richland, Washington.

The department also offers a minor in electrical engineering.

**Description of Courses**

**E E** For explanation see Index under “Symbols”

**110 Introduction to Electrical Engineering 2** (1-3) For freshmen only. Activities and career opportunities in E E; basic concepts and practices.

214 Design of Logic and Analog Circuits 3 (2-3) Prereq Math 172 or c//. Functional approach to design of electronic circuits; exposure to elementary circuit concepts and design with integrated circuits.

261 Electrical Circuits I 3 Prereq Phys 202; Math 315 or c//; Cpt S 203 or c//; c// in E E 262. Fundamental concepts of electrical science and its utilization in circuits, components, and devices.

262 Electrical Circuits Laboratory 1 (0-3) Prereq c// in E E 261. Electrical instruments; laboratory applications of electrical laws; transient and steady-state responses of simple circuits.

300 [U] Technology and Society 3 II Technology and its effects on society; demands of society for technology; critical examination of selected technological-societal problems.

301 Electrical Engineering Fundamentals 3 Prereq Phys 202; Math 172. Basic d.c. and a.c. circuits and machines.

302 Electrical Engineering Fundamentals Laboratory 1 (0-3) Prereq c// in E E 301. Laboratory experiments accompanying E E 301.

306 Electrical Engineering Applications 3 Prereq E E 301. For non-majors. Electrical equipment including electronics and machines.

307 Electrical Engineering Laboratory 1 (0-3) Prereq c// in E E 306. For non-majors. Experimental study of electrical machines and electronics.

311 Electronics 3 Prereq E E 214, 261 with grade of C or better. Fundamental digital and linear electronic circuits and devices including large- and small-signal analysis and design.

314 Microprocessor Systems 3 (2-3) Prereq E E 214, Cpt S 201, 203, 210, or 220. Comparison of several microprocessor systems with reference to architecture, support software, and electronic characteristics; assembling and programming systems.

321 Electrical Circuits II 3 Prereq E E 261 with grade of C or better. Graphs, loop and cutset analysis, state, and Laplace and Fourier transforms, network functions, frequency response, two-ports, energy and passivity.

331 Electromagnetic Fields and Waves 3 Prereq Phys 202; Math 315; major or minor in E E. Fundamentals of electrical fields, magnetic fields, and electromagnetic waves.

351 Distributed Parameter Systems 3 Prereq E E 331. Potential theory, transmission lines, high frequency electronics, antennas, fiber optics.

352 E E Laboratory I 3 (1-6) Prereq E E 311, 321, or c/; Cpt S 203. Experiments in electrical circuits, measurements and electronics; principles of measurements and measuring instruments.

361 Energy Conversion 3 Prereq E E 321, 331. Electromechanical, magnetohydrodynamic, and direct electrical energy conversion.

362 E E Laboratory II 2 (0-6) Prereq E E 361 or c/. Experiments in simulation, modelling, electrical machines.

414 Fundamentals of Digital Systems 3 Prereq E E 214. Boolean algebra; minimization of Boolean functions; realization of combinational and sequential logic circuits; digital system organization and design.

441 Systems Theory 3 Prereq E E 341. Behavior of generalized systems; state variable approach; classical mechanics.


466 Pulse and Digital Circuits 3 (2-3) II Prereq E E 311. Electronic theory and practice used in design of digital computers and other switching networks.

475 Electrical Measurements 2 (1-3) II Prereq E E 352. Wathour meters, fault location, magnetic properties, individual instrumentation problem.

476 Electronic Circuits 3 Prereq E E 311, 341, c/ in 477. Circuits with active devices; design of amplifiers, oscillators, and other circuits using semiconductor devices.

477 Electronics Laboratory 2 (1-3) Prereq c/ in E E 476. Laboratory applications of E E 476.

480 Seminar 2 Prereq senior in E E. Written and oral communications of technical material.

482 Power Systems Laboratory 2 (1-3) I Prereq E E 362. Assigned topics related to electric power systems.

489 Principles of Automatic Controls 3 I Prereq E E 341. Analysis, synthesis, stabilization, and optimization of closed-loop systems.

491 Performance of Power Systems 3 Prereq E E 341 and 361, or 391. Static and dynamic behavior of power systems, fault studies, surge phenomena, and economic considerations.


495 Internship in Electrical Industry V 1-4 May be repeated for credit; cumulative maximum 8 hours. Prereq E E 341 or 361. For juniors and seniors in E E. Students work full time in engineering assignments in approved industries.

496 Solid-State Electronics 3 II Prereq E E 311; MSE 302. Physics of p-n junctions and operating principles of semiconductor devices; bipolar and field-effect transistors, switching devices and integrated circuits.

499 Special Problems V 1-4 May be repeated for credit.

501 Advanced System Analysis 3 Prereq E E 341. Dynamic systems from the state variable approach; observability, controllability, stability, and sensitivity of differential and non-differential systems.

502 Advanced Automatic Control Theory 3 Prereq E E 489. Nonlinear and sampled data systems; optimization of deterministic systems.


507 Random Processes in Engineering 3 II Prereq Math 443 or 460. Signal detection; optimum filter theory and spectral analysis of discrete and continuous processes in physical systems.


510 Direct Energy Conversion 3 Prereq E E 331; M E 301. Energy sources; conversion principles; semiconductors; thermoelectric, photovoltaic, thermionic, magnetohydrodynamic and thermonuclear power generation; fuel cells; miscellaneous direct conversion methods.

511 Protection of Power Systems 3 I Prereq E E 491 or c/. Protection of electrical equipment as related to electric power systems.

512 Active Network Synthesis 3 Devices and classical network synthesis; two-port network theory, amplifiers, filters, negative impedance converters, active filters, and oscillators. Cooperative course taught at the University of Idaho.

513 Hybrid Simulation Techniques 3 (2-3) Prereq E E 494. Design of hybrid computers and their application to complex systems.

514 Advanced Digital System Design 3 Prereq E E 414. Realization of modern developments in digital system design; associative
memory; pattern recognition; special purpose input-output devices; parallel computing techniques.

516 Microwave and Optical Communications 3 I 1981-82 a/y. Prereq E E 331. Microwave and optical waveguides, active and passive devices, communications systems.

517 Electrical, Magnetic, Optical and Conduction Properties of Solids 3 I Prereq E E 331; M E 301. Phenomenological development of dielectricity; magneto-electricity, piezo-electricity, magnetostriction; electro-optical and magneto-optical effects, birefringence; thermo-electricity; thermooptic and galvanomagnetic effects; magneto-resistivity, piezo-resistance.

518 Advanced Electromagnetic Theory I 3 I Prereq E E 351. Field theory, classical electromagnetism, potential theory, boundary value problems, wave propagation.

519 Advanced Electromagnetic Theory II 3 II Guided waves, inhomogeneous wave equations, radiation, scattering, diffraction.


527 Antenna Theory 3 II 1980-81 a/y. Prereq E E 351. Wire and aperture antennas as radiating, receiving, and scattering elements; arrays of coupled elements, reflectors.

531 Energy Management and Planning 2 I Concepts of energy management and planning; forecasting, resource assessment and impact studies.

550 Communication Theory I 3 or 4 Discrete receiver principles; channel constraints; binary communication techniques; fading and scattering media; optimum reception of continuous wave-form modulated signals. Cooperative course taught at the University of Idaho.

581 Advanced Topics in Power Engineering 1-3 May be repeated for credit.

582 Advanced Topics in System and Circuit Theory 1-3 May be repeated for credit.

586 Microprocessor Structure and Applications 3 (2-3) II Prereq E E 466 or 476. Design with microprocessors and associated MSI and MSI devices in instrumentation, control, other applications.

595 Directed Study in Electrical Engineering 1-3 May be repeated for credit. Current topics in electrical engineering. Cooperative course taught at the University of Idaho.

596 Integrated Circuit Engineering 3 I Prereq E E 496, 476. Basic aspects of integrated circuit engineering, fabrication, device behavior and linear circuit design.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit. (For PhD in engineering science only.)

Schedule of Studies

A Bachelor of Science degree in Electrical Engineering ordinarily requires a total of 124 hours.

At least 48 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

Freshman Year

First Semester

Engl 101 Composition 3
Chem 105 Principles 4
Math 171 Anal Geom & Calc 4
EE 110 Introduction 2
Hum or Soc S (GUR) 3

Second Semester

Com Prof Elect [C] 3
Phys 201 Engineering 4
Math 172 Anal Geom & Calc 4
ME 101 Graphic Design 2
Hum Elective (GUR) 3

Sophomore Year

First Semester

Math 220 Int Linear Alg 2
Math 273 Calculus III 2
Phys 202 Engineering 4
CE 211 Statics 3
EE 214 Log An Ckts 3
Cpt S 203 Cpt Prog Engr 2

Second Semester

Math 315 Diff Equations 3
Cpt S 203 Comp Prog Engr 2
CE 212 Dynamics 3
EE 261 Elect Ckts I 3
EE 262 Elect Ckts Lab 1
EE 314 Micropr Syst 3
Hum or Soc S (GUR) 3

Junior Year

First Semester

EE 311 Electronics 3
EE 321 Elect Ckts II 3
EE 331 Flds & Waves 3
EE 352 EE Lab I 3
MSE 302 Materials Sci 3
Second Semester  |  Hours
---|---
EE 341 Com Systems  |  3
EE 351 Dist Par Systems  |  3
EE 361 Energy Conversion  |  3
EE 362 EE Lab II  |  2
Econ 201 Principles (GUR)  |  4

Senior Year  

First Semester  |  Hours
---|---
ME 301 Thermodynamics  |  3
EE 480 Seminar  |  2
Approved Elective¹  |  10-12

Second Semester  |  Hours
---|---
ME 404 Heat Transfer  |  3
Adv Hum or Soc S Elective  |  3
Approved Electives¹  |  9-11

¹Senior electives may be chosen from most of the 400-level and some of the 500-level courses listed for this department. Appropriate courses from other departments will also be accepted. The selection will include 3-4 credit hours of laboratory experience. The student must discuss his selection of electives with an adviser prior to the end of the junior year.

Transfer Students

Students planning to transfer from other institutions should carefully note the sequence of courses listed above. Transfers from community colleges should consult the booklet “Transfer Programs for Washington Community Colleges” or should write directly to this department for specific information.

Preparation for Graduate Study

Before undertaking graduate study in electrical engineering, a student should have completed substantially the equivalent of the above schedule of studies. For students entering from other areas, completion of necessary prerequisite courses may be undertaken while enrolled as a graduate student.

Department of English


The curriculum of the Department of English is designed for: 1) students who are interested in preparing for graduate study in English, 2) students who wish specific training in the teaching of language and literature, and 3) students who desire a broad education emphasizing language and literature.

Students electing an English major as preparation for the study of the law can receive special advisement from the department's pre-law adviser. Such students are urged to take specific supporting courses in such other disciplines as philosophy, history, business administration/economics and political science.

Students who are preparing to teach English in the public schools of Washington should examine the summary of requirements for majors and minors listed in the Department of Education in this catalog, and they should confer with representatives of that department concerning the requirements for certification.

The Department of English offers courses of study leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy in English. In cooperation with the Department of History, the department participates in the interdepartmental program of American Studies leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy in American Studies. In cooperation with the Department of Foreign Languages and Literatures, the department participates in the interdepartmental program in Literary Studies leading to the degree of Doctor of Philosophy in Literary Studies.

Description of Courses

Engl For explanation see Index under “Symbols”

100 Mechanics of English 1 Basic usage, grammar, and mechanical aspects of written English.

101 [W] English Composition 3 The writing of correct, coherent English prose, stressing orderly development of thought and precise exposition.

102 [W] English Composition for Chicanos 3 Same as Ch St 102.

103 Basic Skills in English—ESL 3 English grammar, composition, and pronunciation for foreign students.

104 Intermediate Grammar and Basic Skills—ESL 3 More complex aspects of
English syntax and the development of basic reading, abstracting, and writing skills.

105 [W] Freshman Composition for ESL Students 3 Special grammatical and rhetorical problems of ESL students.

108 [H] Reading Literature 3 Reading for pleasure, appreciation, and enlightenment: short stories, novels, plays, poetry.

198 [W] English Composition Honors 3 1
199 [H] English Composition and Literature Honors 3


209 [H] Survey of English Literature to 1750 3
210 [H] Survey of English Literature 1750 to 1900 3

245 [H] American Literature to 1855 3
246 [H] American Literature since 1855 3

255 English Grammar 3

256 The Organization of English 3 I The phonology, morphology, and syntax of English, especially contemporary American.

260 [H] Great Works Series 2 I Works of lasting appeal in world literature through the 18th century.

261 [H] Great Works Series 2 II Works of lasting appeal in world literature since the 18th century.


304 Chaucer 3 I Poetry and prose of Geoffrey Chaucer.

305 [H] Shakespeare 3 Shakespearean drama to 1600.

306 [H] Shakespeare 3 Shakespearean drama after 1600.


308 [H] Introduction to Literary Criticism 3 II

316 Introduction to American Studies 3 II Prereq 6 hrs from Hist 110, 111, Engl 245, 246. Significant American ideas, themes, myths, lore, behavior patterns.

319 [H] Black Literature in America, 1700-1900 3 I Same as BI St 319.

320 [H] Black Literature in America 1900 to Present 3 II Black literature from the Harlem Renaissance to the present.

323 Approaches to the Teaching of English 3 English literature and composition in secondary schools.

332 [H] Poetry: Twentieth Century 2 20th century poetry including Continental.

333 [H] Fiction: Twentieth Century 3 20th century fiction including Continental.

334 [H] Drama: Twentieth Century 3 20th century drama including Continental.

335 [H] The Bible as Literature 3


351 Creative Writing: Prose 3 Prereq Engl 101.
352 Creative Writing: Poetry 3 Prereq Engl 101.

354 History of the English Language 3 I Prereq 1 yr for L. Language related to the origin, history, and literature of its speakers.

355 Women Writers 3 II Women's artistic and intellectual contributions to prose, fiction, drama, and poetry.

366 [H] The English Novel: Defoe to Elliot 3 I
367 [H] The English Novel: Meredith to the Present 3 II

368 [H] American Fiction to 1900 3 I
369 [H] American Fiction since 1900 3 II

401 [W] Advanced Writing 3 II Advanced problems in writing, criticism, and research.


403 Professional and Technical Writing—ESL 3 II Technical writing techniques, formal report preparation; focus on special grammatical and rhetorical problems of ESL students.

406 English Renaissance Literature I 3 I 1980-81 a/y. Non-dramatic literature of the period 1500 to 1600. Credit not granted for both Engl 406 and 506.

407 English Renaissance Literature II 3 II Non-dramatic literature of the period 1600 to 1660.

409 English Renaissance Drama 3 1 1981-82 a/y. English drama to 1660.

415 Dryden, Pope, and Johnson 3 I Neoclassical literature from 1660 to 1798. Credit not granted for both Engl 415 and 515.

416 English Romantic Literature 3

417 Victorian Literature 3 II

451 Advanced Creative Writing: Prose 3 May be repeated for credit; cumulative maximum 6 hours.

452 Advanced Creative Writing: Poetry 3 May be repeated for credit; cumulative maximum 6 hours.

458 Topics in Psycholinguistics 3 May be repeated for credit; cumulative maximum 6 hours. Relates psycholinguistic research to linguistic and psychological theory; application of such research to reading, writing, and language remediation.

470 American Culture Series 3 May be repeated for credit; cumulative maximum 6 hours.
The West in American literature; the Southern Renaissance; literature of World War II.
471 American Romantic Movement 3 I Prereq Engl 245 and 246. Credit not granted for both Engl 471 and 571.
472 American Poetry 3 II
490 Seminar in Literature 3 For seniors only.
495 Topics in English 3 May be repeated for credit; cumulative maximum 12 hours. Literature of special or current interest: detective fiction, science fiction, feminism in literature, children's literature, and others.
499 Special Problems V 1-4 May be repeated for credit.
501 Seminar in Teaching Writing 3 Theory and practice of the teaching of English composition from remedial to advanced levels.
503 Old English: Anglo-Saxon 3
504 Old English: Beowulf 3
506 English Renaissance Literature I 3 Graduate level counterpart of Engl 406; additional requirements. Credit not granted for both Engl 406 and 506.
507 Shakespeare 3 Plays, poems, criticism, and background materials.
510 Backgrounds of American Literature 3 Dominant themes in American literature and their European origin.
511 Seminar in Colonial and Provincial Literature 3
512 Introduction to Graduate Study 3
513 Seminar in American Studies 3 May be repeated for credit. Same as Hist 513.
514 Seminar in Regional American Literature 3 May be repeated for credit.
515 Dryden, Pope, and Johnson 3 Graduate level counterpart of Engl 415; additional requirements. Credit not granted for both Engl 415 and 515.
519 Seminar in Nonfiction Prose 3 May be repeated for credit.
521 Seminar in British Romantic Literature 3 May be repeated for credit.
522 Seminar in Victorian Literature 3 May be repeated for credit.
525 Seminar in English Literature of the Seventeenth Century 3 May be repeated for credit.
527 Seminar in English Literature of the Restoration and Eighteenth Century 3 May be repeated for credit.
529 Nineteenth-Century American Fiction 3 May be repeated for credit.
533 Seminar in the English Renaissance 3 May be repeated for credit.
537 Seminar in English Literature 3 May be repeated for credit.
541 Creative Writing 3 May be repeated for credit. Instruction and criticism in the writing of fiction, poetry, and other creative forms.
543 Problems in English Linguistics: Syntax and Phonology 3 May be repeated for credit; cumulative maximum 6 hours.
544 TESOL: Methods and Practice 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Engl 543. Theoretical issues and practical experience in ESL classroom situation.
547 Literary Criticism 3 Theories of literature from Plato and Aristotle to the present.
548 Seminar in Literary Criticism 3 May be repeated for credit. Problems in the theory and practice of literary criticism.
549 Twentieth-Century Prose Fiction 3 May be repeated for credit; cumulative maximum 6 hours. Selected American and English masterpieces of the 20th century.
550 Seminar in Twentieth Century Poetry 3 May be repeated for credit.
551 Seminar in Twentieth Century Drama 3 May be repeated for credit.
554 The History of the English Language 3
555 Seminar in Middle English Literature 3 May be repeated for credit.
560 Seminar in Drama 3
567 Seminar in the English Novel 3
571 American Romantic Movement 3 Graduate level counterpart of Engl 471; additional requirements. Credit not granted for both Engl 471 and 571.
573 Seminar in Major American Writers 3 May be repeated for credit.
580 Seminar in Medieval Literature 3 May be repeated for credit. The literature of western Europe from 450 to 1500.
591 Seminar in Literary Studies 3 May be repeated for credit. Same as For L 591.
595 Topics in English 3 May be repeated for credit; cumulative maximum 6 hours. Language, English pedagogy, or literature of special or current interest: reading theories, teaching of writing, current literary theories.
598 Teaching Apprenticeship 1 May be repeated for credit.
600 Special Projects or Independent Study Variable credit.
700 Master's Research, Thesis, and/or Examination Variable credit.
702 Master's Special Problems, Directed Study, and/or Examination Variable credit.
800 Doctoral Research, Dissertation, and/or Examination Variable credit.
Schedule of Studies

At least 45 of the total hours required for the bachelor’s degree in this program must be in upper-division hours.

Three programs are offered for the English major; all lead to the degree of Bachelor of Arts in English. Option I is a traditional English program for the professional. Option II is a program for English-Education majors (see Department of Education). Option III is a program for students who want a broad education emphasizing language and literature.

The department also offers a minor in English.

Option I: Professional Major

| A) Three from Engl 209, 210, 245, 246 | Hours |
| B) Engl 301, 401 | 6 |
| C) Two from Engl 304, 305 or 306, 307, 308 | 6 |
| D) One from each of the following groups: |
|   1) Engl 255, 256, 354, 458 | 3 |
|   2) Engl 406, 407, 409 | 3 |
|   3) Engl 366, 410, 415 | 3 |
|   4) Engl 367, 416, 417 | 3 |
|   5) Engl 470, 471, 472 | 3 |
|   6) Engl 316, 319, 320, 368, 369 | 3 |
| Total | 39 |

Option II: Teaching Major

| A) Three from Engl 108, 209, 210, 245, 246 | Hours |
| B) Engl 301, 401, 308, 323 | 12 |
| C) Two from Engl 304, 305 or 306, 307, 415 | 6 |
| D) One from each of the following groups: |
|   1) Engl 366, 367, 416, 417 | 3 |
|   2) Engl 316, 320, 368, 369, 471, 472 | 3 |
|   3) Engl 332 (2 hrs), 333 (3 hrs), 334 (3 hrs) | 2 or 3 |
|   4) Engl 255, 256, 354, 458 | 3 |
| Total | 38 or 39 |

Option III: General Major

| A) Three from Engl 108, 209, 210, 245, 246 | Hours |
| B) Engl 301, and one from 351, 352, 401 or 402 | 6 |
| C) Two from: |
|   1) Engl 255, 256, 354, 458 | 6 |
|   2) Engl 304, 305 or 306, 307 | 6 |

3) Period courses numbered above 400 | 6 |
D) One from genre courses numbered above 300 | 3 |
Total | 39 |

English Minor

The student must complete a minimum of 16 hours in English courses (excluding 101 and 108), at least half of which are upper division.

Preparation for Graduate Study

Students interested in a graduate program in English at Washington State University should offer preparation in English courses generally approximating one of the three undergraduate programs described above. Students with undergraduate majors in such subjects as philosophy, foreign languages, and history may also be accepted for graduate study in the department. Every student should be well grounded in at least one modern foreign language.

Department of Entomology


The entomology curriculum and facilities provide opportunities for learning and research in the basic and applied aspects of the study of insects and related arthropods. Majors at all levels are prepared in both applied and basic research as well as teaching. Federal and state restrictions governing the use of pesticides require more personnel able to advise on all aspects of such use. Courses are designed for majors and non-majors, providing supplementary training for students in agriculture, education, veterinary medicine, bacteriology and public health, environmental sciences, and natural sciences.

The suggested curriculum prepares students for graduate study or for employment with county, state, or federal governments, and gives specialized training for those wishing to become pest control consultants, chemical company representatives, or pest management specialists. Interdepartmental courses in plant protection and pest management integrating principles of control for a variety of pests are available, and may include specialization in entomology at the undergraduate level. The plant protection and pest management curriculum earns a bachelor's
degree in general agriculture, but the coordinator and adviser for this curriculum should be contacted in the Department of Entomology.

Facilities are available for graduate study in the major areas of entomology: apiculture, behavior, biological and integrated control, economic entomology, ecology, forest entomology, insect-plant relationships, medical entomology, morphology, physiology, and taxonomy. Departmental faculty at outlying research centers also serve as advisers on graduate student research problems, and provide guest lectures in courses. Extensive insect collections support teaching and research.

The department offers courses of study leading to the degrees of Bachelor of Science in Entomology, Master of Science in Entomology, and Doctor of Philosophy.

**Description of Courses**

**Entom For explanation see Index under “Symbols”**


348 Forest Entomology 3 (2-3) I Same as For 348.

440 Field Entomology 1 or 2 May be repeated for credit. S Prereq Entom 340 or 343. One or two weeks of field investigation in entomological problems.

441 Systematic Entomology 5 (2-9) II 1980-81 a/y. Prereq Entom 340 or 343. Theory, techniques, and history of insect classification; biology, literature, and identification of all orders and important families of insects.

443 Insect Ecology 3 (2-3) I 1981-82 a/y. Prereq Entom 340 or 343. Interrelationships of insects with the physical and biotic environment; population dynamics and community relations.


452 Pesticides and the Environment 2 II Prereq 12 hrs biological sciences. Immediate and prolonged effects of pesticides on man and other animals; legal and moral repercussions of pesticide use.

474 (574) Aquatic Entomology Lab 2 (0-6) II 1981-82 a/y. Prereq c// in Entom 472. Field trips required. Cooperative course taught at the University of Idaho.

498 Insect Morphogenesis 4 (3-3) II 1981-82 a/y. Prereq Entom 340 or 343. Ontogenetic development; embryogenesis and metamorphosis; insect phylogeny and evolution. Cooperative course taught at the University of Idaho.

499 Special Problems V 1-4 May be repeated for credit.

511 Principles of Systematic Biology 3 I 1980-81 a/y. Same as Zool 511.

540 Taxonomy of Immature Insects 5 (2-9) II 1981-82 a/y. Prereq Entom 441. The orders and families of insects as distinguished by characters of eggs, nymphs, larvae, and pupae.

541 Advanced Insect Ecology 3 (2-3) I 1980-81 a/y. Prereq Entom 343; general ecology or Entom 443. Population and community dynamics; theory and application in natural and artificial systems. Cooperative course taught at the University of Idaho.


543 Population Management 2 (1-3) I 1981-82 a/y. Prereq Math 171; Cpt S 201 or 210; an ecology course. Systems approach to theoretical population ecology and its application to management problems.


545 Toxicology of Insecticides 4 (3-3) II 1980-81 a/y. Prereq Chem 240, Zool 222 or Entom 340 or 343. General principles of insecticide toxicology; classification, mode of action and metabolism of each group of insecticidal chemicals; hazards to invertebrates.
549 (449) Insect Pest Management 2 II 1981-82 a/y. Prereq Entom 450. Use of combatible combinations of chemical, biological and cultural techniques to control pests with minimal environmental upsets.

550 Insect Physiology 4 (3-3) II 1981-82 a/y. Prereq Chem 240; Zool 352; Zool 222, or Entom 340 or 343. General principles of insect physiology; the mechanisms of vital processes in insects; organ, cellular, subcellular, chemical and physical levels.

560 Photography for Entomologists 2 (1-3) II 1981-82 a/y. Prereq Entom 343. By interview only. Technique of scientific photography; macrophotography, cinematography, and microphotography; use of specialized films and methods.

582 Insect Physiological Ecology 2 II 1980-81 a/y. Prereq Entom 484. Selected topics in physiological ecology. Cooperative course taught at the University of Idaho.

593 Seminar 1 May be repeated for credit. Prereq 20 hrs biology. Reporting problems and research in entomology.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

**Schedule of Studies**

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

At major in entomology requires Entom 343 and 441, plus a minimum of 11 hours of entomology electives: Bio S 103, 104, 372; Bot 232 or 320; Chem 105, 106, 240; Engl 101 and 3 hours writing and 2-3 hours communication skills (writing or speech); Genet 301; Math 140 or 171; Phys 101, 102; Zool 352, 222.

Students contemplating graduate work should take Chem 340, 341, 342, 343 instead of Chem 240; Zool 352, and a foreign language. Other suggested electives are Chem 364, 366; Math 171; Phys 101, 102; Zool 222, 510, plant physiology.

Students planning to work after the bachelor's degree as pest control consultants, or as pest management specialists, should include courses in pest management; Chem 474; Entom 452, P1 P 329; Soils 201; Agron 305; Ag Ec 201; Biom 310 and crops courses in agronomy and horticulture.

**Preparation for Graduate Study**

As preparation for work toward an advanced degree, a student should have completed an undergraduate major in some field of biological science, chemistry, forestry, or agriculture. Background work should include a year each of zoology, botany, or an integrated course in the biological sciences, a basic course in entomology, plant or animal physiology, and organic chemistry. The background in mathematics includes calculus.

**Programs in Environmental Science and Regional Planning**

Programs Chair and Professor, W. H. Funk; Regional Planning Major Adviser: Professor, W. R. Lassey; Environmental Science Major Advisers: Associate Professor, G. L. Young; Assistant Professor, E. H. Franz.

The programs combine two closely related fields of studies: environmental science and regional planning. Environmental science is concerned with the study of natural and modified environments and their interactions with biological (including human) communities, with an emphasis on the comprehensive understanding of the environmental/ecological context, assessment of beneficial and disruptive impacts, and methodology to analyze, interrelate, and resolve these complex systems. The regional planning curriculum provides an understanding of basic issues, methods, and processes in rural, land use, and regional planning with comprehensive studies of natural and human systems. Students acquire through both programs a holistic and interdisciplinary perspective and ecological understanding that prepare them for a variety of roles in the study, planning, and management of the environment.

Both programs emphasize the need for development of areas of specialization by the students in consultation with their faculty advisers. Environmental science majors can specialize in agricultural ecology, biological science, cultural ecology, environmental quality control, natural resources, physical science, or regional and land use planning. Regional planning majors can specialize in administration, implementation, assessment, or design of planning systems; or planning for social and human resources, natural and physical resources, economical and political systems, or transportation systems.
Because of the diversity of the environmental context, the program for each student is flexibly designed in a unique, multi-optional, interdisciplinary concept. It provides a strong basis for graduate study and research. The programs are closely coordinated with the Environmental Research Center and other university research units. The programs are administratively supported by the Colleges of Agriculture, Business and Economics, Engineering, and Sciences and Arts. Its participating faculty resource list includes some 90 faculty from over 40 disciplines.

The programs offer courses of study leading to the degrees of Bachelor of Science in Environmental Science, Master of Science in Environmental Science, and Master of Regional Planning. Students can also participate in the individual interdisciplinary Ph.D. degree program.

**Description of Courses**

Env S For explanation see Index under "Symbols"

101 [U] Environment and Human Life 3 Interactions between humans and their environment; multidisciplinary introduction to environment concepts and concerns.

102 [U] Environment and Human Life 1 Prereq c// in Env S 101. Environmental problems; possibilities for solutions; environmental management.

174 [Z] Introduction to Meteorology and the Atmospheric Environment 3 Same as Ch E 174.

199 Role of Agriculture in a Quality Environment I I Same as Ag 199.

301 Forest and Range Environments 3 Same as For 301.

302 Environmental Field Trip 1 (0-3) II Prereq Env S 101 or c//. One week field trip during spring vacation to study environmental problems and management practices from perspective of government and industry.

303 [B] Conservation of Renewable Resources 3 Same as For 303.


402 [P] Earth's Resources 3 II Same as Geol 402.

403 [P] Environmental Geology 3 II Same as Geol 403.

404 The Ecosystem 3 (2-3) II Prereq Math 171; Cpt S 201; Bio S 372. Analysis and simulation of ecosystem processes: dual emphasis on ecological principles and development of models to evaluate policies for management. Credit not granted for both Env S 404 and 304.

444 Environmental Impact Statement Assessment 3 (2-3) I Analysis of environmental impact statements and their legal framework; methods of environmental assessment and team development of an impact statement. Credit not granted for both Env S 444 and 544.

470 Fundamentals of Air Pollution 3 I Same as Ch E 470.

474 Applied Meteorology 2 Same as Ch E 474.

480 Environmental Chemistry 2 II Same as Chem 480.

493 Seminar 1 May be repeated for credit; cumulative maximum 6 hours.

495 Undergraduate Internship V 1-12 May be repeated for credit; cumulative maximum 12 hours. By interview only. Practical experience in appropriate agencies; for career students in environmental science.

499 Special Problems V 1-4 May be repeated for credit.

504 The Ecosystem 3 (2-3) Graduate level counterpart of Env S 404; additional requirements. Credit not granted for Env S 404 and 504.

510 Modeling and Simulation of Ecological Systems 3 II Same as Cpt S 510.

520 Special Topics 2 May be repeated for credit; cumulative maximum 6 hours.

521 Special Topics in Air Pollution V 1-3 May be repeated for credit; cumulative maximum 6 hours. Same as Ch E 521.

544 Environmental Impact Statement Assessment 3 (2-3) Graduate level counterpart of Env S 444; additional requirements. Credit not granted for both Env S 444 and 544.

549 Land Use and Environmental Law 4 Analysis and interpretation of local, state and federal laws, codes and regulations applicable to land planning and environmental protection. Cooperative course taught at University of Idaho.

571 Air Pollution Meteorology 3 II Same as Ch E 571.

572 Air Pollution Measurement Techniques 2 (1-3) I Same as Ch E 572.

573 Air Pollution Abatement and Administration 3 Same as Ch E 573.

574 Air Pollution Seminar 1 Same as Ch E 574.

581 Chemistry of Natural Waters 3 I Same as Chem 581.

586 Applied Stream Sanitation 3 (2-3) II Prereq Env S or Chem 581. Assimilating capability and complex self purification capacity of a natural water system.

593 Graduate Seminar 1

595 Graduate Internships V 1-12 May be repeated for credit; cumulative maximum
Program in Environmental Science and Regional Planning

12 hours. By interview only. Practical work experience in appropriate agencies; for graduate career students.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

Regional Planning

RP

540 History and Theory of Regional Planning 3
1 Prereq Soc 101 or Pol S 102; Econ 203.
History of planning from ancient time to present; basic planning theories from a human ecological perspective.

541 Planning in Rural Environments 3 II Prereq RP 540. Planning theories and methods applied to rural regions, issues and problems unique to rural planning.

550 Methods and Processes in Regional Planning 3 II Prereq RP 540; Biom 412. Basic analyses and approaches to planning; implementation techniques; planning agencies.

567 Regional Landscape Inventory and Analysis 5 (1-12) Graduate level counterpart of L A 467; additional requirements. Credit not granted for both L A 467 and R P 567.

568 Advanced Projects in Planning and Design 5 (0-15) Graduate level counterpart of L A 468; additional requirements. Credit not granted for both L A 468 and R P 568.

590 Special Topics in Regional Planning V 1-3 May be repeated for credit.

593 Seminar in Regional Planning 1 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

Schedule of Studies

The course of study is organized around the requirements listed below; additionally a sequence will be designed by each student and the major adviser to provide training depth in one of seven optional areas of specialization: agricultural ecology, biological science, cultural ecology, environmental quality control, natural resources, physical science, or regional and land use planning. (Fact sheets on each option are available from the programs office). At least 40 of the total hours required for the Bachelor of Science in Environmental Science must be in the upper-division courses, 18 of which are in the chosen area of specialization (normally in not more than two departments). Majors in environmental science must satisfy General University Requirements as specified for majors in the College of Arts and Sciences; many of these requirements are built into the curriculum below. Students should note the lack of specific courses in the humanities, at least 6 hours of which must be included in their course work. Each major must also complete 8 hours in a modern foreign language unless he/she has completed two years of such language in high school (or one year in high school and four hours in the same language at WSU).

Freshman Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Env S 101 Env &amp; Human Life</td>
<td>3</td>
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<tr>
<td>Env S 102 Env &amp; Human Life</td>
<td>1</td>
</tr>
<tr>
<td>Engl 101 Composition</td>
<td>3</td>
</tr>
<tr>
<td>Chem 105 Principles</td>
<td>4</td>
</tr>
<tr>
<td>Math 107 or 201</td>
<td>3</td>
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</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anth 101 General</td>
<td>3</td>
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<tr>
<td>Chem 106 Principles</td>
<td>4</td>
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<tr>
<td>Math 171 or 202</td>
<td>3-4</td>
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<tr>
<td>Econ 201 Principles</td>
<td>4</td>
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<tr>
<td>Soc 101 Introduction</td>
<td>3</td>
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Sophomore Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Bio S 103 Introductory</td>
<td>4</td>
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<tr>
<td>Phys 101 or 201</td>
<td>4</td>
</tr>
<tr>
<td>Geol 102 or Soils 201</td>
<td>4-3</td>
</tr>
<tr>
<td>Engl 201 or 402</td>
<td>3</td>
</tr>
<tr>
<td>Cpt S 201 or 203</td>
<td>2</td>
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Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bio S 104 Introductory</td>
<td>4</td>
</tr>
<tr>
<td>Phys 102 or 202</td>
<td>4</td>
</tr>
<tr>
<td>Chem 240 or 340/341</td>
<td>4-5</td>
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<tr>
<td>Env S 302 Field Trip</td>
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<td>Humanities Elective</td>
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Junior Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Bact 101 or 201</td>
<td>4-5</td>
</tr>
<tr>
<td>Genetics or Physiology</td>
<td>3-4</td>
</tr>
<tr>
<td>Upper-division Pol S</td>
<td>3</td>
</tr>
<tr>
<td>Env S 493 Seminar</td>
<td>1-2</td>
</tr>
<tr>
<td>Electives/Option Courses</td>
<td>4-5</td>
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Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper-division Anth</td>
<td>3</td>
</tr>
<tr>
<td>Bio S 372 General Ecology</td>
<td>4</td>
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<tr>
<td>Env S 493 Seminar</td>
<td>1-2</td>
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<tr>
<td>Electives/Option Courses</td>
<td>7</td>
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</table>
## Senior Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
</tr>
<tr>
<td>Env S 444 Impact Statements</td>
<td>3</td>
</tr>
<tr>
<td>Bio S 474 Human Ecology</td>
<td>3</td>
</tr>
<tr>
<td>Upper-division Soc</td>
<td>3</td>
</tr>
<tr>
<td>Env S 493 Seminar</td>
<td>1-2</td>
</tr>
<tr>
<td>Electives/Option Courses</td>
<td>6</td>
</tr>
<tr>
<td>Second Semester</td>
<td></td>
</tr>
<tr>
<td>Upper-division Econ</td>
<td>3</td>
</tr>
<tr>
<td>Biom 412 (or other statistics)</td>
<td>3</td>
</tr>
<tr>
<td>Env S 404 Ecosystem</td>
<td>3</td>
</tr>
<tr>
<td>Env S 493 Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Electives/Option Courses</td>
<td>4</td>
</tr>
</tbody>
</table>

1. Geol 403 is acceptable as a substitute for this requirement.
2. One course in genetics or physiology is required, to be selected from: Genet 201 or 301; Bio S 305, Bot 320, or Zool 352.
3. Anthropology—Anth 304, 309, or upper-division ethnology or ethnography course.
4. Political Science—Pol S 423 or upper-division public policy formation course.
5. Sociology—Soc 330, 331, or 431.
6. Economics—Econ 316, Ag Ec 380, or Econ 472.
7. Env S majors are required to complete four (4) credit hours of the Env S 493 Seminar series in any combination of 1 or 2 credit sections.

**NOTE:** Courses taken to fulfill the above requirements, as listed, cannot be taken to satisfy requirements for the option. Beyond those options listed, students are encouraged, in close consultation with an adviser, to create their own option, one more closely fitted to their specific needs: such option alternatives must be approved by the program adviser. Those students taking a dual major or who already have a bachelor's degree may use the other degree program as a substitute for the option, with their adviser's permission.

## Department of Fine Arts

**Professor and Department Head, R. Coates; Professors, R. Feasley, G. Hansen, K. Monaghan; Associate Professors, R. Helm, F. Ho, J. Hockenhull, A. Okazaki; Assistant Professors, P. Connor, J. Dollhausen, J. Schuman, P. Siler, J. Weintraub.**

The Fine Arts Department offers a diversity of experiences in the visual arts. Courses are designed to give the student both historical perspectives and practical skills in a variety of media.

Students interested in preparing for secondary and primary teaching find that the department, working with the Department of Education, provides ample training for them as artists and teachers. Those in art education who wish to take the Bachelor of Arts in Fine Arts should complete the minimum departmental requirements of 53 hours.

The department offers courses of study leading to the degrees of Bachelor of Arts in Fine Arts and Master of Fine Arts.

## Description of Courses

### Foundation

- **101** [H] Introduction to Art 3 For non-majors. Appreciation of various visual art forms; emphasis on contemporary period.
- **102** Fine Arts Orientation 1 Prereq c// in FA 103. Introduction to various media of fine arts.
- **103** Art 3 (0-6) Prereq c// in FA 102. Introduction to formal elements through studio experience.

### Art History

- **104** [H] Black Visual Arts 3 Same as BI St 102.
**Chem 217 Quant Anal** 4  
**Elective** 2

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Bact 201 Gen Microb</td>
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<td>Phys 102 General</td>
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<tr>
<td>Chem 240 Organic</td>
<td>4</td>
</tr>
<tr>
<td>Hum or Soc S Elective</td>
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**Junior Year**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>F S 416 Food Microb</td>
<td>3</td>
</tr>
<tr>
<td>Ag Ec 201 Ag Ec Mgmt</td>
<td>4</td>
</tr>
<tr>
<td>Chem 364 Intro Biochem</td>
<td>3</td>
</tr>
<tr>
<td>F S 380 Food Pres</td>
<td>3</td>
</tr>
<tr>
<td>F S 472 Dairy Products</td>
<td>4</td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>F S 433 Ag Process</td>
<td>3</td>
</tr>
<tr>
<td>Engl 201 or Ag 205</td>
<td>3</td>
</tr>
<tr>
<td>F S 471 Fruit &amp; Veg Prod</td>
<td>4</td>
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<tr>
<td>Elective*</td>
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**Senior Year**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Biom 310 or 412</td>
<td>3</td>
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<tr>
<td>F S 473 Meat and Poul Prod</td>
<td>4</td>
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<tr>
<td>F S 401 Seminar</td>
<td>1</td>
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<tr>
<td>F S 370 Food Chem</td>
<td>3</td>
</tr>
<tr>
<td>Ag Ec 350 Ag Bus Mgt</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>A S 301 Prin Nutr</td>
<td>3</td>
</tr>
<tr>
<td>F S 474 Grain Products</td>
<td>3</td>
</tr>
<tr>
<td>F S 371 Food Analysis</td>
<td>4</td>
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<tr>
<td>Elective*</td>
<td>4</td>
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</tbody>
</table>

*Students wishing to place greater emphasis in certain fields of specialization should make the substitutions and select the elective courses shown under the appropriate list of recommended electives.

**Recommended Electives**

<table>
<thead>
<tr>
<th>Food Production: A S 101, Hort 201, 311, or 320; Agron 203.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business:</strong> B A 210, 230, 231; Ag Ec 301, Psych 306.</td>
</tr>
<tr>
<td><strong>Engineering:</strong> Math 171a, 172a; Phys 201b, 202b; CE 341, 342; Chem E 301, 302, 401, 402.</td>
</tr>
<tr>
<td><strong>General:</strong> Cpt S 201; F S 426; FNIM 420, 421.</td>
</tr>
<tr>
<td><strong>Nutrition:</strong> FNIM 130, 333, 343.</td>
</tr>
<tr>
<td><strong>Science:</strong> Math 171a, 172a; Chem 331, 332, 340c, 341c, 342c, 364, 366, 371, 372.</td>
</tr>
</tbody>
</table>

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### Preparation for Graduate Study

Students who plan work toward an advanced degree should elect courses which will support their minor area of interest or strengthen their major. Consultation with their adviser will be found most helpful.

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**Department of Foods, Nutrition, and Institution Management**

**Professor and Department Head, D. C. Fletcher; Professor, M. Hard; Associate Professors, K. Funk, G. Jennings, M. Mitchell, E. Monagle, G. Scheier; Assistant Professors, E. Augustin, L. Massey, C. McCartan, S. McCurdy, E. McDonough, T. Mehta, J. Walsh; Clinical Instructor, M. Stevens.**

The curriculum is designed to prepare students for professional dietetics, positions as home economists in food-related organizations and for research and graduate study.

Six options of study are offered to men and women interested in careers related to food, nutrition and foodservice management. The students enrolled in these options complete prescribed courses of study leading to the degree of Bachelor of Science in Home Economics.

The **Food-Related Business Option** is for those interested in combining a career in business with foods. Courses in foods and nutrition, based on a foundation of chemistry and human physiology, are supplemented with appropriate business administration courses to prepare the graduate for entry-level positions in the test kitchens of food processors, as representatives of equipment or utility companies, or with other food-related organizations such as advertising agencies and in federal and local government programs.

The **Food-Related Communications Option** provides students with the opportunity to develop communication skills while studying the prescribed courses in foods and nutrition which are based on a foundation of chemistry and human physiology. Employment opportunities may be found in industry or government organizations engaged in the dissemination of food and nutrition information to the public.

The student enrolled in the Food-Related Communications Option may, by careful course selection, fulfill the requirements for a minor in communications. The minor will strengthen the student's communications skills and enhance job opportunities.
Practicum experiences are available to students enrolled in the above options. For this experience, the student learns on-the-job for one semester or during the summer. Practicum experiences are arranged to match the career goals of the student.

Three options for studying dietetics are available.

General Dietetics is the "traditional" option in dietetics and has been available since the 1940's. By following the prescribed course of study of foods, nutrition and foodservice management based on chemistry, biochemistry, physiology and business, the student fulfills the minimum academic requirements of the American Dietetic Association as well as those of the department and university. The student must gain additional clinical experience or training through a dietetic internship before he/she becomes eligible for membership in the American Dietetic Association. Internships in hospitals or selected organizations are very competitive and are available outside the state of Washington, mostly in the midwest and eastern part of the United States. Those completing the program of study for a Bachelor of Science degree and an internship are qualified for a variety of positions as a member of the management team and/or health care team in hospitals, school lunch, college and university food service, restaurants and in government and private agencies.

Completion of the Foodservice Management Option fulfills minimum academic requirements for membership in the American Dietetic Association, as well as those required by the department and university. Course work in chemistry, physiology, nutrition, foods, business and foodservice management are required. The graduate may become a member of the American Dietetic Association by completing an administrative internship. This person is then eligible for administrative positions in hospitals, school lunch, college and university foodservice, restaurants as well as in government and private agencies. These persons are not qualified to work in diet therapy or nutrition education positions.

The Coordinated Undergraduate Option in General Dietetics combines classroom education with clinical experiences in dietetics. Course work is similar to that described for general dietetics. In this four-year option, the student completes the academic requirements for the department and university as well as the eligibility requirements for membership in the American Dietetic Association and for taking the examination to become a Registered Dietitian. Graduates of this option qualify for the same kinds of positions as do the graduates of the General Dietetics Option who complete an internship.

To become a Registered Dietitian it is necessary to complete one of the dietetic options and an internship for the General Dietetic and the Foodservice Management options. No internship is necessary after completing the Coordinated Undergraduate Option in General Dietetics. In addition, it is necessary to pass a registration examination which is given twice each year under the auspices of the American Dietetic Association. The dietitian meeting qualifications for registration is eligible to use the designation "R.D."

The sixth option in the department is the Research Option. The Research Option requires more science courses than the above options. Physics and biology, in addition to courses in chemistry, biochemistry, physiology, foods and nutrition, are required. Students may participate in research projects conducted by the faculty. This experience provides a general understanding of career possibilities and allows students to share in research accomplishments. Those persons graduating in the Research Option may obtain jobs in quality control or test kitchens in firms in the food industry. The graduate of this option may become a laboratory technician; however, to become a leader in a research project, an advanced degree is usually required. The Research Option is excellent preparation for graduate study.

The department also offers courses of study leading to the degree of Master of Science in Home Economics. The department participates in interdisciplinary programs in food science and nutrition leading to the degrees of Master of Science in Food Science, Master of Science in Nutrition, and Doctor of Philosophy (Food Science, Nutrition).

Description of Courses

For explanation see Index under "Symbols"

Foods and Nutrition

FNIM

120 Food Preparation 3 (2-3) Principles and methods of preparation, qualities, composition and uses of foods. Credit not granted for both FNIM 120 and 220.

130 [Z] Nutrition for Man 3 Nutrition principles and applications to nutrient needs at all age levels; psychological, economic, and cultural implications of food.

220 Food Preparation 3 (2-3) II Prereq Chem 240. Application of scientific principles in the use and preparation of selected standard quality food products.

230 Food and Cultures of African Peoples 3 Impact of food and culture of African peoples on ethnic groups throughout the world.
266 Management of Home Equipment 3 (2-3)
Management of equipment and utilities used in the home.

270 Food Selection and Appraisal 2 1 Same as F S 270.

280 Quantity Food Production 3 Prereq FNIM 120 or 220. Principles of menu writing, sanitation and food preparation applied to management of quantity food production and service.

281 Quantity Food Production Laboratory I 2
(0-6) Prereq FNIM 120 or 220. Recipe adjustment and costing; preparing and serving food in quantity.

282 Quantity Food Production Laboratory II 1
(0-3) Prereq FNIM 120 or 220. By interview only. Recipe adjustment and costing; preparing and serving food in quantity.

333 Nutrition in the Human Life Cycle 3 1
Prereq Chem 240; Zool 251. Influences of physiological and anatomical changes on nutrient needs in relationship to stages of the life cycle.

334 Family Food Management 3 (2-3) Prereq FNIM 120 or 220; a course in nutrition. Selection, purchase, preparation, and serving foods; nutritional needs, life styles, and income levels.

350 Dynamics of Dietetics 2 (1-3) I Prereq major in FNIM; c/ in FNIM 475 for CUO students. Dynamics of nutritional care and foodservice management in health and disease.

381 Quantity Food Purchasing 2 II Purchasing process; specifications, receiving, storage and inventory control.

420 Comparative Foods 2 I Prereq Chem 240. Experimental foods taught by means of demonstrations; chemical and physical principles in the preparation of foods.

421 Comparative Foods Laboratory 1 (0-3)
May be repeated for credit; cumulative maximum 2 hours. II Prereq FNIM 420. Studies of food products reported through research paper or public demonstration.

431 Prenatal, Infant, and Child Nutrition 2 I
1981-82 a/y. Prereq Zool 251; Chem 240; one course in nutrition. Nutrition of the mother and fetus during pregnancy and of the child from infamy to adolescence.

434 Human Nutrition, Intermediary Metabolism 3 II Prereq Chem 364; Zool 251. Biochemical roles of nutrients and processes of intermediary metabolism affecting man's need for food; recommended dietary allowances; national nutritional problems.

435 Diet Therapy 3 (2-3) II Prereq FNIM 434. Nutrition principles applied to pathological conditions in man.

436 Nutrition Education 3 II Prereq FNIM 333. Individual and group nutrition education programs; methods, resources, settings, and community structures for guiding change in nutritional behavior.

438 Readings in Foods and Food Systems Management 2 Prereq FNIM 480 or c/. Reports, discussions and reviews of recent scientific literature and developments in foods and food systems management. Credit not granted for both FNIM 438 and 538.

439 Current Topics in Nutrition 2 Prereq FNIM 434. Analyses of scientific, popular and legislative articles pertaining to topics of current interest in nutrition. Credit not granted for both FNIM 439 and 539.

440 Clinical Dietetics 10 (3-21) By interview only. Nutrition principles applied to pathological conditions in humans and participation in delivery of nutritional care.

475 Clinical Experience in Dietetics V 1-15 May be repeated for credit; cumulative maximum 15 hours. By interview only. Application of theory in a clinical setting.

480 Organization and Management of Food Service Systems 3 Prereq FNIM 280. Organization and management principles as applied to food.

481 Dietetics/Management Practicum V 3 (1-6) to 6 (1-5) May be repeated for credit; cumulative maximum 6 hours. Prereq senior in FNIM. Application of theory in assessing, implementing and evaluating dietary and management practices. Credit not granted for both FNIM 481 and 498.

482 Equipment for Food Service Systems 3 II 1981-82 a/y. Prereq FNIM 280, 281 or 282. Materials, specifications, operations and use, maintenance schedules of kitchen equipment; dining room facilities and equipment flow.

484 Computer-Assisted Dietary Management 3
Prereq FNIM 480 or c/. Use of computer programs to aid management in inventory control, production, food cost accounting and patient nutrient analysis.

485 Clinical Experience in Food Service Systems 3 (1-6) By interview only. Experience in food service systems in clinical settings.

498 Food Practicum V 1 (0-3) to 8 (0-24) May be repeated for credit; cumulative maximum 8 hours. Not open to freshmen and sophomores. Supervised experiences of working in one or more food related businesses, organizations, and agencies. Credit not granted for both FNIM 481 and 498.
Advanced Human Nutrition I 3 I Prereq FNIM 434. Experimental basis for human nutritional requirements and determination of nutritional status.

Advanced Human Nutrition II 3 II Prereq FNIM 503. Metabolic responses to foods with emphasis on neural and hormonal responses; interaction of nutrients at the whole body level.

Research Techniques in Nutrition 3 (1-6) II Prereq 6 hrs nutrition. Methods of conducting field, applied and metabolic studies in human nutrition.

Food Quality Evaluations 3 (2-3) II 1980-81 a/y. Prereq senior or graduate in FNIM or FS. Techniques in evaluation of quality of foods by sensory or instrumental methods.

Changing Food Patterns 2 or 3 S Prereq FNIM 334; 8 hrs social science; Zool 251 or Chem 240. Interrelationships of food behavior and nutrition; implications for teaching and development of instructional plans.

Community Nutrition 3 I Prereq adv nutrition. By interview only. Analysis and evaluation of community nutrition programs—planning, surveillance and intervention; community resources, agencies, and institutions for nutrition.

International Nutrition 3 I Prereq advanced nutrition course. World nutrition problems; cultural and economic relating to meeting nutritional needs.

Nutrition and Aging 2 or 3 II Prereq advanced nutrition course. By interview only. Assessment, evaluation, and treatment of nutritional problems of the aged.

Human Digestion and Absorption 3 II Prereq Chem 364; FNIM 434. Pathological biochemistry, anatomy, and physiology of digestion and absorption in human gut.

Pathophysiology of Human Nutrition 3 I Prereq Zool 353; Chem 364; FNIM 435. Protein, fat, carbohydrate and other nutrient pathophysiology in the human.

Nutrition Program Theory and Practice 3(2-3) II Prereq FNIM 436. Societal and behavioral determinants of food habits; application and implementation of planning and evaluation principles to nutrition education programs.

Readings in Foods and Food Systems Management 2 Graduate level counterpart of FNIM 438; additional requirements. Credit not granted for both FNIM 438 and 538.

Current Topics in Nutrition 2 Graduate level counterpart of FNIM 439; additional requirements. Credit not granted for both FNIM 439 and 539.

Trends in Food Service Systems Management 3 II Prereq FNIM 480. Advanced administrative problems, procedures, personnel management, and on-the-job training.

Foods/Nutrition Practicum V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 4 hours. By interview only. Professional level supervised field experience in foods and/or nutrition.

Problems, Research and Thesis

Special Problems V 1-4 May be repeated for credit.

Special Projects or Independent Study Variable credit.

Master's, Research, Thesis, and/or Examination Variable credit. (For master's in H E or nutrition only)

Master's Special Problems, Directed Study, and/or Examination Variable credit. (For MAT in H E only)

Doctoral Research, Dissertation, and/or Examination Variable credit. (For PhD in nutrition only)

Schedule of Studies

The Bachelor of Science in Home Economics requires a total of 120 semester hours. At least 40 of the total hours required for the Bachelor of Science degree must be in upper-division courses.

All students in the major are required to take:
A. General University Requirements, B. Department Core Courses, and C. the courses listed for the specific option. First semester freshmen should enroll in chemistry (see specific option).

A. General University Requirements

<table>
<thead>
<tr>
<th>Hours</th>
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<tbody>
<tr>
<td>Arts and Humanities</td>
</tr>
<tr>
<td>Social Sciences</td>
</tr>
<tr>
<td>Anth 101 or 203</td>
</tr>
<tr>
<td>Econ 201 Principles</td>
</tr>
<tr>
<td>Psych 101, 102 and/or Soc 101*</td>
</tr>
<tr>
<td>Communications Proficiency</td>
</tr>
<tr>
<td>Engl 101 Composition</td>
</tr>
<tr>
<td>Sciences</td>
</tr>
<tr>
<td>Chemistry*</td>
</tr>
<tr>
<td>Zool 251 Human Physiology</td>
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*See specific options

B. Department Core Courses

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<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>Chem 240 Elem Organic Chem</td>
</tr>
<tr>
<td>FNIM 130 Nutr for Man</td>
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C. Department Options

1. Food-Related Business Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Chem 101, 102 Introductory</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
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<tr>
<td>Chem 105, 106 Principles</td>
<td>8</td>
</tr>
<tr>
<td>Bact 101 Elem Bact &amp; Pub H</td>
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<tr>
<td>Psych 101 or Soc 101 Intro</td>
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<tr>
<td>FS 471, or 472, or 473, or 474</td>
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<tr>
<td>FNIM 266 Mgmt Home Eq</td>
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<td>FNIM 270 Food Sel &amp; App</td>
<td>2</td>
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<tr>
<td>FNIM 420, 421 Comp Foods</td>
<td>3</td>
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<tr>
<td>FNIM 438 or 439</td>
<td>2-3</td>
</tr>
<tr>
<td>FNIM 498 Food Practicum</td>
<td>1-8</td>
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</tbody>
</table>

Plus a minimum of 12 credits selected from: BA 201, 230, 330, 360, 367 or CFS 350; Speech elective.

2. Food-Related Communications Option* or Minor**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Chem 101, 102</td>
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<tr>
<td>Bact 101 Elem Bact &amp; Pub H</td>
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<tr>
<td>Psych 101 or Soc 101</td>
<td>3</td>
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<tr>
<td>FS 380 Food Pres Tech</td>
<td>3</td>
</tr>
<tr>
<td>BA 360 Marketing</td>
<td>3</td>
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<tr>
<td>BA 367 or CFS 350</td>
<td>3</td>
</tr>
<tr>
<td>Com 225 Newswriting</td>
<td>2</td>
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<tr>
<td>Com 235 Reporting</td>
<td>2</td>
</tr>
<tr>
<td>Com 250 Intro Broadcasting</td>
<td>3</td>
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<tr>
<td>Com 280 Adver Prin &amp; Pract</td>
<td>3</td>
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<tr>
<td>Com 312 Public Relations</td>
<td>3</td>
</tr>
<tr>
<td>Com 330 New Editing</td>
<td>3</td>
</tr>
<tr>
<td>Com 373 Soc Mass Comm</td>
<td>3</td>
</tr>
<tr>
<td>Com 413 Public Info</td>
<td>3</td>
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<tr>
<td>FNIM 266 Mgmt Home Eq</td>
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<td>FNIM 270 Food Sel &amp; App</td>
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<td>FNIM 420, 421 Comp Foods</td>
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<td>FNIM 438 or 439</td>
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<tr>
<td>FNIM 498 Food Practicum</td>
<td>1-8</td>
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*For an option the student should select at least 12 credits from the listed communications courses.

**For a minor all of the listed communication courses must be taken.

3. General Dietetics Option

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Chem 105, 106</td>
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<tr>
<td>Bact 101 Elem Bact &amp; Pub H</td>
<td>4</td>
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<tr>
<td>Psych 101 or Soc 101 Intro</td>
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4. Foodservice Management Option

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<tr>
<th>Course</th>
<th>Hours</th>
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<tr>
<td>Chem 101, 102</td>
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<tr>
<td>Bact 101 Elem Bact &amp; Pub H</td>
<td>4</td>
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<tr>
<td>Psych 101 Introduction</td>
<td>3</td>
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<tr>
<td>Soc 101 Introduction</td>
<td>3</td>
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<tr>
<td>Math 101 Inter Algebra +</td>
<td>3</td>
</tr>
<tr>
<td>B A 210 Law &amp; Business</td>
<td>3</td>
</tr>
<tr>
<td>B A 230 Accounting</td>
<td>3</td>
</tr>
<tr>
<td>B A 301 or Psych 306</td>
<td>3</td>
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<tr>
<td>Econ 350 Labor Econ</td>
<td>3</td>
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<td>Cpt S 210 or 220</td>
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<tr>
<td>FNIM 381 Quant Fd Purch</td>
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<tr>
<td>FNIM 420, 421 Com Foods</td>
<td>3</td>
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<tr>
<td>FNIM 436 or Educ 301</td>
<td>3-4</td>
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<tr>
<td>FNIM 438 Readings</td>
<td>2</td>
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<tr>
<td>FNIM 480 Mgmt Fd Sys</td>
<td>3</td>
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<tr>
<td>FNIM 481 Dietetics/Mgmt</td>
<td>3-6</td>
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<tr>
<td>FNIM 484 Cpt Diet Mgmt</td>
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5. Coordinated Undergraduate Option in General Dietetics

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>Chem 105, 106</td>
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<td>Bact 101 Elem Bact &amp; Pub H</td>
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<td>Soc 101 Introduction</td>
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<td>Psych 101 or 102 Intro</td>
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<tr>
<td>Math 101 Inter Algebra +</td>
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<tr>
<td>Chem 364, 366</td>
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<td>B A 301 or Psych 306</td>
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<tr>
<td>FNIM 350 Dynam Diet</td>
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<td>FNIM 381 Quant Fd Purch</td>
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<td>FNIM 434 Hum Nutr</td>
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<tr>
<td>FNIM 436 Nutr Educ</td>
<td>3</td>
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<tr>
<td>FNIM 438 Readings</td>
<td>2</td>
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<tr>
<td>FNIM 439 Cur Topics</td>
<td>2</td>
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<tr>
<td>FNIM 440 Clin Dietetics</td>
<td>10</td>
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<tr>
<td>FNIM 475 Clin Exp Dietetics</td>
<td>12</td>
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<tr>
<td>FNIM 480 Mgmt Fd Sys</td>
<td>3</td>
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<tr>
<td>FNIM 484 Cpt Diet Mgmt</td>
<td>3</td>
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<tr>
<td>FNIM 485 Clin Exp</td>
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</table>
Department of Foreign Languages and Literatures


Knowledge of languages in addition to English is essential in the modern world of rapid communication, international business, and multinational ventures in science and technology. The Department of Foreign Languages and Literatures attempts to help students prepare themselves for full participation in the world community by offering a wide range of classes in language, literature, and culture.

Courses are offered regularly in Chinese, Greek, Italian, Japanese, Latin, Swahili, and Swedish. Majors are available in French, German, Russian, and Spanish. Languages such as Hindi, Sanskrit, and others may be offered as warranted by student interest and staff available from the departmental office.

The department's curriculum is structured to allow entry on any level. Students who begin language study in the public schools or at another institution may continue here at their level of competence without loss of time. Specifically, the courses in this department serve several purposes. They (1) enable students to gain proficiency in their target language and to appreciate the literature and culture of that language; (2) give language training for careers which require it; (3) provide a continuing service to students of other departments by helping them learn to read foreign publications in their fields of interest; and (4) prepare future foreign language teachers.

Two modern language laboratories are available for individual use by students with their own tapes or departmental tapes. The laboratories are also connected to the University Dial Access System, which enables students to utilize the laboratories' services by telephone.

Recognizing the need for students to reinforce in a practical way knowledge gained in the classroom, the department sponsors a wide variety of supplementary activities. All students are eligible to participate in the German Choir and French Cabaret. In addition, Fiesta Latina, Deutscher Abend, and Serata Italiana are open to students of those languages. The maison française, a living group where only French is spoken and where conversational activities are supervised by a resident native speaker, is open to students of sophomore standing and above. Similar living arrangements for students of German are currently under active preparation. Visiting lecturers, foreign film showings, and performances of plays by professional companies from abroad as well as by WSU foreign language students supplement the classroom experience.

Transfer Students
Transfer not later than the second semester of the sophomore year is recommended to allow scheduling of major courses in proper sequence. However, additional semesters may be necessary to complete required courses.

Preparation for Graduate Study
Normally the applicant should have an undergraduate major in foods, nutrition or institution management. However, candidates with a good record in related fields may be well prepared for certain areas of advanced study. Students from related disciplines would be required to take certain courses required of undergraduate majors in these fields.

Students who plan graduate study may wish to participate in an accelerated program to obtain both a B.S. and a M.S. in Home Economics in a five-year period. Students who wish to participate in the B.S./M.S. five-year plan should decide to do so in their junior year so that a program to meet FNIM and Graduate School requirements can be developed.

Department of Foreign Languages and Literatures

6. Research Option

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<tr>
<th>Course</th>
<th>Hours</th>
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<tr>
<td>Chem 105, 106</td>
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<tr>
<td>Bio S 102 Intro Biol</td>
<td>4</td>
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<tr>
<td>Bact 201 Gen Microb</td>
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<td>Psych 101 or 102 or Soc 101</td>
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<tr>
<td>Math 140, 141</td>
<td>8</td>
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<tr>
<td>Chem 217 Quant Anal</td>
<td>4</td>
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<td>Chem 364, 366</td>
<td>4</td>
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<tr>
<td>Phys 101, 102</td>
<td>8</td>
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<tr>
<td>Biom 412 Statistics</td>
<td>3</td>
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<td>FNIM 270 Food Sel &amp; App</td>
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<td>FNIM 420, 421 Comp Fds</td>
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<td>FNIM 434 Hum Nutr</td>
<td>3</td>
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<tr>
<td>FNIM 438 or 439</td>
<td>2</td>
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</table>

*An elective course may be substituted if the Mathematics Achievement Score on Washington Pre-College Test is greater than 56.
Two departmental scholarship funds provide foreign language majors with one scholarship covering tuition and fees and several smaller scholarships annually. They are awarded to qualified majors of junior or senior standing.

The department offers courses leading to the degrees of Bachelor of Arts in Foreign Languages and Literatures and Master of Arts in Foreign Languages and Literatures. The department also participates in the interdepartmental Program in Literary Studies leading to the degree of Doctor of Philosophy.

Description of Courses
For explanation see Index under “Symbols”

Foreign Language
For L
111 [H] Introduction to World Folk Literature: Asia and Africa 3 1 Readings in folktales, ballads, customs, and beliefs from selected cultural or geographical areas of Africa and Asia.
112 Introduction to World Folk Literature: Europe 3 Readings in folktales, ballads, customs, and beliefs from selected cultural or geographical areas of Europe.
300 Studies in Foreign Languages V 1-4 May be repeated for credit. Languages not currently a part of the curriculum may be offered on demand.
301 Spoken Swahili I 4 I Same as Bl St 301.
302 Spoken Swahili II 4 II Same as Bl St 302.
303 Elementary Hindi 4 I 1981-82 a/y. Basic structure; reading and conversational skills; core vocabulary.
324 [H] Methods of Teaching Foreign Languages 3 Prereq 2 yrs Fren, Ger, Lat, Rus, or Span.
350 [S] Speech, Thought, and Culture 3 Same as Anth 350.
352 [H] Literature and Lore of South Asia 2 May be repeated for credit. Lectures and readings in English of selected topics and writers.
426 Applications of Linguistics to the Teaching of Foreign Languages 3 II 1980-81 a/y. Prereq 304 language course. Contemporary linguistic principles applied to the teaching of foreign languages.
450 Descriptive Linguistics 1 3 Same as Anth 450.
456 Historical Linguistics 3 Same as Anth 456.
499 Special Problems V 1-4 May be repeated for credit.
591 Seminar in Literary Studies 3 Same as Engl 591.

597 Seminar in Scholarly Methodology 1 II Bibliography and formal aspects of scholarly writing.
600 Special Projects or Independent Study Variable credit.
700 Master’s Research, Thesis, and/or Examination Variable credit.
702 Master’s Special Problems, Directed Study, and/or Examination Variable credit.
800 Doctoral Research, Dissertation, and/or Examination Variable credit. (for PhD in literary studies only)

Chinese
Chin
301 First Semester 4 I Principles of Chinese with emphasis on the spoken language.
302 Second Semester 4 II Prereq Chin 301.
320 Chinese Conversation 2 May be repeated for credit; cumulative maximum 6 hours. Prereq Chin 302. Intensive practice in speaking modern Chinese.
350 Chinese Literature in English 2 May be repeated for credit; cumulative maximum 6 hours. Lectures and readings in English of selected topics and writers.

French
Fren
101 First Semester French 4 Elementary French; understanding and speaking.
102 Second Semester French 4 Prereq Fren 101.
203 [H] Third Semester French 4 Prereq Fren 102. Intermediate French; systematic grammar review and development of all skills.
303 Intensive French 10 (5-15) S Provides active knowledge of understanding, speaking, reading, and writing French. For students with little or no experience in French. Open to undergraduate and graduate students.
304 [H] Introduction to Advanced French Studies 4 Prereq Fren 203. Selected French texts in cultural context; continued practice in spoken and written French.
315 [H] French Civilization—Early Period 2 I Lectures and readings in English on the cultural history of France from ancient times to the death of Louis XIV.
316 [H] French Civilization—Modern Period 2 II Lectures and readings in English on the cultural history of France from the beginning of the Age of Enlightenment to modern times.
322 French Composition 3 I Prereq Fren 304. Systematic practice in writing French.
323 French Conversation 3 II Prereq Fren 304. Systematic practice in speaking French.
Department of Foreign Languages and Literatures

333 [H] Survey of French Literature to 1700 3
Prereq Fren 304. Transitional course shifting emphasis from language to literature.

334 [H] Survey of French Literature after 1700 3
Prereq Fren 304.

350 [H] French Literature in English 2 May be repeated for credit. Lectures and readings in English of selected topics and writers.

401 Advanced French Conversation 1 (0-3) May be repeated for credit; cumulative maximum 4 hours. Prereq Fren 322 or 323. Intensive oral practice in small groups.

415 Introduction to French-Canadian Culture 2
Prereq Fren 322, 323, 333, or 334. An introduction to the history, language, and literature of French-Canada.

416 Seminar in French Civilization 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Fren 322, 323, 333, or 334.

422 Advanced French Grammar and Syntax 2 I
Prereq Fren 322 or 323. Fluency and accuracy developed.

423 Pronunciation and Phonetics 2 II Prereq Fren 322 or 323. A practical approach to French phonetics; pronunciation and diction; special problems.

425 [H] French Literature of the Seventeenth Century 3 Prereq Fren 322, 323, or 333. Selected works and authors; the classical period.

432 [H] French Literature of the Eighteenth Century 3 Prereq Fren 322, 323, or 334. The French Enlightenment; selected writings of Montesquieu, Voltaire, Diderot, Rousseau, and others.

441 [H] French Literature of the Nineteenth Century 3 Prereq Fren 322, 323 or 334. Authors and movements of the century; the Romantic, Parnassian, and Symbolist poets.

442 [H] French Literature of the Nineteenth Century 3 Prereq Fren 322, 323, or 334. Authors and movements of the century; the Romantic, Realist, and Naturalist prose writers.

451 [H] French Literature of the Twentieth Century 3 II 1981-82 a/y. Prereq Fren 322, 323, or 334. Authors and movements from the early 1900's to 1930; Gide, Proust, Generation of 1920; neosymbolism and Catholic poetry.

452 [H] French Literature of the Twentieth Century 3 I 1980-81 a/y. Prereq Fren 322, 323, or 334. Contemporary authors and movements; pre-surrealism, Apollinaire, contemporary poetry; new theater, existentialism, nouveau roman, modern critics and essays.

480 Seminar in French Language or Literature 3
May be repeated for credit. Prereq Fren 322, 323, 333, or 334.

499 Special Problems V 1-4 May be repeated for credit.

500 Seminar in Old French 3 II Training in the reading of Old French; discussion and interpretation of selected works.


522 Stylistics 2 I Near-native ability developed through a comprehensive study of French style.

523 History of the French Language 3 II
1981-82 a/y. Phonological, morphological, semantic, and syntactic development of the French language from Vulgar Latin to the present.

525 Intensive French for Graduate Students 10 (5-15) S Prereq 1 yr college Fren. Provides active knowledge of the four language skills. Satisfactory completion may fulfill language requirements.

550 Seminar in Twentieth Century French Literature 3 May be repeated for credit; cumulative maximum 6 hours.

580 Graduate Seminar 3 May be repeated for credit.

598 Seminar in the Teaching of French 1 May be repeated for credit; cumulative maximum 4 hours. Theory, problems, and methods of teaching French at the college level.

600 Special Projects or Independent Study
Variable credit.

German

101 First Semester German 4 Fundamentals of speaking, reading, and writing German.

102 Second Semester German 4 Prereq Ger 101.

103 Guten Tag I 1 (0-2) I Film program for enrichment in basic German.1

104 Guten Tag II 1 (0-2) I Film program for enrichment in basic German; continuation of 103.1

203 [H] Third Semester German 4 Prereq Ger 102. Grammar review and development of reading and speaking skills.

303 Intensive German 10 (5-15) S Provides active knowledge of listening, speaking, reading, and writing German. For students with little or no experience in German. Open to undergraduate and graduate students.

304 [H] Intermediate German 4 Prereq Ger 203. Selected German texts in a cultural context;

1Will not satisfy foreign language requirement of College of Sciences and Arts.
continued practice in spoken and written German.

315 [H] Germanic Civilization 2 I The cultural development of the Germanic peoples; readings, lectures, and discussions in English.

316 [H] German Culture and Civilization 2 II The cultural development of Germany from the 17th century to the present; readings, lectures, and discussions in English.

322 Composition and Conversation 3 I Prereq Gr 304. Intensive practice in speaking and writing formal German.

323 Composition and Conversation 3 II Prereq Gr 304. Continuation of intensive practice in conversation and formal writing skills.

333 [H] Introduction to German Literature 3 Prereq Ger 304. Transitional course shifting emphasis from language as such to literature.

334 [H] The German Novelle 3 Prereq Ger 304.

350 [H] German Literature in English 2 May be repeated for credit. Readings, lectures, and discussions in English of selected topics and writers.

401 Informal German Conversation 1 May be repeated for credit; cumulative maximum 4 hours. Prereq Ger 304. Intensive oral practice in small groups.

420 Advanced Composition and Conversation 3 I Prereq Ger 322 or 323. Development of proficiency in writing skills; emphasis on fluency and accuracy.

432 [H] German Literature of the Enlightenment and Storm and Stress 3 Prereq Ger 304. The works of Lessing, young Goethe, young Schiller, and others.

433 [H] the German Classical Period 3 I 1980-81 a/y. Prereq Ger 304. Readings from the later works of Goethe, Schiller, and others.

442 [H] German Drama of the Nineteenth Century 3 Prereq Ger 304. The works of Kleist, Buechner, Hebbel, Grillparzer, and others.

451 German Literature from 1880 to First World War 3 Prereq Ger 304. The works of Hauptmann, Hofmannsthal, Kafka, Mann, Rilke, and others.

452 German Literature from the First World War to the Present 3 Prereq Ger 304. The works of Hesse, Mann, Brecht, Zuckmayer, Grass, Durrenmatt, Frisch, and others.

460 German Poetry 3 Prereq Ger 304. Introduction to German poetics through a study of German lyrics and ballads.

480 Seminar in German Language or Literature 3 May be repeated for credit. Prereq Ger 304.

499 Special Problems V 1-4 May be repeated for credit.

521 Syntax and Stylistics 2 I 1981-82 a/y. Advanced composition; development of German prose style.

523 History of the German Language 3 I 1980-81 a/y. Phonological, morphological, semantic, and syntactic development of German from the earliest time to present.

525 Intensive German for Graduate Students 10 (5-15) S Prereq 1 yr college German. Provides active knowledge of the four language skills. Satisfactory completion may fulfill language requirements.

540 Goethe 3 A comprehensive examination of Goethe’s life and works.

543 German Romantic Movement 3 I 1980-81 a/y. Literary, aesthetic, and philosophic writings of the Romantic period.

580 Graduate Seminar in German Language and Literature 3 May be repeated for credit.

596 Resources for Teaching German II 1981-82 a/y. Examination and evaluation of materials available for teaching German at all levels; recent innovations.

598 Seminar in the Teaching of German I May be repeated for credit; cumulative maximum 2 hours. I Theory, problems, and methods of teaching German at the college level.

600 Special Projects or Independent Study Variable credit.

Hindi

For L

303 Elementary Hindi 4 I 1981-82 a/y. Basic structure; reading and conversational skills; core vocabulary.


Italian

Ital

101 First Semester Italian 4 I Fundamental principles of Italian; the spoken language.

102 Second Semester Italian 4 II Prereq Ital 101. Continuation of Ital 101.

Japanese

Japn


302 Japanese II 4 II Prereq Japn 301. Continuation of Japn 301.
Department of Foreign Languages and Literatures

303 Intensive Japanese 10 (5-15) S Provides active knowledge of listening to, speaking, reading, and writing Japanese. For students with little or no experience in Japanese. Open to undergraduate and graduate students.


Latin

Lat
101 Beginning Latin 4 I For students who have had no Latin or who need a review course before taking advanced work.

102 Selections from Latin Prose and Poetry 4 II Prereq Lat 101.

299 Readings and Conferences V 1-4 May be repeated for credit. Prereq Lat 102.

Russian

Rus
101 First Semester Russian 4 I Fundamentals of speaking, reading, and writing Russian.

102 Second Semester Russian 4 II Prereq Rus 101. Continued development of basic skills in reading, writing, and speaking Russian.

203 [H] Third Semester Russian 4 I Prereq Rus 102. Extended study of basic grammar; conversational Russian; reading of excerpts from literature.

303 Intensive Russian 10 (5-15) S Provides active knowledge of understanding, speaking, reading, and writing Russian. For students with little or no experience in Russian. Open to undergraduate and graduate students.

304 [H] Intermediate Russian 4 II Prereq Rus 203. Reading, writing, and speaking modern Russian; structure and linguistic characteristics; introduction to Russian literature; discussions in Russian.

315 [H] Slavic Civilization 3 II Slavic culture taught in English with readings and lectures in English.

320 Russian Conversation I 2 (0-6) Prereq Rus 304. Laboratory practice to improve aural-oral skills and perfect pronunciation.

321 Russian Conversation II 2 (0-6) Prereq Rus 304.

350 [H] Russian Literature in English 2 May be repeated for credit. Not open to freshmen. Russian prose, poetry, and drama in English translation; 19th and early 20th centuries; Soviet Period.

471 Russian Literature of the Soviet Period 3 Prereq Rus 304. Representative examples of Russian prose written in the USSR after 1920.

480 Seminar in Russian Language or Literature 3 May be repeated for credit. Russian and Slavonic area.

499 Special Problems V 1-4 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

Spanish

Span
101 First Semester Spanish 4

102 Second Semester Spanish 4 Prereq Span 101.

203 [H] Third Semester Spanish 4 Prereq Span 102.

303 Intensive Spanish 10 (5-15) S Provides active knowledge of understanding, speaking, reading, and writing Spanish. For students with little or no experience in Spanish. Open to undergraduate and graduate students.

304 [H] Introduction to Advanced Spanish 4 Prereq Span 203. Reading and discussion of selected Spanish texts in a cultural context; brief grammar review.

315 [H] Hispanic Civilization 3 I Spanish culture with lectures and readings in English.

316 [H] Hispanic American Culture 3 II Spanish-American culture with lectures and readings in English.

320 Spanish Conversation 1 (0-3) May be repeated for credit; cumulative maximum 4 hours. I Prereq Span 304. Opportunity to converse in small groups with native informants.

321 Pronunciation of Spanish 1 (0-3) I Prereq Span 203. Pronunciation of basic Spanish sounds.

322 Advanced Grammar 2 I Prereq Span 304. Recommended for those intending to take the upper level composition or conversation courses.

323 Intensive Oral Spanish 2 I Prereq Span 304. Practice in the use of conversational Spanish in formal and informal contexts.

324 [H] Spanish for Chicanos I 3 I Prereq fluency in Span. Readings of Chicano writers; composition, grammar.

325 [H] Spanish for Chicanos II 3 II Same as Ch St 325.

326 Spanish Composition 2 I Prereq Span 304. The writing of formal and informal Spanish.
330 Advanced Intensive Spanish for Undergraduate Students 6 (3-9) S Prereq Span 303. Continuation of Span 303.

333 [H] Masterpieces of Spanish and Spanish-American Literature 3 Prereq Span 304. Reading and discussion of outstanding literary works of Spanish and Spanish-American literature.

350 [H] Spanish Literature in English 2 May be repeated for credit. Lectures and readings in English of selected topics and writers from Spain and Spanish America.

422 [H] Seminar in Literature of the Spanish Golden Age 3 Prereq Span 304. Reading and discussion of representative works of the Spanish Golden Age.

423 Advanced Conversational Spanish 2 II Prereq Span 304. Practice of the use of conversational Spanish in formal and informal contexts.

425 Seminar in Cervantes 3 Prereq Span 304. Quijote plus selected other works.

426 (420) Advanced Spanish Composition 2 II Prereq Span 304. Writing of formal and informal Spanish.

442 Spanish Literature of the Nineteenth Century 3 Prereq Span 304. Drama, poetry, the short story, the costumbrista sketch, and the novella in 19th century Spain.

450 The Generation of 1898 and Modernism 3 Prereq Span 304. Reading and discussion of representative works by Peninsular writers of the early 20th century.

451 Spanish Literature since 1920 3 Prereq Span 304.

471 Nineteenth Century Spanish American Literature 3 II Prereq Span 304. Selected readings from independence to modernism.

472 [H] Spanish-American Literature of the Twentieth Century 3 Prereq Span 304. Selections for the drama, poetry, the essay, and the short story.


480 Seminar in Spanish Language or Literature 3 May be repeated for credit. Prereq Span 304.

499 Special Problems V 1-4 May be repeated for credit.

500 Seminar in Golden Age Literature 3 Prereq Span 304. Reading and discussion of representative works of the Spanish Golden Age.


530 Advanced Intensive Spanish for Graduate Students 6 (3-9) S Continuation of Span 303.


580 Graduate Seminar 3 May be repeated for credit. Prereq Span 304.

598 Seminar in the Teaching of Spanish I 1 May be repeated for credit; cumulative maximum 4 hours. Theory, problems, and methods of teaching Spanish at the college level; resources and materials.

600 Special Projects or Independent Study Variable credit.

Swahili

For L

301 Spoken Swahili I 4 I Same as Bl St 301.

302 Spoken Swahili II 4 II Same as Bl St 302.

Swedish

Swed

301 First Semester Swedish 4 I Speaking, reading, and writing Swedish.

302 Second Semester Swedish 4 II Continuation of Swed 301.

303 [H] Third Semester Swedish 3 Prereq Swed 302. Grammar review and development of reading and speaking skills.

350 [H] Scandinavian Literature in English 2 May be repeated for credit. Scandinavian literature from Ibsen and Strindberg to the present.

Schedule of Studies

At least 40 of the total hours required for the bachelor’s degree in this program must be in upper division courses.

A minimum of 26 hours (beyond 203) or the equivalent in competence in the major language is required for a Bachelor of Arts degree in Foreign Languages and Literatures. In addition, each major must present either (1) competence in a second foreign language, up to and including 304 or the equivalent, (2) related work from another field or a teaching minor, or (3) a second major in another field.

In the junior and senior years students should take from 2 to 8 hours in their major language each semester as their individual program requires.
MINIMAL REQUIREMENTS FOR EACH MAJOR

French: 304, 322, 323, 333, 334, 423, plus 8 hours from 315 or 316, 401 (maximum 2 hrs), 415, 416, 422, 425, 432, 441, 442, 451, 452, 480.

German: 304, 315, 322 or 323, 334, 420, plus 11 hours from 316, 333, 401 (maximum 1 hr), 432, 433, 442, 451, 452, 460, 480.

Russian: 304, 315 plus 19 hours from 320, 321, 380, 471, 480, 499.


MINIMAL REQUIREMENTS FOR EACH MINOR

To fulfill requirements for a minor in Foreign Languages and Literatures a student must present a minimum of 16 hours of course work in one language or area, all of which a minimum of 4 hours above the 304-level (or its equivalent) must be taken in residence; these 4 hours must include at least one course of 2 credit hours or more in the target language.

Preparation for Graduate Study

Students who contemplate graduate work in the Department of Foreign Languages and Literatures should present an undergraduate degree similar to those described in the above schedule of studies. Complete details on graduate programs are available from the chair of the department.

Area Studies

The area studies curriculum (Latin America, Western European, and Eastern European Studies) permits students interested in a particular region of the world to follow a course of study concentrating on the language, literature, history, politics, geography, economics, and general culture of that area. Complete details are available from the department. Through careful choice of electives and of courses meeting General University Requirements, a student may obtain sufficient concentration to prepare for graduate study in several fields or to enhance a wide variety of career possibilities.

Teacher-Training Program

Students preparing to teach should consult the catalog listing of the Department of Education for certification requirements and for teaching majors and minors. Those who intend to major in foreign languages and education should begin the study of the major language in the first year and of the minor language, if any, not later than the beginning of the second year.

Intensive Courses

To meet the specific needs of those students who wish to achieve a degree of fluency within a brief time period, the department offers highly successful intensive courses in French, German, Japanese, Russian, and Spanish each summer. Students devote eight hours per day, five days a week, for a period of eight weeks to formal language instruction.

Department of Forestry and Range Management


The department is fully accredited by the Society of American Foresters and the Range Science Education Council.

The department offers courses of study in forest management, range management and wildland recreation leading to the degrees of Bachelor of Science in Forest Management, Bachelor of Science in Range Management, and Master of Science in Forest and Range Management.

The department also participates in interdepartmental programs leading to the degrees of Bachelor of Science in Environmental Science and Master of Science in Environmental Science.

Bachelor's Program

The department requires a minimum 2.30 gpa for certification of major.

The undergraduate program is designed to provide the necessary breadth and depth in professional training to prepare the individual for a fruitful adult life as a responsible citizen. A curriculum leading to the bachelor's degree consists of a basic core of courses plus a selected option.

The core courses include all common requirements set forth by the university, U.S. Civil Service Commission, Society of American Foresters, Range Science Education Council and departmental faculty.
A selected option provides an opportunity for the student to fit a curriculum to his or her particular interests.

An early step in enrollment is to select the area of major emphasis to be pursued, namely: forest management, range management or wildland recreation management. Before the junior year a student will choose an option within one of these major divisions to complete the curriculum. The options for forestry and range management are common to both, while wildland recreation has separate options.

All students majoring in either forestry or range management are required to successfully complete 128 hours of course work, including For 399 (exclusive of physical education activity courses), to earn the Bachelor of Science degree. At least 40 of the total hours required for the bachelor’s degree in this program must be in upper-division courses.

Between the junior and senior years all students will work for a professionally oriented organization while enrolled in the summer session course, For 399, Professional Integration. The student, under the direction of a faculty adviser, carries out a program of studies and readings designed to integrate formal course work and field experience. The department assists in obtaining suitable employment to meet this requirement.

Opportunities for Employment

Students and graduates find opportunities for summer and permanent employment in a wide variety of resource management agencies with consultant, industrial, municipal, state, and federal employers.

Description of Courses

For explanation see Index under "Symbols"

110 Forestry Orientation 1 Forest and range resources and the profession. Primarily for forestry and range management freshmen.

201 Dendrology 3 (2-3) I Classification and identification of forest trees.

230 Wildland Fire Management 3 I Causes, behavior, and effects of forest fires; techniques of prevention, presuppression and suppression; uses of fire in wildland management.

275 Recreation in America 2 I Same as RPA 275.

301 Forest and Range Environments 3 Prereq Bio S 103. Site factors and their effect upon forest and range vegetation.

303 (B) Conservation of Renewable Resources 3 Philosophy and principles of conservation; identification of major uses of resources; case studies to illustrate conservation practices.

304 Silviculture 2 Prereq For 301. Intermediate stand treatment and regeneration of forest.

305 Silviculture Laboratory 1 (0-3) I Prereq For 304. Field trips required.

311 Forest Economics 3 I Prereq Econ 203 or Ag Ec 201. Economic analysis applied to problems in the utilization of forest and forest products.

312 Forest Mensuration 4 (3-3) Prereq Biom 310 or BA 215; Cpt S 201 or 210. Theory of forest measurements; basic applications of growth and yield of trees and stands, and forest inventory. Field trips required.

320 Timber Harvesting 3 II Not open to freshmen or sophomores. Current practices and problems; planning and coordinating timber harvesting with forest management.

321 Wood Structure and Properties 3 (2-3) I Prereq Bio S 103. Wood anatomy; identification and uses of commercial U.S. species; properties, defects, and variation; relation of structure and properties to utilization.

322 Forest Products 3 II Prereq For 321. Production methods, grading and utilization of primary, secondary, and chemically derived wood products; wood preservation. Field trips required.

331 Forest Pathology 3 (1-6) II Same as PL 331.

348 Forest Entomology 3 (2-3) I Principles and concepts of forest entomology; integration and application of basic knowledge; processes in dealing with forest insect problems.

351 Principles of Range Ecosystems Management 3 I Introduction, history, regions, physiological and ecological applications, measurements, interpretations, and planning.

352 Range Livestock Management 3 II Prereq For 351. Not open to freshmen or sophomores. Range livestock management and nutrition in western grazing regions; proper use, grazing systems, water development; range improvement for livestock production. Field trips required.

354 Range Plant Communities 3 (1-6) II Prereq Bot 232. Range grasses, forbs, browse, and poisonous plants; their identification, distribution, ecology and management; economic and nutritive value.

371 Wildland Recreation 3 For juniors and seniors. Historic development; benefits;
federal, state, and local involvement; current problems and trends in the field of wildland recreation.

372 Wildland Recreation Field Laboratory I (0-3) Prereq c// in For 371. Field observation of recreation practices. Field trips required.

373 Interpretive Techniques 3 (2-3) I Prereq For 371. For juniors and seniors. Fundamentals and practices in interpreting wildland biological and physical phenomena as related to public recreation.

375 Recreation Programs 3 II Same as RPA 375.

380 Wildlife Habitat Management 3 Prereq For 301 or Bio S 372. Wildlife habitat management, life histories of forest and range wildlife species, interaction of timber and livestock production with wildlife.

395 Forest and Range Management Seminar I May be repeated for credit.

399 Professional Integration 1 S Prereq For 495; major in For or Rg Mgt. Integration of summer employment in professionally directed programs with formal courses and summer reading assignments.

402 Forestation 3 (2-3) II Prereq For 301. Forest seed, nursery, planting and seedling problems. Field trips required. Credit not granted for both For 402 and 502.

411 Forest Finance and Valuation 3 II Prereq For 311. Continuation of For 311. Economic and finance principles applied to forest management and appraisals.

412 Forest and Range Policy and Administration 3 Forest laws and policies; organization and administration of public and private forest enterprises; administration of special and multiple uses.

415 Forest Management 4 (3-3) Prereq For 304, 312, 411. Integration of mathematical, economic and biological principles and application of modern decision-making techniques for sustained product yield. Field trips required.

451 Range Habitat Analysis 3 (2-3) I Prereq Biom 310. Evaluating range habitat production and utilization; domestic livestock and big game range inventory procedures. Field trips required.

452 Range Management 3 (2-3) II Prereq For 351, 451. Applications of recent developments and research to the planning and administration of rangeland.

460 Watershed Management 3 I Principles and practices of management of forest and rangelands for protection, maintenance, and improvement of water resource values. Credit not granted for both For 460 and 560.

471 Wildland Recreation Management 3 (2-3) II Prereq For 371. Planning and management techniques applied to wildland recreation problems and situations.

475 Recreation and Park Facility Management 3 Same as RPA 475.

478 Wildland Recreation Planning 3 (2-3) I Prereq For 371, 471. Comprehensive, area and development planning for wildland recreation and amenities in multiple- and single-use settings.

479 Wildland Recreation Internship V 1-12 An elective opportunity for select students to supplement their academic training with practical field experience.

480 Big Game Habitat Management 3 II Prereq For 352, 380. Habitat management principles based on ecology and physiology of plants and animals; securing proper use, habitat rehabilitation; multiple use management.

493 Land Use Seminar 1 I 1981-82 a/y. Current problems and policies relating to multiple-use management.

495 Professional Integration Seminar I May be repeated for credit. Prereq For 399; major in For or Rg Mgt. Preparation for or integration of summer professional experience.

499 Special Problems V 1-4 May be repeated for credit.

501 Advanced Topics in Silviculture 2 May be repeated for credit. II Prereq For 304. Directed study and discussion of current problems of special silvicultural interest.

502 Forestation 3 (2-3) Graduate level counterpart of For 402; additional requirements. Credit not granted for both For 402 and 502.

511 Advanced Forest Economics 3 II 1981-82 a/y. Prereq For 311; Econ 301. Literature relating economic principles to forest management, utilization and marketing.

515 Multiple Use Management 3 II Prereq senior in For. Integration of multiple uses of forest and rangelands through application of modern technological, social and mathematical principles. Field trip required.

519 Advanced Topics 1-3 May be repeated for credit; cumulative maximum 6 hours.

551 Advanced Range Ecology 3 I 1980-81 a/y. Prereq Bot 462 and one range course. Ecological concepts as applied to classification and use of native grazing lands. Cooperative course taught at the University of Idaho.
Advanced Range Plant Communities 3 (2-3) I Prereq For 452; Soils 201; Bot 462. Vegetation and site classifications for the Pacific Northwest rangeland; application of synecological principles and concepts to rangeland management. Field trip required.

Advanced Topics in Range Management 1-3 May be repeated for credit; cumulative maximum 6 hours. II Prereq For 452. Review of current literature and its application in range management.

Watershed Management 3 Graduate level counterpart of For 460; additional requirements. Credit not granted for both For 460 and 560.

Wildland Environmental Analysis 2 (1-3) II Quantitative analysis of interaction of energy exchange and site influencing wildland productivity and management of different goods and services.

Big Game Habitat Studies 1 (0-3) II Seven day trip to observe big game habitat management practices by state and federal agencies in several western states.

Seminar in Forestry and Range Management 1 May be repeated for credit. Literature review; preparation and presentation of reports in forestry and range science.

Special Projects or Independent Study Variable credit.

Master's Research, Thesis, and/or Examination Variable credit.

Master's Special Problems, Directed Study, and/or Examination Variable credit.

General Departmental Requirements

Completion of a degree includes appropriate core requirements (either forest management, range management or wildland recreation) plus requirements in an optional area.

Those interested in a general forestry education should select the forest management core and the forest management option. Those interested in a general range education should select the range management core and the range management option. Those interested in related areas should select the desired core plus the desired option. The objective of the optional area of work is to give the student an opportunity to develop some depth of understanding in another field in addition to his major.

Forest Management Core Requirements

The following curriculum meets professional standards established by the Society of American Foresters and the U.S. Civil Service Commission.

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses. A minimum of 128 hours (exclusive of physical education activity courses) is required for graduation.

All forestry students are required to take the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101 Composition</td>
<td>3</td>
</tr>
<tr>
<td>Spe or Com Elective (Principles)</td>
<td>3</td>
</tr>
<tr>
<td>Bio S 103 and 104 or Bot 201</td>
<td>8</td>
</tr>
<tr>
<td>Cpt S 201, 210, or 220</td>
<td>2-4</td>
</tr>
<tr>
<td>Chem Electives (Principles)</td>
<td>8</td>
</tr>
<tr>
<td>Math 107, 171, or Math 201, 202</td>
<td>6-8</td>
</tr>
<tr>
<td>or Math 140, 141</td>
<td></td>
</tr>
<tr>
<td>Econ 203 Fundamentals</td>
<td>4</td>
</tr>
<tr>
<td>Phys 101 General</td>
<td>4</td>
</tr>
<tr>
<td>Geol 102 Phys Geol</td>
<td>4</td>
</tr>
<tr>
<td>Soils 201 Soils</td>
<td>3</td>
</tr>
<tr>
<td>Biom 310 or B A 215</td>
<td>3</td>
</tr>
<tr>
<td>For 110 Orientation</td>
<td>1</td>
</tr>
<tr>
<td>For 201 Dendrology</td>
<td>3</td>
</tr>
<tr>
<td>For 301 Environments</td>
<td>3</td>
</tr>
<tr>
<td>For 304 Silviculture</td>
<td>2</td>
</tr>
<tr>
<td>For 311 Economics</td>
<td>3</td>
</tr>
<tr>
<td>For 312 Mensuration</td>
<td>4</td>
</tr>
<tr>
<td>Soils 316 Air Photo Interp</td>
<td>1</td>
</tr>
<tr>
<td>For 399 Prof Integration (summer)</td>
<td>1</td>
</tr>
<tr>
<td>For 411 Finance and Valuation</td>
<td>3</td>
</tr>
<tr>
<td>For 412 Policy and Admin</td>
<td>3</td>
</tr>
<tr>
<td>For 415 Timber Mgmt</td>
<td>4</td>
</tr>
<tr>
<td>For 495 Prof Integ Seminar (spring &amp; fall)</td>
<td>2</td>
</tr>
<tr>
<td>For 230, 331, or 348</td>
<td>3</td>
</tr>
<tr>
<td>For 351, 371, 380, or 460</td>
<td>3-4</td>
</tr>
<tr>
<td>For 320 or 321</td>
<td>3</td>
</tr>
<tr>
<td>Soc S Elective</td>
<td>2</td>
</tr>
<tr>
<td>Hum Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

Range Management Core Requirements

The following curriculum meets professional standards established by the Range Science Education Council and U.S. Civil Service Commission.

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses. A minimum of 128 hours (exclusive of physical education activity courses) is required for graduation.

All range students are required to take the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101 Composition</td>
<td>3</td>
</tr>
<tr>
<td>Bio S 103 and Bio S 104 or Bot 201</td>
<td>8</td>
</tr>
<tr>
<td>Math 107 or 201 or 140</td>
<td>3-4</td>
</tr>
<tr>
<td>Chem Principles</td>
<td>8</td>
</tr>
</tbody>
</table>
A S 213 or 301
Com or Spe Electives (Principles) 3
Chem 240 Organic 4
Soils 201 Soils 3
Bot 332 Systematic 3
Bot 320 Plant Phys 3
Econ 203 Fundamentals 4
Biol 310 or B A 215 3
Bot 462 Synecology 3
Ag Ec 340 Farm Mgt 3
For 110 Orientation 1
For 301 Environments 3
For 304 Silviculture 2
For 380 Wildlife Mgmt 3
For 351 Rg Ecosystems Mgmt 3
For 354 Range Plant Comm 3
For 352 Rg Livestock Mgmt 3
Soils 316 Air Phot Interp 1
For 399 Prof Integration (summer) 1
For 451 Range Habitat Anal 3
For 493 Land Use Seminar 1
For 495 Prof Integ Seminar (spring & fall) 2
For 452 Range Management 3
Hum Electives 6
SoC Electives 2

Options (Forestry and Range)
One of the following options must be added to the above core to complete the curriculum in either forest management or range management.

FOREST MANAGEMENT
(Available with forest management degree only) 3
CE 101; For 320 and 321; two additional courses from For 230, 331, 348; two additional courses from For 351, 371, 380 or 460; electives approved by adviser.

RANGE MANAGEMENT
(Available with range management degree only) 3
Com, Engl, or Spe Elective—3 hours; Geol 102; Bot 436; For 460; electives approved by adviser.

BIOLICAL SCIENCE
(Preparation for post-graduate work) Chem 240; Bot 332, 320, 462; Genet 301; For 331, 348; electives approved by adviser.

BUSINESS
Engl 201 or 402; B A 210, 230, 340, 360; Econ 301; For 511; six hours of related coursework beyond the introductory level in business administration, economics, or agricultural economics, approved by adviser.

CONSERVATION
Env S 101; Pol S 101; Engl 201; Soils 301; Econ 301; For 303; Ag Ec 480; Pol S 443; electives approved by adviser.

FOREST-RANGE MANAGEMENT
(For foresters only, also meets U.S. Civil Service requirements for range conservationist) Chem 240; Bot 332, 320, 462; range electives 12 hours; electives approved by adviser.

PHYSICAL SCIENCE
(Preparation for post-graduate work) Phys 202; Math 171, 172; Chem 240; Bot 320; 20-25 hours electives approved by adviser.

RANGE-FOREST MANAGEMENT
(Range students only) For 230 or 331 or 348; For 320 or 321; forestry electives (include forest economics or management) 9 hours; electives approved by adviser.

RECREATION
Soc 101; 3 hrs upper-division Soc electives; Zool 330 or Geog 435; For 275, 371, 372, 471; For 373 or 475; Pol S 101 or 206; electives approved by adviser.

SOILS
(Also meets U.S. Civil Service requirements for soil scientist) Geol 102; Chem 217, 240; Bot 320; Soils electives 12 hours; For 351 or 371 or 380 or 460 (in addition to core); electives approved by adviser.

WILDLIFE HABITAT MANAGEMENT
(Meets U.S. Civil Service requirements for Wildlife Biologists) Zool 224; Math 141 or 171 or 202; Cpt S 201 or 210; Engl 201; Bot 436; For 380; 480; Wildlife Electives 3 hours; Zool or Wildlife electives 9 hours; electives approved by adviser.


Wildland Recreation Core Requirements
The Wildland Recreation curriculum leads to the Bachelor of Science degree in Forest Management. The curriculum does not meet the Society of American Foresters requirements for a professional forester. It can meet the U.S. Civil Service requirements for "Forester" if additional forestry courses are taken as electives.

The Wildland Recreation curriculum offers specialties in park management, planning, and interpretation. It is designed for students desiring to work at the professional level for a federal, state or local resource based recreation agency like the National Park Service, U.S. Forest Service, Bureau of Land Management, Army Corps of Engineers and state and local park systems. The curriculum is reviewed by professional recreation
specialists and reflects skills and knowledge essential in entry level positions with resource based recreation agencies.

At least 40 of the total hours required for the bachelor’s degree in this program must be in upper division courses. A minimum of 128 hours (exclusive of physical education activity courses) is required for graduation.

All wildland recreation students are required to take the following core courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Engi 101 Composition</td>
<td>3</td>
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<tr>
<td>Engi 201 Expos Writ</td>
<td>3</td>
</tr>
<tr>
<td>Spe 102 Public Spkg</td>
<td>3</td>
</tr>
<tr>
<td>Bio S 103, 104</td>
<td>8</td>
</tr>
<tr>
<td>Chem 101, 102 or 105, 106</td>
<td>8</td>
</tr>
<tr>
<td>Phys 380 Phys &amp; Soc</td>
<td>3</td>
</tr>
<tr>
<td>Geol 102 Phys Geol</td>
<td>4</td>
</tr>
<tr>
<td>Geol 310 Eval Earth</td>
<td>4</td>
</tr>
<tr>
<td>Ag Ec 201 Econ in Agric</td>
<td>3</td>
</tr>
<tr>
<td>Pol S 101 or 206</td>
<td>3</td>
</tr>
<tr>
<td>Pol S 440 Public Admin</td>
<td>3</td>
</tr>
<tr>
<td>Soc 101 Introduction</td>
<td>3</td>
</tr>
<tr>
<td>For 303, Zool 330 or Geog 345</td>
<td>3</td>
</tr>
<tr>
<td>Math 103 Statistics</td>
<td>3</td>
</tr>
<tr>
<td>Math 201 Finite Math</td>
<td>3</td>
</tr>
<tr>
<td>Soc or Pol S Electives</td>
<td>3-4</td>
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<tr>
<td>(300-400 level)</td>
<td></td>
</tr>
<tr>
<td>For 201 Dendrology</td>
<td>3</td>
</tr>
<tr>
<td>For 301 or Bio S 372</td>
<td>3</td>
</tr>
<tr>
<td>For 304 Silviculture</td>
<td>2</td>
</tr>
<tr>
<td>For 399 Prof Integration</td>
<td>1</td>
</tr>
<tr>
<td>(summer)</td>
<td></td>
</tr>
<tr>
<td>For 371 Wildland Rec Policy</td>
<td>3</td>
</tr>
<tr>
<td>For 372 Wildland Rec Lab</td>
<td>1</td>
</tr>
<tr>
<td>For 373 Interp Tech</td>
<td>3</td>
</tr>
<tr>
<td>For 471 Wildland Rec Mgt</td>
<td>3</td>
</tr>
<tr>
<td>For 478 Wildland Rec Plan</td>
<td>3</td>
</tr>
<tr>
<td>For 495 (spring and fall)</td>
<td>2</td>
</tr>
<tr>
<td>For 499 Senior Special Problem</td>
<td>2</td>
</tr>
<tr>
<td>Arts and Hum Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

Specialties (Wildland Recreation)

By the beginning of the junior year (60 semester hours) students are expected to have selected a specialty in the Wildland Recreation field. This specialty will add an additional 40-41 semester hours of required and approved electives to the core curriculum. Specialties are available in the following areas:

**MANAGEMENT**

Soils 201, 415; H Ed 263; Cpt S 200; Crm J 101; L A 264, 363; For 380, 475; Env S 444; 7 hours free electives; electives approved by adviser.

**DESIGN AND PLANNING**

Soils 201, 404, 415; Arch 101; L A 262, 363, 467; Env S 444; 9-10 hours free electives; electives approved by adviser.

**Transfer Students**

Transfer students should plan to complete the basic courses in English, speech, chemistry, biology, mathematics, physics, social science and humanities by the end of their sophomore year. Ten hours of Forestry X credit is given for a Technician’s degree. Refer to WSU bulletin on Transfer Programs for Community Colleges, available through community college advisers, for details on transferable courses.

**Graduate Programs**

Students wishing to develop their skills beyond the four-year programs and having strong performance records in undergraduate work may elect to enroll in graduate programs. These programs lead to the degrees of Master of Science in Forest and Range Management or Master of Science in Environmental Science. Both thesis and non-thesis master’s programs are offered with special emphasis available in forest management, range management, business, watershed management, wildland recreation, soils, wildlife habitat, and others. All graduate students are required to teach and do research.

**General Agriculture**


The primary functions of this program are the listing of courses that are of general interest to students in agriculture and related fields and the administration of the undergraduate major in general agriculture (including agricultural communications and the curriculum in plant protection and pest management) and the graduate major in Adult and Continuing Education.

The undergraduate major in general agriculture is designed for students who wish to prepare for certain careers requiring broad training in agriculture. A maximum number of electives is permitted to enable the student to specialize in one or two fields, or otherwise to tailor the curriculum to fit particular needs. A major in agricultural communications and a curriculum in plant protection and pest management are also available in general agriculture.
The Master of Adult and Continuing Education degree is designed for professionals in the field of adult and continuing education. Requirements and course descriptions are outlined in the Graduate Study Bulletin.

The courses of study lead to the degree of Bachelor of Science in Agriculture and Master of Adult and Continuing Education.

## Description of Courses

For explanation see Index under "Symbols".

### Agriculture

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag 101</td>
<td>Introduction to Agriculture</td>
<td>2 Survey of the broad field of agriculture, its relation to society, government, and business.</td>
<td></td>
</tr>
<tr>
<td>Ag 199</td>
<td>Role of Agriculture in a Quality Environment</td>
<td>1 I Environmental problems and the place of agriculture in their solution.</td>
<td></td>
</tr>
<tr>
<td>Ag 201</td>
<td>Introduction to Pest Management in a Quality Environment</td>
<td>2 I Introduction to pest management to maximize plant protection and safeguard the quality of the environment.</td>
<td></td>
</tr>
<tr>
<td>Ag 205</td>
<td>Human Relations in the Business of Agriculture</td>
<td>3 (2-3) Developing an understanding of human behavior and learning skills in communication and leadership.</td>
<td></td>
</tr>
<tr>
<td>Ag 390</td>
<td>Seminar in International Agriculture</td>
<td>1 II Current international agricultural issues and agricultural development.</td>
<td></td>
</tr>
<tr>
<td>Ag 499</td>
<td>Special Problems</td>
<td>V 1-4 May be repeated for credit.</td>
<td></td>
</tr>
</tbody>
</table>

### Adult and Continuing Education

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE 510</td>
<td>Development and Evaluation of Adult Education Programs</td>
<td>3 (2-3) II The development, implementation, and evaluation of adult education programs.</td>
</tr>
<tr>
<td>ACE 511</td>
<td>Seminar</td>
<td>1 or 2 May be repeated for credit.</td>
</tr>
<tr>
<td>ACE 514</td>
<td>Adult Learning</td>
<td>3 I By interview only. Theories, principles, concepts, and practices that apply to adult learning.</td>
</tr>
<tr>
<td>ACE 516</td>
<td>Research in Adult and Continuing Education</td>
<td>2 Prereq two courses in ACE. Analysis of research findings and design of studies in adult and continuing education.</td>
</tr>
<tr>
<td>ACE 600</td>
<td>Special Projects or Independent Study</td>
<td>Variable credit.</td>
</tr>
<tr>
<td>ACE 700</td>
<td>Master's Research, Thesis and/or Examination</td>
<td>Variable credit.</td>
</tr>
</tbody>
</table>

### Biometrics

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biom 310</td>
<td>Agricultural Statistics</td>
<td>3 (2-3) Prereq Math 101. Methods of statistical analysis and the principles involved in their interpretation and application to agricultural data.</td>
<td></td>
</tr>
<tr>
<td>Biom 412</td>
<td>Biometry</td>
<td>3 Prereq Math 101. Principles and methods of statistical analysis as applied to biological experimentation.</td>
<td></td>
</tr>
<tr>
<td>Biom 512</td>
<td>Experimental Design</td>
<td>3 Prereq Biom 412. Principles with analysis and interpretation of data.</td>
<td></td>
</tr>
<tr>
<td>Biom 600</td>
<td>Special Projects or Independent Study</td>
<td>Variable credit.</td>
<td></td>
</tr>
</tbody>
</table>

## Schedule of Studies

At least 40 of the total hours required for this degree must be in upper-division courses with at least 24 hours in agriculture. Students electing a major in general agriculture must complete at least 12 semester hours in English composition, speech, communications, and Ag 205; 3 hours in math or competency; 3 hours in statistics; 16 hours in physical and biological science; and 12 hours in social sciences and arts and humanities. At least 40 semester hours in agriculture courses must be completed including 15 hours in one department and 9 hours in a second.

### Freshman Year

**First Semester**
- Ag 101 Introduction: 2
- Engl 101 Composition: 3
- Math 101, 107, 109, 140, or 201: 3-4
- Ag Elective: 3
- Elective: 2-3

**Second Semester**
- Chem 101 or 105: 4
- Hum or Soc S Elective: 3
- Ag Elective: 3
- Elective: 5-6

### Sophomore Year

**First Semester**
- Chem 102 or 106: 4
- Bio S 103 Introductory: 4
- Spe 102 or Hum Elective: 3
- Econ 102 Fund Macr: 3
- Elective: 2-3

**Second Semester**
- Bio S 104 or Bot 201: 4
- Hum or Soc S Elective: 3

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General Studies

Ag 205 or Spe, Engl, Com
  Elective 3
Ag Ec 201 or Econ 203 3
Elective 2-3

Junior Year
First Semester
  Hours
Pl P 329 General 3
Biom 310 or 412 3
A S 213 App An Nutr 3
Elective 5

Second Semester
  Hours
Soils 201 Soils 3
Hum or Soc S Elective 3
Entom 340 Ag Entom 3
Elective 6

Senior Year
First Semester
  Hours
Ag M 344 Irrigation and Drainage 3
Agron 305 Weeds 3
Soils 301 Soil Mgmt 2
Elective 7

Second Semester
  Hours
Electives 14

Students desiring to qualify as conservationists in the Soil Conservation Service should have 12 hours of soils. To qualify as soil scientists, a total of 15 hours in soils is required. Soils 201, 301, 400, 404, and 411 are recommended.

More emphasis in business can be gained by taking Ag Ec 335, 340, 350, and 351; B A 230; Econ 320; Cpt S 200, 201, or 220.

Agricultural Communications

A major in agricultural communications is offered in the College of Agriculture, in cooperation with the Department of Communications, leading to the degree of Bachelor of Science in Agriculture.

The student declaring this major must complete the requirements of the general agriculture curriculum and earn a minimum of 30 hours in the Department of Communications, including any communications courses used to satisfy general agriculture requirements. Those electing this major should make that decision known as early as possible in their academic career.

Agricultural Communications majors should complete the following:

Print Media: Jour 225, 235; Cine 253; P R 313, 413; Com 490, and 9 elective hours in the Department of Communications.

Broadcast Media: Bdest 165, 250, 255, 355, 365; P R 312, 313; Com 490, and 6 elective hours in the Department of Communications.

Recommended electives: The student should consult with a Department of Communications adviser before registering for elective courses. Specialized programs patterned for individual career aspirations may be developed in conjunction with the head of the Department of Communications or a designated representative.

Foreign Service

Many students wish to serve in a foreign country. Some desire temporary or interim assignments. Others desire lifetime careers in serving as agriculturists in foreign lands. Excellent preparation is possible through the general agriculture curriculum. Twenty semester hours of courses chosen from the following list will, along with the General Agriculture curriculum, help prepare the student for foreign service in agriculture:

Ag Ec 420; Anth 101, 203, 301; Bact 101; Econ 416, 470, 472; Env S 101; FNIM 130; Genet 201; Geog 101, 102; Geol 101; Pol S 102, 222, 423, 427; Psych 101, 102, 350; Soc 101, 270, 330, 371; For L elective.

Plant Protection and Pest Management

The College of Agriculture provides a curriculum in plant protection and pest management which is jointly offered by the Departments of Agronomy and Soils, Entomology, Horticulture and Landscape Architecture, and Plant Pathology; and coordinated through the Department of General Agriculture. Students interested in this curriculum should contact the curriculum coordinator in the Department of Entomology.

General Studies

General Studies is for students who have varied interests that may cut across the usual departmental boundaries, and who wish to play a major role in deciding on a suitable curriculum of study. The student earns a Bachelor of Arts, Bachelor of Science, or Bachelor of Liberal Arts degree depending upon the program selected. The degree is not identified with a special subject matter field on the diploma.

Total credits for graduation of 120 semester hours should normally include 40 credits or more in courses at the 300- and 400-level.

Students who wish to enroll in General Studies should contact the appropriate coordinator or adviser listed below under the various divisions.
Biological, Mathematical and Physical Sciences

H. Batey, Coordinator
This division of General Studies is for students who are interested in interdisciplinary programs which offer broader options in course selections than are possible within single departments. The only restrictions are that each major program be coherent and that upper-division courses be represented to the greatest degree consistent with appropriate prerequisites.

Each student will (1) satisfy the General University Requirements and any additional requirements of the College of Sciences and Arts; (2) earn 120 semester hours, that normally include 40 or more at the upper-division level; (3) devise a program of study under a defined goal of some future career or of post-graduate study.

Plan A. A major concentration of courses not less than 24 credits in a single department, program or area including at least 15 upper-division hours, and a minor concentration not less than 15 credits in another department, program or area including at least 6 upper-division hours.

Plan B. A combination of biological sciences courses not less than 39 credits in three or more departments or programs including at least 21 upper-division hours.

Plan C. A combination of mathematical and physical sciences courses not less than 39 credits in three or more departments or programs including at least 21 upper-division hours.

Classical Studies

L. McNew, Coordinator
The classical studies option is designed for students who wish to obtain a broad understanding of the ancient Greek and Roman foundations of modern Western Civilization. Greek and Latin language study is an important part of the program in order to aid comprehension of classical thought, literature, and history. This major should be of great value for students contemplating careers in medicine, law, and business or graduate work in history, archaeology, or literature. It is not suitable for those who wish to teach Latin or Greek or enter graduate school in classics unless additional language study is undertaken. The approach is interdisciplinary and flexible to allow students to pursue varied interests within a broad field. This major leads to the degree of Bachelor of Liberal Arts.

DEGREE REQUIREMENTS

Major: General Studies—Classical Studies

Completion of a second year (or its equivalent) of Greek or Latin language and a minimum of 36 hours of courses in classical studies, including:

- F A 201 Art of Western Civ
- Hist 340 Ancient Greece
- Hist 341 Rome: Rep & Emp
- Hum 100 Mythology
- Hum 101 Hum Anc World
- Hum 301 Greek & Rom Drama
- Phil 300 Anc & Med Phil

and 17 hours from the following:

- Anth 336 Classical Archaeology
- Engl 308 Intr Lit Crit
- F A 202 Art Western Civ
- F A 301 Classical Heritage
- Hist 381 Sci West Civ
- Pol S 437/Hist 488 Class Pol Thot
- Hist 440 Early Middle Ages

Additional Greek and Latin beyond the basic language requirements, appropriate seminars, special offerings, and independent study from associated departments with the approval of the Coordinator of the classical studies option.

Minor: Students wishing to minor in Classical Studies are required to take a minimum of 16 hours of course work chosen from the above list, at least 8 of which are at the 300 level and above. Students are encouraged, but not required, to take a classical language.

Humanities and Social Sciences

H. Deming, Coordinator
This division of General Studies is for students whose primary interest in the humanities or social sciences requires interdisciplinary programs and course selections that are not possible within single academic programs or established curricula. It is expected that the student's major program will be coherent, that it will include as many upper-division hours as possible consistent with appropriate prerequisites, and that it will be aimed at a general education or oriented toward a future career.

Each student must (1) satisfy the General University Requirements and any additional requirements of the College of Sciences and Arts, (2) earn 120 semester hours which normally include 40 or more at the upper-division level, (3) establish an acceptable program in consultation with the coordinator from one of the plans set forth below, and (4) achieve at least a 2.00 gpa in program course work.

Plan A. A concentration of courses at least 24 credits in a single academic department or special curriculum, and a minor concentration at least 15 credits in another department or special curriculum.
Plan B: A combination of humanities courses at least 39 credits involving three or more academic departments.

Plan C: A combination of social science courses at least 39 credits involving three or more academic departments.

**Liberal Arts**

**R. Littlewood, Coordinator**

Students who choose this option design their own major with the help of the adviser. This major is conceived of as the pursuit of a coherent body of knowledge beyond the usual departmental boundaries. In this process, the student is expected to become literate and skillful in the use of the English language, attain competence in a foreign language, and demonstrate a capacity for rational evaluation and discourse. The Liberal Arts Program may also lead to certification in Secondary Education in appropriate cases.

Normally in this program students will also: (1) satisfy General University Requirements; (2) write, during their senior year, a thesis on a topic arising out of their particular course of studies; (3) carry on a significant portion of their studies via guided by independent reading; and (4) earn at least half the credit hours after joining the program in upper-division and perhaps some graduate courses.

**Linguistics**

**J. Lord, Coordinator**

A student majoring in linguistics may expect a broad liberal education in literature, anthropology, mathematics, and philosophy, around a core of language. The student will gain a substantial familiarity with several languages and types of linguistic structure, and will become conversant with the formal theories of linguistic analysis and the historical study of language.

The major in linguistics requires 40 credit hours, variously distributed among the following courses, depending upon the particular emphasis which the student and adviser together select. Each of the following general areas must be represented in the program:

**Linguistics:** Anth 250, 350, 355, 450, 451, 456; Engl 256, 354, 458, 499; 15 or more hours including at least one historical course.

**Mathematics and Computer Science:** Math 107, 171, 220, 360, or 201, 202, 360, 361; Cpt S 215, 416; 3 to 18 hours depending upon special emphasis.

**Philosophy:** Phil 201, 401, 410, 415; 3 to 12 hours depending upon emphasis.

**Foreign Languages:** Six to 18 hours, depending on special emphasis; the 6 hour minimum, if elected, must be at the 300-level or higher. A historical linguistics course may be substituted for the historical course above.

**Religious Studies**

**D. H. Bishop, Coordinator**

Students majoring in Religious Studies will gain a broad background and understanding in the religious values and spiritual concepts of their own and other cultural traditions, and in the mutual relations between religious and other social institutions. Students considering careers in charitable or church callings will find special interest in this major, but it is appropriate for anyone.

A student may earn a major in Religious Studies by completing 39 semester hours of work from among the designated courses in the several departments involved. Of these 39 hours, 23 must consist of specified core courses, details of which can be obtained from the Coordinator. The remaining 16 hours for the major can come from among any of the courses on the approved list.

A student must also satisfy the GUR and College of Sciences and Arts graduation requirements, and take at least 40 of the total 120 semester hours in upper-division courses. For a Minor in Religious Studies, a student must take at least 16 semester hours of work from among the courses on the approved list, at least half of which must be at the upper-division level. Religious Studies also makes an ideal second major, which can be acquired with no extra course work of any kind.

The approved courses for the major or minor in Religious Studies are as follows:

Anth 303; Engl 304, 305, 306, 307, 335, 407, and 416; For L 300 (ancient languages only), For L 352, Lat 101 and 102; Hist 140, 270, 301, 341, 374, 423, 440, 441 and 445; Hum 100, 101, 202, 301, 350; Phil 107, 300, 314, 315, 407, 440; and Soc 341.

Independent Studies (499) may also receive some credit in participating departments toward Religious Studies major or minor.

**Teacher-Training**

Students who are preparing to teach in junior or senior high school may in some cases receive their degrees in General Studies. Such students must fulfill the requirements for graduation of the College of Sciences and Arts. There are no further requirements if they complete their teaching major and minor and fulfill all the requirements for the Provisional Certificate. The degree awarded is
Bachelor of Arts or Bachelor of Science, according to the degree granted in the student's major teaching field.

In the case of the following teaching majors, the degree must be taken in General Studies: the junior high school major—language arts; the junior and senior high school majors—physical science.

In a number of junior and senior high school teaching majors the student has the choice of getting a degree in General Studies or completing additional work for a degree in the department concerned.

For further information on teaching certification, refer to the Department of Education.

**Program in Genetics**


Genetics, the science of heredity, with its different areas of specialization, is involved in many branches of basic and applied biology. The program is designed to provide training in a number of areas including molecular and developmental genetics, population and quantitative genetics, mutagenesis, cytogenetics, evolution, and agricultural breeding.

The program comprises cooperating members of twelve departments of the Colleges of Agriculture and Sciences and Arts. The interdisciplinary role of genetics is emphasized, thus permitting students to study with geneticists who represent a wide range of research interests in plant, animal, and microbial genetics and to use the specialized equipment available in the cooperating departments. Facilities are available to students for almost every phase of modern genetic research, including molecular genetics and mutagenesis laboratories, electron microscope laboratories, Computing Center, and Nuclear Radiation Center.

Biochemistry, cytology, mathematics and statistics, and physiology are the principal avenues through which knowledge of genetics is acquired. These subjects are necessary supplemental areas of study for students in the program. Graduates will be prepared for careers in genetics in university-level teaching and research, for research positions with government and private agencies, and in some cases for specialized medical research and genetic counseling.

The program offers a course of study leading to the degrees of Master of Science in Genetics and Doctor of Philosophy.

**Description of Courses**

**Genet** For explanation see Index under "Symbols"

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>General Genetics 3 Prereq Bio S 104; 2 sem Chem. Principles of modern and classical genetics; innovative methods.</td>
</tr>
<tr>
<td>302</td>
<td>General Genetics Laboratory 2 (0-6) I Prereq Genet 301 or c/z. Basic principles of modern and classical genetics utilizing several species.</td>
</tr>
<tr>
<td>330</td>
<td>Human Genetics 3 II Prereq Genet 301 or 201. Exploration of individual and population genetics leading to critical discussion of current social, medical, and scientific issues.</td>
</tr>
<tr>
<td>490</td>
<td>Instructional Practicum V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq Genet 301. By interview only.</td>
</tr>
<tr>
<td>499</td>
<td>Special Problems V 1-4 May be repeated for credit.</td>
</tr>
<tr>
<td>502</td>
<td>Advanced Genetics II 2 II Prereq Genet 301. Introduction to molecular, developmental, and ultrastructural genetics.</td>
</tr>
<tr>
<td>503</td>
<td>Laboratory in Molecular and Developmental Genetics 2 (1-3) II Prereq Genet 301. Techniques and procedures in the areas of molecular and developmental genetics; microbial and biochemical experiments.</td>
</tr>
<tr>
<td>520</td>
<td>Ecological Genetics 2 II Same as Zool 520.</td>
</tr>
<tr>
<td>535</td>
<td>Physiology and Genetics of Parasitism 3 I 1981-82 a/y. Same as PI P 535.</td>
</tr>
<tr>
<td>548</td>
<td>Teaching Advanced Biology Topics 2 May be repeated for credit. Same as Bio S 548.</td>
</tr>
</tbody>
</table>

562 Mathematical Genetics 3 II 1981-82 a/y. Same as Math 562.

569 Nucleic Acid Biochemistry 3 III 1981-82 a/y. Same as BC/BP 569.

570 Eukaryotic Gene Organization and Regulation 3 III 1980-81 a/y. Prereq Genet 502. Eukaryotic genome organization at molecular and ultrastructural levels; eukaryotic gene regulation discussed at current level of knowledge and research.

581 Advanced Topics in Genetics V 1-2 May be repeated for credit. Prereq Genet 501 or 502. Recent research in selected areas of genetics.

592 Advanced Topics in Cell Biology 1-3 May be repeated for credit; cumulative maximum 7 hours. Current research in cell structure and function.

598 Seminar 1 May be repeated for credit. I Prereq Genet 301. Reviews of recent and classical research in genetics and cytology.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.


311 Weather and Climate 3 III The elements of weather and climate.

345 Conservation of Natural Resources 3 II Economic, ecological, and social problems of resource utilization; public policies in conservation.

445 Urban Geography 3 I 1980-81 a/y. Geographical-ecological examination of development, distribution, and change of the world's great cities; urban patterns and functions; emphasis on U.S., Canada.

474 Human Ecology 3 I Same as Bio S 474.

499 Special Problems V 1-4 May be repeated for credit.

Department of Geology

Professor and Department Head, W. F. Scott; Professors, J. W. Crosby, III, P. R. Hooper, J. W. Mills, P. E. Rosenberg, R. K. Sorem, G. D. Webster, Associate Professor, F. F. Hoit, Jr., A.J. Watkinson; Assistant Professor, H. L. Vecher; Adjunct Associate Professor, Y. Herman-Rosenberg; Research Associate, R. H. Fewkes.

Geology is the study of the Earth's materials, structure, and history. The department offers both general and specialized training in the major branches of the science. The elementary courses are designed to provide a strong background for those who major in geology as well as to furnish other students with an interesting and comprehensive introduction to earth science. The program provides excellence in training and research on the nature, origin, evaluation, use, and conservation of our water and non-renewable energy and mineral resources. Students who intend to go into professional geological work should plan on earning an advanced degree.

The department occupies a large new building with extensive modern research and teaching laboratories. The courses of study lead to the degrees of Bachelor of Science in Geology, Master of Science in Geology, and Doctor of Philosophy. A minor in geology is also offered.

Description of Courses

Geog For explanation see Index under "Symbols"

101 Physical Geography 3 I 1981-82 a/y. Survey of the character and origin of different types of landforms, climates, soils, vegetation, water resources; significance to human occupation.

102 [S] Human Geography 3 Cultural patterns and ecology as interrelated with landscape and natural environment.

103 [P] Introduction to Geology 4 (3-3) Not open to students with credit in Geol 102. Introductory physical geology for non-science majors; emphasis on western U.S.
[P] Physical Geology 4 (3-3) Not open to students with credit in Geol 101. For science majors. Modern concepts of earth science; mineral rock, resource, and map study. Field trip required.

306 Rocks of the Northwest 2 (1-3) I Prereq Geol 101 or 102. Field and laboratory rock study. Field trips required.

307 Field Methods 3 (1-6) II Prereq Math 107; Geol 340. Principles and application of instruments and methods used in geologic mapping.

308 Field Geology 5 S Prereq Geol 307. Admission by arrangement. Detailed geologic mapping of an area; practice in methods of geologic field work.

310 (120) [P] Evolution and Earth History 4 (3-3) II Prereq Geol 101 or 102. History and development of the Earth's physical features and its inhabitants. Field trip required.

317 Soil Mechanics 3 Same as CE 317.

320 Spring Field Trip Preparation 1 May be repeated for credit. II Prereq Geol 310. Reading in preparation for geology spring field trip.

321 Spring Field Trip 1 (0-3) May be repeated for credit. II Prereq Geol 310. A week field trip to study lateral changes in sedimentary rocks of a selected area of the western United States.

322 [P] Physical Oceanography 2 I Physical properties of the oceans, ocean floors, and ocean margins; their origin, development, and significance to man.

340 Geologic Structures 4 (3-3) I Prereq Geol 101 or 102.

350 (250) [P] Mineralogy and Crystallography 4 (2-6) I Prereq Geol 101 or 102. Composition, physical properties, structure, crystallography, identification, and origin of minerals.

355 Optical Mineralogy 3 (2-3) II Prereq Geol 350, Phys 102 or 202. Elements of optical crystallography and optical identification of minerals.

361 Igneous Petrology 2 (1-3) II Prereq Geol 355. Mineralogy and petrology of igneous rocks, using the polarizing microscope.

362 Metamorphic Petrology 2 (1-3) II Prereq Geol 360 or c/1. Mineralogy and petrology of metamorphic rocks, using the polarizing microscope.

402 [P] Earth's Resources 3 II 1980-81 a/y. Prereq Geol 101 or 102 or Env S 101. The origin, occurrence, production, reserves and future of the Earth's finite energy and mineral resources and its water supply.


410 Invertebrate Paleontology 4 (3-3) I Prereq Geol 310. Morphology, classification, evolution, and ecology of fossil invertebrate organisms.

415 Environmental Measurements 3 (1-6) Same as CE 415.

420 Sedimentary Petrography and Sedimentation 3 (2-3) I Prereq Geol 310. Sedimentary rock composition and origins applying the fundamental principles of sedimentation.

421 Principles of Stratigraphy 2 (1-3) I Prereq Geol 310. Principles of correlating and dating of sedimentary strata.


480 Introductory Geochemistry 3 I Prereq Chem 106; Geol 102 or 310. The chemistry of earth materials and processes.

486 Principles of Geochemistry 3 II Prereq Chem 106; Geol 362. Chemical concepts applied to geology. Cooperative course taught at the University of Idaho.

491 Geology of Hell's Canyon 2 (0-6) May be repeated for credit; cumulative maximum 2 hours. S Field study of the geological formations of Hell's Canyon utilizing a raft trip on the river.

492 Geology of the Upper Salmon River Canyon 2 (0-6) May be repeated for credit; cumulative maximum 2 hours. S Field study of the geological formations of the upper Salmon River Canyon utilizing a raft trip on the river.

499 Special Problems V 1-4 May be repeated for credit.

508 Advanced Field Methods 3 (0-9) May be repeated for credit. S Individual instruction in advanced methods of field geology.


515 Paleocology 3 II 1981-82 a/y. Past environments; interrelations of physical and biological factors; changes in the physical environments. Cooperative course taught at the University of Idaho.

520 Regional Stratigraphic Analysis 4 (1-9) II 1980-81 a/y. Prereq Geol 421.

523 Advanced Topics in Stratigraphy 2 May be repeated for credit. II 1980-81 a/y. Prereq Geol 421.

524 Geophysical Engineering 4 (3-3) Same as C E 524.

525 Sedimentology 3 (2-3) II 1981-82 a/y. Prereq Geol 420.


541 Structural Analysis 3 (2-3) II 1980-81 a/y. Prereq Geol 340. Structural analysis of regions subjected to multiple deformation.

550 Advanced Mineralogy 3 I Prereq Geol 355; Chem 106. Elements of crystal chemistry and crystal physics.

551 Ore Microscopy 3 (0-9) I 1981-82 a/y. Prereq Geol 355, 470. Identification of ore minerals using polarizing ore microscope; measurement of rotation properties; interpretation of ore textures; photomicrography; practical problems.

552 X-Ray Analysis in Geology 3 (2-3) II Prereq Geol 350, 355. X-ray diffraction on geological research; powder diffractometry and X.R.F. spectrometry; practical problems.

556 Electron Microprobe 3 (2-3) II Prereq Geol 362. Principles and practices in the use of the electron microprobe. Cooperative course taught at the University of Idaho.

560 Advanced Igneous Petrology 3 (2-3) I Prereq Geol 361. Petrogenesis of igneous rocks.

561 Advanced Mineral Deposits 3 I 1980-81 a/y. Prereq Geol 410. Ore mineralogy and sulphide phase equilibria; microcosmic studies of natural and synthetic sulphide minerals. Cooperative course taught at the University of Idaho.

565 Metamorphism 3 (2-3) II Prereq Geol 362. Metamorphic minerals, rocks, processes, and facies. Cooperative course taught at the University of Idaho.

570 Metallic Mineral Deposits 3 I 1981-82 a/y. Prereq Geol 470, 480, or c/. Modern advances in the genesis of metallic mineral deposits of magmatic, hydrothermal, sedimentary, and metamorphic origin.

573 Advanced Topics in Economic Geology 2 (1-3) May be repeated for credit. II 1980-81 a/y. Prereq Geol 470. Combined field, laboratory, and library research on some problem in nonmetallic or metallic mineral deposit genesis.

575 Geology of Underground Water 3 I 1980-81 a/y. Prereq Ag M 344, C E 315, or Geol 340. Geologic principles underlying the accumulation and movement of groundwater; its development and exploitation.


585 Geochemical Exploration 3 (2-3) I Principles and use of rapid chemical tests of rocks, soil, sediment, vegetation, or water samples in prospecting for mineral deposits. Cooperative course taught at the University of Idaho.

586 Advanced Geochemical Exploration 3 (2-3) II 1981-82 a/y. Colorimetric and instrumental analytical methods in mineral exploration, primary and secondary dispersion patterns, endogenic and exogenic behavior of individual elements. Cooperative course taught at the University of Idaho.

590 Photogeology 3 (1-6) II Air photos for geologic information; elements of photogrammetry; map presentation and interpretation of stereo vertical and oblique air photos. Cooperative course taught at the University of Idaho.

592 Interdisciplinary Research Topics in Geology 3 May be repeated for credit; cumulative maximum 6 hours. I Advanced topics across normal subject boundaries; tectonics and magma origin.

593 Advanced Topics in Petrology 3 May be repeated for credit; cumulative maximum 6 hours. II 1981-82 a/y. Prereq Geol 550, 551, 560. Ore petrology or igneous petrology.

594 Advanced Topics in Mineralogy 4 II 1980-81 a/y. Crystallography, crystal chemistry, and mineral equilibria.

600 Special Projects or Independent Study Variable credit.

700 Master’s Research, Thesis, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Schedule of Studies

At least 40 of the total hours required for a bachelor’s degree in this program must be in upper-division courses.
I. General University and Arts and Sciences Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101, English Comp*</td>
<td>3</td>
</tr>
<tr>
<td>Communication Proficiency</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td>6</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>6</td>
</tr>
<tr>
<td>Humanities or Social Sciences</td>
<td>9</td>
</tr>
<tr>
<td>Foreign Language 1 year (2 semesters) unless 2 years have been taken in high school.</td>
<td></td>
</tr>
</tbody>
</table>

*If grade is not B or above, Engl 201 must be taken.

II. Geology Requirements

Students are encouraged to discuss with their geology adviser modifications which may be made in the list of required courses to fit the needs of specialized interests.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geol 102 Physical</td>
<td>4</td>
</tr>
<tr>
<td>Geol 307 Field Methods</td>
<td>3</td>
</tr>
<tr>
<td>Geol 308 Field Geol</td>
<td>5</td>
</tr>
<tr>
<td>Geol 310 Evolution</td>
<td>4</td>
</tr>
<tr>
<td>Geol 340 Geol Structures</td>
<td>4</td>
</tr>
<tr>
<td>Geol 350 Mineral and Crystallog</td>
<td>4</td>
</tr>
<tr>
<td>Geol 355 Optical Mineralogy</td>
<td>3</td>
</tr>
<tr>
<td>Geol 361 Ig Petrology</td>
<td>2</td>
</tr>
<tr>
<td>Geol 362 Met Petrology</td>
<td>2</td>
</tr>
<tr>
<td>Geol 410 Paleontology</td>
<td>4</td>
</tr>
<tr>
<td>Geol 420 Sed Petrograph</td>
<td>3</td>
</tr>
<tr>
<td>Three courses from: Geol 421, 430, 470, 475, 480</td>
<td>8-10</td>
</tr>
</tbody>
</table>

III. Specific Outside Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 105-106 Principles</td>
<td>8</td>
</tr>
<tr>
<td>Bio S Elective</td>
<td>3</td>
</tr>
<tr>
<td>Phys 201-202 Classical Physics*</td>
<td>8</td>
</tr>
<tr>
<td>Math 171 Calculus I</td>
<td>4</td>
</tr>
</tbody>
</table>

*Phys 101-102 acceptable if taken before major is declared and grade is C or above.

IV. Recommended Geology Electives

Geol 320 Field Trip Prep; Geol 321 Field Trip; Geol 322 Oceanography; Geol 402 Earth Resources; Geol 403 Environmental Geol.

V. Recommended Outside Electives

Anth 471 Man's Past Environments; Bot 380 Paleobotany; Chem 217 Quan Anal; Chem 331, 332, 333, 334; C E 101 Surveying; Computer Science; MSE 301 Materials Science; Math 172 Calculus II; Math 315 Differential Equations; Phys 482 Geophysics; Soils 201 Soils; Soils 404 Morphology; Soils 416 Air Photo Interpretation; Statistics.

Minor in Geology

Geol 101 or 102, and 12 hours of upper-division credit in geology courses selected in consultation with a geology faculty adviser.

Preparation for Graduate Study

As preparation for work toward an advanced degree in geology, a student should have completed, or plan to take without graduate credit, the following or their equivalents: Geol 102, 307, 308, 310, 340, 350, 355, 361, 362, 410, 420; one year of general physics; one year of general inorganic chemistry; mathematics through one semester of calculus.

Department of History


Offerings in the field of history may be classified as American, Asian, European, and Latin American.

A major in history can be used in government service, the new specialty of public history, several areas of business and industry, and many other fields. It can also be used in preparation for study of the law, the ministry, and archival work and librarianship. Double majors or complementary minors combining history with other fields are easily arranged.

The department offers courses of study leading to the degrees of Bachelor of Arts in History, Bachelor of Arts in Social Studies, Master of Arts in History, and Doctor of Philosophy. In cooperation with the Departments of English and Speech, the department participates in the interdepartmental program in American Studies leading to the degree of Doctor of Philosophy.

Description of Courses

Hist For explanation see Index under "Symbols"

101 (140) [S] Classical and Christian Europe 3 Greece and Rome, birth of Christianity and Islam, Middle Ages, Renaissance, Reformation, religious wars, Louis XIV.

102 (141) [S] Revolutionary Europe Since Louis XIV 3 The acceleration of change in
Western thought, institutions, economy, international relations, and Europe's world role.

110 [S] American History to 1865 3
111 [S] American History Since 1865 3
198 [S] History Honors 3
208 American Indians to 1830 3 I Same as Na Am 208.
209 American Indians from 1830 3 II Same as Na Am 209.
210 [S] Topics in American History 3 May be repeated for credit; cumulative maximum 6 hours. Intensive and experimental study of special topics.
230 [S] Latin America, The Colonial Period 3 I
231 [S] Latin America, The National Period 3 II
270 [S] Introduction to South Asian Culture 3 I Hinduism, Buddhism, Jainism; traditional social organization, impact of Islam, British imperialism, independent India and Pakistan.
275 [S] Introduction to East Asian Culture 3 II Civilizations of China and Japan.
298 History of Women in American Society 3 I An examination of the roles of women—social, economic, political—in American history from colonial times to the present.
301 History of Christianity 3 I Christianity and its impact on Europe and America from Roman times to present-day America.
310 [S] Afro-American History I 3 I Same as Bl St 310.
311 [S] Afro-American History II 3
312 [S] History of Canada 3
313 Civil Rights 3 Same as Bl St 313.
314 African History 3 Same as Bl St 314.
316 Introduction to American Studies 3 II Same as Engl 316.
322 History of Washington 2
323 History of Washington 2 Same as Hist 322.
325 History of American Agriculture and Rural Life 3 II Land, labor, crop and animal husbandry, markets, and patterns in rural family and community life, colonial times to the present.
340 [H] Ancient Greece 3 I History and culture of the pre-Christian Greek civilization.
341 [S] Rome: Republic and Empire 3 II History and culture of the Roman world from the independence of the city to the onset of the medieval order.
342 [H] History of England to 1485 3 I Survey of English history; intellectual and cultural development.
343 [H] History of England Since 1485 3 II Continuation of Hist 342.
346 Age of Louis XIV: Europe 1600-1789 3 I Cultural and social survey of early modern Europe relating artistic and intellectual trends to political and economic developments.
370 [S] History of Blacks in the Western U.S. 3 Same as Bl St 370.
381 [S] Science in Western Civilization Through Newton 3 I Development of Western science and its influence on European culture and society.
382 [S] Science in Western Civilization from Newton to Einstein 3 II
386 Military History of World War II 3 II All theaters of war, 1939-45; Europe, North Africa, Atlantic, Asia, and Pacific, including Germany's campaigns in the east.
398 History of Women in the American West 3 II The history of women in the American Northwest through women's literature, archives, and oral history.
399 [S] Historical Biography 3 May be repeated for credit; cumulative maximum 6 hours. Lives of influential American and world figures as illustrative of the age in which they lived.
408 Indians of the Northwest 3 I Same as Na Am 408. Credit not granted for both Hist 408 and 508.
409 Indians of the Southwest 3 II Same as Na Am 409. Credit not granted for both Hist 409 and 509.
411 American Diplomatic History 1776-1914 3 I Policies and principles characteristic of American diplomacy from 1776 to 1914. Credit not granted for both Hist 411 and 511.
412 American Diplomatic History in the Twentieth Century 3 II Credit not granted for both Hist 412 and 512.
413 Early American History to 1750 3 I The cultures and interactions of Native Americans, Europeans, and Africans; development of colonial American societies and institutions.
414 The Era of the American Revolution 3 II The origins of the American Revolution, the War of Independence, and the emergence of republican government and society.
416 Civil War and Reconstruction 3 II The Civil War as a problem in historical causation and the social, political, and economic impact of the war. Credit not granted for both Hist 416 and 516.

417 Rise of Modern America 3 I Response to industrialism in the Gilded Age and the reform movements of Populism and Progressivism. Credit not granted for both Hist 417 and 517.

418 United States 1914-1941 3 I America through World War I, cultural tensions of the Twenties, and the crises of Depression and impending war. Credit not granted for both Hist 418 and 518.

419 United States 1941-Present 3 II International and domestic impact of World War II, era of McCarthyism, American aspirations, tensions and conflicts in the "post-industrial" era. Credit not granted for both Hist 419 and 519.

420 American Constitutional History 3 II 1981-82 a/y, Prereq Hist 110 or Pol S 101. Credit not granted for both Hist 420 and 520.

421 The American Frontier 3 II The American frontier and its importance in American history. Credit not granted for both Hist 421 and 521.

422 Political and Social History of the Pacific Northwest 3 Fulfills the teaching certification requirement in state history and government in Washington and other Pacific Northwest states.

423 American Intellectual and Social History 3 Ideas influential on American society, emphasizing Puritanism, the American Revolution, abolitionism, science, Darwinism, Pragmatism, modern political ideology, and religion. Credit not granted for both Hist 423 and 523.

424 (414) South Africa: From Pre-European Settlement to Present 3 II Same as BL St 424.

429 Seminar in American History 3 May be repeated for credit.

430 History of Mexico 3 I War of independence, 19th century Mexico and the liberal-conservative struggle; modern Mexico since the Revolution of 1910.

432 Twentieth Century Latin America 3 II Contemporary developments, policies and trends in the Latin American states.

433 History of Cuba Since Independence 3 1980-81 a/y. Achievement of independence, consequences of monoculture and foreign dominance; strong emphasis on the Castro Revolution.

439 Seminar in Latin American History 3 May be repeated for credit.

440 [H] The Early Middle Ages, 330-1050 3 I Western Europe, the Byzantine Empire, and Islam from the dissolution of classical Roman civilization to the 11th century revival.

441 [H] The Later Middle Ages, 1050-1500 3 I Western European and Byzantine civilizations from the 11th century revival to the advent of the Renaissance in the West.

444 [H] The Renaissance 3 I Political, cultural, and religious history of Europe, 1300-1500.

445 The Reformation 3 II Political, cultural, and religious history of Europe, 1500-1650.

447 Europe in the French Revolutionary and Napoleonic Era, 1789 to 1815 3 II 1981-82 a/y. Credit not granted for both Hist 447 and 547.

448 Europe and the World, 1815 to 1914 3 I Post-Napoleonic reaction to world war; 19th century background to 20th century growth of democracy, socialism, imperialism, materialism, and totalitarianism. Credit not granted for both Hist 448 and 548.

449 Europe and Two World Wars, 1914-1945 3 I Political, intellectual, economic, and international aspects of European life during and between two world wars. Credit not granted for both Hist 449 and 549.

450 Europe: Cold War and Detente 3 II Collapse, confrontation, new balance; Europe's recovery and increasing influence in world affairs, continuing East-West conflicts, integration movements. Credit not granted for both Hist 450 and 550.

455 Tudor England 3 I Credit not granted for both Hist 455 and 555.

456 Stuart England 3 II 1981-82 a/y. Credit not granted for both Hist 456 and 556.

459 Modern Britain 3 I Britain and the Empire from the Napoleonic Wars to the present.

460 European Diplomacy 1848 to 1914 3 I 1980-81 a/y.

461 European Diplomacy Since 1914 3 II 1980-81 a/y. Credit not granted for both Hist 461 and 561.

462 History of Imperial Russia 3 I History and culture of Imperial Russia from Peter the Great to the 1905 revolution.

463 History of the Soviet Union 3 II The Russian revolutions and the Soviet regime: 1905 to the present.

465 Communist East Europe 3 II History, government, and culture of the countries which comprise the Soviet East European bloc; emphasis since 1945.

467 The Enlightenment 3 II Social and intellectual currents of 18th century Europe.
468 Hitler and Nazi Germany 3 I Rise and fall of Nazism and Hitler; Nazi racial theories, Hitler's triumph, the Third Reich, Holocaust and "Goetterdamerung." Credit not granted for both Hist 468 and 568.

469 Seminar in European History 3 May be repeated for credit.

470 India, 1526-1947 3 I Muslim empire, its intellectual, artistic, architectural traditions, their impact upon Hindu culture; British rule, nationalism, Gandhi and the freedom movement.

471 Contemporary South Asia 3 II Performance of the governments of India, Pakistan, Bangladesh; population pressures and their implications for foreign aid and world food supplies.

475 Twentieth Century East Asia 3 II

476 Revolutionary China, 1800 to Present 3 I Nature and effects of revolutions in China from 1800 to present. Credit not granted for both Hist 476 and 576.

477 Modern Japanese History 3 I 1980-81 a/y. The development of state and society in Japan from 1800 to present. Credit not granted for both Hist 477 and 577.

480 Methods of Teaching Social Studies 3 I Methods, resources, selection of content, past and present issues in social studies education.

485 Inter-American Relations 3 II Same as Pol S 414. Credit not granted for both Hist 485 and 585.

486 United States Foreign Relations 3 II Same as Pol S 427. Credit not granted for both Hist 486 and 586.


488 [S] Classical Political Thought 3 I Same as Pol S 437.

489 [S] Recent Political Thought 3 I Same as Pol S 438.

490 Politics of Developing Nations 3 Same as Pol S 435. Credit not granted for both Hist 490 and 590.

497 Seminar 3 May be repeated for credit; cumulative maximum 6 hours.

499 Special Problems V 1-4 May be repeated for credit.

508 Indians of the Northwest 3 Graduate level counterpart of Hist 408; additional requirements. Credit not granted for both Hist 408 and 508.

509 Indians of the Southwest 3 Graduate level counterpart of Hist 409; additional requirements. Credit not granted for both Hist 409 and 509.

510 Field Course in American History 3 May be repeated for credit. Readings and interpretive problems of American history.

511 American Diplomatic History 1776-1914 3 I Graduate level counterpart of Hist 411; additional requirements. Credit not granted for both Hist 411 and 511.

512 American Diplomatic History in the Twentieth Century 3 II Graduate level counterpart of Hist 412; additional requirements. Credit not granted for both Hist 412 and 512.

513 Seminar in American Studies 3 May be repeated for credit. Same as Engl 513.

516 Civil War and Reconstruction 3 II Graduate level counterpart of Hist 416; additional requirements. Credit not granted for both Hist 416 and 516.

517 Rise of Modern American 3 II Graduate level counterpart of Hist 417; additional requirements. Credit not granted for both Hist 417 and 517.

518 United States 1914-1941 3 I Graduate level counterpart of Hist 418; additional requirements. Credit not granted for both Hist 418 and 518.

519 United States 1941-Present 3 Graduate level counterpart of Hist 419; additional requirements. Credit not granted for both Hist 419 and 519.

520 American Constitutional History 3 II Graduate level counterpart of Hist 420; additional requirements. Credit not granted for both Hist 420 and 520.

521 American Frontier 3 II Graduate level counterpart of Hist 421; additional requirements. Credit not granted for both Hist 421 and 521.

523 American Intellectual and Social History 3 Graduate level counterpart of Hist 423; additional requirements. Credit not granted for both Hist 423 and 523.

525 (S12) Seminar in American History 3 May be repeated for credit. Prereq 12 hrs Hist.

526 (S11) Seminar in American Diplomatic History 3 May be repeated for credit. 1 Research in American diplomacy and a survey of pertinent literature in the field.

530 Seminar in Latin American History 3 II May be repeated for credit. Prereq 12 hrs Hist.

531 The Spanish Empire in America 3 I 1981-82 a/y. Methods and consequences of Spanish imperial administration; comparison with other imperial systems in America.

532 The Mexican Revolution 3 II 1981-82 a/y. The course, nature, and consequences of the revolutionary upheaval which began in 1910.
540 Seminar in Modern European History 3 May be repeated for credit. Prereq 12 hrs Hist.

542 Seminar in Renaissance-Reformation 3 May be repeated for credit. II Research in various problems in Renaissance and Reformation history.

547 Europe in the French Revolutionary and Napoleonic Era, 1789 to 1815 3 II Graduate level counterpart of Hist 447; additional requirements. Credit not granted for both Hist 447 and 547.

548 Europe and the World, 1815 to 1914 3 I Graduate level counterpart of Hist 448; additional requirements. Credit not granted for both Hist 448 and 548.

549 Europe and Two World Wars, 1914-1945 3 I Graduate level counterpart of Hist 449; additional requirements. Credit not granted for both Hist 449 and 549.

550 Europe: Cold War and Detente 3 I Graduate level counterpart of Hist 450; additional requirements. Credit not granted for both Hist 450 and 550.

555 Tudor England 3 I Graduate level counterpart of Hist 455; additional requirements. Credit not granted for both Hist 455 and 555.

556 Stuart England 3 II 1981-82 a/y. Graduate level counterpart of Hist 456; additional requirements. Credit not granted for both Hist 456 and 556.

561 European Diplomacy Since 1914 3 II 1981-82 a/y. Graduate level counterpart of Hist 461; additional requirements. Credit not granted for both Hist 461 and 561.

568 Hitler and Nazi Germany 3 I Graduate level counterpart of Hist 468; additional requirements. Credit not granted for both Hist 468 and 568.

570 Seminar in Population and Quantitative History 3 II Introduction to concepts and methods; applications to social and political history.

576 Revolutionary China, 1800 to Present 3 I Graduate level counterpart of Hist 476; additional requirements. Credit not granted for both Hist 476 and 576.

577 Modern Japanese History 3 I 1980-81 a/y. Graduate level counterpart of Hist 477; additional requirements. Credit not granted for both Hist 477 and 577.

580 Historiography 3 I Prereq 20 hrs Hist.  

581 American Historiography 3 II

585 Inter-American Relations 3 II Same as Pol S 514. Graduate level counterpart of Hist 485; additional requirements. Credit not granted for both Hist 485 and 585.

586 United States Foreign Relations 3 II Same as Pol S 527. Graduate level counterpart of Hist 486; additional requirements. Credit not granted for both Hist 486 and 586.

587 American Political Thought 3 I 1980-81 a/y. Same as Pol S 534. Graduate level counterpart of Hist 487; additional requirements. Credit not granted for both Hist 487 and 587.

590 Politics of Developing Nations 3 I Same as Pol S 535. Graduate level counterpart of Hist 490; additional requirements. Credit not granted for both Hist 490 and 590.

595 The Teaching of History in College I Theory, problems, and methods of teaching history at the college level.

597 Seminar in History 2 or 3 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

**Schedule of Studies**

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

It is assumed that prior to the junior year the student will have completed courses meeting general university and College of Sciences and Arts requirements for graduation and should have completed the following:

<table>
<thead>
<tr>
<th>Course Details</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist 100- or 200-level courses</td>
<td>12</td>
</tr>
<tr>
<td>Pol S 101 or 102</td>
<td>3</td>
</tr>
<tr>
<td>Three courses from the following in Social Science (Soc S 101; Econ 201; Anth 101; Soc 101; Psych 102; Geog 101 or 102; a course in minority studies) and in Humanities (Phil 101 or 102; F A 208 or 209; Hum 101, 102, 104, or 350). At least one course must be taken from each area.</td>
<td>9-10</td>
</tr>
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</table>

**Junior Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course Details</th>
<th>Hours</th>
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<td>Hist 300- or 400-level</td>
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<tr>
<td>Minor Elective</td>
<td>3</td>
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<tr>
<td>Literature Elective (Engl or For L)</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
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</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course Details</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Hist 300- or 400-level</td>
<td>6</td>
</tr>
<tr>
<td>Minor Elective</td>
<td>3</td>
</tr>
<tr>
<td>Literature Elective(Engl or For L)</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
</tbody>
</table>
Senior Year

First Semester
- Hist 400-level: 3 hours
- Minor Elective: 3 hours
- Electives: 9 hours

Second Semester
- Hist 400-level: 3 hours
- Minor Elective: 3 hours
- Electives: 9 hours

The 30 hours of history required must include 6 hours (any level) in each of these fields: United States, Europe, and other fields and areas (Latin American, Asia, Canada, etc.). At least one history seminar is required for a major.

Social Studies
Students desiring a teaching major in the social studies should see the teacher-education program outlined in the Department of Education. Enrollment will be in the Department of History and the Department of Education.

Teaching Majors in History
Students with a program in education who wish to acquire a teaching major in history should enroll in both the Department of History and in the Department of Education while fulfilling the departmental requirements for a major in history.

Minor In History
A minor in history requires 16 hours, 8 of which must be in upper-division courses.

Preparation for Graduate Study
Students who have had basic undergraduate training in European and American history (approximately 12 hours) and who have had undergraduate majors in such subjects as American literature, economics, anthropology, and political science may be well prepared for graduate study in several fields of specialization in history. Adequate opportunities are provided for removing deficiencies by taking appropriate courses or special examinations.

Undergraduates who are pursuing their studies at other institutions or through other curricula at this institution and who contemplate graduate work in this department should select courses similar to those required in the above schedule of studies.

Home Economics
For instructional staff, see departments in the College of Home Economics.

Description of Courses

H E For explanation see Index under "Symbols"

199 Perspectives in Home Economics 2 Explores and integrates careers and curricula through field experiences; family units, life style, personal options; professional competencies.

404 Independent Living Skills for Handicapped 2 S Prereq 9 hrs Psych and Soc, 3 hrs Bio S. Development of independent living skills for persons with physical limitations and/or learning disabilities.

499 Special Problems V 1-4 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

Honors Program

V. N. Bhatia, Director

The primary objective of the Honors Program is to provide enriched educational opportunities for qualified students. The program offers a plan to promote an appreciative understanding of the physical and cultural world, and it is designed to supplement the more specialized training in the major field. It also provides the opportunity and the stimulus for students to develop their creative abilities.

The Honors Program involves students from all departments and colleges and includes honors courses throughout the student's undergraduate career. Each department or college, if it wishes, may offer special work for its students in addition to the University Honors courses.

Freshman students joining the Honors Program must take Engl 198 in the first semester, unless they are advised otherwise by the Director of the Honors Program. Students who are qualified to enroll in calculus (Math 171 or 172) are considered to have completed the minimum amount of mathematics required for the Honors Program. (Additional mathematics may be taken if the student wishes and must be taken if required by the student's major field.) Students not qualified to enroll in calculus should enroll in Math 198 or Phil 198 or an appropriate mathematics course. Students who are not admitted to the Honors Program as incoming freshmen may petition to enter it any time after the end of their first semester but not later than the beginning of the junior year. For continued enrollment
in the Honors Program, students must maintain an overall B average (3.00) and must maintain this same average in honors work. 

Students in the Honors Program are not required to complete the "General University Requirements for Graduation," except for the foreign language requirement, where it applies.

A student may drop out of the Honors Program at any time within existing university rules, and the honors courses taken will be applied toward the General University Requirements for Graduation.

Students who satisfactorily complete all Honors Program requirements, earn a 3.00 grade point average in honors courses, and a cumulative grade point average of 3.00 will receive an Honors Certificate. In addition, all students with a minimum of 30 semester hours of graded work at WSU will graduate cum laude if their cumulative grade point average for all WSU work is 3.30 but less than 3.80, or summa cum laude if the cumulative average is 3.80 or above.

Honors courses are open to students enrolled in the Honors Program. Other students of comparable ability may be permitted to enroll in individual classes by the Director of the Honors Program if space is available.

**Description of Courses**

For explanation see Index under "Symbols".

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites</th>
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<tr>
<td>Anth 198</td>
<td>Anthropology Honors 3</td>
<td>3</td>
<td>(3-3) II Prereq Chem 298.</td>
</tr>
<tr>
<td>Bio S 298</td>
<td>Biological Science Honors 4</td>
<td>(3-3)</td>
<td>II Prereq Chem 298.</td>
</tr>
<tr>
<td>Chem 298</td>
<td>Physical Science Honors 4</td>
<td>(3-3)</td>
<td>II Prereq Chem 298.</td>
</tr>
<tr>
<td>Econ 198</td>
<td>Economics Honors 3</td>
<td>3</td>
<td>(3-3) II Prereq Math 107 or 198.</td>
</tr>
<tr>
<td>Engl 198</td>
<td>English Composition Honors 3</td>
<td>3</td>
<td>(3-3) II Prereq Math 107 or 198.</td>
</tr>
<tr>
<td>Engl 199</td>
<td>English Composition and Literature Honors 3</td>
<td>3</td>
<td>(3-3) II Prereq Math 107 or 198.</td>
</tr>
<tr>
<td>Hist 198</td>
<td>History Honors 3</td>
<td>3</td>
<td>(3-3) II Prereq Math 107 or 198.</td>
</tr>
<tr>
<td>Hum 198</td>
<td>Humanities Honors 3</td>
<td>1</td>
<td>(3-3) II Prereq Math 107 or 198.</td>
</tr>
<tr>
<td>Math 198</td>
<td>Mathematics Honors 3</td>
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<td>(3-3) II Prereq Math 107 or 198.</td>
</tr>
<tr>
<td>Phil 198</td>
<td>Philosophy Honors 3</td>
<td>3</td>
<td>(3-3) II Prereq Math 107 or 198.</td>
</tr>
<tr>
<td>Pol S 198</td>
<td>Political Science Honors 3</td>
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<tr>
<td>Psych 198</td>
<td>Psychology Honors 3</td>
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</tr>
<tr>
<td>Soc 198</td>
<td>Sociology Honors 3</td>
<td>3</td>
<td>(3-3) II Prereq Math 107 or 198.</td>
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</tbody>
</table>

**Schedule of Studies**

A bachelor’s degree earned through the Honors Program ordinarily requires approximately the same number of total semester hours as required by the corresponding non-honors curriculum in the major field concerned. At least 40 of the total hours must be in upper-division courses.

For Honors Program students the following courses or approved substitutes are required. Honors Program students are strongly urged to gain a proficiency in a foreign language and to take advantage of the Study Abroad opportunities offered by Washington State University. (In five-year programs, the junior and senior years may be interpreted as III, IV, or V.)

The student in the first two years must take three of the following courses in social science: Anth 198, Econ 198, Hist 198, Pol S 198, Psych 198, Soc 198. The student must also take Phil 198 or Math 198, or an approved substitute if not enrolled in calculus or not qualified to enroll in it. Sophomores are required to complete one of the U H 460 Seminars, Hum 198, or U H 370. Honors students are required to complete three credits of independent study prior to their last semester. This may be done through Summer Reading (U H 300).
Department of Horticulture and Landscape Architecture

200, 300, or 400), U H 499, or other approved arrangements.

**Freshman Year**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
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<tr>
<td>First Semester</td>
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<tr>
<td>Engl 198 Honors</td>
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<tr>
<td>Math 198 or Phil 198 (or appropriate mathematics course)</td>
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<tr>
<td>Dept Requirements or Electives</td>
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<tr>
<td>Second Semester</td>
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<tr>
<td>Engl 199 Honors</td>
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<td>Social Science Honors</td>
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**Sophomore Year**

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<td>First Semester</td>
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<tr>
<td>U H 200 Summer Reading</td>
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<tr>
<td>Exam</td>
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<tr>
<td>U H 460 or Hum 198</td>
<td>2-3</td>
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<tr>
<td>Chem 298 Honors</td>
<td>4</td>
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<tr>
<td>Social Science Honors</td>
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<td>9</td>
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<tr>
<td>Second Semester</td>
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<tr>
<td>U H 460 or 370</td>
<td>2-3</td>
</tr>
<tr>
<td>Bio S 298 Honors</td>
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</tr>
<tr>
<td>Social Science Honors</td>
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<td>Dept Requirements or Electives</td>
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**Junior Year**

<table>
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<th>Semester</th>
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<tbody>
<tr>
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<tr>
<td>U H 300 Summer Reading</td>
<td>1-3</td>
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<tr>
<td>Exam</td>
<td></td>
</tr>
<tr>
<td>U H 460 Seminar</td>
<td>2-3</td>
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<tr>
<td>U H 330 Western Civilization</td>
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<td>Dept Requirements or Electives</td>
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<td>Second Semester</td>
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<tr>
<td>U H 460 or 370</td>
<td>2-3</td>
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<tr>
<td>U H 350 Eastern Civilizations</td>
<td>3</td>
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<td>Dept Requirements or Electives</td>
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**Senior Year**

<table>
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<th>Hours</th>
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<tr>
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Courses printed in Roman type are required for graduation; those in italics are optional.

**Horticulture**

Courses in horticulture are designed to give instruction in the principles and practices of fruit and vegetable production and utilization, floriculture, and nursery management. Emphasis is given to the principles of plant production, management, and understanding plant growth and development upon which cultural practices are based. The curricula are designed to fit men and women for work in fruit or vegetable growing, in fruit and vegetable handling and processing, in marketing organizations, in fieldmen positions, in state and federal departments of agriculture, and in commercial nursery work and related fields.

Courses in ornamental horticulture prepare students for work in greenhouse and nursery management and florist and garden center operations.

The Department of Horticulture and Landscape Architecture offers an undergraduate minor in the area of fruit and vegetable production and ornamental horticulture.

The department offers courses of study leading to the degrees of Bachelor of Science in Horticulture, Bachelor of Science in Landscape Architecture, Master of Science in Horticulture, and Doctor of Philosophy.

**Description of Courses**

*For explanation see Index under “Symbols”*

**Horticulture**

101 Plants and Gardens 3 (2-3) I Indoor and outdoor plants and gardens for appreciation and pleasure; fruits, vegetables, flowers, ornamentals, and native plants. Credit not granted for both Hort 101 and 130.

130 House Plants and Home Gardening 3 II Care and identification of plants for inside
the home; planning, planting and care of flower and vegetable gardens. Credit not granted for both Hort 101 and 130.

134 Home Flower Arrangement 2 (1-3) Principles, theory, and history of flower design; use and selection of flowers, containers, and color harmonies; conditioning of cut flowers.

201 Plant-Environment Relations 3 (2-3) I For agriculture and plant science majors. Plant growth and environments: relationships to cultural practices.

231 Landscape Plant Materials I 3 (2-3) I Prereq Hort 101 or Hort 201. Characteristics, ecology, nomenclature, identification, selection and use of important woody and herbaceous landscape plant species.

232 Landscape Plant Materials II 3 (2-3) II Prereq Hort 231. Continuation of Hort 231.

251 Propagation of Plants 3 (1-6) Prereq Hort 101 or 201 or Bio S 101 or 103. Principles and methods of multiplying herbaceous and woody plants and their handling up to usable size. Field trip required.

311 Fruit Growing 3 (2-3) II Prereq Hort 201. The principles and practices of deciduous tree fruit production in Washington.

313 Small Fruit Culture 3 I 1980-81 a/y. Botanical relationships, plant characteristics, fruiting habits, varieties, location, culture, marketing, and utilization of small fruits. Field trip required.

320 Commercial Vegetable Crops 3 I Prereq Hort 201 or plant science course; Soils 201. Commercial vegetable production; importance, climate, fertility and cultural requirements; pest control, harvesting and marketing; greenhouse and tropical vegetables.

321 Commercial Vegetable Crops Laboratory 1 (0-3) I Prereq c/a in Hort 320. Principles and concepts of vegetable plant characteristics, cultivars, production, nutrition, and culture. Field trip required.


335 Greenhouse Construction and Management 3 (2-3) I Prereq Hort 201; Soils 201; 1 yr Chem. Methods and materials; heat, ventilation, and light control; soil, fertilizer, and water management as related to greenhouse production. Field trip required.

336 Commercial Flower Design and Retail Shop 3 (1-6) I Prereq Hort 134, 335. For floriculture majors. Design and use in commercial shops; church and hall decorations; floral merchandizing and supplies, store management and shop arrangement.

345 Plant Breeding 3 (2-3) II Same as Agron 345.

380 Food Preservation Technology 3 I Same as F S 380.

399 Professional Work Experience V 1-4 May be repeated for credit; cumulative maximum 8 hours. Prereq basic horticulture. By interview only. Planned and supervised work experience.

416 Physiology of Horticultural Crop Plants 3 I Prereq Bot 320; Hort 311, 320; Soils 201. Effects of environment, nutrition, and management on growth, quality, and yield of horticultural crops.

417 Plant Pest Control 3 (2-3) II Prereq Chem 240. Principles, methods, equipment, chemicals, benefits, and hazards of plant pest control. Field trips required.

418 Post-Harvest Physiology 3 (2-3) I Prereq Hort 201; Bot 320. Physiological and chemical basis for handling and storage practices; dormancy, maturation, ripening, and senescence phenomena; physiological disorders; refrigeration principles. Field trip required.

425 Current Topics in Horticulture 3 May be repeated for credit; cumulative maximum 6 hours. I Prereq Hort 311, 320, or 335; Bot 320; Genet 301. Classical, current scientific, and popular literature on horticultural topics.


456 Seminar 1 May be repeated for credit; cumulative maximum 2 hours. Current literature and special reports.

469 Vegetable Seed Production 1 II 1980-81 a/y. Same as Agron 469.

470 Potato Science 1 II 1980-81 a/y. Prereq Hort 201. Origin, culture, harvesting, handling, storage and marketing of the potato. Cooperative course taught at the University of Idaho.

492 Instructional Practicum in Horticulture V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq junior or senior. By interview only.

498 greenhouse Construction and Management V 1-3 S Methods and materials used in greenhouse construction, environmental control, and management for greenhouse crop production.
Special Problems V 1-4 May be repeated for credit.

Horticultural Research Techniques 1 May be repeated for credit; cumulative maximum 4 hours. Specialized techniques and methods useful in horticultural research.

Environmental Physiology V 1-4 May be repeated for credit; cumulative maximum 8 hours. Prereq Bot 320. Advanced topics in the physiological effects of light, temperature, moisture, nutrition, and their management in plant productivity.

Seminar V 1-2 May be repeated for credit; cumulative maximum 8 hours. Continuous enrollment required of regularly enrolled graduate students in horticulture. Recent developments in horticulture.

Advanced Pomology 3 II 1981-82 a/y. Modern concepts, research, and commercial problems as reflected in current horticultural literature.

Plant Growth Regulators 3 II 1981-82 a/y. Prereq Bot 320. Naturally occurring hormones and synthetic regulators; synthesis, mechanism of action, control of growth and developmental processes; practical applications in agriculture.

Realizing Potato Production and Processing Potentials 2 (1-3) I 1981-82 a/y. Prereq Bot 320; Soils 301. The physiological, physical, chemical, and technical basis for modern potato production and processing. Field trip required. Joint listing with the University of Idaho.

Plant Tissue, Cell, and Organ Culture 3 (2-3) I 1981-82 a/y. Prereq Bot 320. Organ, tissue, and cell culture and morphogenesis and their contributions, both actual and potential, to current problems in plant science.

Special Projects or Independent Study Variable credit.

Master's Research, Thesis, and/or Examination Variable credit.

Master's Special Problems, Directed Study, and/or Examination Variable credit.

Doctoral Research, Dissertation, and/or Examination Variable credit.

Fruit and Vegetable Production

Freshman Year

First Semester
Hort 201 Plant Environment 3
Engl 101 Composition 3
Chem 101 or 105 4
Hum or Soc S Elective 3

Second Semester
Bio S 104 Introductory 3
Ag 205 or Spe Elective 3
Chem 102 or 106 4
Hum or Soc S Elective 3

Sophomore Year

First Semester
Bot 201 Intermediate 4
Hort 251 Propagation 3
Ag Ec 201 or Econ 201 3
Soils 201 Soils 3
Hum or Soc S Elective 3

Second Semester
Hort 311 Fruit Growing 3
Bot 320 Plant Physiology 3
Chem 240 Elem Org Chem 4
BA 230 Prin of Accig 4

Junior Year

First Semester
Hort 320 Veg Crops 3
PI P 329 General 3
Soils 301 Soil Management 2
Hort Elective* 3
Electives 6

Second Semester
Entom 340 Ag Entomology 3
Genet 301 Genetics 3
Ag M Elective 3
Hort Elective* 3
Elective 3

Summer Session (or semester)
Hort 395 Professional Work Experience 3

Senior Year

First Semester
Hort 418 Post-Harvest 3
Hort 425 Cur Topic in Hort 3
Hort 456 Seminar 1
Ag Ec 340 Farm Management 3
Electives 6

Second Semester
Hort 416 Hort Physiology 3
Hort 417 Plant Pest Control 3
Hort 456 Seminar 1
Electives 9

Schedule of Studies

Students in horticulture may take work in fruit and vegetable production or ornamental horticulture.

At least 40 of the total hours required for the bachelor's degree in these programs must be in upper-division courses.
*Electives totaling at least 6 hours must be taken from Hort 311, 321, 335, 345, 380, 469.

Courses printed in Roman type are required for graduation; those in italics are optional.

Ornamental Horticulture

Freshman Year

First Semester
- Hort 101 or 201: 3 Hours
- Engl 101 Composition: 3 Hours
- Chem 101 or 105: 4 Hours
- Hum or Soc S Elective: 3 Hours
- Option Requirement: 3 Hours

Second Semester
- Bio S 102 or 103: 3 Hours
- Chem 102 or 106: 4 Hours
- Hum or Soc S Elective: 3 Hours
- Option Requirement: 3 Hours

Sophomore Year

First Semester
- Hort 231 Plant Materials I: 3 Hours
- Chem 240 Elem Org Chem: 4 Hours
- Ag Ec 201 or Econ 201: 3 Hours
- Bot 201 Intermediate: 4 Hours

Second Semester
- Hort 232 Plant Materials II: 3 Hours
- Hort 251 Propagation: 3 Hours
- Soils 201 Soils: 3 Hours
- Ag 205 or Spe 102: 3 Hours
- Option Requirement: 3 Hours

Junior Year

First Semester
- Hort 335 Gnmh Const and Mgt: 3 Hours
- Bot 320 Plant Physiology: 3 Hours
- L A 264 Basic Landscape Design: 2 Hours
- Soils 301 Soil Management: 3 Hours
- Option Requirement: 3 Hours

Second Semester
- B A 230 Prin of Accctg: 4 Hours
- Entom 340 Ag Entomology: 3 Hours
- PL P 329 General: 3 Hours
- Ag M Elective: 3 Hours
- Option Requirement or Elective: 3 Hours

Summer Session (or semester)
- Hort 399 Professional Work Experience: 3 Hours

Senior Year

First Semester
- Hort 320 Veg Crops: 3 Hours
- Hort 456 Seminar: 1 Hour
- Hort 425 Cur Topic in Hort: 3 Hours
- Option Requirement or Elective: 9 Hours

Second Semester
- Hort 456 Seminar: 1 Hour

Hort 417 Plant Pest Control: 3 Hours
Option Requirement or Elective: 12 Hours

Floriculture Option. Students in floriculture must take the above listed courses plus the following: Hort 134, 336, and 438. It is also recommended that they take Hort 416, 418; B A 201, 210 and/or Ag E 335.

Nursery Management Option. Students in nursery management must take the above courses plus the following: Agron 301 or Hort 334, Agron 305, and Hort 416. It is also recommended that they take B A 201, 210, and/or Ag E 335.

Courses printed in Roman type are required for graduation; those in italics are optional.

Preparation for Graduate Study

Students with undergraduate majors in the plant sciences, including horticulture, agronomy, plant pathology, environmental science, genetics, plant physiology and biochemistry may be well prepared for graduate study in horticulture.

Undergraduate students who are pursuing their studies at other institutions, or through other curricula at this institution, and who contemplate graduate work in horticulture, will do well to elect as many courses in the basic physical and biological sciences as possible.

LANDSCAPE ARCHITECTURE

Landscape Architecture is the professional art and science of planning and designing the activities of people so that they are in harmony with the resources of the land. The practice ranges in scale from the design of residential and garden landscapes to planning and design of complex projects such as cities and regions.

The curriculum is accredited by the American Society of Landscape Architects (ASLA). It stresses a broadly based course of study emphasizing residential, community, and urban design; site, regional and land use planning, and professional practice methods.

The curriculum is divided into two parts: Pre-Landscape Architecture and Landscape Architecture. The opportunity exists to participate in special studies, professional work experiences and foreign study.

Description of Courses

For explanation see Index under "Symbols"

Landscape Architecture

LA 202 The Built Environment 3 II Same as Arch 202.

260 History of Landscape Architecture 3 I

Historical developments in the practice and
profession of landscape architecture throughout the world, circa B.C. to present.

262 Landscape Architectural Design I 3 (1-6) I
Prereq Arch 101, 102. Basic design and graphic techniques relating to solving of elementary design problems.

263 Landscape Architectural Design II 3 (1-6) II
Prereq L A 262. Techniques for visualizing and designing landforms; application to design process; construction principles applied to design projects.

264 Basic Landscape Design 3 II For non-majors. Design theory and principles; site design factors; design process application; construction criteria; graphic communication; landscape circulation systems; plant uses.

361 Landscape Architectural Design III 4 (0-12)
I Prereq L A 263. Professional design problems, residential, urban, regional, and open space issues.

362 Plants and Landscape Architectural Design IV 3 (0-9) Prereq c// in L A 361; Hort 232. Design projects; use of plant materials to solve spatial, horticultural, biological, aesthetic, and environmental problems. Field trip required.

363 Landscape Architecture Recreation Design V 3 (1-6) II Prereq L A 361. Principles and techniques for recreation planning and design at varying scales.

365 Landscape Architectural Construction I 4
(0-12) I Prereq L A 263. Earthwork computations; surface and subsurface drainage systems; horizontal and vertical vehicular circulation; parking layout; construction materials; details; intermediate grading design.

366 Landscape Architectural Construction II 4
(0-12) II Prereq L A 365. Cost estimating; reference filling; construction materials and detail design; construction specifications; advanced grading design projects.

Professional Work Experience V 1-4 May be repeated for credit; cumulative maximum 8 hours. Prereq junior or senior in L A. By interview only. Planned and supervised professional work experience in landscape architecture.

466 Senior Seminar I May be repeated for credit; cumulative maximum 2 hours. Prereq senior in L A. Topics of current or special interest in the profession.

467 Regional Landscape Inventory and Analysis 5 (1-12) I Prereq Bio S 104; Soils 201 or Geol 101. Application of ecological planning process for landscape inventory

and analysis. Credit not granted for both L A 467 and R P 567.

468 Advanced Projects in Planning and Design 5 (0-15) II Prereq L A 467. Individual or group studio project in landscape architectural design or regional planning; exploring advanced techniques, methods and programming. Credit not granted for both L A 468 and R P 568.

492 Instructional Practicum in Landscape Architecture V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq junior or senior. By interview only.

499 Special Problems V 1-4 May be repeated for credit.

Schedule of Studies

Pre-Landscape Architecture
Pre-Landscape Architecture (PreLA) is a two-year, non-degree course of study that is intended to prepare undergraduate students for the advanced professional curriculum in the upper division. The PreLA curriculum concentrates on General University Requirements (GURs) and basic professional courses. The completion of PreLA prepares the student for the application to the professional major in landscape architecture or entry-level technical positions in various landscape industries. Transfer students who have not completed the equivalent of the PreLA course work will be accepted directly into PreLA.

Freshman Year

First Semester
Arch 101 Arch Graphics 3
Engl 101 Composition 3
Plant Science GUR 3-4
Humanities GUR 3
Social Science GUR 3

Second Semester
Arch 102 Arch Graphics 3
Science GUR 3-4
Social Science GUR 3
Physical Science GUR 3-4
Humanities GUR 3

Sophomore Year

First Semester
Hort 231 Plant Materials I 3
L A 260 L A History 3
C E 101 Surveying 3
L A 262 Basic Design 3
Communications GUR 3

Second Semester
Hort 232 Plant Materials II 3
L A 263 L A Design & Const 3

206
Arch 355 Lt Bldg Const 3
Soils 201 Soils 3
Elective GUR 3

General University Requirement (GUR) courses should be selected with the assistance of a Landscape Architecture adviser.

Landscape Architecture

The professional four-year course of study is divided into two segments. These are Pre-Landscape Architecture (listed above) and the third- and fourth-year professional Landscape Architecture program (L A). Completion of the four-year program totaling 120 credits leads to the degree of Bachelor of Science in Landscape Architecture and allows the student to enter the profession. There are 40 upper-division credits required for graduation. At least three additional years of professional experience and successful completion of the landscape architectural license examination are necessary for registration as a licensed Landscape Architect in most states.

To be admitted to the major of LA, the students should have completed the PreLA curriculum and submit an application. Application forms and instructions are available from the Admissions Office and the Department of Agriculture and Landscape Architecture Office. Applications to the professional program must be submitted prior to April 1. Due to limitations of space, faculty, and budget, admission can be granted to only the most qualified students based on experience, demonstrated abilities, motivation, and academic performance.

Transfer students who have completed the equivalent of the PreLA curriculum may apply to the professional program.

Junior Year

First Semester
L A 361 Site Planning 4
L A 362 Planting Design 3
L A 365 L A Construction 4
Emphasis Elective** 3

Second Semester
L A 363 L A Design V 3
L A 366 L A Construction 4
Ag M 346 Turf Irr Sys 1
Soils 415 Terrain Analysis 3
Emphasis Elective** 3

Senior Year

First Semester
L A 467 Land Inv Analysis 5
L A 499 Programming Thesis 1
Emphasis Electives** 9

Second Semester
L A 466 Senior Seminar 1
L A 468 Advance Plan Design 5
Arch 473 Practice Ethics 2
Emphasis Electives** 7

**Each student is required to take 10 credit hours of elective course work beyond the above-listed core courses and the GURs that will provide them with an area of emphasis. Those areas of emphasis may be in (1) design, (2) plant sciences, (3) construction theory and practice, or (4) planning. The concentration in an area of emphasis is intended to give the student more background in a particular area of interest as a complement to the core landscape architecture course work. Selection of appropriate emphasis electives will be made with the assistance of the faculty adviser.

Hotel and Restaurant Administration

PULLMAN CAMPUS
Professor and Director, D. M. Laudadio; Professor, L. Kreck; Lecturer, T. Umbreit.

This program provides specialized study of the major organizational and administrative problems of the hotel and restaurant industry. The program is intended to prepare graduates for the managerial opportunities available in the industry here and abroad. The curriculum provides for the well-rounded education of the hotel, restaurant, club, and institutional executive. It includes courses in the arts and sciences, economics, business administration, engineering, and foods, as well as in hotel and restaurant management. To be eligible for certification of a major in hotel administration a student must have at least a 2.60 gpa. The course of study leads to the degree of Bachelor of Arts in Hotel Administration.

Description of Courses

For explanation see Index under "Symbols"

H A
181 Introduction 3 Historical development and organizational structure of the hospitality service industries.
235 Principles of Tourism 3 Underlying principles and practices in domestic tourism.
280 Hotel Organization I 3 Prereq H A 181; B A 230. Management functions relating to the planning and operational policies of various hotel departments.
311 Law in Innkeeping 1 Prereq B A 210. The case method is utilized in treating subjects
such as innkeeper's lien, torts, and crimes against innkeepers.

320 Industry Experience 2 (0-6) Students work in hospitality industry; two supervised reports required.

350 Beverage Management 3 II Not open to freshmen and sophomores. Beverage operations; detailed study of wines and spirits; consideration of social impacts such as trends in consumption.

356 Food and Beverage Management I 3 II Prereq H A 280. Management theory, problems, and cases in food and beverage operations; work methods; sanitation; research.

357 Food and Beverage Management II 3 I Prereq H A 381. Problems encountered in the management of food and beverage operations such as control and forecasting.

381 Hotel Organization II 3 I Prereq H A 181. Advanced management methods and concepts utilized in the administration of hospitality service industries.

435 Tourism 3 I International and domestic tourism; effects of tourism on the society.

480 Hotel Management 3 I Prereq B A 360. Theory and practice; problems in guests relations, special sales efforts, intramural promotion, research.

483 Current Issues in Hospitality Management 3 Prereq senior standing in H A. Management theory and practice related to current issues in the hospitality industry.

491 Operational Analysis 3 I Prereq H A 357. Using management tools in analyzing operational effectiveness of hotel and restaurant organizations.

495 Hotel Management Seminar 3 Prereq H A 357. Use of the case method and computerized statistical programs in the analysis of administrative practices of organizations.

499 Special Problems V 1-4 May be repeated for credit.

Transfer Students

A student planning to transfer to hotel and restaurant administration from a two year program should have made appropriate academic progress before transferring. In addition, the student should have 500 hours (one summer) of gainful employment in the hospitality industry. However, it is strongly advised that the student utilize both summers in related employment before entering WSU.

SEATTLE CAMPUS:
WSU's Seattle Center for Hotel and Restaurant Administration, 1108 E. Columbia, Seattle, Washington 98122 (Seattle University Campus).

This program is offered on the quarter system. Students must have 60 semester or 90 applicable quarter hours to enter the degree program. Students who wish to enter the degree program may transfer the first two years' work from any accredited community college or four-year college. Person in industry or other interested parties who wish to further their education but do not want to pursue a degree, are welcome to enroll in courses for a limited number of credits on a space available basis.

Description of Courses

HAS For explanation see Index under "Symbols"

Credits are shown as quarter hours.

101 Food Preparation 5 (3-6) An introduction to the fundamentals of food preparation, terminology and equipment.

201 Quantity Food Production 5 (5-0) Prereq HAS 101. Principles of menu writing, sanitation and food preparation applied to management of quantity food production and service.

202 Quantity Food Production Laboratory I 3 (0-3) Prereq HAS 101. Recipe adjusting and costing; preparing and serving food in quantity.

203 Quantity Food Production Laboratory II 1 (0-3) Recipe adjustment and costing, preparing and serving food in quantity.

235 Principles of Tourism 5 (5-0) Underlying principles and practices in local tourism.

270 Hospitality Facility Maintenance 2 (2-0) Investigation of management problems associated with the physical plant.

285 Hotel Organization I 5 Introduction to hospitality industry; historical development of various types of food, lodging facilities;
organization and functions of operating
departments within hotels.
The case method is utilized in treating sub-
jects such as innkeeper's lien, torts, and
crimes against innkeeper.
320 Industry Experience 3 Students work in
hospitality industry; two supervised reports
required.
355 Food and Beverage Management I 3
Management theory, problems, cases in
food, beverage operations, work methods,
primarily purchasing and menu planning.
356 Food and Beverage Management II 3 (3-0)
Prereq HAS 280, 281. Management theory,
problems and cases in food and beverage
operations work methods, food facility
design and sanitation safety.
357 Food and Beverage Management III 5 (5-0)
Prereq HAS 381. Problems encountered in
the management of food and beverage
operations, such as dealing with control
and forecasting.
370 Building and Maintenance Management 3
(3-0) Prereq HAS 270. Problems involved
with the supervision of maintenance per-
nel and direction of the maintenance
program.
375 Club Management 5 (5-0) Prereq junior
standing. The identification of managerial
problems unique to club operations and
their potential solutions.
381 Hotel Organization III 5 (5-0) Prereq HAS
180. Advanced management methods and
concepts utilized in the administration of
hospitality service industries.
385 Applied Personnel Management 3 Func-
tional areas of personnel planning, selec-
tion, training, evaluation and wage and
salary administration related to the
hospitality industry.
386 Applied Industrial Relations 3 Labor rela-
tions; history, organization, and elections
of bargaining agents, negotiation and ad-
ministration of contracts.
435 Tourism 5 (5-0) Prereq HAS 235. Interna-
tional and domestic tourism; effects of
travel on the society.
478 Research in Hospitality Industry 5 (5-0)
Prereq B A 215; Cpt S 220. Utilizing
statistical analysis in strategy formulation.
480 Hotel Management 5 (5-0) Prereq B A 360.
Theory and practice; problems in guest
relations, special sales efforts, intramural
promotion, research.
483 Current Issues in Hospitality Management
5 (5-0) Prereq senior standing in H A.
Management theory and practice related to
current issues in the hospitality industry.
491 Operational Analysis 3 (3-0) Prereq HAS
387. Using management tools in analyzing
operational effectiveness of hotel and
restaurant organization.
495 Hotel Management Seminar 5 (5-0) Prereq
HAS 357. Use of the case method and com-
puterized statistical programs in the
analysis of administrative practices of
organizations.
499 Special Problems V 1-5 May be repeated for
credit.

Schedule of Studies

Seattle Campus

The Bachelor of Arts degree in Hotel Adminis-
tration requires a total of 180 quarter hours. At least
60 of the total hours required for this degree must
be in upper-division courses. Required: For
general courses and core courses, see Business
Administration section; any upper-division
B A or Econ course may be substituted for B A
340 in the core. Hotel and Restaurant
Administration Requirements: HAS 101*, 150, 180,
201*, 202, 270, 280, 281, 320, 356, 357, 370, 381,
483, 495; HAS electives 10 hours.

*HAS 101 and 201 are required courses which are
not offered on the Seattle Campus and must be
taken at a community college or the Pullman
Campus. The last 45 quarter hours must be taken
in residence at the Seattle Campus.

Humanities Courses

The Humanities curriculum consists of a series of
interdisciplinary courses designed to introduce
students to some of the basic concepts of civiliza-
tion through the study of representative master-
pieces of literature, music, art and related fields.
The courses numbered 101, 202 and 204 provide a
survey of Western Civilization from ancient times
to the twentieth century.

Hum

100 [H] Mythology 2 Graeco-Roman myths and
their influence on art, literature and music.
101 [H] Humanities in the Ancient World 3 In-
tegrated humanities: literature, philosophy,
history, and art of the Ancient World.
198 [H] Humanities in the Ancient World:
Honors 3 Integrated humanities: literature,
philosophy, history, and art of the Ancient
world.
202 [H] Humanities in the Middle Ages and
Renaissance 3 Integrated humanities: ex-
ploring ideals of humanism in literature,
philosophy, history, art, and music of the
Middle Ages and Renaissance.
Program in Literary Studies

Professor and Program Head, W. H. Shurr.

Offered jointly by the Department of English and the Department of Foreign Languages and Literatures, the program in Literary Studies is designed to give the student an appreciation of literature as a phenomenon both transcending and subject to national and linguistic boundaries. The doctoral degree to which the program leads is conceived of—due allowance being made for the fact that knowledge of one’s native language is likely to remain supreme—as requiring equal proficiency in English and its literature and one foreign language and its literature, accompanied by a lesser degree of proficiency in a second foreign language and its literature. At times the student may be advised to enroll in appropriate courses offered by other departments, such as History, Philosophy, or Speech. Students will also be expected to acquaint themselves with a selected group of the world’s classics which fall outside their chosen area of study.

Thus the program in Literary Studies is designed to encourage the breadth of understanding which an acquaintance with literature at large, as well as a detailed knowledge of several specific literatures, should afford. Its purpose is to graduate well-rounded, mature, and creative scholars equipped to teach in departments of English, foreign languages, or comparative literature, and ready to participate in general programs in the humanities. Graduates of the program should be well prepared also for the responsible positions in university or research libraries. A complete description of the program will be found in the Graduate Study Bulletin of Washington State University.

Department of Materials Science and Engineering

Professor and Department Head, D. B. Masson; Professors, S. A. Duran, R. J. Hoyle, T. M. Maloney, G. G. Marra, R. V. Subramanian; Adjunct Professor, S. H. Bush; Associate Professor, R. F. Pellerin; Adjunct Associate Professors, J. J. Laidler, L. C. Olsen, J. L. Straalsund; Assistant Professors, B. L. Farmer, W. E. Johns, R. J. Livak; Adjunct Assistant Professor, W. J. Mills; Adjunct Lecturers, B. Francis, D. E. Mahagin, R. D. Nelson, R. E. Nygren.

Materials Science and Engineering is the application of methods and principles of the pure sciences to the study and utilization of engineering materials. In this application of science, the relationship between internal structure and useful properties is of primary importance, although other characteristics of solids contribute to material properties in important ways.

The specific fields of application covered by research and instructional programs can be expressed by the nominal designations of metals (metallurgy), polymers, ceramics, wood, and composites. For purposes of analysis, study in these disciplines may be placed on a generalized basis by dividing them into the following areas of materials science: (1) structural nature of materials, (2) thermodynamics and phase equilibrium, (3) phase transformations in materials, (4) mechanical properties of materials, (5) physical properties of materials, and (6) chemical properties of materials. Because of the diversity of useful properties encountered in materials engineering, attention must also be given to the application and peculiarities of specific materials types. Where possible, however, a generalized approach toward the study of materials, their properties, their selection, and their utilization is fostered.

The department offers courses leading to the degrees of Bachelor of Science in Physical Metallurgy and Master of Science in Materials Science and Engineering. The department participates in the interdepartmental program in engineering science leading to the degree of Doctor of Philosophy.

Description of Courses

MSE For explanations, see Index under “Symbols”


103 [Z] Wood in Arts, Crafts and Building 3 (2-3) 1 Physical, technical, esthetic and environmental considerations in use of wood.

110 Metallurgy 2 1 For freshmen only. Materials science and engineering, metallurgy; elements of physical metallurgy.

220 Metallography 3 (0-9) II Principles and techniques of optical metallography and other laboratory methods used in modern physical metallurgy.
301 Materials Science 3 Prereq Chem 105; Math 172; Phys 202. Structure of materials, phase equilibrium, phase transformations, and mechanical properties.

302 Materials Science 3 Prereq Chem 105; Math 172; Phys 202. Structure of materials, phase equilibrium, transformations; electronic structure of solids; thermal, electrical, and magnetic properties of materials; semiconductors, dielectrics.

331 Process Metallurgy I Prereq Chem 105; Phys 202 or c//. Mineral preparation, steel making, extraction and refining of selected metals; casting, working, machining, welding; powder metallurgy; heat treatment of metals.

332 Metallic Materials 3 II Prereq MSE 301. Physical metallurgy of engineering metals and their alloys.

402 Polymeric Materials 3 I Prereq MSE 301 or junior in Engr or Ph S. Structural characterization, syntheses and reactions of polymeric materials; relationships between structure and properties, viscoelasticity, deformation, and physical behavior of polymers.

403 Ceramic Materials 3 II 1981-82 a/y. Prereq MSE 301. Processing, characteristics, microstructure, and properties of ceramic materials.

414 Thermodynamics and Phase Equilibrium 4 I Prereq Chem 331; MSE 301. Concept of activity, equilibrium, partial molar quantities; relationship between free energy, composition, and temperature; heterogeneous equilibria; ternary and multicomponent systems.

415 Physical Properties 3 II 1981-82 a/y. Prereq MSE 301. Introduction to electron theory and lattice vibration theory of solids; applications to thermal, electrical, and magnetic properties of solids.

416 Phase Transformations 3 I Prereq Chem 331; MSE 421, 414. Thermodynamics of solid phases; mechanisms and kinetics of diffusion; nucleation and growth; recrystallization; boundary migration; eutectoid and martensitic transformations.

418 Chemical Properties 3 II 1980-81 a/y. Prereq Chem 331 or c//; MSE 301. Thermodynamics and kinetics of heterogeneous chemical reactions at metallic surfaces; oxidation and other gas-metal reactions; electrolysis; corrosion.

421 X-ray Diffraction 3 II Prereq Phys 202. Properties of X-rays, scattering and diffraction; space lattices and groups; projections, diffraction methods; structure determination; x-ray spectroscopy.

423 X-ray Diffraction Laboratory 1 (0-3) II Prereq c// in MSE 421. X-ray diffraction techniques; interpretation of diffraction data from single crystals and polycrystals.

425 Physical Metallurgy Laboratory 2 (0-6) I Prereq c// in MSE 414. Selected experimental work in physical metallurgy.

426 Physical Metallurgy Laboratory 2 (0-6) II Prereq c// in MSE 416. Selected experimental work in physical metallurgy.

436 Glued Wood Products 3 (2-3) II Theory and technology of use of adhesives in composite and laminated wood products. Cooperative course taught at the University of Idaho.

450 Seminar I May be repeated for credit. For seniors only.

499 Special Problems V 1-4 May be repeated for credit.

501 Advanced Topics in Materials Science V 2-3 May be repeated for credit; cumulative maximum 6 hours. Chemical crystallography, microstructure, ultrastructure, theories of crystalline and non-crystalline solids, rheology and fracture mechanism of materials.

504 Fundamentals of Research 2 II Development of research projects, research plans, oral presentations, publications. Cooperative course taught at the University of Idaho.

511 Deformation and Fracture 3 I Prereq MSE 301; MSE 413 or C E 314. Elementary dislocation theory and its applications to some important deformation and fracture processes.

514 Thermodynamics of Solids 3 II 1981-82 a/y. Prereq MSE 414 or 400-level thermo. Thermodynamic properties of solid solutions; models for substitutional and interstitial solutions; configurational and non-configurational contributions; calculation of phase diagrams.

516 Phase Transformations 3 I 1981-82 a/y. Prereq MSE 301, 414, 416. Thermodynamics, nucleation, interface motion, mechanisms and kinetics of solid state reactions; thermal activation; athermal kinetics; diffusion, interface phenomena.

519 Advanced Topics in Metals Chemistry 3 II 1980-81 a/y. Prereq MSE 418 or Chem 436.
Mechanisms, thermodynamics, and kinetics of chemical reactions between solid metals and their environment.

530 Seminar in Materials Science and Engineering 1 May be repeated for credit; cumulative maximum 3 hours. Prereq graduate student in MSE. Reporting problems, research and research methods in materials science and engineering.

531 Advanced Wood Technology 3 (2-3) I Anatomical features of woody material; microscopic analysis of woody tissues. Cooperative course taught at the University of Idaho.

533 Fracture in Solids 3 II Prereq MSE 413 or CE 314. Fracture initiation and propagation in metals, ceramics, polymers, wood and composites; effect of environment; relationship to microstructure.

536 Wood Chemistry 3 (2-3) I Prereq Org Chem. Chemistry of wood tissues, lignin, cellulose, hemicellulose, and other polysaccharides. Cooperative course taught at the University of Idaho.

542 High-Temperature Phenomena in Solids 3 I Prereq MSE 416 or chem thermo; MSE 511. Kinetics and mechanisms of diffusion in solids; high-temperature deformation; oxidation.

543 Natural and Synthetic Polymeric Materials 3 II Prereq MSE 402. Glassy, crystalline, and rubbery states of synthetic and natural polymers.

546 Microstructure and Properties of Wood 3 II Effect of structure and composition of wood on its physical and mechanical properties.

547 Basic Principles of Adhesion 3 I Prereq MSE 402. Principles of interfacial bonding applied in the engineering of polymers, wood, and heterogeneous systems.

548 Reinforced Polymer and Wood Based Composites 3 I Fundamentals of composite materials having polymers and wood as major components.

549 Nondestructive Testing of Wood-Based Materials 3 II Principles of nondestructive testing applied to wood-base materials.


600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

(For PhD in engineering science only)

## Schedule of Studies

### Physical Metallurgy

Metallurgy is the study and utilization of metals as engineering materials. Physical metallurgy deals primarily with the nature and properties of metals and alloys as they are used, rather than with their extraction from ores. In the undergraduate program the student is introduced to physical metallurgy through the broad concepts of materials science. This involves a study of the mechanical, chemical, and physical properties of metals, their crystal structure, their equilibrium behavior, and their utilization in engineering practice. Graduate studies provide the opportunity for pursuing original investigations in the area of fields. The curriculum in physical metallurgy in the College of Engineering is accredited by the Engineers' Council for Professional Development. At least 45 of the total hours required for the bachelor's degree in this program must be in upper-division courses; at least three hours of the total 18 hours of social science and humanities must be above the introductory level. A total of 122 semester hours are needed for the course work required for graduation in this program.

### Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
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<tr>
<td>Math 171 Calculus I</td>
<td>4</td>
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<tr>
<td>Chem 105 or 111</td>
<td>4</td>
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<tr>
<td>MSE 110 Metallurgy</td>
<td>2</td>
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<tr>
<td>Com Prof Elective</td>
<td>3</td>
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<td>Hum or Soc S Elective</td>
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<tr>
<th>Second Semester</th>
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<tr>
<td>Math 172 Calculus II</td>
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<tr>
<td>Math 220 Linear Algebra</td>
<td>2</td>
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<tr>
<td>Chem 106 or 212</td>
<td>4</td>
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<tr>
<td>Com Prof Elective</td>
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<tr>
<td>Bio S Elective</td>
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### Sophomore Year

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<tr>
<td>Math 273 Cal Diff Equat</td>
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<tr>
<td>Phys 201 Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Chem 217 Quant Anal</td>
<td>4</td>
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<tr>
<td>Cpt S 203 Comp Prog Engr</td>
<td>2</td>
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<tr>
<td>Hum or Soc S Elective</td>
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<tr>
<th>Second Semester</th>
<th>Hours</th>
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<tr>
<td>Math 315 Diff Equat</td>
<td>3</td>
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<tr>
<td>Phys 202 Engineering</td>
<td>4</td>
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<tr>
<td>CE 211 Statics</td>
<td>3</td>
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Department of Pure and Applied Mathematics

Econ 102 Fundamentals 3
Hum Elective 3

Junior Year
First Semester
Chem 331 Physical 3
Chem 333 Physical Lab 1
CE 314 Mech of Mat 3
MSE 301 Materials Science 3
MSE 331 Process Met 3
Hum or Soc S Elective 3

Second Semester
MSE 220 Metallography 3
MSE 332 Metallic Materials 3
MSE 421 X-Ray Diffrac 3
MSE 423 X-Ray Diffrac Lab 1
MSE 418 Chem Properties 3
Technical Elective* 3

Senior Year
First Semester
MSE 414 Thermo and Phase Eq 4
MSE 416 Phase Transfer 3
MSE 425 Phys Met Lab 2
MSE 450 Seminar 1
Technical Elective* 3
Hum or Soc S Elective 3

Second Semester
MSE 403 Ceramic Materials 3
MSE 413 Mech of Solids 3
MSE 415 Phys Properties 3
MSE 426 Phys Met Lab 2
MSE 450 Seminar 1
Technical Elective* 3

*Technical electives may be chosen from the following courses: E E 261, 262, 301, 302, 306, 307, 311, 496; M E 303, 326, 403; C E 315; Ch E 414; MSE 402; B A 215; Chem 305, 332, 405; Phys 303, 304, 410; Math 340, 440, 441; Cpt S 215, 310; or other cognate courses.

Courses printed in Roman type are required for graduation; those in italics are optional.

Transfer Students
Students planning to transfer to Washington State University should note the sequence of courses required for the bachelor’s degree.

Preparation for Graduate Study
Metals and Ceramics: Before undertaking graduate study, a student should have completed substantially the equivalent of the above schedule of studies. Undergraduate deficiencies may be made up during the first year of graduate work.

Polymers and Wood: Before undertaking graduate study, a student should have completed a baccalaureate program in one of the following areas: polymer science and engineering, wood science and engineering, materials science, chemical engineering, civil engineering, mechanical engineering, chemistry, or physics.

Department of Pure and Applied Mathematics


The Department of Pure and Applied Mathematics provides undergraduate instruction and training in all major fields of mathematics. The numerous service courses taught by the department reflect the growing importance of mathematics in an increasing number of other disciplines. The undergraduate major is designed to provide a sound background for entrance to careers such as actuarial science, operations research, secondary education, and computational and statistical analysis. The mathematics major also prepares students for graduate study in such fields as business, economics, management science and computer science, as well as mathematics and statistics.

Graduate study and specialization are offered by the department in the usual classical, and a number of modern, areas. A Doctor of Arts program is specially designed for future college teachers, while the several options in applied mathematics, which include an internship experience, provide graduate preparation for mathematical careers in business and industry.

Astronomy and statistics courses at both the undergraduate and graduate levels are administered by the department. Instruction in astronomy is enhanced by the use of a 12-inch refractor at the Jewett Observatory and a Spitz planetarium. The mathematics library receives current copies of over 300 journals in many languages. It also has sets of collected works and an extensive collection of advanced treatises. Talented undergraduate majors in mathematics are given individual and small group instruction outside of class, sometimes resulting in research publications.
Entering freshmen whose preparation is sufficiently good, as determined by high school records and other evidence, will be permitted to enroll directly in courses for which they are qualified. Upon satisfactory completion of such a course, they may receive advanced placement credit for certain of the prerequisite mathematics courses.

The department offers courses of study leading to the degrees of Bachelor of Arts in Mathematics, Master of Arts in Mathematics, Doctor of Arts, and Doctor of Philosophy.

Description of Courses

For explanation see Index under "Symbols"

Mathematics

Math

101 Intermediate Algebra 3 Prereq appropriate math placement score. Fundamental algebraic operations and concepts.

103 [Z] Statistical Thinking 3 Scientific explanation; correlations and causality; presenting statistical evidence; graphical and numerical methods; chance and gambling; the bell-shaped distribution.

105 [Z] Mathematics for Elementary Education 3 The nature of mathematical thought patterns, concrete foundations of the natural and rational number system, the development of mathematical operations.

107 Precalculus Mathematics 4 Prereq 3 yrs HS mathematics or Math 101. Basic concepts of algebra, trigonometry, and analytic geometry. Credit not granted for more than one of Math 107, 109, and 140.

109 Audiotutorial Precalculus Mathematics 3 (2-3) Prereq 3 yrs HS mathematics or Math 101. Basic concepts of algebra, trigonometry, and analytic geometry. Same as 107 except taught in multimedia approach. Credit not granted for more than one of Math 107, 109, and 140.


140 [Z] Mathematics for Life Scientists I 4 Prereq Math 101 or 2 yrs HS algebra. Basic mathematical operations applied to problems in life sciences; polynomial, periodic, exponential, logarithmic functions; graphical methods; differential and integral calculus. Credit not granted for Math 140 and any one of Math 107, 109, 171, 202, 206.

141 [Z] Mathematics for Life Scientists II 4 Prereq Math 140. Continuation of Math 140. Differential equations; functions of several variables; probability; complex numbers; vectors and matrices.


172 Calculus II 4 Prereq Math 171. Techniques and applications of one variable calculus; estimations; series, derivative of a vector function.

198 [Z] Mathematics Honors 3 Credit not granted for both Math 116 and 198.

201 [Z] Introduction to Finite Mathematics 3 Prereq 2 yrs HS algebra or Math 101. Basic notions of logic, linear algebra, matrices, and analytic geometry; applications to linear programming. Credit not normally granted for more than one of Math 201, 205, and 220.

202 Introduction to Mathematical Analysis 3 Prereq Math 107 or 201. Differential and integral calculus of the polynomial, exponential, and logarithmic functions. Credit not normally granted for more than one of Math 140, 171, 202, and 206.

205 [Z] Finite Math for Architects 3 Linear algebra, analytic geometry, linear programming, applications to architecture. Credit not normally granted for more than one of Math 201, 205, and 220.

206 Mathematical Analysis for Architects 3 II Prereq Math 205. Calculus of elementary functions; trigonometry; applications to architecture. Credit not normally granted for more than one of Math 140, 171, 202, and 206.

220 Introductory Linear Algebra 2 Prereq Math 171 or c/c. Elementary linear algebra with geometric applications. Credit not normally granted for more than one of Math 201, 205, and 220.

273 Calculus III 2 Prereq Math 172; 220 or c/c. Credit of functions of several variables.


302 Theory of Numbers 3 Prereq Math 172, 220. Divisibility properties of integers; congruences; diophantine equations; quadratic residues.

303 Higher Geometry 3 Prereq Math 220. Geometry as a deductive system of logic, postulational systems; projective and non-Euclidean geometries.
315 Differential Equations 3 Prereq Math 172, 220; 273 recommended. Linear differential equations and systems; series, numerical and qualitative approaches; applications.

316 Introduction to Discrete Structures 3 Same as Cpt S 316.

320 Elementary Modern Algebra 3 Prereq Math 220. Algebra as a deductive system; number systems; groups, rings, and fields.

325 Elementary Combinatorics 3 II Prereq Math 220. Introduction to combinatorial theory and graph theory with applications to economics, computer science, and network theory.


364 Principles of Optimization 3 Prereq Math 202 or 220. Algebra of linear inequalities; duality; graphs, transport networks; linear programming; special algorithms; nonlinear programming; selected applications.

371 Introduction to Analysis 3 Prereq Math 273, 315. Completeness of real numbers, the theory of integration and differentiation, sequences of functions, Taylor's formula, power series.

375 Vector Analysis 3 II Prereq Math 273, 315. Line integrals, gradient, curl, divergence, Stokes' theorem, potential functions.

408 Mathematics for Economists 3 I Prereq Math 201, 202. Mathematical topics applicable to modern economic analysis and research.

410 Theory of Functions of a Complex Variable 3 Prereq Math 273, 315. Cauchy's theorem; Taylor and Laurent series; calculus of residues; conformal mapping; special functions applied to engineering and physical sciences.

415 Intermediate Differential Equations 3 Prereq Math 315. Linear systems; qualitative theory (existence, uniqueness, stability, periodicity); boundary value problems; applications.

417 Introduction to Simulation 3 Same as B A 417.

420 Linear Algebra 3 I Prereq Math 220. Advanced topics in linear algebra including similarity transformations, canonical forms, dual spaces, Hermitian matrices, bilinear forms.

421 Algebraic Structures 3 II Prereq Math 220. Properties of algebraic structures and their homomorphisms, semi-groups, groups, rings, unique factorization domains, fields.

425 Introductory Topology 3 I Prereq Math 273, 315. Sets, metric spaces, topological spaces; continuous mappings, compactness, connectedness, local properties, function spaces, and fundamental groups.

431 Topics in Science and Mathematics Teaching 2 May be repeated for credit. Prereq Math 172, or Math 105, or Bio S 430, or c/. New curricula and pedagogical techniques for middle school instruction in science and mathematics.

435 Astronomy and Astrophysics 3 Same as Astr 435.

440 Applied Mathematics I 3 Prereq Math 273, 315. Green's and Stokes' theorems; orthogonal functions; eigenvalue problems; Fourier series; applications involving partial differential equations and boundary value problems.


448 Numerical Analysis 3 Prereq FORTRAN programming; Math 273, 315. Interpolation and approximation; numerical quadrature; solution of linear systems of equations; nonlinear equations; solution of ordinary differential equations.

464 Operations Research and Game Theory 3 II Prereq Math 273. Linear and integer programming; optimization problems; applications to economic and military strategies; rectangular games; minimax theory.

481 Topics in Analysis 3 May be repeated for credit.

497 Instructional Practicum V 1-2 May be repeated for credit; cumulative maximum 2 hours. By interview only.

499 Special Problems V 1-4 May be repeated for credit.

500 Proseminar I May be repeated for credit; cumulative maximum 2 hours.

501 Linear Algebra and Analysis 5 I Prereq Math 371, 420. Advanced linear algebra, calculus on Euclidean n-space, basic complex analysis.


503 Abstract Analysis 4 I Prereq Math 502. Topological structures, generalized measure and integration, basic functional
analysis, function spaces, generalized functions, applications to numerical analysis.


507 Advanced Theory of Numbers 3 May be repeated for credit; cumulative maximum 6 hours. Analytic and algebraic number theory.

509 Foundations of Mathematics 3 I 1980-81 a/y. The basis of mathematics in logic and set theory; continuum hypothesis; Godel's theorems, recent developments.

512 Ordinary Differential Equations 3 Prereq Math 371. Existence of solutions; linear systems; qualitative behavior, especially stability; periodic solutions.

525 Topology I 3 Prereq Math 371, 421. General topology; homotopy; homology; manifolds.

526 Topology II 3 Prereq Math 525. Continuation of Math 525.

538 Topics in Modern Astrophysics 3 May be repeated for credit; cumulative maximum 9 hours. Ii same as Astr 538.

539 Group Representation Theory and Applications 3 I Prereq Phys 402 or 406 or Chem 531; Math 420. Group theory, matrix groups, group representations, and selected applications from physics and chemistry.


544 Computational Linear Algebra 3 Numerical solution of linear systems of equations; linear least squares problems; matrix eigenvalue and eigenvector computation; error analysis.


562 Mathematical Genetics 3 II 1981-82 a/y. Prereq Genet 301; Stat 443. Deterministic and stochastic approaches to genetics and population genetics; branching, birth-death, and diffusion processes as applied to genetics.

564 Topics in Optimization 3 May be repeated for credit. II Prereq Math 371, 464, 544; Cpt S 201. Advanced topics in the theory and computing methodology in optimization with emphasis on real-life algorithmic implementations.


581 Seminar in Analysis 3 May be repeated for credit.

582 Seminar in Algebra 3 May be repeated for credit.

583 Seminar in Applied Mathematics 3 May be repeated for credit.

584 Seminar in Topology and Geometry 3 May be repeated for credit.

585 Seminar in Number Theory 3 May be repeated for credit. I 1981-82 a/y.

586 Topics in Mathematical Modeling in Natural Sciences 3 May be repeated for credit; cumulative maximum 12 hours. Selected topics in the mathematical modeling of physical and biological phenomena.

590 Seminar in Undergraduate Mathematics Instruction 3 May be repeated for credit; cumulative maximum 6 hours. II Curricular and other problems of teaching mathematics to undergraduates.

591 Seminar in the History of Mathematics I I Topics in the history of mathematics to 1800.

592 Seminar in the History of Mathematics I II Topics in the history of mathematics from 1800 to present.

600 Special Projects or Independent Study Variable credit.

602 Teaching Internship V 2-12 May be repeated for credit. Prereq 40 hrs credit in DA program. A structured teaching internship of no less than one quarter nor more than one academic year.

603 Service Internship V 2-12 May be repeated for credit. Prereq 40 hours graduate work
in service-oriented options. A structured internship in a non-academic working environment for between six to twelve months.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Statistics

Stat 429 Introduction to Probability and Distribution Theory 3 I Prereq Math 171 or 202. Elements of probability theory; binomial, Poisson, normal distributions; expectation; independence, transformations; estimation and tests of hypotheses as applied to problems of modern science. Credit not normally granted for Stat 429 and 443.

430 Statistics for Physical Science 3 II Same as Biom 430.

443 Applied Probability 3 I Prereq Math 172, 220. Axioms of probability theory; random variables; expectation; generating function; law of large numbers; central limit theorem; Markov chains. Credit not normally granted for Stat 429 and 443.

470 Computer Methods in Probability and Statistics 3 II Same as Cpt S 470.

544 Applied Stochastic Processes II Prereq Stat 443. Poisson and Markov processes; queuing theory; auto-covariance; stationarity; power spectra; harmonic analysis; linear mean-square predictions.

548 Statistical Theory I 3 I Prereq Math 273; Stat 430. Probability spaces, combinatorialas, multidimensional random variables, characteristic function, special distributions, limit theorems, stochastic processes, order statistics.

549 Statistical Theory II 3 II Prereq Stat 548. Continuation of Stat 548. Statistical inferences; estimation and testing hypotheses; regression analysis; sequential analysis and nonparametric methods.

560 Mathematical Statistics and Probability Theory 3 May be repeated for credit; cumulative maximum 6 hours. I Prereq Math 371; Stat 549. Distribution-free statistics; stochastic processes and Markov chains; measure-theoretic foundations of probability.

561 Mathematical Statistics and Probability Theory 3 May be repeated for credit; cumulative maximum 6 hours. II Prereq Stat 560. Continuation of Stat 560.

572 Data Analysis 3 Prereq Math 220; Stat 443 or 548. Robust statistical methods resistant to failures of model assumptions; smoothing; curve-fitting; multivariable relationships; clustering.

Schedule of Studies

A major in mathematics requires Math 171, 172, 220, 273, 315, 371, 420 and 421, plus 15 hours of mathematics electives numbered above 300 (Stat 443 and at least one of Math 340, 364, and 440 are recommended electives); Cpt S 210; Phys 201, 202 and Eng 201.

Students contemplating graduate work in mathematics should give special consideration to Math 375, 410, 448, and 481 as electives. At least one of the foreign languages, French, German or Russian through 199 or 203, is strongly recommended.

For students with interests in the areas below, the indicated modifications in these requirements should be made.

Secondary Education: Math 320 and 303 may be substituted for Math 420 and 421; either Math 330 or Math 431 plus one hour of 497 (but not both) should be taken; electives should be content courses (not 300, 497); the requirements for a provisional teaching certificate with teaching major in Math must be met; Cpt S 201 may be substituted for Cpt S 210.

Computer Science: Additional requirements: two courses from Math 364, 440, 441, 464; Stat 443; Math 448; Cpt S 215, 310, 315; EE 414.

Applied Mathematics: Additional requirements: Math 440, 441 or Math 364, 464; Math 410; Math 448; Stat 443; Cpt S 310; a year's course in depth in an appropriate applied area outside of the Mathematics Department is recommended in addition to the mathematics requirements.

Probability and Statistics: Stat 430 and 443 are required; Math 364 or 464, Stat 544, 548, 549 are recommended electives for the major. In addition to the mathematics requirements, electives such as BA 412, 514, 516, 519, Biom 520, and Cpt S 470 are recommended.

Mathematics Minor: A mathematics minor requires 18 hours, with at least 9 hours of upper-division credits (excluding Math 300, 330, 431, and 497). GPA requirements for the major (see graduation requirements) also apply to the minor in mathematics.

Courses required for either the major or minor are not to be taken pass-fail.
Preparation for Graduate Study
As preparation for work toward an advanced degree in mathematics a student should have completed the equivalent of the above schedule of studies. Adequate opportunities are provided for removing deficiencies through the taking of appropriate courses. Graduate students who contemplate undertaking studies leading to a doctoral degree should contact the department for advice and assistance in the development of their plans.

Department of Mechanical Engineering

The field of mechanical engineering is concerned with: (a) the use and economical conversion of energy from natural sources into other useful energy to provide power, light, heat, cooling and transportation, (b) the design and production of machines to lighten the burden of human labor, (c) the creative planning, development and operation of systems for using energy, machines and resources, and (d) the processing of materials into products useful to people. Employment opportunities are available for participation in mechanical design, systems design, equipment development, project engineering, production management, applied research and sales and service.

The curriculum emphasizes courses fundamental to all aspects of mechanical engineering and there is an opportunity to take elective courses to strengthen a student’s background or to pursue special interests. Graduates are prepared to enter the field as engineers or to continue into a graduate program. An engineering internship program is available for students to gain industrial experience during their academic career. An integrated BS/MS program facilitates the completion of a master’s degree in one additional year beyond the bachelor’s degree.

The department offers courses of study leading to the degrees of Bachelor of Science in Mechanical Engineering (accredited by the Engineering Council for Professional Development) and Master of Science in Mechanical Engineering. The department participates in an interdepartmental college program in engineering science leading to the degree of Doctor of Philosophy.

Description of Courses

M.E. For explanation see Index under “Symbols”

101 Graphic Design 2 (1-3) Orthographic theory, conventions, and visualization; isometric and oblique pictorials; introductory engineering design considerations.

102 Descriptive Geometry 2 (1-3) Prereq: M.E. 101. Graphical and solution of spatial problems from all engineering fields; visualization and communication skills.

201 [P] Technology Today 3 1 Concepts of modern technology and the interrelation between society and technology. For the nonengineer.

203 Metals Processing 1 (0-3) Basic manufacturing methods in use in modern industries; materials forming and joining techniques; machinery capabilities; precision measurement.

210 Production Processes 4 (3-3) Metal processing, cutting and fabrication; laboratory experience in basic processing techniques.

212 Systems Design 2 Prereq: M.E. 101. Concepts of mechanical engineering systems design; social, economic, and political implications; case studies.

301 Fundamentals of Thermodynamics 3 Prereq: Phys 201; Math 315 or c/. Thermodynamic properties of matter, ideal and real gases, work and heat, first and second laws and their application to engineering systems.

302 Thermodynamic Systems 3 Prereq: M.E. 301; major in engineering. Power and refrigeration cycles, thermodynamic relations, mixtures and solutions, reacting systems and application to combustion processes; phase and chemical equilibrium.

303 Fluid Dynamics 3 Prereq: M.E. 301; major in engineering. Laminar and turbulent flow of ideal and viscous fluids; pipe flow; boundary layers; wing theory; supersonic flow; nozzles, shock waves.

305 Laboratory II 1 (0-3) Prereq: M.E. 302 or 303 or c/. Major in engineering. Experiments related to principles of compressible and incompressible fluids, thermodynamics, and thermodynamic cycle components.

312 Kinematic Analysis 3 (2-3) Prereq: C.E. 212; major in engineering. Motion transfer; velocity, acceleration, and inertia forces in machines; static and dynamic force systems; cam profiles; gears and gearing systems.
313  Engineering Analysis 3  (2-3) Prereq Math 315; Cpt S 203; major in engineering. Analysis and modeling of engineering problems utilizing numerical and mathematical techniques and the computer, including the analog computer.

315  Fabrication and Materials Laboratory 2  (1-3) S Prereq C E 314. Materials properties and fabrication techniques; laboratory examples from mechanics of materials; manufacturing techniques, numerical control.

320  Materials Laboratory 1  (0-3) Prereq C E 314 or c/c/; major in engineering. Mechanical behavior of materials and application to engineering structures.

324  Mechanical Equipment 3  The mechanical aspects of heating, ventilation, and air conditioning.

326  Heat Transfer and Compressible Fluid Flow 3  Prereq M E 301; major in engineering. Steady and unsteady state conduction; free and forced convection; thermal radiation; compressible (isentropic, Fanno, Rayleigh) flow; normal and oblique shocks.

404  Heat Transfer 3  Prereq M E 301; major in engineering. Conduction, radiation, and convection heat transfer; analytical, numerical, experimental results for solids, liquids and gases; heat exchanger design.

406  Laboratory III 3  (1-6) Prereq M E 305; 404 or c/c/; major in engineering. Investigations involving solid-body mechanics, heat transfer, and fluid mechanics.

414  Machine Design 3  Prereq C E 314; M E 320; major in engineering. Optimal design of machinery; analysis for prevention of machine elements failure.

416  Design of Engineering Systems 3  (1-6) Prereq M E 414; major in engineering. Design of mechanical systems integrating thermal sciences and solid-body mechanics aspects.

417  Design of Thermal Systems 3  (1-6) Prereq M E 404 or c/c/; major in engineering. Detailed design of thermal power systems.

419  Air Conditioning 3  Principles of heat and moisture transfer; air motion and purity in buildings; design of systems.

435  Thermal Systems 3  II Prereq M E 302. Thermal systems of current interest in processes and power industries; combustion, cryogenics, direct energy conversion, nuclear power.

436  Combustion Engines 3  I Prereq M E 302. Internal combustion engines; spark ignition engines, diesels, and gas turbines.

439  Applied Aerodynamics 3  II Prereq C E 315 or M E 303. Aerodynamic lift and drag; circulation; boundary layers, application to vehicle and structural design and pollution control.

449  Mechanical Vibrations 3  Prereq M E 313; major in engineering. Damped and undamped systems of single and multidegrees of freedom; transmissibility; isolation; log decrement; energy methods; applications.

470  (450) Kinematic Synthesis 3  I Prereq M E 312. Analytical and graphical techniques applied to the analysis and synthesis of planar mechanisms. Credit not granted for both M E 470 and 570.

472  (452) Mechanical Systems Design 3  II Prereq M E 414. Assessment of performance and detail design of selected mechanical system components, concepts and assemblies. Credit not granted for both M E 472 and 572.

474  (424) Production Engineering 3  I Techniques of manufacturing process specification, tooling, process cycles, facilities planning, process control, and profit analysis. Credit not granted for both M E 474 and 574.

481  (451) Control Systems 3  II Prereq M E 313. Analysis and design of feedback control systems. Credit not granted for both M E 481 and 581.

495  Internship in Mechanical Industry 2  May be repeated for credit; cumulative maximum 6 hours. By interview only. Student to work full time on engineering assignment in approved industries with industrial and faculty supervision.

499  Special Problems V 1-4 May be repeated for credit.

510  (536) Macoroscopic Thermodynamics V 2-3 II Advanced thermodynamics from macroscopic viewpoint; basic postulates, equilibrium, stability, property relations; application to thermal-fluid and solid mechanics; irreversible thermodynamics.

511  (535) Microscopic Thermodynamics V 2-3 I Microscopic development of equilibrium; classical and quantum particle statistics; statistical description of real and ideal gases, solids, and liquids.

512  (537) Physical Gas Dynamics V 2-3 II 1980-81 a/y. Prereq M E 510 or 511. Kinetic theory of gases; molecular view of fluid dynamics; applications to momentum, energy, mass transport, molecular dynamics in laser scattering.

513  (545) Conduction Heat Transfer 1 I 1981-82 a/y. Analytical methods applied to
multidimensional steady state and transient conduction heat transfer, melting and ablation, variable thermal properties.

514 (547) Thermal Radiation Processes V 2-3 Prereq M E 404 or 563. Thermal radiation within enclosures, ideal and real surfaces; radiative processes within absorbing/emitting media; applications to furnaces, solar energy systems.

515 (546) Convective Heat Transfer 3 II Prereq M E 520, 521. Derivation of the energy conservation equation; laminar and turbulent forced convection heat transfer with internal and external flow; free convection.

520 Continuum Mechanics 2 I Development of the basic laws governing a continuum continuity, momentum, and energy.

521 Transport Phenomena 2 I Prereq M E 520. Application of the basic laws of continuum mechanics to fluids; momentum, heat, mass, and species conservation.


523 Computational Methods for Thermal Systems 3 II 1981-82 a/y. Thermodynamics property formulations for modeling and analysis of thermal systems; availability and irreversibility concepts for analysis of complex energy systems. Cooperative course taught at the University of Idaho.


525 Flow of Ideal Fluids 1 I Prereq Math 440. Potential flow over cylinders, air foils, and other configurations applications.

526 Thermodynamic Property Formulations 3 II 1981-82 a/y. Thermodynamic property formulations from experimental measurements; weighted least squares fitting techniques; multiple regression analysis of analytic functions for thermodynamic property relations. Cooperative course taught at the University of Idaho.

531 (554) Elasticity 2 I Prereq M E 520. Systematic treatment of the stress, strain, and displacement of a linear, homogeneous body under the influence of external forces.

532 Finite Elements 3 I Same as C E 532.

533 (555) Mechanical Behavior of Materials 3 II Prereq M E 531. Quantitative methods of dealing with material behavior; plastic and brittle response of materials to external loads and deformation.

534 (558) Advanced Production Engineering 3 II Application of analytical techniques and computer programs in a computer aided manufacturing environment.

540 (557) Advanced Dynamics of Physical Systems 3 II Newtonian dynamics, rotating coordinate systems; Lagrangian and Hamiltonian mechanics; gyroscopic mechanics, other applications.


542 (552) Optimal Control of Dynamic Systems 3 II Introduction to optimal control theory, differential games, and multiple criteria systems. Applications in engineering, biology, economics, agriculture, and medicine.

551 Turbulent Flow and Diffusion V 1-3 I 1981-82 a/y. Same as C E 551.


553 (543) Two-Phase Flow V 1-3 May be repeated for credit; cumulative maximum 3 hours. II 1981-82 a/y. Prereq M E 521. Fundamentals of the flow of fluids with two phases and applications.

556 Numerical Modeling in Fluid Mechanics 3 II 1981-82 a/y. Same as C E 556.


562 (530) Synthesis of Thermal Power Systems 3 I Prereq M E 302. Critical design and evaluation of the performance of the components of various thermal power systems; system arrangement, component compatibility.

563 (533) Advanced Heat Transfer 3 II Prereq M E 404. Advanced level heat transfer with emphasis on the engineering design aspect of heat transfer.

569 (549) Advanced Topics in Thermal and Fluid Sciences V 1-3 May be repeated for credit. Advanced topics in thermodynamics, heat transfer or fluid mechanics; analytical and experimental methods.

570 Kinematic Synthesis 3 Graduate level counterpart of M E 470; additional requirements. Credit not granted for both M E 470 and 570.
572 Mechanical Systems Design 3 Graduate level counterpart of M E 472; additional requirements. Credit not granted for both M E 472 and 572.

574 Production Engineering 3 Graduate level counterpart of M E 474; additional requirements. Credit not granted for both M E 474 and 574.

579 (559) Advanced Topics in Design and Manufacturing V 1-3 May be repeated for credit.

581 Control Systems 3 Graduate level counterpart of M E 481; additional requirements. Credit not granted for both M E 481 and 581.

589 Advanced Topics in Dynamics and Controls V 1-3 May be repeated for credit; cumulative maximum 9 hours.

598 Seminar I May be repeated for credit. Seminar on current research interests.

600 Special Projects or Independent Study Variable credit.

700 Master’s Research, Thesis, and/or Examination Variable credit.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit (for PhD in Engineering Science only)

Schedule of Studies

The Bachelor of Science degree in Mechanical Engineering requires a total of 124 semester hours. At least 60 of the total hours required for this degree must be in upper-division courses.

Freshman Year

First Semester
Arts and Hum Elective 3
Com Prof Elective 3
Math 171 Calculus I 4
M E 101 Graphic Design 2
Soc S Elective 3

Second Semester
Econ 102 Fundamentals 3
Cpt S 203 Computer Prog 2
Chem 105 Principles 4
Math 172 Calculus II 4
M E 102 Desc Geometry 2

Sophomore Year

First Semester
Math 273 Calculus III 2
Math 220 Linear Algebra 2
Phys 201 Classical Physics 4
C E 211 Statics 3
M E 210 Production Processes 4

Second Semester
Chem 106 or Bio S Elective 4-3
Math 315 Diff Equations 3
Phys 202 Classical Physics 4
C E 212 Dynamics 3
M E 212 Systems Design 2

Junior, Senior Years

M E 301, 302, 303, 404 12
M E 312, 313, 414, 449 12
M E 305, 320, 406 5
MSE 301 3
C E 314 3
E E 301, 302, 306, 307 8
M E 416 or 417 3
M E or Technical Electives 9
Arts, Hum, Soc S Electives 6
Engl 402 or Com GUR 3

Certification

Students who have completed at least 30 semester hours of course work and who have completed Engl 101, M E 101, Math 171, Math 172, Chem 105, Phys 201 and C E 211 or their equivalent are eligible to apply for certification into the Department of Mechanical Engineering. Applications for certification will be reviewed by a department committee. When it becomes necessary to limit enrollment, the overall gpa as well as the gpa for the prerequisite courses listed above will be important factors. Preference will be given to applications received before April 15 for the fall semester and November 1 for the spring semester. Students who are required to be certified but who have not completed all of the prerequisite courses will be placed in a pre-engineering major and assigned to a mechanical engineering adviser. Additional details and application forms are available from the department office.

Transfer Students

The Department of Mechanical Engineering cooperates with the community colleges in Washington to minimize problems associated with transfer. Inquiries concerning specific questions are welcomed. A strong preparation in mathematics and physics is necessary prior to transfer to minimize the time required at Washington State University to complete the bachelor's degree requirements.

The requirements for direct entry into the Department of Mechanical Engineering upon transfer are the same as listed above for certification. Transfer student applications will be handled by the Admissions Office and the department so that students do not need to make separate application to the department.
Preparation for Graduate Study

Before undertaking graduate study, a student should have completed substantially the equivalent of the above schedule of studies. Students from other scientific disciplines (such as physics, chemistry, mathematics) are encouraged to apply. Specific details concerning prerequisites for such students are worked out on an individual basis.

Program in Basic Medical Sciences


The Program in Basic Medical Sciences is an integral part of the Washington-Alaska-Montana-Idaho (WAMI) Program in the Extension of Medical Education, and course work is parallel with and equivalent to the first year curriculum of the University of Washington School of Medicine. The entire program is taught in concert with the University of Idaho which, along with the University of Alaska and Montana State University, is also a WAMI university. With few exceptions, courses are taught on both campuses with faculty from WSU and Idaho taking part in each, WAMI student being taught as a single class. All WAMI students are members of the first year class of the University of Washington School of Medicine and all courses may apply to the M.D. degree granted by that university.

Because of specialized support material required and the nature of course content, course enrollment is restricted. With the approval of the program chair and the student's adviser, certain of the courses listed below may be used in graduate programs leading to advanced degrees granted by other academic units.

In accordance with School of Medicine policy, all Med S courses are S, F graded.

Description of Courses

Med S For explanation see Index under "Symbols"
anatomy, including skull, pharynx and larynx; audition and balance.

532 Nervous System 5 (4-3) II Normal structure and function of the nervous system, including the eye.

534 Endocrine System 2 I Gross and microscopic anatomy of the endocrine system; basic function and pathology of the endocrine glands.

535 Introduction to Clinical Medicine III 2 (1-2) II For WAMI students only. The screening physical examination.

600 Special Projects or Independent Study V 1-6 May be repeated for credit; cumulative maximum 6 hours.

Department of Military Science

Professor and Department Head, Colonel P. E. Courts; Assistant Professors, Major T. C. Stephens, Captains R. D. McConnell, E. J. O'Shaughnessy, D. R. Jorgensen; Staff Affiliates, MSG L. Williams, SSG J. C. Moore.

The Army ROTC program is designed to supplement a student's academic studies by helping to develop the personal attributes which are necessary for effective performance in leadership positions and by providing a general military background to prepare the student for further specialized study after commissioning.

The military science curriculum comprises a two-year Basic Course and a two-year Advanced Course. Any student enrolled at WSU may enroll in the Basic Course without obligation for active service or for continuation into the Advanced Course. A student who has successfully completed the Basic Course may apply for enrollment in the Advanced Course. If enrollment is approved by the Department Head, the student contracts to accept a commission and to serve on active duty for either three years or three months followed by reserve duty. Training is in General Military Science. Advanced course students attend a six-week summer camp normally between their junior and senior year. Upon graduation, cadets may apply for commission in any branch of the Army for which they are qualified.

Leadership events are required each semester for students seeking a commission. These events provide instruction in individual military skills. Practical leadership experience is gained through activities and through peer instruction.

The normal four-year program can be compressed in the event a student is unable to follow the normal schedule. Additionally, an opportunity is available to obtain a commission in two calendar years; to be eligible, a student must have at least two academic years remaining at the university (undergraduate, graduate or a combination of both). If accepted, the student attends a six-week camp (Mil S 205) to qualify for enrollment in the Advanced Course. Students who have had previous military training may apply for advanced placement.

Advanced Course ROTC students receive $100 per school month stipend. Competitively awarded scholarships are available, paying tuition and enrollment fees, the cost of necessary equipment and supplies, and $100 per school month stipend to Basic Course students. High school students may apply for a four-year ROTC scholarship in the fall of their senior year; ROTC students may apply for one, two, or three-year scholarships. Students who are selected for and accept a scholarship agree to serve for four years on active duty as a commissioned officer.

Students who successfully complete the Advanced Course and graduate from the university are normally commissioned in the United States Army Reserve. Students who rank in the upper one third of their ROTC class are eligible to compete for commissions in the Regular Army. Students who wish to seek advanced degrees may apply for a delay in call to active duty in order to complete their studies before entering service.

Description of Courses

For explanation see Index under “Symbols”

Basic Course

Mil S

010 Leadership Event No credit Military skills and exercise of leadership.

101 Fundamentals of Leadership and Management I 1 1 Role of the Army in contemporary society.

102 Fundamentals of Leadership and Management II 1 1 Theory of leadership.

201 Introduction to Tactics 2 I Fundamentals of military leadership and tactics; map reading, terrain association and evaluation.

202 American Military History 3 2 American military history from colonial times to the present; evaluation of significant events from the viewpoint of the participants and their resources; decision-making techniques.

205 (025) Basic Summer Camp 3 S Prereq 2 yrs college. By interview only. Intensive orientation and internship in military training and skills held at an active Army post. Application required two weeks in advance.
Advanced Course

210 (035) Advanced Summer Camp 6 S By interview only. Intensive study and internship in military tactics, command, and leadership held at an active Army post. Application required two months in advance.

301 Applied Leadership and Management 3 I Military skills in preparation for tactics.

302 Advanced Tactics and Military Leadership 3 II Principles of small unit tactics; techniques of instruction.

401 Advanced Military Management I 3 I Military law, personal affairs and career development.

402 Advanced Military Management II 3 Staff operations.

499 Special Problems V 1-4 May be repeated for credit.

Department of Music of the School of Music and Fine Arts


The Music Department is committed to a tradition of excellence in performance and the study of theoretical, historical, and philosophical aspects of the musical arts. Its chief objectives are:

— to provide the student with a foundation in the analysis and criticism of music and guide him toward acquiring discriminating judgment in a progressive musical environment;
— to assist the aspiring performer and composer to reach the highest potential of his artistic capacity;
— to train teachers of music who can be effective in contemporary society;
— to contribute toward a varied humanistic education within the university community.

As an integral part of the academic program, the department maintains a vital offering of recitals and concerts by students, faculty, and guest artists.

Courses of study lead to the degrees of Bachelor of Music, Bachelor of Arts in Music, and Master of Arts in Music.

The Department of Music is a full member of the National Association of Schools of Music.

Description of Courses

Performance Studies in Music

Performance studies are offered on several levels to meet the needs of music majors as well as those of students from the general university community. There are no additional fees or tuition charges for either performance studies or the use of practice facilities. The 100-level performance studies are open to any student without audition as class instruction for one hour per week (2 credits). The 200 level denotes group or private instruction for advanced non-music majors by special permission of the department chair, or study in a secondary performance medium by music majors.

Individual instruction in performance studies is offered at the 300 and 400 level for music majors, and, by special permission of the department chair, to advanced non-music majors who meet all requirements for music majors as listed below. All students enrolled in 200-300-400-level performance instruction are required to attend weekly convocation (student recital), attend recitals as required, participate in at least one approved music department ensemble, and enroll in a music theory or music history course each semester until core requirements have been completed. No student will be permitted to enroll in 300-400-level performance studies unless all of these criteria are met. In addition, each music major must pass Mus 281 to meet the keyboard proficiency requirement, unless this has been satisfied through admission to Mus 301 or 302, or by examination.

Performance studies may not be taken on a pass-fail basis. Description of each course listed below may be obtained from the Department of Music office.

Non-Major Performance Studies

100 level—Class Instruction

200 level—Secondary and Advanced

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Oboe 115 215
Clarinet 116 216
Bassoon 117 217
Saxophone 118 218
Guitar 120 220

Major Performance Studies

Admission to the 300 level is by freshman standing examination only. Students normally progress from the 300 level to the 400 level by upper-division standing examination before a representative committee of the faculty. This evaluation will include all aspects of the student's program, including keyboard proficiency and core music requirements.

The 500 level denotes credit given for graduate study in a primary performance area, and is limited to enrolled graduate students pursuing a master's degree. Credit is granted on the basis of two credits for one half-hour lesson per week and four credits for two half-hour lessons per week; during summer session one credit is given for two half-hour lessons per week.

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Music Performing Groups

Mus 228, 428 Opera Workshop 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Fundamentals in operatic performance.

Chorus 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students willing to participate in choral singing. Usually one public appearance each semester.

Choir 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition. Public performances each semester.

University Singers 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition.

Vocal Ensembles 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition. Public performance may be required.

Symphony Orchestra 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition. Orchestral literature and public performance each semester.

Chamber Music 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition. Public performance may be required.

Concert Bands 1 2 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition. Public performances.

Wind Ensemble 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition. Public performances.

Jazz-Lab Band 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition. Public performances.

Brass Ensembles 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition. Public performance may be required.

Woodwind Ensembles 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition. Public performance may be required.
241, 441 Accompanying I 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours.

242, 442 Chamber Orchestra 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition.

243, 443 Percussion Ensembles 1 3 rehearsals a week. May be repeated for credit; cumulative maximum 8 hours. Open to students by audition.

Theory

Mus

152 Music Fundamentals 2 Notation of pitch, rhythm, scales, intervals, triads, fundamental harmonic progression, coordinated with singing.

251 Materials and Structures of Music 3 Prereq Mus 152 or by examination. Overtones, melody, rhythm, intervals, tonality, modality, penta-scales, two-voiced counterpoint, analytical techniques, composition.

252 Applied Theory 1 (0-3) Prereq Mus 152 or by examination; c// in Mus 251. Ear training, conducting, rhythmic reading, sight singing, keyboard, dictation.

253 Materials and Structures of Music 3 Prereq Mus 251, 252. Writing, analysis of three, four voiced homophonic and contrapuntal music, diatonic emphasis, seventh chords, modulation.

254 Applied Theory 1 (0-3) Prereq Mus 252; c// in Mus 253. Ear training, sight singing, keyboard.

351 Materials and Structures of Music 3 Prereq Mus 253, 254. Vertical, linear and formal relationships of chromatic music; writing, analysis, coordinated with aural study.

352 Aural Studies I (0-3) May be repeated for credit; cumulative maximum 2 hours. Prereq Mus 254 or examination. Advanced sight singing and ear training.

353 Materials and Structures of Music 3 Prereq Mus 351. Vertical, linear and formal relationships of 20th century music; writing, analysis, listening.

451 Modal Counterpoint 2 May be repeated for credit; cumulative maximum 4 hours. I Prereq Mus 353. Contrapuntal techniques of the 16th century with original writing in the style.

452 Tonal Counterpoint 2 May be repeated for credit; cumulative maximum 4 hours. II Prereq Mus 353. Contrapuntal techniques of the early 18th century with original writing in the style.

Form and Analysis 2 II 1981-82 a/y. Prereq Mus 353. Organization of musical works according to the relationships in sectional divisions, thematic divisions, and tonal bases.

Seminar in Orchestration 2 May be repeated for credit. Prereq Mus 352. Scoring for various instrumental combinations.

Seminar in Composition V 1-3 May be repeated for credit. Prereq Mus 451 or 452. Original writing in small, large forms; traditional, experimental.

Seminar in Acoustics 2 I 1980-81 a/y. Nature and transmission of sound as it relates to music.

Seminar in Music Theory 2 May be repeated for credit; cumulative maximum 4 hours.

Twentieth Century Styles 2 II 1980-81 a/y. Original writing utilizing contemporary idioms.

History and Literature

Mus

160 [H] Survey of Music Literature 3 Listening from the humanistic point of view.

161 Introduction to Critical Studies in Music 3 Prereq Mus 152 or 251, or c//. Historical styles of music through analytical listening, score examination and source materials.

262 Music of Black Americans 2 Music of the Afro-American culture; African origins and development of religious and secular music.

265 Native Music of North America 2 I Music and ceremonialism as a reflection of realities in North American native cultures, past and present.

360 History of Music I: Baroque and Classic Periods 3 I Prereq Mus 251, 252. Development and change in the musical culture of Western Europe from 1600 to 1815.

361 History of Music II: Romantic Period and the 20th Century 3 II Prereq Mus 251, 252, 360. Development and change in the musical culture of Western Europe and the U.S. from 1815 to the present.

362 [H] History of Jazz 3 History of jazz in chronological sequence from early Dixieland to jazz-rock combinations of eighties; stylistic and improvisational developments.

363 [H] Music of Mexico and the Southwest 3 A historical survey of Chicano music; description, analysis, and forms of music from the pre-Spanish ending in 1521 to present.

364 [H] Musical Theatre and Opera 2 Texts, music and dramatic structure of the musical theatre from Florentine Camerata to Broadway show.
History of Music III: Medieval and Renaissance Periods 3 I Prereq Mus 251, 252. Development and change in the musical culture of Western Europe from ancient times to 1600 A.D.

Colloquium in Music 2 Developing a critical attitude toward the composition and performance of music of all periods; aesthetic success, style, and performance.

Seminar in Major Performance Literature 2 May be repeated for credit; cumulative maximum 6 hours. Prereq Mus 351. Survey/performance of solo and chamber literature for voice, keyboard, strings, winds, brass, percussion.

Band Literature and Performance 1 May be repeated for credit; cumulative maximum 4 hours. Survey and analysis of recently published literature for use in instrumental music programs of the public schools.

Choral Literature I 1 (0-3) I Survey and performance of madrigal and motet literature.

Introduction to Graduate Studies in Music 2 Required of all graduate students in Mus. Basic bibliographic and research techniques; written presentations related to area of emphasis.

Literature of Twentieth Century Music 2 II 1981-82 a/y. Prereq Mus 351. Impressionism, expressionism, neoclassicism, neoromanticism, jazz, and recent electronic music.

Symphonic Literature 2 I 1981-82 a/y. Symphony orchestra and symphonic form from its beginning to modern times studied from the score.

Chamber Music Literature 2 I 1980-81 a/y. The concept and development of chamber music; study of major works.

Opera Literature 2 I Literature and concepts of opera from 1600 to the present.

Choral Literature II 2 II 1980-81 a/y. Survey of major choral works from Bach to the present.

Seminar in Music History 2 May be repeated for credit; cumulative maximum 6 hours. Prereq Mus 360, 361, 460. Various historic periods and composers.

Music Education

Mus

Class Piano I 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. For majors, minors, and Elem Educ majors only. Pedal, sightreading, transposition, playing by ear, chord progressions and melody harmonizations. Open to students by audition.

Class Piano II 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. Continuation of Mus 181. Scales, arpeggios, blocked and broken chords; repertoire to complement individual skills and theoretical knowledge. Open to students by audition.

Class Voice 2 (1-3) May be repeated for credit. Fundamentals of vocal techniques, correct posture, breathing, and tone production through use of basic repertoire.

Class Piano III 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. Prereq Mus 182. Principles, functional keyboard. Open to students by audition.

Fundamental Brass Techniques 1 (0-3) Majors and minors only. Beginning class in brass.

Fundamental String Techniques 1 (0-3) Majors and minors only. Beginning class in strings.

Fundamental Voice Techniques 1 (0-3) II Majors, minors, and Elem Educ majors only. The unchanged, changing, and changed voice.

Fundamental Woodwind Techniques 1 (0-3) Majors and minors only. Beginning class in woodwinds.

Fundamental Percussion Techniques 1 (0-3) For majors, minors, and Elem Educ majors only. Beginning class in percussion.

Music for the Classroom Teacher 2 For elementary education majors. Listening, songs, instruments, and accompaniment abilities appropriate to the elementary grades.

Choral Program 2 (1-3) I For majors, minors, and Elem Educ majors only. Choral organizations, auditions, placement, intonation, balance, blend, diction, phrasing, styles, and materials.

Materials and Methods for Classroom Teachers 3 Prereq Educ 300. Techniques in singing, listening, reading, rhythmic, and creative activities.

Music Education 3 I Philosophies, administration, organization, materials, and methods.

Elements of Conducting 1 Prereq Mus 251. Patterns and styles of conducting, score reading.

Instrumental Conducting 1 (0-3) Score reading, clefs, transcription, aural training, rehearsal techniques, ensemble seating, and programming.

Ensemble Conducting 1 (0-3) Prereq Mus 482.

Vocal mechanism, teaching procedures, and materials.


487 Seminar in String Pedagogy 2 I 1980-81 a/y. Teaching of the strings; materials and methods.

490 Materials and Methods for Music Teachers 2 or 3 II Current programs and trends in the teaching of music; methods of Orff and Kodaly.

519 Secondary Performance Study 1 or 2 May be repeated for credit; cumulative maximum 6 hours. Prereq bachelor's degree in Music. Instruction on instruments or voice other than major performing medium.

575 Advanced Conducting 2 or 3 May be repeated for credit. Prereq Mus 482. Orchestras, bands, and choruses.

581 Instructional Procedures in Brass Instruments 2 or 3 Prereq Mus 381. Playing, teaching, and choice of materials for trumpet, horn, trombone, baritone, and tuba.

583 Seminar in Vocal Physiology 2 II 1981-82 a/y. Physical structure of the voice, teaching procedures, and choice of materials for studio use.

584 Instructional Procedures in Woodwind Instruments 2 or 3 Prereq Mus 384. Playing, teaching, and choice of materials for flute, oboe, clarinet, bassoon, and saxophone.

586 Instructional Procedures in Percussion Instruments 2 or 3 Playing, teaching, and choice of materials from drums, cymbals, timpani, and all special percussion effects.

589 Seminar in Instructional Procedures in Choral Music 2 I Prereq Mus 351 and experience in chorus or choir. Choral organizations, principles, and techniques of singing; diction, intonation, quality, balance, blend, phrasing, style, and tonal color; examination of materials.

590 Music Education 2 or 3 Problems of instruction, supervision, and administration.

591 Instrumental Ensemble Techniques 2 or 3 May be repeated for credit; cumulative maximum 6 hours. Instrumental programs in public schools; class instruction, rehearsal routines, program building, and examination of materials.

522 Graduate Recital 2 May be repeated for credit; cumulative maximum 4 hours.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

Schedule of Studies

In addition to the requirements listed under the various options for the Bachelor of Music degree and the Bachelor of Arts degree in Music, each student must satisfactorily complete a theory-history core consisting of: Music 161, 251, 252, 253, 254, 351, 353, 360, 361 with a 2.00 gpa. Each student must also satisfy the keyboard proficiency requirements by qualifying for Mus 302, passing Mus 281, or by examination. Students must complete the General University Requirements plus those for the College of Sciences and Arts totalling 39 credits. As part of the General University Requirements in science, music students are advised to take Phys 322, plus 1 credit of Phys 499.

Bachelor of Music

This four-year program offers options for specialization in performance, composition and theory, music history and literature, and music education. At least 40 of the 128 hours required for this degree must be upper-division courses.

The following curricula are designed to prepare students as professional musicians and teachers of music.

Students following options I, II, or III are required to present an acceptable junior and senior recital in the major performance medium.

Option I—Keyboard

<table>
<thead>
<tr>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory-History Core</td>
</tr>
<tr>
<td>Performance Studies</td>
</tr>
<tr>
<td>Secondary Instrument</td>
</tr>
<tr>
<td>Mus 451 or 452 Counterpoint</td>
</tr>
<tr>
<td>Mus 453 Form &amp; Analysis</td>
</tr>
<tr>
<td>Mus 465 Sem Major Perf Lit</td>
</tr>
<tr>
<td>Mus 481 Conducting</td>
</tr>
<tr>
<td>Mus 486 Piano Pedagogy</td>
</tr>
<tr>
<td>Ensembles (Pianists must include 1 hour of Music 235/435 and 1 hour of Music 241/441)</td>
</tr>
<tr>
<td>Electives</td>
</tr>
</tbody>
</table>

All Keyboard Majors are required to accompany an approved junior or senior recital.
**Option II—Brass, Woodwinds, Strings, Percussion**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory-History Core</td>
<td>23</td>
</tr>
<tr>
<td>Performance Studies</td>
<td>32</td>
</tr>
<tr>
<td>(major performance instrument)</td>
<td></td>
</tr>
<tr>
<td>Mus 381, 382 or 384</td>
<td>1</td>
</tr>
<tr>
<td>(in area of concentration)</td>
<td></td>
</tr>
<tr>
<td>Mus 203 Voice</td>
<td>2</td>
</tr>
<tr>
<td>Mus 451 or 452 Counterpoint</td>
<td>2</td>
</tr>
<tr>
<td>Mus 453 Form &amp; Analysis</td>
<td>2</td>
</tr>
<tr>
<td>Mus 455 Orchestration</td>
<td>2</td>
</tr>
<tr>
<td>Mus 481, 482 Conducting</td>
<td>2</td>
</tr>
<tr>
<td>Ensembles</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>15</td>
</tr>
</tbody>
</table>

**Option III—Voice**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory-History Core</td>
<td>23</td>
</tr>
<tr>
<td>Performance Studies</td>
<td>32</td>
</tr>
<tr>
<td>(major performance area)</td>
<td></td>
</tr>
<tr>
<td>Mus 364 Musical Theater and Opera</td>
<td>2</td>
</tr>
<tr>
<td>Mus 451 or 452 Counterpoint</td>
<td>2</td>
</tr>
<tr>
<td>Mus 453 Form &amp; Analysis</td>
<td>2</td>
</tr>
<tr>
<td>Mus 465 Sem Major Perf Lit</td>
<td>2</td>
</tr>
<tr>
<td>Mus 481 Conducting</td>
<td>1</td>
</tr>
<tr>
<td>Foreign Language (one year in each of two languages)</td>
<td>16</td>
</tr>
<tr>
<td>Ensembles (must include 2 hours of Music 228/428)</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>1</td>
</tr>
</tbody>
</table>

**Option IV—Music Education**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory-History Core</td>
<td>23</td>
</tr>
<tr>
<td>Performance Studies (at least 2 hours at the 400 level)</td>
<td>14</td>
</tr>
<tr>
<td>Mus 381, 382, 383, 384, and 386</td>
<td>5</td>
</tr>
<tr>
<td>Mus 389 Choral Program</td>
<td>2</td>
</tr>
<tr>
<td>Mus 480, 490 or 490</td>
<td>6</td>
</tr>
<tr>
<td>Select 2 from Mus 451 or 452, 453, 455</td>
<td>4</td>
</tr>
<tr>
<td>Mus 481, 482 Conducting</td>
<td>2</td>
</tr>
<tr>
<td>Ensembles (Vocal performers must include Mus 228/428 for one credit hour. Instrumentalists should include one semester of chamber music ensemble.)</td>
<td>6</td>
</tr>
<tr>
<td>Prof Education courses</td>
<td>25</td>
</tr>
<tr>
<td>H Ed 480 or 481, or Bact 101 or 201</td>
<td>2-5</td>
</tr>
</tbody>
</table>

**Option V—Composition and Theory**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory-History Core</td>
<td>23</td>
</tr>
<tr>
<td>Performance Studies</td>
<td>14</td>
</tr>
<tr>
<td>Mus 451, 452 Counterpoint</td>
<td>4</td>
</tr>
<tr>
<td>Mus 453 Form &amp; Analysis</td>
<td>2</td>
</tr>
<tr>
<td>Mus 455 Orchestration</td>
<td>2</td>
</tr>
<tr>
<td>Mus 456 Composition</td>
<td>12</td>
</tr>
<tr>
<td>Mus 464 Colloquium</td>
<td>2</td>
</tr>
<tr>
<td>Mus 481, 482 Conducting</td>
<td>2</td>
</tr>
<tr>
<td>Ensembles (to include a minimum of 1 semester of choral ensemble)</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>24</td>
</tr>
</tbody>
</table>

If the student’s major performance area is neither piano nor organ, at least 4 hours of Music 202 or 302 are required.

**Option VI—Music History-Literature**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory-History Core</td>
<td>23</td>
</tr>
<tr>
<td>Performance Studies</td>
<td>14</td>
</tr>
<tr>
<td>Mus 262 Music of Bl Amer</td>
<td>2</td>
</tr>
<tr>
<td>Mus 363 Music of Mex &amp; SW</td>
<td>3</td>
</tr>
<tr>
<td>Mus 364 Mus Theater and Opera</td>
<td>2</td>
</tr>
<tr>
<td>Mus 451, 452 Counterpoint</td>
<td>4</td>
</tr>
<tr>
<td>Mus 453 Form &amp; Analysis</td>
<td>2</td>
</tr>
<tr>
<td>Mus 460 History III</td>
<td>3</td>
</tr>
<tr>
<td>Mus 464 Colloquium</td>
<td>2</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>8</td>
</tr>
<tr>
<td>Phil 220, or F A 202, 203</td>
<td>6</td>
</tr>
<tr>
<td>Hist 346, 440, 441, 444, 445 (select 2)</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>14</td>
</tr>
</tbody>
</table>

**Bachelor of Arts in Music**

This four-year program is designed to meet the needs of students wishing a broad liberal arts background with a major in music. A minimum of 48 credits in music is required including at least 40 hours of credit in upper-division courses. The music concentration may be in either theory-history or performance.

**Music Theory-History Option**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory-History Core</td>
<td>23</td>
</tr>
<tr>
<td>Mus 451 or 452 Counterpoint</td>
<td>2</td>
</tr>
<tr>
<td>Mus 464 Colloquium</td>
<td>2</td>
</tr>
<tr>
<td>Performance Studies</td>
<td>8</td>
</tr>
<tr>
<td>(When the student’s major performance area is not keyboard, at least 2 hours of study in piano or organ is required.)</td>
<td></td>
</tr>
<tr>
<td>Ensembles</td>
<td>4</td>
</tr>
<tr>
<td>Mus Electives</td>
<td>9</td>
</tr>
<tr>
<td>Electives</td>
<td>33</td>
</tr>
</tbody>
</table>

**Performance Option**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory-History Core</td>
<td>23</td>
</tr>
<tr>
<td>Performance Studies</td>
<td>12</td>
</tr>
</tbody>
</table>
(must include a minimum of 4 credits at the 400 level)

Ensembles 6
Mus Electives 7
Electives 33

Program in Native American Studies

Director, W. Willard; Professor, A. L. Olsen; Assistant Professor, C. E. Traeger.

The program offers a minor in Native American Studies which requires a minimum of 16 hours of credit, half of which must be in upper-division course work.

The curriculum is designed to offer interdisciplinary study in a wide spectrum of courses to provide a broad knowledge of Native American cultures, so that students will be better equipped to live and work within the context of contemporary Native American society.

The Native American Program also offers opportunities to take part in activities of the Native American Resource Center, which serves to cooperatively meet, in conjunction with Native American communities, the human resources development needs identified by Native American communities.

Description of Courses

Na Am For explanation see Index under “Symbols”

101 [S] Native American Studies 3 I Introduction to Native American studies; introductory course to contemporary native America.

201 Issues in Contemporary Native American Reservation Development 3 II Contemporary Federal-Indian-state interactions; current issues in relationship to present time reservation economic development.

205 Native American Arts 3 I Same as FA 205.

208 American Indians to 1830 3 I History of Native Americans from Columbus to Jackson and the impact of Europeans on the Indian peoples of North America.

209 American Indians from 1830 3 II History of Native Americans from Andrew Jackson’s administration to the present dealing with the Indian policies of the U.S. and the Indian response.

265 Native Music of North America 2 I Same as Mus 265.

320 [S] Native Peoples of North America 3 Same as Anth 320.

331 [S] Archaeology of the New World 3 Same as Anth 331.

408 Indians of the Northwest 3 I Native Americans of the Coast and Plateau; historic relationship with Europeans and Anglo-Americans.

409 Indians of the Southwest 3 II History of Native Americans in the Southwest; contact and conflict with Europeans and Anglo-Americans.

410 Ethnic Groups and Public Education 2 or 3 Same as Educ 410.

420 Native American Perspective on Ecology 3 Patterns of interaction between American Indian groups and their environments.

422 Native Peoples of the Pacific Northwest 3 Same as Anth 422.

451 Native American Language and Tradition 3 Same as Anth 451.

465 Federal Indian Policy in Relation to the Development of Indian Communities 3 S Treaties, federal legislation, and policy interpretations concerning Native American communities and their development.

490 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 4 hours.

499 Special Problems V 1-4 May be repeated for credit.

Naval Science

The Navy-Marine OEP, administered and taught on the University of Idaho campus, offers full and part scholarships leading to commissions and active duty as Navy or Marine Corps officers. Normally, students enter the program at the beginning of the freshman year; however, selected students may enter up to the beginning of the junior year. Students take 20 hours of professional courses taught by Navy and Marine Corps officers. Special provision for meeting freshman and sophomore requirements is made for students who enter the program in their junior year. Following graduation, a broad variety of duty assignments is available to the newly commissioned officer, including duty on nuclear submarines and surface ships, in naval aviation, supply corps, civil engineering corps, and ground or aviation assignments in the Marine Corps. All commissioned go on active duty at full pay and allowances immediately upon graduation.

FULL SCHOLARSHIP PROGRAM

Application for this program is normally made during the fall of the student’s senior year of high school or freshman year of college. Initial selections are based on college entrance examination scores (SAT or ACT) and high school academic
performance. A student on full scholarship participates in three summer training cruises of six to eight weeks duration. The first and third cruises are aboard ships of the Pacific or Atlantic Fleet and often include travel to Europe or the Far East. During the second cruise, students are introduced to submarine, amphibious warfare, and aviation specialties. Full scholarship benefits include tuition, fees, books, and a $100 per month retainer. During summer cruises, the students receive one half the pay of an ensign, in addition to room and board. Graduates of this program are commissioned as regular officers in the Navy or Marine Corps.

PART SCHOLARSHIP PROGRAM
Application for this program is made directly to the head of the Department of Naval Science. Students receive their uniforms and naval science textbooks at no cost and begin receiving monthly subsistence pay of $100 per month at the beginning of the junior year. Part scholarship students may be nominated by the Professor of Naval Science to the Chief of Naval Education and Training for a full scholarship, if their grades and military aptitude marks are sufficient. The program requires one training cruise during the summer following the junior year. It is an active cruise of the same type and with the same pay as described for the full scholarship program. Graduates of this program are ordered to active duty with reserve commissions.

MARINE CORPS OPTION
Both full and part scholarship students who desire a Marine Corps commission may apply for the Marine Corps option during their first two years in college. Students taking this option enroll in specialized classes on Marine Corps subjects during their junior year and participate in summer training at the Marine Corps Schools at Quantico, Virginia, during the summer following the junior year.

TWO-YEAR PROGRAM
Navy-Marine Corps full and part scholarship applicants entering the program after completion of their sophomore year will be required to attend the Naval Science Institute (NSI) during the summer between their sophomore and junior years. At the NSI they will study the material taken by the four-year candidates during their freshman and sophomore years. On completion of the NSI, candidates return to the university and complete the junior and senior years of the naval science curriculum with their peers. Candidates in the two-year program will participate in one afloat cruise between their junior and senior years. Applications must be submitted early in the second semester of the sophomore year. The top NSI graduates are awarded full scholarships for their last two years of college. The remaining graduates receive part scholarships.

FIELD TRIPS
Field trips to Navy and Marine Corps facilities are arranged periodically in order to allow the Navy/Marine Corps OEP members the opportunity to learn more about the naval service.

Description of Courses

Naval Science

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Credits</th>
<th>Prereq</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Drill/Lab</td>
<td>No credit</td>
<td>Required of all Navy-Marine Corps Officer Education Program students. One hour lab per week. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>101</td>
<td>Introduction to Naval Science 2</td>
<td>2</td>
<td>Roles of major elements of naval service; design and structure of ships. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>102</td>
<td>Ships Systems I 3</td>
<td>3</td>
<td>Introduction to damage control and propulsion systems of naval ships; nuclear and conventional power. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>200</td>
<td>Seminar V 1-2</td>
<td>By interview only.</td>
<td>Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>201</td>
<td>Ships Systems II 3</td>
<td>3</td>
<td>Naval weapons: ballistics, control, propulsion, components, systems analysis. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>202</td>
<td>Seapower and Maritime Affairs 2</td>
<td>U.S. Navy and merchant marine seapower, development, and policy. Cooperative course taught at the University of Idaho.</td>
<td></td>
</tr>
<tr>
<td>299</td>
<td>Directed Study V 1-2</td>
<td>By interview only.</td>
<td>Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>301</td>
<td>Navigation 3</td>
<td></td>
<td>Theory, principles, and procedures of terrestrial and celestial navigation. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>302</td>
<td>Naval Operations 3</td>
<td>Prereq NS 301</td>
<td>Naval operations and tactics, relative motion, rules of the nautical road. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>311</td>
<td>Evolution of Warfare 3</td>
<td></td>
<td>Evolution of war through tactics; strategy from Sun Tzu to J. F. C. Fuller. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>400</td>
<td>Seminar V 1-2</td>
<td>By interview only.</td>
<td>Cooperative course taught at the University of Idaho.</td>
</tr>
</tbody>
</table>
Intercollegiate Program in Nursing

SPOKANE CAMPUS

PULLMAN CAMPUS
Associate Professor and Lower-division Adviser, H. Roberts

Washington State University is a participant in the four-member program providing baccalaureate nursing education in Eastern Washington. The program, open to men and women, is designed for two types of students—those with no previous preparation in nursing and registered nurses. The curriculum is four academic years for the student with no previous preparation in nursing. The length of the program for the registered nurse varies depending upon previous education and the course load carried while at the university.

The lower-division curriculum consists of the freshman and sophomore years on the Pullman campus and prepares the student with a foundation in the natural and social sciences and the humanities.

The upper-division curriculum consists of the junior and senior years at the Intercollegiate Center for Nursing Education in Spokane and provides the professional course work in nursing. To apply for admission a student must have at least 60 semester hours and all courses prerequisite to nursing complete the term prior to enrollment in the upper division.

The program is approved by the Washington State Board of Nursing and accredited by the National League for Nursing. Upon successful completion of the baccalaureate program, graduates are eligible to take the state examination for licensure as Registered Nurses. The course of study leads to the degree of Bachelor of Science in Nursing.

Description of Courses

The following courses are offered at the Intercollegiate Center for Nursing Education—Spokane Campus.

Nurs For explanation see Index under "Symbols"

305 Scientific Concepts for Nursing I 3 Prereq junior in Nurs. Normal developmental physiological and psychological processes, from conception through aging; pharmacologic and nutrition factors influencing adaptation.

306 Clinical Nursing I 10 (4-18) Prereq junior in Nurs; Nurs 305 or c/c. Holistic view of nursing process; assessment/interventions for well individuals of all ages and mild stress situations; clinical application.

307 Assertiveness Training for Nurses 2 Prereq junior in Nurs. Assertiveness training to assist professional nurses in improving interpersonal relationships in nursing situations.

308 Geriatric Nursing 2 Prereq junior in Nurs. Physiologic and psychologic changes of the aging process; role of gerontologic client within society; implications for nurses.
Schedule of Studies

The Bachelor of Science degree in Nursing requires a total of 120 semester hours. At least 60 of the total hours required for this degree must be in upper-division courses. All students must meet the General University Requirements for Graduation and departmental requirements which include (a) *Arts and Humanities and Social Science*: 21 hours with at least 6 hours in arts and humanities and 6 hours in social sciences; all courses must be outside the nursing major; (b) *Communication Proficiency*: 6 hours including 3 in written communication; (c) *Sciences*: 12 hours with at least 3 hours in the biological sciences and 3 hours in the physical sciences and 2 hours credit for 6 clock hours of laboratory work; courses must be outside the nursing major; and (d) *Foreign Language*: one year of foreign language if the student has not completed two years of one foreign language in high school.

A grade of C or better is required in all upper-division required nursing courses. Two non-nursing upper-division courses supportive to the nursing major are also required. Independent study and correspondence courses do not fulfill this requirement.

**Freshman Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101 Composition</td>
<td>3</td>
</tr>
<tr>
<td>Psych 101 Prin of Behavior</td>
<td>3</td>
</tr>
<tr>
<td>Chem 101 Introductory</td>
<td>4</td>
</tr>
<tr>
<td>Soc S or Hum Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>2</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 108 Intro to Lit</td>
<td>3</td>
</tr>
<tr>
<td>Soc 101 Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Chem 102 Chem &amp; Man</td>
<td>4</td>
</tr>
<tr>
<td>Bio S 102 General</td>
<td>4</td>
</tr>
<tr>
<td>Com Prof Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Sophomore Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 251 Human Physiol</td>
<td>4</td>
</tr>
<tr>
<td>CFS 240 Dev &amp; Guidance</td>
<td>3</td>
</tr>
<tr>
<td>Bact 101 Elementary</td>
<td>4</td>
</tr>
<tr>
<td>Soc S or Hum Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zool 315 Human Anatomy</td>
<td>4</td>
</tr>
<tr>
<td>FNIM 130 Nutrition for Man</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Soc S or Hum Elective</td>
<td>6</td>
</tr>
</tbody>
</table>

**Junior Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs 305 Sci Con I</td>
<td>3</td>
</tr>
<tr>
<td>Nurs 306 Clin Nurs I</td>
<td>10</td>
</tr>
</tbody>
</table>
Program in Nutrition

Second Semester
Nurs 315 Sci Con II 3
Nurs 316 Clin Nurs II 12
Elective 2

Senior Year
First Semester
Nurs 405 Intro Res Nurs 3
Nurs 406 Clinical Nurs IV 12

Second Semester
Nurs 416 Clin Nurs IV 12
Supportive Course 2-3
Nurs 499 Special Problems 1-4

Transfer Students

Students who plan to transfer to nursing at Washington State University from other institutions should coordinate their program early with the nursing adviser on the Pullman campus to select courses that will be applicable to the degree requirements.

Registered nurses who plan to obtain their baccalaureate degree in nursing from Washington State University may obtain admission and curricular information from the nursing adviser on the Pullman campus. Upper-division nursing major requirements and policies pertinent to the registered nurse should be discussed with the nursing adviser at the Center in Spokane.

Program in Nutrition


The interdepartmental graduate program in nutrition is composed of faculty from the Departments of Animal Sciences, and Food Science and Technology in the College of Agriculture; the Department of Foods, Nutrition and Institution Management in the College of Home Economics; and the Department of Veterinary Microbiology and Pathology in the College of Veterinary Medicine. The program offers courses of study leading to the degrees of Master of Science and Doctor of Philosophy in Nutrition. Graduate training in basic and applied nutrition of man and a variety of laboratory and domestic animals is available. Specific areas of research include nutrient availability, utilization and interactions; new food and feed sources; nutrition and disease; and nutritional status and requirements. Excellent facilities contribute to these teaching and research objectives, including extensive WSU central facilities.

Students wishing to pursue studies leading to advanced degrees in nutrition are encouraged to obtain undergraduate training in nutrition, biological sciences, chemistry (inorganic, organic, and quantitative), physics and mathematics. The Graduate Record Examination (GRE) is required for admission. Students with bachelor's degrees in foods and nutrition and animal nutrition are usually well prepared for admission. Students from a wide variety of other fields may be admitted provided the necessary prerequisites are met. The interdisciplinary impact of other fields on nutrition encourages selection of courses in biochemistry, physiology, biometry, as well as in nutrition, to meet course requirements. A wide variety of additional graduate courses in agricultural, biological, social and veterinary sciences are available to supplement the degree program.

Graduates will be prepared for careers in teaching, research and extension at universities and for field representative and research positions in government, industry and other organizations.

Description of Courses

501 Vitamins 2 II 1981-82 a/y. Same as A S 501.
502 Seminar in Nutrition 1 May be repeated for credit. Same as A S 502.
505 Experimental Nutrition 3 I 1980-81 a/y. Same as A S 505.
521 Research Techniques in Nutrition 3 I Same as FNIM 521.
523 Mineral Metabolism 3 II 1981-82 a/y. Same as A S 523.
526 Community Nutrition 3 I Same as FNIM 526.
530 International Nutrition 3 I Same as FNIM 530.
531 Nutrition and Aging 2 or 3 II Same as FNIM 531.
532 Human Digestion and Absorption 3 II Same as FNIM 532.
533 Pathophysiology of Human Nutrition 3 I Same as FNIM 533.
536 Nutrition Program Theory and Practice 3 (2-3) II Same as FNIM 536.
College of Pharmacy


The pharmacy curriculum is divided into five areas: pharmacy—the study of the pharmaceutical dosage forms and the delivery of professional services in a clinical pharmacy program; pharmaceutical chemistry—the principles of chemistry applied to the problems of pharmacy; pharmacognosy—the study of drugs of natural origin; pharmacology—the study of the action of drugs; and pharmacy administration—the study of the business principles and laws of pharmacy.

Students may enroll in professional elective courses during the third and fourth professional years to prepare for specialized careers in professional, retail, or hospital pharmacy; detailing physicians on pharmaceutical products; teaching; research and development in industry; or government.

The College of Pharmacy is accredited by the American Council on Pharmaceutical Education and is a member of the American Association of Colleges of Pharmacy.

The College of Pharmacy offers courses of study leading to the degrees of Bachelor of Pharmacy, Master of Science in Pharmaceutical Science, and Doctor of Philosophy.

Description of Courses

For explanation see Index under "Symbols"

Pharmacy
Phar

101 Orientation 1 I Open to all students.
217 Drugs in Our Society 2 For non-majors. The use and abuse of drugs.
300 Pharmaceutical Calculations 1 I The mathematics of pharmacy to meet the needs of dispensing practitioners.
301 Basic Pharmaceutics I 4 (3-3) I Prereq Chem 340. Theory, preparation, and application of pharmaceutical solutions and an introduction to pharmaceutical calculations.
302 Basic Pharmaceutics II 3 (2-3) II Prereq Phar 301. Theory, preparation, and application of solid pharmaceutical dosage forms.
310 The Pharmacist and Social Health 2 II Prereq Bact 101; Phar 342 or c/. The pharmacist's role in individual and group health problems.
401 Clinical Pharmacy 5 (4-3) Prereq Phar 406. Biopharmaceutics and pharmacology applied to clinical situations, drug information and evaluation; disease states.
405 Professional Practice 8 (0-24) Prereq Phar 406. An externship providing practical professional experience in various pharmacies under the supervision of an approved pharmacist preceptor.
406 Therapeutic Agents 4 (2-6) II Prereq Phar 416, 436, 472 or c/. Professional competence in applying principles of pharmaceutics, medicinal chemistry and pharmacology to selecting therapeutic products; dispensing procedures; clerkship preparation.
408 Clinical Clerkship V 4 (0-12) or 8 (0-24) May be repeated for credit. Prereq Phar 406. Externship providing clinical experience in the delivery of health care and the role of the pharmacist in patient care.
415 Basic Pharmaceutics III 3 (2-3) I Prereq Phar 302. Theory, preparation, and application of liquid and semisolid pharmaceutical dispersions.
416 Biopharmaceutics 3 (2-3) II Prereq Phar 415. Dosage form evaluation as to stability, availability, absorption, distribution, and excretion of drugs; allied analytical procedures.
419 Drug Induced Diseases 2 Prereq Phar 406. Incidence, mechanisms, manifestations, treatment and/or prevention of drug induced diseases.
501 Advanced Pharmacy 3 Prereq Chem 331 or 371. Equilibrium and kinetic concepts applied to pharmaceutical systems.


511 Advanced Topics in Pharmaceutical Sciences 2 or 3 May be repeated for credit. Current research interest in pharmaceutical chemistry, pharmacetics, pharmacognosy, and pharmacology.

Pharmaceutical Chemistry

Phar

436 Chemotherapy 3 I Prereq Phar 310, 471; Bact 101. Nonspecific and heavy metal germicides; infections and neoplastic diseases; radioisotopes and biological effects of ionizing radiation.

525 Pharmaceutical Analysis 3 (2-3) I Prereq Chem 342. Procedures and instruments used in analytical and separation methods.

526 Pharmaceutical Analysis 3 (2-3) II Continuation of Phar 525.

531 Chemical Structure and Drug Action 3 I Prereq 10 hrs Org Chem; Phar 471 or Chem 364. Theories of medicinal chemistry.

532 Chemical Structure and Drug Action 3 II Prereq Phar 531. Effect of variation of structure on pharmacological properties of selected classes of medicinals.

Pharmacognosy

Phar


342 Pharmacognosy 3 II Prereq Chem 342. Continuation of Phar 341. Poisonous plants; pharmacologically important enzymes, vitamins, antibiotics, allergens, and biologicals.

446 Drugs and the Immune System 2 Prereq Bact 101; Chem 364; Phar 342. Basic biological, chemical, and clinical principles of immunology as they relate to the use of drugs in pharmacy practice.

542 Plants and Drugs 3 (2-3) II History, processing, source, microchemistry, and anatomy of plants which become drugs and sources of drugs.

546 Advanced Pharmacognosy 3 II Biosynthetic and chemotaxonomic relations in drug plants.

554 Chemistry of Natural Products 3 II Prereq 10 hrs Org Chem. Chemistry of medicinally important natural products to include the classes glycosides, alkaloids, and steroids.

Pharmacology

Phar

360 Essentials of Pharmacology 3 Modes of action, pharmacological and toxicological effects and principles governing use of drugs essential to providing nursing care.

464 Toxicology 2 Prereq Phar 472 or c//. Symptomatology, prevention, treatment, and demography of toxic reactions to drugs and household, agricultural, and economic poisons.


471 Chemical Pharmacology 5 I Prereq Chem 342, 364; Zool 315, 353; c// in Phar 473. Mechanisms of drug action and factors modifying drug responses; physicochemical properties of drugs; drug-receptor interactions; development of drugs.

472 Pharmacodynamics 5 II Prereq Phar 471; c// in Phar 474. Pharmacology and medicinal chemistry of the classes of drugs.

473 Pharmacology Laboratory 1 (0-3) I Prereq c// in Phar 471. Principles; physiological and biochemical techniques.

474 Pharmacology Laboratory 1 (0-3) II Prereq Phar 473; c// in Phar 472. Pharmacodynamics of specific drug categories.

529 Neurochemistry 3 Same as V Ph 529.

561 Advanced Pharmacology 3 I Prereq Phar 472. Lectures and conferences on the more advanced concepts and applications of drug action.

562 Advanced Pharmacology 3 II Prereq Phar 561. Continuation of Phar 561.

Pharmacy Administration

Phar

483 Pharmacy Administration 5 Prereq senior in Phar; Econ 201. Problems and procedures in the establishment and management of a pharmacy; laws relating to pharmacy and professional practice.

Problems, Seminar, and Research and Thesis

Phar

200 Seminar 1 II Prereq Phar 101.

413 Seminar 1 Required of seniors in Phar.

499 Special Problems V 1-4 May be repeated for credit.

598 Seminar 1 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.
700 Master's Research, Thesis, and/or Examination Variable credit.
702 Master's Special Problems, Directed Study, and/or Examination Variable credit.
800 Doctoral Research, Dissertation, and/or Examination Variable credit.

**Schedule of Studies**

The Bachelor of Pharmacy degree requires a total of 154 semester hours. At least 78 of the total hours required for this degree must be in upper-division courses.

### Prepharmacy Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Bio S 103 Introductory</td>
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<tr>
<td>Chem 105 Principles</td>
<td>4</td>
</tr>
<tr>
<td>Math 140 Math for Life Sci</td>
<td>4</td>
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<tr>
<td>Hum or Soc S Elective</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>Bio S 104 Introductory</td>
<td>4</td>
</tr>
<tr>
<td>Chem 106 Principles</td>
<td>4</td>
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<tr>
<td>Com Prof Elective</td>
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<td>Hum or Soc S Elective</td>
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### First Professional Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Phar 101 Orientation</td>
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<tr>
<td>Chem 340 Organic</td>
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<tr>
<td>Chem 341 Organic Lab</td>
<td>2</td>
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<tr>
<td>Com Prof Elective</td>
<td>3</td>
</tr>
<tr>
<td>Phys 101 General</td>
<td>4</td>
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<td>Hum or Soc S Elective</td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Phar 200 Seminar</td>
<td>1</td>
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<tr>
<td>Bact 101 Elementary</td>
<td>4</td>
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<tr>
<td>Chem 342 Organic</td>
<td>3</td>
</tr>
<tr>
<td>Chem 343 Organic Lab</td>
<td>2</td>
</tr>
<tr>
<td>H Ed 363 First Aid¹</td>
<td>2</td>
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<tr>
<td>Phys 102 General</td>
<td>4</td>
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### Second Professional Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Phar 301 Basic Phar I</td>
<td>4</td>
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<tr>
<td>Phar 341 Beg Pharmacognosy</td>
<td>4</td>
</tr>
<tr>
<td>Chem 364 Biochemistry</td>
<td>3</td>
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<tr>
<td>Chem 366 Biochemistry Lab</td>
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<tr>
<td>Zool 315 Gross &amp; Microanatomy</td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Phar 300 Phar Calculations</td>
<td>1</td>
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<tr>
<td>Phar 302 Basic Phar II</td>
<td>3</td>
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<tr>
<td>Phar 310 Soc Health</td>
<td>2</td>
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¹Holders of a valid Red Cross Advanced First Aid Certificate at the time of admission or prior to graduation will have H Ed 363 waived.

### Third Professional Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Phar 415 Basic Phar III</td>
<td>3</td>
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<tr>
<td>Phar 436 Chemotherapy</td>
<td>3</td>
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<tr>
<td>Phar 467 Hum Path</td>
<td>3</td>
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<tr>
<td>Phar 471 Chem Pharmacology</td>
<td>5</td>
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<tr>
<td>Phar 473 Pharmacology Lab</td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Phar 406 Therapeutic Agents</td>
<td>4</td>
</tr>
<tr>
<td>Phar 416 Biopharmaceutics</td>
<td>3</td>
</tr>
<tr>
<td>Phar 472 Pharmacodyn</td>
<td>5</td>
</tr>
<tr>
<td>Phar 474 Pharmacology Lab</td>
<td>1</td>
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<td>Elective</td>
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### Fourth Professional Year

(Interchangeable Semesters)

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Phar 401 Clinical Phar</td>
<td>5</td>
</tr>
<tr>
<td>Phar 413 Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Phar 417 Drugs Acces</td>
<td>2</td>
</tr>
<tr>
<td>Phar 464 Toxicology</td>
<td>2</td>
</tr>
<tr>
<td>Phar 483 Phar Ad</td>
<td>5</td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Phar 408 Clinical Clerkship</td>
<td>8</td>
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<tr>
<td>Elective</td>
<td>7</td>
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</table>

Courses printed in Roman type are required for graduation; those in italics are optional.

### Preparation for Graduate Study

As preparation for work toward an advanced degree in pharmacy, the usual pattern is completion of the requirements for a bachelor's degree in pharmacy. In particular instances, students having undergraduate majors in chemistry or the biological sciences may be suitably prepared for graduate study in pharmacy. The completion of courses in calculus and physical chemistry is desirable as part of the preparation for graduate study.

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**Department of Philosophy**

*Professor and Department Head, J. C. Carloye; Professors, D. H. Bishop, J. E. Broyles, H. S. Silverstein; Associate Professors, G. W. Lilje, M. R. Neville; Assistant Professor, M. T. Perejohn.*

The Department of Philosophy offers courses intended to provide the student with an introduction to fundamental intellectual problems, and

*Econ 203 acceptable if Econ 201 cannot be scheduled.*
both classical and contemporary attempts at their solutions. Students are encouraged to develop their own critical faculties.

The department offers courses of study leading to the degrees of Bachelor of Arts in Philosophy and Master of Arts in Philosophy.

**Description of Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Type</th>
<th>Prerequisites</th>
<th>Credit</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phil</td>
<td>For explanation see Index under “Symbols”</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>101</td>
<td>[H] Introduction to Philosophy 3 I Nature and place of philosophy in human thought; problems and achievements.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
<td></td>
</tr>
<tr>
<td>107</td>
<td>[H] Philosophy of Religion 3 II Western religious thought, nature and knowledge of God, relations to science, morality, and society.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
<td></td>
</tr>
<tr>
<td>198</td>
<td>[H] Philosophy Honors 3 I The nature of formal argument; principles of scientific inquiry.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
<td></td>
</tr>
<tr>
<td>201</td>
<td>[H] Elementary Logic 3 Analysis and evaluation of deductive and non-deductive argument.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
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<tr>
<td>220</td>
<td>[H] Aesthetics 3 I 1980-81 a/y. Philosophy of art; analysis of aesthetic experience; criteria of art criticism.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
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<tr>
<td>260</td>
<td>[H] Ethics and Contemporary Social Issues 3 Ethics through analysis of contemporary moral and social issues.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
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<tr>
<td>300</td>
<td>[H] History of Ancient and Medieval Philosophy 3 I 1980-81 a/y. Pre-req Phil 101. Pre-Socratic, Plato, Aristotle; post-Aristotelian philosophy to the Renaissance.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
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</tr>
<tr>
<td>305</td>
<td>[H] History of Modern Philosophy 3 II 1980-81 a/y. Pre-req Phil 101. Renaissance; 17th and 18th century philosophers.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
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</tr>
<tr>
<td>310</td>
<td>[H] Recent and Contemporary Philosophy 3 I 1980-81 a/y. Pre-req Phil 101. 19th and 20th century philosophers.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
<td></td>
</tr>
<tr>
<td>314</td>
<td>[H] Philosophy and Religion of India 3 II 1980-81 a/y. Pre-req Phil 101 or 107. The metaphysics, epistemology, ethics, aesthetics and social philosophy of Hinduism, Buddhism, Islam and other schools of thought.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
<td></td>
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<tr>
<td>315</td>
<td>[H] Philosophy and Religion of China and Japan 3 II 1981-82 a/y. Pre-req Phil 101 or 107. Confucianism, Taoism, Shintoism, and Mahayana Buddhism dealt with historically and in terms of central beliefs.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
<td></td>
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<tr>
<td>401</td>
<td>Seminar in Symbolic Logic 3 I 1980-81 a/y. Prereq Phil 201.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
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<tr>
<td>407</td>
<td>(550) Seminar on Religious Studies V 1-3 Senior seminar for majors in religious studies.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
<td></td>
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<tr>
<td>410</td>
<td>Seminar in Philosophy of Language 3 I 1981-82 a/y. Prereq 6 hrs Phil. The nature of conceptual knowledge by examining the manner in which this knowledge is expressed in language.</td>
<td>3</td>
<td>Prereq Phil 101</td>
<td>3 hrs</td>
<td></td>
</tr>
</tbody>
</table>

| 415  | Seminar on Analytic Philosophy 3 I 1980-81 a/y. Prereq Phil 101. The analytic tradition: Moore, Wittgenstein and others; language in philosophical problems. Credit not granted for both Phil 415 and 516. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 420  | Existentialism 3 II 1981-82 a/y. Prereq Phil 101. The movement of religious and non-religious existentialism beginning with Kierkegaard and Nietzsche, and including Heidegger, Sartre, Merleau-Ponty, Buber and Tillich. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 425  | Seminar in Philosophy of Science 3 II 1981-82 a/y. Prereq Phil 201 or 415. For philosophy and science majors. Purpose and logical structure of science; human implications. Credit not granted for both Phil 425 and 525. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 430  | Philosophy of Literature 3 II 1980-81 a/y. Prereq 3 hrs Phil. Nature of literary work of art; principles of literary criticism and evaluation. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 435  | (335) Seminar in Theory of Knowledge 3 I 1981-82 a/y. Prereq Phil 101 or 201. Problems of immediate knowledge and mediate knowledge, modes of cognition. Credit not granted for both Phil 435 and 535. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 436  | (435) Seminar on American Philosophy 3 I 1981-82 a/y. Pre-req 6 hrs Phil. Classical American philosophers; the pragmatists, Peirce, James, and Dewey. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 440  | Seminar on Metaphysics 3 II 1980-81 a/y. Prereq 9 hrs Phil. Classical and contemporary views of metaphysics; self, world, God, nature of being. Credit not granted for both Phil 440 and 540. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 445  | Seminar on Social and Political Philosophy 3 II 1981-82 a/y. Prereq Phil 101. Problems of normative social and political theories; historical and contemporary philosophers. Credit not granted for both Phil 445 and 545. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 460  | Seminar on Ethical Theory 3 II 1980-81 a/y. Prereq 9 hrs Phil. Problems on ethical theory, historical and contemporary philosophers. Credit not granted for both Phil 460 and 560. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 499  | Special Problems V 1-4 May be repeated for credit.                   |          | Prereq 12 hrs Phil.             |                                  |                                                                      |
| 510  | Seminar in the History of Philosophy 3 May be repeated for credit. 1 Prereq 12 hrs Phil. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 511  | Seminar in Theory of Logic 3 II 1981-82 a/y. Prereq Phil 201; 9 hrs Phil. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 515  | Seminar on Analytic Philosophy 3 Graduate credit counterpart of Phil 415; additional requirements. Credit not granted for both Phil 415 and 515. | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
| 516  | (515) Seminar on Philosophy of Mathematics 3 II 1980-81 a/y. Prereq Phil 401, 415 or | 3        | Prereq Phil 101                 | 3 hrs                            |                                                                      |
9 hrs Phil. Rival interpretations concerning concepts, structure, and nature of mathematics.

520 Seminar in Contemporary Ideas 3 May be repeated for credit. II Prereq 12 hrs Phil.

525 Seminar in Philosophy of Science 3 Graduate level counterpart of Phil 425; additional requirements. Credit not granted for both Phil 425 and 525.

526 (525) Seminar on Teaching of Philosophy I II 1981-82 a/y. Prereq 12 hrs Phil.

535 Seminar in Theory of Knowledge 3 Graduate level counterpart of Phil 435; additional requirements. Credit not granted for both Phil 435 and 535.

540 Seminar on Metaphysics 3 Graduate level counterpart of Phil 440; additional requirements. Credit not granted for both Phil 440 and 540.

545 Seminar on Social and Political Philosophy 3 Graduate level counterpart of Phil 445; additional requirements. Credit not granted for both Phil 445 and 545.

550 (540) Seminar in Philosophical Psychology 3 I 1981-82 a/y. Prereq Phil 101, 201, 435, or 9 hrs Phil. Theories of mind, self, mental acts, psychological states, and human actions.

560 Seminar on Ethical Theory 3 Graduate level counterpart of Phil 460; additional requirements. Credit not granted for both Phil 460 and 560.

600 Special Project or Independent Study Variable credit.

700 Master’s Research, Thesis and/or Examination Variable credit.

702 Master’s Special Problems, Directed Study and/or Examination Variable credit.

**Schedule of Studies**

At least 40 of the total hours required for the bachelor’s degree in this program must be in upper-division courses.

It is recommended that departmental majors complete the following requirements by the end of the sophomore year: Phil 101, 201, and three-fourths of the graduation requirements of the College of Sciences and Arts. All departmental majors are required to take Phil 300, 305, 310, 460, 435 or 440, 415 or 436. Supplementary courses in the College of Sciences and Arts will be arranged in consultation with the members of the Department of Philosophy.

**Preparation for Graduate Study**

Students who have completed basic undergraduate work in philosophy while majoring in other areas, either in the sciences or humanities, may be suitably prepared for graduate study in philosophy.

Students from other institutions may judge the adequacy of their preparation by comparison with the departmental requirements for undergraduate majors. Those who have not completed standard courses in the history of philosophy, ethics, epistemology, or logic should regard these as deficiencies which must be made up in the early stages of their graduate program.

**Departments of Physical Education for Men and Women**

**PHYSICAL EDUCATION FOR MEN**


**PHYSICAL EDUCATION FOR WOMEN**

Professor and Department Head, E. Gordon; Professors, M. Adrian, M. L. Enberg; Associate Professors, S. Durrant, W. Harrington, G. Hulac, J. Washburn, W. Weaver; Assistant Professors, D. Albright, H. Brown, Burtz, T. Coblenz, J. Gutting, K. Kohl, M. Mowatt, D. Pipher, A. Sanders, K. Wilke, W. Zietz.

The Departments of Physical Education for Men and Women unite the interests of the following areas: professional physical education for the teacher and coach, the elective activity programs for all students, Prephysical therapy, professional recreation and park administration, intramural programs, intercollegiate activities, and health education.

**Physical Education**

The physical education curriculum is designed to provide a solid professional preparation for future teachers of physical education. Students majoring in elementary education may also take physical education as their area of subject-matter concentration. Students majoring in secondary physical education may also obtain K-12 certification by taking additional courses PEP 254, 379, 380, 381, 383, 389.
PHYSICAL EDUCATION MAJORS

1. Senior or Junior High School Major (for men): 30 hours minimum.

Required courses and competencies: PEP 195 or 197; MPE 229, 235 or PEP 393; H Ed 363; PEP 261; 362; 382; 465; 482; 494; 496. Select 5-6 courses from the following: MPE 111, 112, 120, 138, 141, 143, 148, 150, 158, 164; plus 2-4 hours from: PEP 199, 220, 266, 300-312, 488, 489, H Ed 361, RPA 151. Zool 251 is recommended. A minor in coaching and one in an unrelated field should be selected. If additional hours can be taken to satisfy the departmental requirements for graduation, the degree should be in physical education. If not, it should be in General Studies.

2. Senior or Junior High School Major (for women): 30 hours minimum.

Required professional courses: WPE 104, PEP 199, 261, 362, 382, 482, 494, 496. Course work or competency in WPE 138 or 139; PEP 190, 191, 192, 193 (2 credits); PEP 196 or 198; 331 or 332; RPA 351 or PEP 355; H Ed 363. Course work or competency in ten approved activity credits. Zool 251 is strongly recommended. An approved minor is required for teacher certification. If additional hours can be taken to satisfy the departmental requirements for graduation, the degree should be in physical education. If not, it should be in General Studies.

PHYSICAL EDUCATION MINORS

1. Senior or Junior High School Physical Education (for men): 20 hour minimum.

PEP 195 or 197; MPE 229, MPE 235 or PEP 393; PEP 261; 362; 382; plus 6 courses from MPE 111, 112, 128, 138, 141, 143, 148, 150, 158, 164; plus 5-6 hours selected on advice from the Department of Physical Education for Men. Zool 251 is recommended.

2. Senior or Junior High School Physical Education (for women): 18 hour minimum.

PEP 261; 362; 382, and 8 hours from PEP 190, 191, 192, 193, 196, 331, 332, 151. Zool 251 is recommended.

3. Coaching: 21 hours.

Spe 102; PEP 220; 266; 330 or 465; 488; 489; plus 6 hours selected from PEP 200-212, 300-312, 393. PEP 390 may be substituted for one PEP 300-312 course. A coaching minor must be approved by the Department of Physical Education.

4. Health Education: 18-20 hours.

H Ed 361; 383; 480 or 481; Psych 102; one course from each of the following groups:

FNIM 130, Env S 101 or equivalent community college course; CFS 247, Psych 230, or Soc 150; Phar 217, 417, or Psych 365.

OPTIONS AND CONCENTRATIONS

(May not be substituted for a teaching minor but may be combined with the above majors and minors with departmental approval):

1. Dance: 20 hour minimum.

RPA 151; MPE/WPE 126; 226; RPA 351 or PEP 254, or 355; PEP 257; 261; 362; plus 5 hours selected from: MPE/WPE 120, 121, 122, 123, 124, 127, 227, 279; PEP 254, 327, 340, 355, 356, 499, RPA 351. Must be approved by the department.

2. Aquatics: 20 hours.

PEP 312; 393; H Ed 363; PEP 261; 362; 433; 390; plus 6 hours selected from: MPE/WPE 233, 234, 229, 130, 131, 235, 278, WPE 289, MPE 293.

3. Athletic Training: 55-61 hours.

Psych 101; Soc 101; FNIM 130; Zool 251; PEP 261; H Ed 363; PEP 266; H Ed 361; PEP 362; 382; 463; 465; 466; 499; plus 4 hours selected from: Bact 101, Spe 112, Phar 217, PEP 300-312. The option must be approved by the department; students are admitted by screening procedure.

Recreation and Parks Administration

D. Albright, D. Burtz, Coordinators

The Recreation and Park Administration curriculum is designed to provide professional recreation preparation in four areas: commercial recreation, park administration, program supervision and therapeutic recreation. The major in RPA must complete a core program of general education and professional recreation and park requirements, in addition to completing option requirements in the areas of his/her choice. In numerous courses, theory and practice are integrated in preparation for the field work experience. A total of 1000 hours of practical experience is required for all majors.

1. Commercial Recreation

RPA 341; B A 230, 360; Com 312; RPA 487; at least 24 hours from at least six competency areas.

2. Park Administration

L A 264; L A 363 or RPA 373; Com 312; RPA 475; For 412; at least 24 hours from at least six competency areas.

3. Program Supervision

RPA 388; Psych 360; B A 230; Com 312; RPA 487; at least 24 hours from at least six competency areas.
4. Therapeutic Recreation  
RPA 383; RPA 388; RPA 460; RPA 483; PEP 463; Phar 217; Psych 333; Psych 360 or S W 394; Soc 356; Soc 361; at least 15 hours from at least four competency areas.

A major in the Recreation and Park Administration curriculum may secure a second degree and qualify for a teaching certificate by completing the subject matter requirements for physical education, the requirement of the Department of Education, and presenting not less than 150 semester hours.

Prephysical Therapy  
R. Larson, Coordinator

The program of studies is designed to prepare the student for admission to the Physical Therapy bachelor degree programs, master’s degree programs, and Professional Certificate curriculum programs. Students majoring in prephysical therapy may elect to enroll in additional courses in the physical and biological sciences or may prepare for teacher certification in physical education or special education.

Degrees

The departments offer courses of study leading to the degrees of Bachelor of Science in Physical Education, Bachelor of Arts in Recreation and Park Administration, Master of Science in Physical Education, Master of Arts in the Teaching of Physical Education, and Doctor of Philosophy.

Description of Courses

Activity Courses

Courses numbered 101 through 174 are for beginners. Courses numbered 177 through 276 are for intermediate or advanced students.

Activity course credit is granted on the basis of one credit for two one-hour classes per week. Repeat credit is granted only for MPE/WPE 201 Conditioning, for a maximum of 2 hours.

M P E / W P E

<table>
<thead>
<tr>
<th>Course</th>
<th>Code</th>
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<tbody>
<tr>
<td>Beg Cond</td>
<td>118</td>
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<tr>
<td>Fund of Move</td>
<td>119</td>
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<tr>
<td>Art Sci Move</td>
<td>120</td>
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<tr>
<td>Self Defense</td>
<td>121</td>
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<td>Beg Judo</td>
<td>122</td>
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<td>Beg Karate</td>
<td>123</td>
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<td>Beg Boxing</td>
<td>124</td>
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<td>Beg Wrestling</td>
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<td>Wt Training</td>
<td>127</td>
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<tr>
<td>Beg Tumbling</td>
<td>128</td>
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<tr>
<td>Beg Gym App</td>
<td>130</td>
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</tbody>
</table>

131 Beg Scuba
136 Special Topics
137 Beg Archery
138 Track Events
139 Field Events
140 Jogging
141 Beg Golf
143 Beg Bowling
145 Beg Fencing
146 Beg Handball
148 Beg Badminton
150 Beg Tennis
152 Pocket Billiards
154 Beg Racquetball
155 Beg Basketball
158 Beg Volleyball
162 Softball
163 Flag Football
164 Beg Soccer
165 Tech Officer
166 Beg Fishing
168 Basic Equitation
171 Beg Rifle
173 Orientering
174 Beg Skiing
177 Int Racquetball
201 Int Conditioning*
207 Int Judo
208 Int Karate
209 Int Boxing
211 Int Wrestling
212 Weight Lifting
214 Int Tumbling
215 Int Gym App
220 Adv Soc Dance
222 Int Ballet
224 Int Jazz Dance
226 Int Mod Tech
227 Adv Mod Tech
228 Int Swimming
229 Adv Swimming
231 Int Scuba
233 Synch Swim
234 Small Craft
235 Life Saving
241 Int Golf
242 Adv Golf
243 Int Bowling
245 Int Fencing
246 Int Handball
247 Adv Racquet
248 Int Badminton
250 Int Tennis
251 Adv Tennis
258 Int Volleyball
259 Adv Volleyball
264 Int Soccer
266 Fly Fishing
268 Int Equitation
269 Engl Equitation
270 West Equitation
271 Int Rifle
274 Int Skiing
276 Ski Touring
278 Fish Fans
279 Orchesis

Varsity Sports
281 Baseball
282 Basketball
283 Cross Country
284 Field Hockey
285 Football
286 Golf
287 Gymnastics
288 Skiing
289 Swimming
290 Tennis
291 Track
292 Volleyball
293 Water Polo
294 Wrestling

*May be repeated for credit; cumulative maximum 2 hours.

Professional Courses

PEP For explanation see Index under “Symbols”

190 Field Sports (W) 1 (0-3) Techniques, individual and team tactics, and officiating.
191 Volleyball (W) 1 (0-3) Techniques, individual and team tactics, and officiating.
192 Basketball (W) 1 (0-3) Techniques, individual and team tactics, and officiating.
193 Softball 1 (0-3) Techniques, individual and team tactics, and officiating.
195 Tumbling and Trampoline (M) 1 (0-3) Skills and techniques in trampoline, tumbling, handbalancing, pyramid building and spotting.
196  Tumbling and Trampoline (W) 1 (0-3)  Skills and techniques in trampoline, floor exercise plus teaching methods and spotting.

197  Men's Gymnastics Apparatus 1 (0-3)  Skills and techniques in pummel horse, rings, vaulting, parallel bars, horizontal bars and spotting.

198  Women's Gymnastics Apparatus 1 (0-3)  Skills and techniques; balance beam, uneven parallel bars, vaulting plus teaching methods and spotting.

199  Disciplines of Physical Education 2  For freshmen and sophomores only. Related areas of prephysical therapy and coaching.

200-211  Advanced Skills and Techniques of Sport 1 (0-3)  Fundamental skills; advanced skills and techniques in selected sports.

  200  Baseball  206  Softball
  201  Basketball  207  Tennis
  202  Field Events  208  Track Events
  203  Football  209  Volleyball
  204  Men's  210  Women's
         Gymnastics  Gymnastics
  205  Soccer  211  Wrestling

220  Officiating V 1-2  May be repeated for credit; cumulative maximum 4 hours.

254  Creative Rhythms for Children 2 (1-3)  For elementary school teachers and recreation leaders.

257  Theory of Dance 2  Historical background; philosophy.

261  Anatomy 3 (2-3)  Human skeletal structure and articulations; skeletal musculature; the nervous and circulatory system.

266  Care and Prevention of Athletic Injuries 2 (1-3)

290  Intramural Administration 2 (1-3)  Philosophies and program content of intramurals at public schools and colleges. Laboratory experiences in WSU intramural program.

300-312  Coaching of Sports 1  Theory and strategy of coaching selected sport areas.

  300  Baseball  308  Track and
  301  Basketball  309  Field
  303  Football  309  Volleyball
  304  Men's  310  Women's
         Gymnastics  Gymnastics
  305  Soccer  311  Wrestling
  307  Tennis  312  Swimming

302  Pool Maintenance and Operation 1  Prereq. adv swimming or equivalent. Information and practice for managers and maintenance specialists in infiltration, pool operation, tests and records, organization and administration of personnel.

330  Biological and Mechanical Aspects of Sports 3  Anatomy, physiology, physiology of exercise, and kinesiology; practical applications to coaching situations.

331  Advanced Analysis of Performance in Physical Activity 1 (0-3)  Prereq. beginning badminton and golf or equivalent experience. Analyses of skill performance and implications for the teaching of selected psychomotor activities.

332  Advanced Analysis of Performance in Individual and Dual Sports 2 (1-3)  Prereq. beginning archery, bowling, and tennis or equivalent experience. Analyses of skill performance and implications for the teaching of selected psychomotor activities.

340  [H] Chicano Dance and Theater 2  Same as Ch St 340.

355  Modern Dance for the Teacher 2 (1-3)  II  Prereq. 2 sem modern dance.

356  Advanced Modern Dance Composition and Choreography 1 (0-3)  May be repeated for credit; cumulative maximum 3 hours. Prereq. PEP 256. Solo and group dances in modern dance idiom for performance and production.

362  Kinesiology 3 (2-3)  Prereq. PEP 261.

379  Physical Education for Primary Grades 2  (1-3)  For elementary education majors. Materials and methods of primary physical education instructors.

380  Physical Education for Intermediate Grades 2  (1-3)  For elementary education majors. Materials and methods of intermediate physical education instructors.

381  Curriculum and Evaluation in Elementary School Physical Education 2  Curriculum, learning, and evaluation relationships in elementary school physical education.

382  Instruction and Programs in Secondary School Physical Education 4  (3-3)  Prereq. certified major or minor and reasonable level of skill competency. Methods, materials and directed teaching in secondary school physical education activities.


389  Practicum in Elementary School Physical Education V 1 (0-3)  to 4 (0-12)  May be repeated for credit; cumulative maximum 4 hours. Prereq. PEP 379 or 380. By interview only. Supervised practicum in an established elementary physical education program.

390  Practicum in Athletic Coaching V 1 (0-3)  to 2 (0-6)  May be repeated for credit;
cumulative maximum 6 hours. By interview only. Supervised practicum in an established public school or college athletic program.

393 Methods of Water Safety Instruction 2 (1-3) Prereq MPE/WPE 235. Red Cross water safety certificates awarded to those who qualify.

400 Conditioning for Maximal Performance 1 or 2 S Prereq PEP 382 or teaching experience. Conditioning principles and programs related to the development of maximal performance; weight and flexibility training, general cardiovascular and cardiorespiratory conditioning.

420 Advanced Basketball Officiating 1 or 2 S Prereq PEP 220 or officiating experience. History, philosophy, and advanced techniques of basketball. For those with basic knowledge of basketball officiating.

433 Aquatic Programs 2 Prereq PEP 393 or WSI certification. Aquatics, organization and administration.

460 Therapeutic Recreation for Afflicted and Handicapped Populations 3 Same as RPA 460.

461 Advanced Human Anatomy 2 (1-3) May be repeated for credit. Prereq PEP 261. Regional dissection and study of gross anatomical body parts.

463 The Atypical Student in Physical Education 2 or 3 (2-3) Prereq for PE majors—PEP 382 or 383; for Educ majors—Educ 303 or 320; for RPA majors—RPA 383; for PrePT majors—PEP 362. Individual differences as the relate to physical education.

464 Physical Therapy Clinical Experience 2 (1-3) Prereq PEP 362. Physical therapy experience in a clinical setting; materials and programming on use of modalities, therapeutic exercise, and reporting and medical writing.

465 Physiology of Exercise 3 (2-3) Prereq PEP 261; Zool 251.

466 Advanced Athletic Training 1 Advanced care and prevention of athletic injuries.

473 Developing Individual Education Programs 1 S Developing programs for the handicapped and normal population based on needs and abilities.

474 Assessment of the Exceptional Child 1 S Tests and measures to determine the motor level and skill capabilities of handicapped children.

475 Activities and Programs for Exceptional Children 1 S Practical adaptation of games and activities for exceptional children in the regular physical education class.

482 Principles of Physical Education 3 Prereq PEP 382. Concepts and principles which give meaning to physical education with the social and educational matrix.

487 Facilities and Equipment for Physical Education, Recreation, and Athletics 2 or 3

488 Administrative Problems in Coaching 2 Administrative problems in coaching in school athletic programs based upon accepted education policies.

489 Behavioral Aspects of Sports 3 Sociological and psychological factors inherent in the coaching of sports.

490 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 6 hours.

494 Evaluation in Physical Education 3 (2-3)

496 Senior Seminar 1 Prereq senior standing.

499 Special Problems V 1-4 May be repeated for credit.

501 Current Topics in Physical Education, Recreation, and Athletics 1-3 May be repeated for credit; cumulative maximum 6 hours credit. Contemporary topics of current interest to graduate physical education, recreation, and athletic students and professional personnel.

511 Health and Medical Aspects of Sport 1 or 2 S Prereq coaching minor certification and teaching experience. Medical supervision, first aid, nutrition, conditioning policies, relationships with health service, legal implications, effects of competitions and care of injuries.

512 Facilities and Equipment in Athletics 1 or 2 S Prereq teaching experience. Newer concepts in school sports facilities, modifying present facilities, educational specifications for facilities, evaluation of athletic facilities.

513 School Law and Athletics 1 or 2 S Prereq teaching experience. Personal and institutional liability, transportation of athletes, insurance coverage, legal responsibilities associated with Title IX, sports injuries; case studies.

514 Public Relations in Athletics 1 or 2 S Prereq teaching experience. Working with the media, audio-visual and oral and written techniques for good public relations.

515 Assessment of the Athletic Programs and Personnel 1 or 2 S Prereq teaching experience. Assessment of the total athletic program, individual sport programs and personnel involved: athletic directors, head coaches, assistant coaches, and officials.

516 Athletic Programs Administration 1 or 2 S Prereq teaching experience. Athletic event
management, tournament, officiating; interrelations of men's and women's programs; Title IX implications, business and accounting procedures.

517 Applying Scientific Principles to Improving Performance 1 or 2 S Prereq teaching experience. Scientific knowledge relating to improving athletic performance; analysis of coaching methods and individual techniques; field of exercise physiology, biomechanics, and coaching theory.

518 Psychological and Sociological Aspects of Sport 1 or 2 S Prereq teaching experience. Methods of working with athletes and athletic teams; individual athletes and groups as they relate to their own development.

564 Mechanical Analysis of Motor Activity 3 Prereq PEP 362 or Phys 101. Fundamental laws of mechanics applied to motor activities.

565 Advanced Physiology of Exercise 2 Prereq PEP 465. Metabolic adjustment made in response to exercise and training with major emphasis upon research findings.

566 Biomechanics 3 (2-3) Prereq PEP 564; Math 202; Phys 102. Biological and mechanical aspects of human movement.

573 Philosophical Perspectives in Physical Education 2 or 3 Contemporary philosophies with implications for objectives, methodology, and course content.

575 Physical Education Programs for Junior and Senior Colleges 3 Prereq PEP 482. Professional, required, intramurals, adaptive, research, and recreational-type programs for general education and professional physical education students.

578 Sports in Society 3 The social significance of sports as viewed from a physical education perspective; sociology of sport research.

579 Psychology and Physical Activity 3 Prereq Psych 321 or 350. Current research findings in psychology pertinent to the teaching and coaching of physical activity.

582 Teaching of Physical Education Activities 1 May be repeated for credit; cumulative maximum 2 hours. Improvement of instruction in physical education classes through the application of current learning theories and teaching strategies.

585 Physical Education Curriculum 2 or 3 Principles of constructing and evaluating the physical education curriculum of public schools.

586 Administrative Perspectives in Physical Education and Recreation 2 or 3 The physical educator and recreation manager as a democratic leader and executive in the educational and community based program.

587 Research Lab Techniques 2 (1-3) or 3 (2-3) Application and use of laboratory research equipment in physical education.

590 Internship V 3 (0-9) to 6 (0-18) May be repeated for credit; cumulative maximum 12 hours. By interview only. Internship in educational, industrial, municipal or private sports or recreational setting; direct participation in tasks, research and reporting activities.

591 Motor Learning 3 Prereq Psych 101; Zool 251. Exploration of learning theory, learning models, and experimental evidence related to learning of perceptual-motor skills.

592 Perceptual Motor Development 3 Physical growth and perceptual-motor development from the prenatal period through senescence.

593 Methods of Research and Experimental Design 2 or 3

596 Seminar 2 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Health Education

H Ed

363 First Aid 2 (1-3) Advanced first aid; accident prevention. Option for instructor's card available.

361 Contemporary Health Issues 3 Current topics with implications for the development and maintenance of a high level of well-being.

383 School Health Instruction 3 Prereq H Ed 361, Educ 303 or 305 or c/. Methods, materials, and resources.

480-1 School Health Programs 2 I Prereq Educ 303, 305, 306. Philosophy, principles, and practices.

490 Instructional Practicum V 1-4 Same as PEP 490.

499 Special Problems V 1-4 May be repeated for credit.

Recreation

RPA

151 Introduction to Recreational Dance 2 (1-3)
Techniques of folk, square, and social dancing.

221 Camp Counselor Education 2 (1-3) Techniques in outdoor living and camp counseling.

275 Recreation in America 2 The recreation movement in America; history, philosophies, trends; socio-economic values; professional recreation within governmental and nongovernmental agencies.

285 Recreation Leadership 2 Prereq RPA 275. Theories and techniques of leadership process as related to recreation personnel.

290 Intramural Administration 2 (1-3) Same as PEP 290.

300 Techniques and Programs in Wilderness Activities 3 (2-3) S Backpacking, survival training, white water floating; skills, programming, safety factors. Field trips required.

321 Camping Administration 2 Prereq RPA 221. Administration and management aspects of organized camping.

341 Commercial Recreation 3 Prereq B A 230. Overview of organization and function of commercial and industrial recreation; commercial goods and services offered in leisure market.

351 (251) Recreation Dance for the Teacher 2 (1-3) Prereq RPA 151. Methods and materials for social, folk, and square dancing.

371 Wildland Recreation 3 Same as For 371.

373 Interpretive Techniques 3 (2-3) Same as For 373.

375 Recreation Programs 3 Prereq RPA 285; major in RPA. Principles, methods and materials for recreation programs in a variety of recreation and park settings.

380 Physical Education for Intermediate Grades 2 (1-3) Same as PEP 380.

383 Therapeutic Recreation Service 2 Prereq RPA 285. The rationale for therapeutic recreation delivery systems and services and their relationships to the treatment setting.

388 Social Recreation 2 (0-6) Prereq Psych 101; Soc 101. Theory, application and demonstration of principles of planning social recreation parties and activities for different occasions, age, and subcultural groups.

389 Practicum in Recreation and Park Services V 1 (0-3) to 2 (0-6) May be repeated for credit; cumulative maximum 8 hours. Prereq RPA 285. By interview only. Supervised practicum in community recreation and park programs.

435 Outdoor Living and Camp Counseling 6 S Prereq upper-division or graduate students.

460 Therapeutic Recreation Practices and Procedures 3 Prereq RPA 383. Disabilities, injuries and afflictions of the ill and handicapped; implications for recreation program planning and delivery.

464 Recreation for the Handicapped 3 S Prereq upper-division or graduate students.

471 Wildland Recreation Management 3 (2-3) Same as For 471.

475 Recreation and Park Facilities Management 3 Problems, methods, planning and techniques applicable to the maintenance of recreation and park facilities for governmental and private agencies.

481 Recreation and Park Administration 3 Prereq RPA 375. Principles underlying the organization, supervision, and administration of delivery systems; review of economic, political, social and cultural factors influencing delivery.

483 Organization and Administration of Therapeutic Recreation 2 Prereq RPA 460. Policies and procedures in the implementation of therapeutic recreation service in institution and community settings.

487 Facilities and Equipment for Physical Education, Recreation, and Athletics 2 or 3 Same as PEP 487.

488 Youth Agencies 2 II Prereq Psych 101 or Soc 101. Structure and function of youth agencies and current topics related to youth in the recreation setting.

489 Field Work in Recreation and Park Administration V 8-12 Prereq RPA 389/490; RPA 481; 1,000 hours practical experience. For RPA majors. RPA problems and practices. Supervised practicum in an established recreation or park agency.

490 Instructional Practicum V 1-4 Same as PEP 490.

499 Special Problems V 1-4 May be repeated for credit.

Schedule of Studies

At least 40 of the total hours required for the bachelor’s degree in these programs must be in upper-division courses.

Physical Education for Women

Majors preparing to teach should consult the catalog listing of the Department of Education for certification requirements and must take H Ed 480 or 481.

Core of required professional courses:

<table>
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<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>A. WPE 104 Art Sci Move</td>
<td>1</td>
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<tr>
<td>PEP 199 Intro to Profession</td>
<td>2</td>
</tr>
<tr>
<td>PEP 261 Anatomy</td>
<td>3</td>
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245
Physics is sometimes defined as the science of matter and energy and the interaction between the two. In any case it is the study of nature at its most fundamental level. As such it is the science upon whose principles all of the other sciences, as well as the technologies, are based. Because it is so basic, a major in physics is ideal preparation, not only for further study in physics, but also for advanced study in such diverse fields as biophysics, medicine, astrophysics, geophysics, chemical physics, engineering, meteorology, and computer science. These same areas also offer careers for the physics major.

Courses offered by the physics department are designed to introduce the student to each of the major physical theories. Additional undergraduate courses use these theories to investigate such topics as optics, atomic physics, nuclear physics, solid state physics, astrophysics and geophysics. In well-equipped laboratories the student tests the theories and learns some of the standard experimental techniques needed to work with modern apparatus such as high-vacuum equipment, lasers, electronic devices, and accelerators.

Active research programs, supported in part by U.S. Government grants and contracts, are being carried out in the following fields: shock wave physics (properties of solids under extreme compression induced by high velocity impact); solid state physics (interaction of intense laser beams with wide band gap insulators, mechanics of rupture of protective oxide films on metals, thin film electro luminescent properties); surface physics and chemical physics (molecular interactions on clean single crystal surfaces, scattering of neutral particles and ions from metal and semiconductor surfaces, thermionic and photoelectron emission patterns, extended X-ray absorption fine structure studies); nuclear physics (meson stopping, capture, and nuclear absorption phenomena for biomedical applications); theoretical physics (mathematical and philosophical bases of quantum mechanics and statistical mechanics, nonlinear wave propagation, nonequilibrium thermodynamics, energy resources). These research groups offer graduate students the opportunity to pursue the original investigations required for advanced degrees. Undergraduate physics majors are encouraged to participate through the special problems course (Phys 499) or through part-time summer jobs that are sometimes available.

**Description of Courses**

**Phys** For explanation see Index under “Symbols”

100 Preparation for Physics 2 Mathematical skills and problem-solving techniques for Phys 101-102 and 201-202. For students who lack requisite preparation.

101 [P] General Physics 4 (3-3) Fundamental principles and applications of mechanics, heat, and sound; oriented toward nonphysical science majors.


303 Modern Physics 3 II Prereq Math 273; Phys 202. The quantum theory and relativity with applications from atomic, nuclear and solid state physics.


310 Modern Laboratory Techniques 3 (1-6) II Prereq Phys 202; 303 or c/. Fundamental laboratory techniques of current interest, and classical experiments.

320 Mechanics 3 II Prereq Math 315 or c/. Phys 102 or 202. Particle motion in one, two, and three dimensions; motions of systems of particles; rigid body motion; Lagrange's equations.

322 [P] Sound Waves and Music 3 I For non-majors. A non-mathematical introduction to the physical nature of sound; theory of music; mechanical and electronic musical instruments.

341 Electricity and Magnetism 3 I Prereq Math 315 or C/. Electrostatic fields, magnetic fields, dielectric and magnetic media.

342 Electricity and Magnetism 3 II Continuation of Phys 341. Maxwell's equations; electromagnetic waves, special relativity.

345 Principles of Astronomy 3 I Same as Astr 345.

371 [P] Revolutions in Physics 3 I Revolutions in man's view of motion and the cosmos, from Aristotle to Einstein.

380 [P] Physics and Society 3 II Interactions of physics with society; energy; air and water pollution; recycling; communications and computers; physics and war; physics and art.

410 Electronics 3 (1-6) I Prereq Phys 102 or 202. Laboratory construction and investigation of electronic circuits employed in research instruments.

435 Astronomy and Astrophysics 3 II Same as Astr 435.

443 Optics 3 I 1981-82 a/y. Prereq Phys 341 or C/. Geometric optics; diffraction, interference, and polarization phenomena of the electromagnetic spectrum; crystal optics.

450 (350) Quantum Mechanics 3 II Prereq Math 315; Phys 304. Introduction to quantum theory with applications to atomic physics.

461 Atomic and Molecular Physics 3 II Prereq Phys 304. Physics of atoms and molecules using quantum theory.

463 Physics of the Solid State 3 I Prereq Phys 304. Lattice vibrations and defects; ionic and electronic conductivities; band theory; magnetic properties; luminescence.


482 Geophysics 3 I 1980-81 a/y. Prereq Phys 202 or 102; Math 171; Geol 101 or 102. Composition, movements, and origins of earth's atmosphere, crust, mantle, and core from seismic, magnetic, gravitational, and thermal evidence.

490 Seminar in Physics Literature 1 I

499 Special Problems V 1-4 May be repeated for credit.

521 Classical Mechanics I 3 I Laws of motion as developed by Newton, d'Alembert, Lagrange, and Hamilton; dynamics of particles and rigid bodies.


533 Advanced Topics in Statistical Mechanics and Thermodynamics 3 I Same as Chem 533.


538 Topics in Modern Astrophysics 3 May be repeated for credit; cumulative maximum 9 hours. II Same as Astr 538.

539 Group Representation Theory and Its Applications 3 I Same as Math 539.

541 Electromagnetic Theory 3 II Prereq Phys 571, 572 or C/. Special relativity and the classical electromagnetic field; emission, propagation, and absorption of electromagnetic waves.

542 Electrodynamics 3 I Prereq Phys 541, 552 or C/. Interaction of matter and electromagnetic radiation; classical and quantum electrodynamics.

551 Quantum Theory I 3 II Prereq Phys 571, 572 or C/. Physical and mathematical foundations; wave mechanics, bound states, and collision theory; matrix mechanics; approximation methods.

552 Quantum Theory II 3 I Prereq Phys 551. Symmetry and invariance, angular momentum; formal theory of scattering; relativistic wave mechanics; second quantization.

564 Atomic and Molecular Phenomena 3 II 1981-82 a/y. Same as Ch P 564.

571 (570) Methods of Theoretical Physics 3 I Prereq Math 440, 441. Mathematical methods for theoretical physics; linear algebra, tensor analysis, complex variables, differential equations, integral equations, variational calculus, and group theory.

572 Methods of Theoretical Physics 3 II Prereq Phys 571. Continuation of Phys 571.

574 Advanced Mathematical Physics 2 II Prereq Phys 572. Advanced methods of contemporary mathematical physics.

581 Advanced Topics 3 May be repeated for credit; cumulative maximum 12 hours. II Topics of current interest in advanced physics.

590 Seminar I May be repeated for credit.

592 Wave Propagation Seminar 2 May be repeated for credit; cumulative maximum 4 hours. Waves in the continuum; elastic, plastic, and hydrodynamic waves; shock waves.

593 Seminar in Physics of Condensed Matter 1 May be repeated for credit; cumulative
maximum 2 hours. Experimental and theoretical methods of study of matter in the condensed state and at interfaces.

594 Seminar in Solid State Physics 1 May be repeated for credit; cumulative maximum 2 hours. Current topics in solid state physics.

595 Nuclear Physics Seminar 1 or 2 May be repeated for credit; cumulative maximum 4 hours. Advanced nuclear and fundamental particle topics.

597 Seminar in the Foundations of Physics 1 May be repeated for credit; cumulative maximum 2 hours. Advanced seminar mathematical and philosophical foundations of physics.

598 Teaching Physics Undergraduate Laboratories 1 May be repeated for credit; cumulative maximum 2 hours. Principles and practices of teaching, planning and management of undergraduate physics laboratories; choice and care of equipment.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

**Schedule of Studies**

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division hours.

A major in physics requires Phys 201, 202, 303, 304, 310, 320, 330, 341, 342, 410, 463, 465, 490 (1 hr), 499 (1 hr); Math 171, 172, 220, 273, 315 plus at least 6 hours from 371, 375, 410, 440, 441, or 448; Chem 105, 106 (or Chem 111); Cpt S 210 and Eng 201.

Optional physics courses include Phys 435, 443, 450, 482 as well as additional 499 credit.

Physics majors with interests in such fields as chemical physics, biophysics, geophysics, astrophysics, engineering physics, and computer science, are urged to consult the departmental advisor for modifications of the requirements listed above. A minor in physics is also offered.

**Transfer Students**

Transfer students receive credit for equivalent courses taken elsewhere, but must meet the requirements for graduation listed above.

**Preparation for Graduate Study**

Students contemplating graduate work in physics should consider Phys 450, 521, 571, 572, and additional mathematics courses. At least one year of German, Russian, or French should also be taken.

**Department of Plant Pathology**


Plant pathology is the study of plant diseases, their economic effects, causes, nature, epidemiology, and control. Opportunities for graduates in plant pathology include research and development for many types of agencies, teaching, extension, sales, and commercial service. Industry, government, educational institutions, and private foundations employ plant pathologists on a world-wide basis.

The undergraduate program in plant pathology is designed to provide a broad background in the biological, physical, and agricultural sciences. Many plant pathology majors continue in graduate study.

The courses offered in this department are designed both to train students expecting to make plant pathology or mycology their professional field of specialization and to provide supplementary training for students in other biological and agricultural fields, particularly agronomy, botany, horticulture, forestry, and entomology. The student who expects to become a professional plant pathologist is advised to include in his undergraduate studies fundamental courses in bacteriology, botany, chemistry, genetics, physics, and zoology.

A professional career in plant pathology requires graduate training, and the four-year course outlined under the schedule of studies is basic for such later specialization. Students often enter advanced work in plant pathology following a major in biology, botany, agronomy, horticulture, or similar area as well as from plant pathology. Specialized areas of advanced study include mycology, nematology, virology, epidemiology, disease physiology, host-parasite relationships, ecology of disease development, biochemistry of pathogenicity, disease resistance, chemical control, and air pollution. Research is conducted on diseases of grain crops, forage crops, forest trees, fruits, vegetables, ornamentals, and turf.

The department offers courses of study leading to the degrees of Bachelor of Science in
Agriculture, Master of Science in Plant Pathology, and Doctor of Philosophy.

The department also participates in a curriculum in Plant Protection and Pest Management. This is an interdepartmental curriculum, leading to a Bachelor of Science degree that is coordinated through the Program in General Agriculture. Interested persons should contact the Curriculum Coordinator through the Department of Entomology.

### Description of Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>331</td>
<td>Forest Pathology 3</td>
<td>Prereq. Bio S 103</td>
<td>Parasitic and non-parasitic diseases of forest and shade trees; life histories of fungi as related to diseases.</td>
</tr>
<tr>
<td>499</td>
<td>Special Problems V</td>
<td>1-4 May be repeated for credit.</td>
<td></td>
</tr>
<tr>
<td>501</td>
<td>Diseases of Plant 4</td>
<td>Prereq. PI P 329</td>
<td>Representative types of plant diseases (non-infectious, bacterial, fungal, viral).</td>
</tr>
<tr>
<td>503</td>
<td>Biological and Cultural Practices of Plant Disease Control 2</td>
<td>Prereq. PI P 501</td>
<td>Biological, cultural, genetic, chemical, and legal bases of plant disease control.</td>
</tr>
<tr>
<td>511</td>
<td>Viruses and Virus Diseases of Plants 3</td>
<td>Prereq. PI P 329 or Bact 314</td>
<td>Nature of plant viruses, vector-virus relationships, and virus diseases of plants. Joint course taught with the University of Idaho.</td>
</tr>
<tr>
<td>512</td>
<td>Methods in Plant Virus Research 3</td>
<td>Prereq. PI P 511</td>
<td>Laboratory and greenhouse research methods used for isolation, identification, characterization, and transmission of plant viruses.</td>
</tr>
<tr>
<td>513</td>
<td>Nematodes and Nematode Diseases of Plants 2</td>
<td>Prereq. PI P 329</td>
<td>Anatomy, identity, and diseases caused by nematodes; techniques and control.</td>
</tr>
<tr>
<td>515</td>
<td>Seminar 1</td>
<td>Prereq. PI P 421</td>
<td>Taxonomy, physiology, and reproduction of the rusts, smuts, and higher basidiomycetes.</td>
</tr>
<tr>
<td>522</td>
<td>Basidiomycetes 3</td>
<td>Prereq. PI P 421</td>
<td>Taxonomy, physiology, and reproduction of the rusts, smuts, and higher basidiomycetes.</td>
</tr>
<tr>
<td>523</td>
<td>Ascomycetes and Fungi Imperfecti 2</td>
<td>Prereq. PI P 421</td>
<td>Taxonomy, phylogeny, physiology, and reproduction of ascomycetes, and fungi imperfecti.</td>
</tr>
<tr>
<td>524</td>
<td>Lower Fungi 2</td>
<td>Prereq. PI P 421</td>
<td>Taxonomy, phylogeny, physiology, and reproduction of aquatic and terrestrial phycymycetes and myxomycetes.</td>
</tr>
<tr>
<td>525</td>
<td>Field Plant Pathology 1</td>
<td>Prereq. PI P 329 or 401</td>
<td>Comprehensive report of pathological observations is required. Field trips required.</td>
</tr>
<tr>
<td>529</td>
<td>Methods and Techniques 4</td>
<td>Prereq. PI P 401</td>
<td>Identification, isolation, culture, and inoculation of susceptible fungi, bacteria, viruses, and nematodes; bioassays; advanced research techniques.</td>
</tr>
<tr>
<td>535</td>
<td>Physiology and Genetics of Parasitism 3</td>
<td>Prereq. Chem 364; Genet 362</td>
<td>Genetic and physiologic aspects of host-parasite interactions.</td>
</tr>
<tr>
<td>540</td>
<td>Seed Pathology 3</td>
<td>Prereq. PI P 329</td>
<td>Seed-borne pathogens including fungi, bacteria, and viruses, nature of their infection, and relation to spread of plant diseases. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>550</td>
<td>Field Mycology 3</td>
<td>Prereq. PI P 522, 523, or 524</td>
<td>Collection, identification, and preservation of parasitic and fleshy fungi; herbarium methods.</td>
</tr>
<tr>
<td>558</td>
<td>Genetics of Fungi 3</td>
<td>Prereq. PI P 1980-81 a/y.</td>
<td>Genetic systems and sexuality of fungi. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>563</td>
<td>Advanced Forest Pathology 2-4</td>
<td>Prereq. PI P 331</td>
<td>Field methods and laboratory techniques; tree diseases, wood rots, their causal organisms, relation to forest practices. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>564</td>
<td>Advanced Forest Pathology 2-4</td>
<td>Prereq. PI P 331</td>
<td>Field methods and laboratory techniques; tree diseases, wood rots, their causal organisms; relations to forest practices. Cooperative course taught at the University of Idaho.</td>
</tr>
<tr>
<td>600</td>
<td>Special Projects or Independent Study</td>
<td></td>
<td>Variable credit.</td>
</tr>
<tr>
<td>700</td>
<td>Master's Research, Thesis, and/or Examination</td>
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<td>Variable credit.</td>
</tr>
<tr>
<td>800</td>
<td>Doctoral Research, Dissertation, and/or Examination</td>
<td></td>
<td>Variable credit.</td>
</tr>
</tbody>
</table>
Schedule of Studies

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

The following list includes the departmental requirements for the undergraduate plant pathology curriculum. Students are advised to consult their advisers for appropriate sequencing of courses and in selecting electives consistent with vocational and professional objectives. They should also check fulfillment of general university requirements.

The following substitutions may be allowed with departmental approval: Bact 201 for Bact 101; Chem 101/102 for Chem 105/106; Ag Ec 201 for Econ 201; Ag 205 for Engl 351; Math 171 for Math 107; Entom 343 for Entom 340; Ch E 474 for Geog 311.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron 305 Weeds</td>
<td>3</td>
</tr>
<tr>
<td>Bact 101 Elem Bact</td>
<td>4</td>
</tr>
<tr>
<td>Bio S 103 and 104 Intro Biol</td>
<td>8</td>
</tr>
<tr>
<td>Bio S 372 Gen Ecol</td>
<td>4</td>
</tr>
<tr>
<td>Biom 301 Agric Stat</td>
<td>3</td>
</tr>
<tr>
<td>Bot 201 Intro Bot</td>
<td>4</td>
</tr>
<tr>
<td>Bot 232 Intro Sys Bot</td>
<td>3</td>
</tr>
<tr>
<td>Bot 320 Intro Plant Phys</td>
<td>3</td>
</tr>
<tr>
<td>Chem 105 and 106 Prin of Chem</td>
<td>8</td>
</tr>
<tr>
<td>Chem 240 Elem Org Chem</td>
<td>4</td>
</tr>
<tr>
<td>Econ 201 Contem Role of Econ</td>
<td>4</td>
</tr>
<tr>
<td>Engl 101 Engl Comp</td>
<td>3</td>
</tr>
<tr>
<td>Engl 351 Creative Writing: Prose</td>
<td>3</td>
</tr>
<tr>
<td>Entom 340 Agric Entom</td>
<td>3</td>
</tr>
<tr>
<td>Genet 301 General Genetics</td>
<td>3</td>
</tr>
<tr>
<td>Geog 311 Weather and Climate</td>
<td>3</td>
</tr>
<tr>
<td>Math 107 Precalc Math</td>
<td>3</td>
</tr>
<tr>
<td>Phys 101 and 102 Gen Phys</td>
<td>8</td>
</tr>
<tr>
<td>Pl P 329 Gen Plant Path</td>
<td>3</td>
</tr>
<tr>
<td>Soils 201 Soils</td>
<td>3</td>
</tr>
<tr>
<td>Ag Electives</td>
<td>15</td>
</tr>
</tbody>
</table>

Preparation for Graduate Study

As preparation for work toward an advanced degree a student should have completed a bachelor's degree; one year each of general inorganic chemistry, botany, zoology, physics, and German; one semester each of systematic botany, plant physiology, bacteriology, general plant pathology, entomology, precalculus, organic chemistry, and report writing or advanced composition.

Department of Political Science

Professor and Department Head, J. C. Pierce; Professors, H. P. Castleberry, J. D. Dowell, J. B. Gabberi, P. M. Morgan, W. H. Peterson, C. H. Sheldon, K. T. W. Swanson, T. Tsurutani; Associate Professors, T. E. Cook, W. F. Mullen; Assistant Professors, P. R. Hagner, N. P. Lovrich.

Courses in political science are offered in six principal fields: public policy formation, comparative government, public law, public administration, international politics and organization, and political theory and methodology.

The department offers courses of study leading to the degrees of Bachelor of Arts in Political Science, Master of Arts in Political Science, and Doctor of Philosophy.

Prelaw Studies

No specific major is necessary to be eligible for law school. The Department of Political Science Prelaw Advising Center assists all students interested in law school regardless of their intended major.

Through its prelaw curriculum, Option II, the department offers students a selection of courses specially designed to prepare them adequately for law school. This curriculum has been prepared on the basis of recommendation of the Association of American Law Schools. Students who choose other departmental options may also be eligible to attend law school if they meet admission requirements.

Public Service

Government is now the nation's largest employer. Many thousands of these officials are political science graduates. The department will be glad to advise students concerning training and career opportunities in federal, state, and local governments, in the foreign service, and in related fields.

Division of Governmental Studies and Services

A unit of the Department of Political Science (DGSS) is an instrument for extending beyond the classroom and into public service the resources represented in the department's teaching and research personnel. Specifically, the functions of the division include the following: performing research and issuing publications relating to government and public affairs; providing training and consulting services to public agencies and private organizations concerned with public affairs; and maintaining liaison with governmental intern programs which afford practical government work experience for students who desire it. The DGSS maintains a collection of specialized government publications of current interest and,
in general, acts as a link between the teaching of government and the conduct of public affairs.

Teaching
It is possible to obtain the bachelor's degree in political science while meeting the requirements for a Washington teaching certificate. Information, in addition to that given under Option IV below, can be obtained from the department.

Minor
A minor in political science requires a minimum of 16 semester hours, half of which must be in upper-division courses.

Description of Courses
For explanation see Index under "Symbols"

General and Introductory Courses
Pol S
102 [S] Introduction to Comparative Politics 3 Nature of the state; fundamental problems of government and politics; an ideological and institutional comparison of democracies and dictatorships.
198 [S] Political Science Honors 3
222 [S] International Politics 3 Creation and operation of national, international, and supranational communities; major world problems since 1945.

Political Theory and Methodology
Pol S
315 Introduction to Political Analysis 3 I Introduction to the main concepts and research techniques of political science.
333 [S] Development of Marxist Thought 3 I Marxist theory from the original writing of Marx and Engels to contemporary developments.
437 [S] Classical Political Thought 3 I The development of political philosophy from the pre-Socratics to Machiavelli.
438 [S] Recent Political Thought 3 II The development of political thought since Machiavelli.

530 The Scope of Political Science 3 I Prereq 12 hrs Pol S. Historical developments and present status of the discipline; contemporary issues and future trends.
531 Research Methods in Political Science 3 II Prereq 12 hrs Pol S; Soc 321. Development of research designs; methods of data collection; analysis of data; data processing and computer applications.
534 American Political Thought 3 Graduate level counterpart of Pol S 434; additional requirements. Credit not granted for both Pol S 434 and 534.
594 Seminar in Political Theory 3 May be repeated for credit; cumulative maximum 6 hours. II

Comparative Government
Pol S
310 [S] Democratic Governments 3 Theoretical foundations, institutions, policy processes and problems of modern democratic political systems.
410 Government of Canada 2 II Political institutions and processes of Canada.
412 Government of the USSR 3 I Institutions and politics of the Soviet Union. Credit not granted for both Pol S 412 and 512.
413 Latin American Governments 3 I 1980-81 a/y. Institutions and political processes of selected Latin American republics. Credit not granted for both Pol S 413 and 513.
435 Politics of Developing Nations 3 I Issues and problems of political development and modernization common among developing nations. Credit not granted for both Pol S 435 and 535.
436 Comparative Politics: China and Japan 3 II Government, politics, and society of two major Asian powers. Credit not granted for both Pol S 436 and 536.
471 Contemporary South Asia 3 II Same as Hist 471.
512 Government of the USSR 3 Graduate level counterpart of Pol S 412; additional requirements. Credit not granted for both Pol S 412 and 512.
513 Latin American Governments 3 Graduate level counterpart of Pol S 413; additional requirements. Credit not granted for both Pol S 413 and 513.
535 Politics of Developing Nations 3 Graduate level counterpart of Pol S 435; additional requirements. Credit not granted for both Pol S 435 and 535.
536 Comparative Politics: China and Japan 3 Graduate level counterpart of Pol S 436; additional requirement. Credit not granted for both Pol S 436 and 536.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>550</td>
<td>Seminar in British Politics 3 I Institutions and policy-making processes in the British political system.</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>551</td>
<td>Seminar in Western European Politics 3 II Institutions and policy-making processes in major western European democratic systems.</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>570</td>
<td>Seminar on Political Violence 3 II Preconditions of internal war and revolution; frustration-aggression theory; measurement of political violence; role of the military in politics. Cooperative course taught at the University of Idaho.</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>584</td>
<td>Seminar in African Politics 3 Intensive analysis of the political process and political change in selected regions of Africa. Cooperative course taught at the University of Idaho.</td>
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<td>3</td>
<td></td>
</tr>
<tr>
<td>595</td>
<td>Seminar in Comparative Politics 3 May be repeated for credit; cumulative maximum 6 hours.</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pol S</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>414</td>
<td>Inter-American Relations 3 I 1981-82 a/y. The Monroe Doctrine, Good Neighbor Policy, and Alliance for Progress; structure and role of the OAS. Credit not granted for both Pol S 414 and 514.</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>421</td>
<td>International Law 3 II Law of peace, status of war, and pacific settlement. Credit not granted for both Pol S 421 and 521.</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>423</td>
<td>International Organization and Administration 3 I The process, problems, and progress: emphasis on the United Nations and the quest for peace. Credit not granted for both Pol S 423 and 523.</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>425</td>
<td>American Diplomatic History 1776-1900 3 I Same as Hist 411. Credit not granted for both Pol S 425 and 525.</td>
<td></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
systems and concepts; problems and techniques involved in selection and management of public employees. Credit not granted for both Pol S 445 and 545.

446 **Public Budgeting** 3 II 1981-82 a/y. The government budget as an instrument of politics, planning and control; organizing for democratic accountability. Credit not granted for both Pol S 446 and 546.

455 **The Presidency** 3 I Same as Pol S 455 above.

501 **Seminar in Public Administration** 3 Cooperative course taught at the University of Idaho.

540 **Introduction to Public Administration** 3 Graduate level counterpart of Pol S 440; additional requirements. Credit not granted for both Pol S 440 and 540.

543 **Administrative Regulation** 3 Graduate level counterpart of Pol S 443; additional requirements. Credit not granted for both Pol S 443 and 543.

545 **Public Personnel Administration** 3 Graduate level counterpart of Pol S 445; additional requirements. Credit not granted for both Pol S 445 and 545.

546 **Public Budgeting** 3 Graduate level counterpart of Pol S 446; additional requirements. Credit not granted for both Pol S 446 and 546.

555 **The Presidency** 3 I Same as Pol S 555 above.

560 **Comparative State Political Systems** 3 II 1980-81 a/y. Political processes, and functions of American state governments; their responses to modern needs in an evolving federal system.

565 **The Government of Metropolitan Areas** 3 II 1980-81 a/y. Political processes, roles, institutions, and problems.

580 **Seminar in Administration and Contemporary Issues** 3 I Interdisciplinary approach to complex problems confronting administrators in the fields of business, education, and government. Cooperative course taught at the University of Idaho.

592 **Topics in Public Administration** 3 May be repeated for credit; cumulative maximum 6 hours. II Prereq Pol S 440 or 445.

**Public Law**

**Pol S**

300 **[S] The American Constitution** 3 Prereq Pol S 101. Constitutional principles as established by the Supreme Court and related political developments.
Before undertaking this schedule of studies, a student should have fulfilled most of the graduation requirements of the College of Sciences and Arts. The following courses, some of which meet these requirements, are strongly recommended, but not required.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Pol S 101 or 198, 102 and 3 hours from 206, 222</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>Econ 201 or 102 and 203</td>
</tr>
<tr>
<td>Hours</td>
<td>Anth 101 or Soc 101</td>
</tr>
<tr>
<td>Hours</td>
<td>Phil 201 Elem Logic</td>
</tr>
</tbody>
</table>

**Junior Year**

**First Semester**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Pol S Elective</th>
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</thead>
<tbody>
<tr>
<td>Hours</td>
<td>Hum or Soc S Elective</td>
</tr>
<tr>
<td>Hours</td>
<td>Elective</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Pol S Elective</th>
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</thead>
<tbody>
<tr>
<td>Hours</td>
<td>Hum or Soc S Elective</td>
</tr>
<tr>
<td>Hours</td>
<td>Elective</td>
</tr>
</tbody>
</table>

**Senior Year**

**First Semester**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Pol S Elective</th>
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</thead>
<tbody>
<tr>
<td>Hours</td>
<td>Hum or Soc S Elective</td>
</tr>
<tr>
<td>Hours</td>
<td>Elective</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Pol S Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>Hum or Soc S Elective</td>
</tr>
<tr>
<td>Hours</td>
<td>Elective</td>
</tr>
</tbody>
</table>

*One course in American history, plus one additional course from Hist 101, 102, 110 or 111.*

**Option II. Prelaw**

The Prelaw Advising Center in the department assists all students interested in law school regardless of their intended major. No specific major is necessary to be eligible for law school. Through its prelaw curriculum, Option II, the department requires a selection of courses designed to prepare students for law school and the legal profession, with considerable flexibility provided in order to fit student interests. Requirements for graduation include 24 hours of Pol S, at least 12 of which must be earned at WSU.

Before undertaking this option, a student should have fulfilled most of the graduation requirements of the College of Sciences and Arts. The following courses, which meet these requirements, are strongly recommended, but not required.

| Hours | Pol S 101 or 198 and 6 hrs from 102, 206, and 222 |

History Elective* 6
Anth 101 or Soc 101 3
Econ 201 or 102 and 203 4-6
Psych 101 or 102 Intro Psych 3
Phil 201 Elem Log 3

**Junior Year**

**First Semester**
Pol S 300 Amer Const 3
Engl 201 or 301 3
B A 230 Prin Acctg 4
Elective 5

**Second Semester**
Pol S Elective 6
Econ, Hist, Psych, or Soc Elective 3
Elective 6

**Senior Year**

**First Semester**
Pol S Elective 3
Econ, Hist, Psych, or Soc Elective 3
Elective 9

**Second Semester**
Pol S Elective 3
Elective 12

*One course in American history plus one additional course from Hist 101, 102, 110 or 111.

**Option III. Public Administration**

This program is designed to provide a broad foundation in political science and related subjects on which can be built either a public service career or graduate specialization in public administration.

Within the limits of the basic requirements outlined, special course patterns can be arranged for students particularly interested in such specialties as city management, city planning, and public personnel administration.

Requirements for graduation include 30 hours in Pol S distributed among fields as follows: at least two advanced courses in public administration (including Pol S 440), two in public policy formation, and one in public law (Pol S 300). Also required are B A 230, Econ 340, a course in statistics (Soc 321, B A 215, Math 360, or Psych 311), and Engl 201 or 301.

Appropriate electives include courses in political science, computer science, psychology, sociology, history, economics, architecture, and civil engineering.

Before undertaking this schedule of studies, a student should have fulfilled most of the graduation requirements of the College of Sciences and Arts. The following courses, which meet these requirements, are strongly recommended, but not required.

**Pol S 101 or 198, and 206**
**Econ 201 or 102 and 203**
**Hist Elective***
**Anth 101 or Soc 101**
**Psych 101 or 102 Intro Psych**

**Junior Year**

**First Semester**
Pol S 300, 440 6
B A 230 Prin Acctg 4
Elective 5

**Second Semester**
Pol S Elective 6
B A 215, Soc 321, Math 361, or Psych 311 3-4
Elective 2-3

**Senior Year**

**First Semester**
Pol S Elective 6
Econ 340 Pub Fin Tax 3
Elective 6

**Second Semester**
Pol S Elective 6
Elective 9

*One course in American history plus one additional course from Hist 101, 102, 110 or 111.

**Option IV. Teaching**

This program is designed for those who wish to obtain the Bachelor of Arts in Political Science while also qualifying for the Washington State Provisional Certificate to teach on the secondary level in the field of social studies.

In meeting the graduation requirements for the College of Sciences and Arts, students must include Psych 101 or 102, Hist 110, 111. Econ 201 or 102-203 are strongly recommended.

Department requirements are:

a) 26 hours in political science, including Pol S 101, 206, 222, 300, 318.

b) a teaching minor in history (18 hours), including Hist 110, 111, 422 and 9 additional hours, at least 3 of which must be upper division. Hist 480, Methods of Teaching Social Studies, is an additional requirement.

c) a second teaching minor, other than in social studies, selected from among those listed in the education section of the catalog. English or speech is strongly recommended.

d) 25 hours in education consisting of Educ 300, 301, 358/359, 402, 403 or 404, 405 or 406.

Those who wish to teach both junior and senior high school must add Educ 450 or 451 to their programs.

257
e) one course from: H Ed 263, 480, 481; Bact 101; Sci 261.

Students undertaking the above program must add education as a second major, preferably during their sophomore year, but before they enroll in any education courses.

Option V. Public Affairs

Option V provides a program for undergraduates who career interests require a course background in a specific substantive public policy area, in addition to basic political science training. To accommodate the varying interests of those electing this option, programs are individually tailored in close consultation with his or her adviser. The program for each student includes key courses in political science plus relevant outside courses relating to the substantive area, in which the student plans to work (e.g., urban affairs, welfare, international relations, natural resources).

Before undertaking this option, a student should have fulfilled the graduation requirements of the College of Sciences and Arts. The following courses, which meet these requirements in part, are strongly recommended:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pol S 101 or 198, and 206</td>
<td>6</td>
</tr>
<tr>
<td>Econ 102/203 or 201</td>
<td>4-6</td>
</tr>
<tr>
<td>Hist Electives</td>
<td>6</td>
</tr>
<tr>
<td>Anth 101 or Soc 101</td>
<td>3</td>
</tr>
<tr>
<td>Psych 101 or 102 Intro Psych</td>
<td>3</td>
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</tbody>
</table>

**Junior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pol S 440 Intro Pub Admin</td>
<td>3</td>
</tr>
<tr>
<td>B A 215, Soc 321, Math 360 or Psych 311</td>
<td>3</td>
</tr>
<tr>
<td>Engl 201 or 301</td>
<td>3</td>
</tr>
<tr>
<td>Policy Area Elective</td>
<td>3</td>
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<tr>
<td>Elective</td>
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**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Pol S 416 Intro Policy Analy</td>
<td>3</td>
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<tr>
<td>Pol S Elective</td>
<td>3</td>
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<tr>
<td>Policy Area Elective</td>
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<tr>
<td>Electives</td>
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**Senior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pol S 497 Internship</td>
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**Urban Planning**

**Junior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Pol S 440 Intro Public Admin</td>
<td>3</td>
</tr>
<tr>
<td>Engl 201 or 301</td>
<td>3</td>
</tr>
<tr>
<td>Soc 330 Communities</td>
<td>3</td>
</tr>
<tr>
<td>Arch 342 Urban Theory</td>
<td>3</td>
</tr>
<tr>
<td>Statistics</td>
<td>3-4</td>
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**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pol S 416 Intro Policy Analy</td>
<td>3</td>
</tr>
<tr>
<td>Pol S 318 Pol Parties</td>
<td>3</td>
</tr>
<tr>
<td>Econ 340 Public Fin Tax</td>
<td>3</td>
</tr>
<tr>
<td>Econ 316 Urban Reg Econ</td>
<td>3</td>
</tr>
<tr>
<td>Geog 445 Urban Geography</td>
<td>3</td>
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</table>

**Senior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Pol S 497 Internship</td>
<td>12</td>
</tr>
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</table>

**Natural Resource Policy and Administration**

**Junior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Pol S 318 Pol Parties</td>
<td>3</td>
</tr>
<tr>
<td>Pol S 440 Intro Public Admin</td>
<td>3</td>
</tr>
<tr>
<td>Engl 201 or 301</td>
<td>3</td>
</tr>
<tr>
<td>Statistics</td>
<td>3-4</td>
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<tr>
<td>Zool 330 Prin Con</td>
<td>3</td>
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**Second Semester**

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<tr>
<th>Course</th>
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<tr>
<td>Pol S 416 Intro Policy Analy</td>
<td>3</td>
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<tr>
<td>Pol 443 Admin Reg</td>
<td>3</td>
</tr>
<tr>
<td>Econ 340 Public Fin Tax</td>
<td>3</td>
</tr>
<tr>
<td>Geog 345 Cons Nat Res</td>
<td>3</td>
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<tr>
<td>For 371 Wildland Recreation</td>
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**Senior Year**

<table>
<thead>
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<th>Course</th>
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<tr>
<td>Pol S 499 Sp Problems</td>
<td>3</td>
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<tr>
<td>Pol S 520 Water Res Pol</td>
<td>3</td>
</tr>
<tr>
<td>For 412 For Range Policy</td>
<td>3</td>
</tr>
<tr>
<td>C E 341 Environmental Quality</td>
<td>2</td>
</tr>
<tr>
<td>Envi S 444 Environmental Impacts</td>
<td>3</td>
</tr>
<tr>
<td>Ag Ec 480 Resource Economics</td>
<td>3</td>
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</tbody>
</table>

**Preparation for Graduate Study**

Students who have had basic undergraduate training in political science while majoring in such
subjects as economics, business administration, history, criminal justice, or sociology may be well prepared for graduate study in political science.

Undergraduates who are pursuing their studies at other institutions or through other curricula at this institution and who contemplate graduate work in this department will do well to select courses similar to those required in the above schedules of studies.

**Predental Curriculum**

*Associate Professor and Coordinator, H. A. Went; Advisers: Associate Professors, J. W. Crane, D. W. King, H. Krakauer, K. L. McIvor; Assistant Professor, M. Griswold.*

Preparation for dental school requires a minimum of two years of college work; however, only a few exceptional students are accepted with the abbreviated background. Three years of college training are strongly recommended, and, where possible, the baccalaureate degree should be secured before attending a professional school.

Students who complete three years’ work in residence and who have fulfilled all General University Requirements for Graduation may receive the Bachelor of Science degree after one year of satisfactory work in an accredited dental school.

The following constitutes the minimum requirements:

1. One year (6 semester hours) of college English.
2. One year of college physics.
3. One year of inorganic chemistry.
4. One year of organic chemistry.
5. One year of biology is mandatory, and additional work is strongly recommended.
6. Twenty-one or more hours of electives in the social sciences and humanities.

Admission to a school of dentistry is based on satisfactory completion of the entrance requirements of that school, attainment of satisfactory scholastic record, satisfactory scores on the Dental Admission Test, and the possession of personal qualifications necessary for the study of dentistry.

**Premedical Curriculum**

*Associate Professor and Coordinator, H. A. Went; Advisers: Professors, J. H. Larsen, Jr., C. M. Stevens; Associate Professors, J. W. Crane, D. W. King, H. Krakauer, K. L. McIvor.*

Preparation for medical school requires a minimum of three years of college work; however, extremely few students are accepted with this abbreviated background. Such students who have fulfilled all General University Requirements for graduation may receive the Bachelor of Science degree after one year of satisfactory work in an accredited medical school. Since there are more than four times as many applicants as there are available places in medical schools, preference is usually given to candidates who have attained the baccalaureate degree. The following will meet the minimum requirements of most medical schools:

1. One year of English composition.
2. One year of inorganic chemistry.
3. One year of organic chemistry.
4. One year of college physics.
5. Mathematics through calculus.
6. One year (and preferably two) of college biology.
7. Twenty-one or more hours of electives in the social sciences and humanities.

In addition, all premedical students must take the Medical College Admissions Test (MCAT) before applications are made for admission to medical schools.

Most medical schools urge premedical students to secure a broad training in fundamental subjects rather than to anticipate specific subjects that will be repeated in medical school.

Acceptance of a student by a medical school is contingent on the satisfactory completion of at least the minimum entrance requirements of that school, attainment of superior scholastic record, good to excellent scores on the MCAT, and possession of personal qualifications appropriate to success in the medical profession. Most schools require applicants to appear for a personal interview. In addition, letters of recommendation from several college teachers must strongly support the applicant.

Many medical schools welcome applications from students who have majors, or who have taken considerable work, in such diverse areas as humanities, mathematics, psychology, sociology, physics, chemistry, biochemistry, and engineering. Adequate latitude exists in the medical school requirements so that the adviser usually is able to suggest a schedule of studies to meet the needs of the individual student.

The bachelor’s degree program provides for either a major or a minor in psychology. The program for majors is designed for those who wish to study psychology as part of a liberal education; for those who plan to use their training in related vocations such as the professions, governmental organizations, business and industry, and psychological services; and for those who are preparing for graduate work in psychology. Course offerings are open to students in other departments who need a background in those aspects of psychology which are related to their respective fields. Also, it is possible to combine a major in psychology with the certificate program in Alcohol Studies.

The graduate program leads to advanced degrees for qualified students who plan careers as psychologists. The course of study for the Doctor of Philosophy degree may be directed toward a specialization in clinical psychology or in one or more of the areas of “general experimental psychology.”

The graduate training program in clinical psychology at Washington State University is accredited by the American Psychological Association.

The department offers courses of study leading to the degrees of Bachelor of Science in Psychology, Master of Science in Psychology, and Doctor of Philosophy.

Excellent facilities are available for instruction and research in psychology. There are specially designed facilities for research in learning, memory, sensory processes, social interaction and behavior modification. Departmental facilities also include the Comparative Behavior laboratory, Primate Research Center and the Human Relations Center, which is a training clinic. In addition, there are available cooperative arrangements with other units of the university and with outside institutions which make it possible for students to gain first-hand experience in research and professional work. The university maintains a comprehensive library of books and journals in psychology and in related fields.

**Description of Courses**

**Psych** For explanation see Index under “Symbols”


102 (201) [S] Introductory Psychology: Human Behavior 3 Personality, development, social behavior, human abilities, abnormal behavior and treatment.

198 [S] Psychology Honors 3 May substitute for Psych 101 or 102 as a prereq to later courses.

230 [S] Human Sexuality 3 Prereq Psych 101 or 102. Sexuality in personal development; personal, cultural, biological influences on sexual identification and behavior; fertility, reproduction, sexual functioning, sexuality and personality.

285 Introduction to Experimental Methods in Psychology 3 (2-3) Prereq Psych 101 or 102. Designing, conducting, and reporting research in selected areas of experimental psychology.

301 Seminar in Psychology V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq 6 hrs Psych.

306 Industrial Psychology 3 Prereq Psych 101 or 102. Individual and group goals; organizational structure and theory; leadership, design of jobs; personnel selection and training; engineering psychology.

307 Human Factors 3 Prereq Psych 101 or Engr major. Human limitations and capabilities in architectural and engineering design; system analysis.

311 Elementary Statistics in Psychology 4 Prereq Math 101 or 3 sem high school algebra. Descriptive statistics, probability, and inference; design and interpretation of research.

321 Introduction to Personality 3 Prereq Psych 101 or 102. Theories, concepts, methods, discoveries in psychology of personality.

323 Self Control 3 Prereq Psych 101 or 102. Analysis of self-control problems; application of behavioral principles to student-conducted projects.

324 Psychology of Women 3 Prereq Psych 101 or 102. Socialization and sex roles of women: a psychological perspective.

333 Abnormal Psychology 3 Prereq 6 hrs Psych; Psych 321. Problems of abnormality from traditional and evolving points of view; types, therapies, outcomes, preventive techniques.

340 Introduction to Clinical Psychology 3 Prereq 6 hrs Psych; Psych 321 or 333. Professional problems including theory, training, relations with clients, institutions, public.

260
change; the relation of personality to social variables and individual differences in overt behavior.

431 Laboratory in Personality and Social Psychology 1 (0-3) Prereq c// in Psych 430. Experimental techniques in personality and social psychology.

445 Undergraduate Practicum V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq 6 hrs Psych. Not open to freshmen. By interview only. Supervised experience in mental health and retardation facilities; application of psychological principles to paraprofessional counseling; training in basic helping skills.

464 Psychological Disorders of Children 3 Prereq Psych 101 or 102; Psych 360 or CFS 240. Psychophysiological disorders; phobias; television and aggression; classroom management; delinquency; retardation; autism; hyperactivity; learning disabilities; marriage and divorce; parental management.

470 Motivation 3 Prereq Psych 101 or 102; Psych 311. Different motivational systems; analysis of environmental and biological factors influencing motivation, with emphasis on human motivation.

471 Laboratory in Motivation 1 (0-3) Prereq c// in Psych 470. Research techniques in motivation.


477 Primate Behavior 3 Prereq Psych 285 or a Zool lab course. Laboratory and field investigations on behavior of non-human primates; emphasizing learning, memory, motivation, family structure, habitat and behavior development.


490 Psychology of Learning 3 Prereq 8 hrs Psych; Psych 311. Techniques, findings, and theories of learning and retention.

491 Psychology of Learning Laboratory I 0-3 Prereq c// in Psych 490. Research on techniques, findings, and theories of learning, and retention.

497 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 4 hours.

498 Research Participation V 2 (0-6) to 4 (0-12) May be repeated for credit; cumulative
maximum 8 hours. Prereq 9 hrs Psych including a lab course. By interview only. Participation in the current research of departmental faculty.

499 **Special Problems V 1-4** May be repeated for credit.

501 **Research Colloquium 1** Individual staff members present their current research work and plans.

502 **Research Participation V 1 (0-3) to 3 (0-9)** May be repeated for credit; cumulative maximum 16 hours. Research design, equipment, data collection, data analysis, and report writing.

503 **Communication in Psychology 3 II** Written and oral communication in psychology; psychological principles upon which good communication is based.

506 **Seminar in Current Problems 2** May be repeated for credit.

507 **Seminar in Current Problems 3** May be repeated for credit.

508 **Seminar in Psychology V 1-3** May be repeated for credit.

511 **Advanced Statistics in Psychology 3 I** Prereq Psych 311.

512 **Statistical Inference and Research Design 3 II** Prereq Psych 511. Psychology statistics used in the design and analysis of variance.

513 **Seminar in Quantitative Psychology 3** Prereq Psych 511, 512.

515 **Program Evaluation 3 II** Substantive, methodological and political issues in evaluation of local and national human service programs.

520 **Theoretical Foundation of Psychotherapy 3** I Major therapy systems.

521 **Behavior Modification 3 (2-3) II** Prereq Psych 491, 520. Learning principles applied to modifying behavior of children and adults in institutions, clinics, and schools.

522 **Cognitive Behavior Therapy 3 I** Theory and practice of desensitization therapy; practical experience.

528 **Behavioral Mechanisms in Physiology 3** Same as V Ph 528.

530 **Professional Problems of Psychology 2 II** Ethical problems and philosophical issues faced in the practices of psychology.

533 **Psychopathology: Theory and Research 3** Theory and research concerning deviant behavior.

535 **Clinical Assessment 3 II** Interviewing procedures, case formulation, and case presentation.

536 **Personality Assessment 3 II** Theories and methods of personality assessment.
some broadly represented animal behaviors.

584 Sensation and Perception 3 (2-3) II 1981-82 a/y. Sensory and perceptual limits and functions of the human organism.


591 Behavior Theory and Learning 3
592 Human Learning and Memory 3 Experimental approaches to human learning, memory and verbal processes.

593 Experimental Analysis of Behavior 3 I Operant conditioning in relation to the experimental evidence currently available; examination of research strategies.

595 Clinical Internship in Psychology 16 (5-33) May be repeated for credit. Prereq passing of prelims and completion of course work for Ph.D. Clinical training in an internship approved by American Psychological Association or by WSU.

598 Alcoholism Agency Field Placement 8 S Same as Soc 598.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Schedule of Studies

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

Beyond certain minimum requirements, there is flexibility in the major (or minor) program, in accordance with the needs of the individual student. A person may "certify" as a major at the end of the freshman year. Students who are considering a psychology degree should, as early as possible in their academic careers, seek consultation with a faculty adviser in the Department of Psychology for assistance in planning their individual programs.

The Bachelor of Science in Psychology requires a minimum of 30 credit hours in psychology, at least 15 hours of which must be in upper-division courses. The student must take at least 10 credit hours of psychology in residence at WSU and must maintain at least a C average in psychology courses.

Required Psychology Courses:
A. Psych 101, 102, and 311.
B. Three laboratory courses from Psych 285, 431, 471, 480 and 491 (credit in two laboratory courses plus 3 hours in Psych 445 or 498 may be substituted).
C. Psychology electives, chosen in conference with adviser.

Required Supporting Courses:
Bio S 102 or 103 or Zool 251; Math 107 or 171 or 201.

During the freshman and sophomore years, a student should complete:
Psych 101, 102, 311, and one psychology laboratory course;
Bio S 102 or 103 or Zool 251; Math 107, 171, or 201

General University Requirements for Graduation and the graduation requirements of the College of Sciences and Arts.

Numerous electives during the first two years—mathematics, biology, physics, chemistry, literature, history, philosophy, sociology, anthropology—contribute substantially to the study of psychology. Again, consultation with a faculty adviser is recommended prior to selecting either psychology courses or supporting courses in other areas.

Students in the Honors Program should ask about modifications in the above schedule for the psychology major for Honors students. Students interested in combining a psychology major with the certificate program in Alcohol Studies should inquire at the office of the Department of Psychology.

Minor in Psychology: The minor in psychology may be certified after the completion of 90 semester hours, at the beginning of the senior year. It requires 18 credit hours in psychology, of which at least 9 must be in upper-division courses.

Required Courses for the Psychology Minor:
A. Psych 101 or 102.
B. At least one psychology laboratory course. (A 3-hour enrollment in either Psych 445 or Psych 498 may be substituted for the psychology laboratory course).
C. Elective courses in psychology, to be chosen in consultation with a psychology faculty adviser.

Teaching Minor in Psychology: For the psychology minor for secondary school teaching, see Education section of this catalog.

Preparation for Graduate Study

Students who contemplate work leading to advanced degrees are urged to consult as early as
possible with a psychology faculty adviser. Graduate programs in psychology require a solid background in mathematics, natural sciences, physics, philosophy, and social sciences as well as appropriate preparation in psychology itself.

Social Science Course

Soc S For explanation see Index under "Symbols"

101 [S] An Integrated Course in the Social Sciences 3 Major contributions of the social sciences to an understanding of human behavior and beliefs.

Department of Sociology


Courses in sociology are designed to provide the student with a better understanding of what makes people and groups of people behave the way they do. Sociology studies the groups people form, the behavior and interaction of these groups, traces their origin and growth, and analyzes the influence of group activities on individual members. Some knowledge of sociology is generally regarded as a useful supplement to the course work in most fields. The course of study for majors is flexible enough to incorporate a variety of individual interests, such as deviance and criminology, the family, social welfare and social policy, and environmental sociology.

Majors may select one of three options for specialized study: I. General Sociology, II. Social Research and Data Analysis, or III. Social Welfare and Public Policy. These options are described below. The undergraduate sociology major provides excellent preparation for careers in a variety of occupations, including public relations, teaching, positions in government, social agencies, and industry; or as a foundation for graduate work in sociology, law, social work, public health administration, and counseling.

The department offers courses of study leading to the degrees of Bachelor of Arts in Sociology, Master of Arts in Sociology, and Doctor of Philosophy.

Description of Courses

For explanation see Index under "Symbols"

Sociology

Soc

101 [S] Introduction to Sociology 3 Basic principles for understanding human group relations; effects of social institutions such as families and schools on everyday life. Prereq for all courses listed below except Soc 102, 150, 198, 381.

102 (160) [S] Contemporary Social Problems 3 Sexual deviance, family violence, changing sex roles, racism, environmental problems, alcohol and drug abuse.

150 [S] Marital and Sexual Life Styles 3 Traditional and alternative marriage styles; social and personal factors in mate selection; sexual life styles; development of sex roles.

198 [S] Sociology Honors 3

270 [S] Personal Identity and Social Interaction 3 The development of personal identity, romantic love and interpersonal attraction; attitude formation and change; conformity and group dynamics.

320 Introduction to Social Research 3 Methods of collecting data: surveys, experiments, field observations; organization and interpretation of data; reading and social research.

321 Introduction to Social Statistics 4 Prereq Soc 320. Levels of measurement; measures of central tendency, dispersion and association; probability, normal curve; use of computer packages as learning tools.

330 [S] Communities 3 Social and environmental factors influencing community growth and decline; rural-urban differences; power structures; community influence on human well-being.

331 [S] Population, Resources and the Future 3 Effects of population on resource depletion, environmental deterioration, social and economic structure; zero population growth prospects; limits to growth debate.

340 [S] Social Inequality: Privilege and Poverty in America 3 Distribution of wealth, income, occupation and life chances; causes and consequences of inequality including welfare and tax systems.

341 [S] Sociology of Religion 3 Social sources and significance of religious beliefs and behavior, social organization of religious groups, and religion and social change.
342 [S] Political Sociology 3 Sociological analysis of political institutions and power structures; social and cultural basis of political behavior.

343 Sociology of Professions and Occupations 3 Relationship between work and social class, alienation, sexism, racism, poverty, disease and death.


356 [S] Sociology of Aging 3 Age roles and role changes; problems of aging and the aged; relations between generations; death and dying.

360 (460) Theories of Deviance 3 Sociological approaches to deviance; historical and contemporary theories and deviance issues.

361 [S] Criminology 3 Crime and society; examines theories of criminality, extent of crime, the criminal justice system, and prevention of crime and delinquency.

362 [S] Juvenile Delinquency 3 Sociological perspectives on delinquency; delinquent gangs and subcultures; delinquency causation and control; police, justice, and corrections as they affect youth.

364 [S] Law and Society 3 Prereq Crm J 101 or Soc 101. Analysis of impact of sociocultural factors on emergence of law, concepts of justice and actual operation of the legal system.

365 Problems of Alcohol Addiction and Abuse 3 Same as Psych 365.

366 Problems of Alcohol Addiction and Abuse 3 Same as Psych 366.

371 Small Groups Analysis 3 Prereq 6 hrs Soc. Interpersonal relations in small groups: how stereotypes and social characteristics including sex, class, and race affect face-to-face behavior.

373 [S] Mass Communication and Public Opinion 3 Social history of print and broadcast media; communication and mass media; examines public opinion, propaganda, censorship, violence, conflict and change.

374 [S] Collective Behavior and Social Movements 3 Sociological basis of panics, riots, fads, and fashions; collective behavior as basis of social change and development of social movements.


384 [S] Sociology of Sex Roles 3 Biological and social causes and effects of sex role socialization; male/female relationships including discriminatory practices, prostitution, and rape.

391 Special Topics in Sociology 1-3 May be repeated for credit; cumulative maximum 6 hours.

410 Development of Social Theory 3 Prereq 6 hrs Soc. Biographical accounts and original writings of both early sociological masters and contemporary sociologists; history of U.S. sociology in social context.

420 Sociological Methods and Techniques 3 Prereq Soc 320, 321. The nature of social science research procedures; sampling, measurement, statistical research design, and data analysis; scientific writing.

421 Intermediate Social Statistics 3 Prereq Soc 320, 321. Probability theory; inference theory; one and two sample tests; regression and correlation analysis; log-linear models for contingency table analysis.

430 World Population: Issues and Debates 3 Prereq Soc 331. Causes of change in fertility, mortality and migration; Malthusian, Marxian, and modern explanations of population change; impacts of world urbanization.

431 Environment and Society 3 Environmental problems, policies and controversies examined via sociological theory and research.

432 Energy and Society 3 Energy and societal evolution; energy consumption and quality of life; social impacts of energy shortages and alternative energy systems.

440 Organizations and Society 3 Problems in individual adaptation to organizations; structure of modern organizations; organizational conflict and change; interaction between organizations and their environment.

446 Medical Sociology 3 Health care and rapidly increasing costs; relations among health care occupations; cure versus prevention; comparison with health care systems in other countries.
Family and Socialization 3 Prereq 6 hrs Soc or Psych. Socialization processes in the family and other social contexts; family patterns and their consequences for parent and child socialization.

Comparative Family Systems 3 Prereq 6 hrs Soc or Anth. Contributions of comparative family research and theory to the understanding of family structure, mate selection, marital interaction, and socialization.

Corrections 3 Prereq Soc 361. History, facilities, processes, and strategies for the correction of juvenile and adult offenders; prevention of crime and delinquency.

Innovations in Corrections and Juvenile Justice 3 Same as Crm J 465.

Special Problems V 1-4 May be repeated for credit.

Theories of Social Organization 3 Major theories of social organization in historical perspective.

Theory Construction and Formalization 3 Testing: formalization of theoretical systems; adaptation of general models to specific problems.

Logic of Sociological Inquiry 3 Evaluation of issues from philosophy of science relevant to social research.

Development of Sociological Theory 3 II Early theories of society; classic sociological theories of the 19th and early 20th centuries.

Seminar in Contemporary Sociological Theory 3 II Recent developments in sociological theory, analysis, application and appraisal of specific theoretical systems.

Research Methods in Sociology 3 Prereq Soc 420. Methodology of social research at the professional level.

Advanced Social Statistics 3 Prereq Soc 321, 421. Variance and covariance; multiple and partial correlation and regression; factor analysis; advanced experimental design.

Advanced Sociological Methodology 3 May be repeated for credit; cumulative maximum 12 hours. Prereq Soc 421, 521. Scaling theory, sampling theory, experimental design, measurement of association, multivariate analysis, current methods and techniques.

Evalutative Research 3 May be repeated for credit. Prereq Soc 520, 521. Methodology of evaluation research of social programs: design, data collection, and analysis; field experience.

Demography 3 Prereq Soc 430. Measurement and analysis of mortality, fertility and migration; population replacement modeling; application of demographic techniques and models to substantive areas.

Human Ecology 3 Social adjustments to physical space; effects of environmental factors; problems and theory of ecological research.

Environmental Sociology 3 Societal-environmental interactions; impacts of human societies on the physical environment; environmental impacts on human behavior and social organization.

Complex Organizations 3 Elements of organization; methodologies for studying organizations; problems of organizational theory.

Sociology of Education 3 Interpretations of society as they affect roles of educational workers; sociological perspectives on the problems of education.

Theories of Social Stratification 3 Marx, Dahrendorf, Weber, Sorokin, Mills, Pareto; problems of stratification research; social class and social policy.

Sociology of Work 3 Sociological literature on professions and other occupations; adequacy of concepts and research methods.

Sociology of Religion 3 Role of religion in social structure process and change; analysis of religious behavior.

Sociology of Community 3 Prereq Soc 330. Community stability and change: Interaction processes; decision-making; societal linkages; effects on well-being.

Political Sociology 3 Systematic survey of theories and the major research literature in political sociology.

Advanced Social Psychology 3 Same as Psych 550.

Practicum in Family Research V 1-4 May be repeated for credit; cumulative maximum 12 hours. Research design, measurement, data collection, analysis, and manuscript writing.

Social Organization and the Family 3 The family as a social institution; principles of social organization applied to family relationships; macro-level analyses of family structure.

Social Psychology of the Family 3 The family as an interacting group; social psychological theories and research applied to family relationships; effects of families on individuals.

Sex Roles in Society 3 Same as CPS 555.

Problems of Deviance Theory 3 Development of theories of deviant behavior; new issues in the study of deviance.
Sociology of Law 3 Examination of social factors affecting the development and maintenance of legal structures and the processes of administration of justice.

Seminar in Problems of Alcoholism 3 Same as Psych 564.

Seminar in Problems of Alcoholism 3 Same as Psych 565.

Seminar in Deviant Behavior 2 May be repeated for credit.

Seminar in Crime and Delinquency 3 Contemporary theory and research in crime and delinquency.

Adolescent Alcohol Use and Abuse 3 Contemporary sociological theory and research in adolescent alcohol use and abuse; action programs, emerging issues.

Small Group Theory and Research 3 Theory and methods of small group research; types of groups, formation, and development of communication networks; socialization in group situations.

Socialization 3 Theories of childhood and adult socialization; personality development; symbolic interaction; learning; agents of socialization.

Behavioral Sociology 3 Sociological research and theory dealing with overt behavior of humans in social situations.

Race and Ethnic Relations 3 I 1981-82 a/y. The nature of intergroup relations; processes and consequences of race and ethnic group contact.

Seminar in Sociology 3 May be repeated for credit; cumulative maximum 9 hours.

The Sociology Profession 2 May be repeated for credit. Requirements, operations, problems, and possibilities of the sociology profession.

Alcoholism Agency Field Experience 3 S Supervised experience in an approved alcoholism agency including involvement as appropriate in administration, treatment and research.

Special Projects or Independent Study Variable credit.

Master’s Research, Thesis, and/or Examination Variable credit.

Master’s Special Problems, Directed Study, and/or Examination Variable credit.

Doctoral Research, Dissertation, and/or Examination Variable credit.

Social Welfare and Public Policy

SW 190 Introduction to Social Work 3 The social worker in action; work with individuals, groups, communities; social work fields of practice.

Social Welfare and Society 3 Current social welfare programs; income maintenance, health services, corrections, public housing, child welfare; historical development of social welfare programs.

Human Behavior and the Social Environment I 3 Normal and abnormal human growth and development from prenatal through adolescence; familial and environmental influences; professional intervention.

Human Behavior and the Social Environment II 3 Normal and abnormal growth and development; young adulthood through old age; problems of aging, retirement, old age, death.

Child Welfare 3 Social work practice in child welfare; adoption, foster homes, child protection, illegitimacy, group homes, day care, children’s institutions, dependency, delinquency.

Social Work Field Experience 15 Placement in a social agency; role of social worker; importance of knowing self; use of knowledge in helping relationships.

Social Work Theory and Methods I 3 Social work values, ethics; theoretical and technical aspects of working with client systems; individuals and families.

Social Work Theory and Methods II 3 Theoretical and technical aspects of working with small group intergroups; use of community resources, community change, social action.

Special Problems V 1-4 May be repeated for credit.

Schedule of Studies

Students who wish to obtain the bachelor’s degree are required to earn 30 hours of credit in sociology. They are advised to earn 30 hours of credit in related fields, of which one half must be in upper-division courses.

At least 40 of the total hours required for the bachelor’s degree in this program must be in upper-division courses. The student may choose one of the following three options, depending upon his/her interest.

Option 1. General Sociology

The following curriculum is intended for students who have selected sociology as the major field around which to build a liberal arts education, or who wish to become professional sociologists through building a foundation at the undergraduate level for graduate training in sociology.

During the freshman and sophomore years, the student is advised to complete most or all of the
graduation requirements of the College of Sciences and Arts. In addition, the following required and optional courses should be completed as indicated.

**Required Courses**

- Soc 101 Introduction
- Soc 320 Intro to Social Res
- Soc 321 Intro Soc Stat
- Soc 410 Dev of Social Th

**Recommended Courses**

- Soc 102 Social Problems
- Soc 270 Social Interaction
- Hist 110, 111, or 141, 142
- Pol S 101 American Govt
- Econ 201 Principles
- Anth 101 Introduction
- Psych 101 Intro Psych

**Option II. Curriculum in Social Research and Data Analysis**

Students wishing to pursue this curriculum will select courses in consultation with departmental advisers.

The student must complete the requirements specified under the first two years of the General Sociology Option, and should complete Soc 420 during the senior year. In addition the student should complete the following courses.

**Recommended Courses:** Math 201, 202; Phil 201, 380, 425; Cpt S 201, 320.

**Option III. Social Welfare and Public Policy**

This option is intended to provide students with appropriate training for employment in areas such as social welfare delivery services, public policy analysis, needs assessment, or social impact assessment. Two illustrative sequences are provided below: sequence one in social welfare and sequence two in public policy. These sequences indicate the breadth considered desirable for employment in these two areas including: (a) general sociology, (b) research methods, (c) content specialization, and (d) field placement in a potential job setting. Other areas of content specialization can be developed by individual students with adviser approval.

**SOCIAL WELFARE**

The social welfare sequence is designed to educate students for responsible entry into the field of social work and the human services professions. Emphasis is given to the development of a generalist who can function effectively in social service programs such as juvenile and adult corrections, mental health, child welfare, mental retardation, family counseling, geriatrics, community development and social action. Courses stress the development of a broad perspective on social problems and social problem solving to include the study of social policy formation and its impact.

Students must master an extensive body of knowledge from the social and behavioral sciences to gain an understanding of the complex nature of social welfare, the social policy underlying these programs, and the methods of working with individuals, families, groups, and communities. Students must also become familiar with the methods of social research and data analysis. A field placement under professional guidance enables students to integrate their knowledge and develop practical skills.

During the first two years students are encouraged to concentrate on meeting the general university requirements. In the last two years they are heavily involved in the social welfare curriculum and related areas of study.

**Required Courses**

- Soc 101 Introduction
- Soc 320 Intro Soc Research
- Soc 321 Intro Soc Stat
- S W 190 Intro Social Work
- S W 390 Soc Welfare and Society
- S W 393 Hum Beh Soc En
- S W 493 Theory and Methods I
- S W 494 Theory and Methods II
- S W 490 Field Placement

**Recommended Courses**

- Psych 101 Intro Psych
- Soc 351 The Family
- Soc 330 Communities
- Soc 361 Criminology
- Soc 362 Juvenile Delinqu
- Psych 464 Exceptional Child
- Psych 445 Practicum
- S W 395 Child Welfare
- CFS 240 Child Dev and Guidance
- Spe 405 Appl Interpersonal Com

**PUBLIC POLICY**

The public policy sequence is designed to provide an integrated approach to social and public policy as these relate to important social issues. Course work focuses upon those questions which the social sciences are best equipped to address: What is public policy? How is it formulated? How are policy alternatives evaluated? How are policy decisions implemented to accomplish desired outcomes? In answering these questions emphasis will be placed on social science research findings.

Students will also develop skills which enable them to assess community needs and the effectiveness of social programs. This involves
understanding the nature and process of social research as these bear on areas of practical concern. This sequence also involves a field placement in which students examine the applicability of sociological methods, concepts, and research findings to policy formulation and program evaluation.

During the first two years students are encouraged to concentrate on meeting the general university requirements. In the last two years they are heavily involved in the public policy curriculum and related areas of study.

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Soc 101 Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Soc 320 Intro Soc Research</td>
<td>3</td>
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<tr>
<td>Soc 321 Intro Soc Stat</td>
<td>4</td>
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<tr>
<td>Soc 330 Communities</td>
<td>3</td>
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<tr>
<td>Soc 431 Envr Soc and Society</td>
<td>3</td>
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<tr>
<td>Soc 470 Soc and Public Policy</td>
<td>3</td>
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<tr>
<td>S W 390 Soc Welfare and Society</td>
<td>3</td>
</tr>
<tr>
<td>Pol S 440 Public Administration</td>
<td>3</td>
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<tr>
<td>S W 490 Field Placement</td>
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</table>

**Recommended Courses**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Soc 373 Mass Com Public Op</td>
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<tr>
<td>Soc 342 Political Soc</td>
<td>3</td>
</tr>
<tr>
<td>Soc 410 Dev of Social Theory</td>
<td>3</td>
</tr>
<tr>
<td>Soc 440 Organ and Society</td>
<td>3</td>
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<tr>
<td>S W 393 Hum Beh Soc En</td>
<td>3</td>
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<tr>
<td>Pol S 206 State and Local Govt</td>
<td>3</td>
</tr>
<tr>
<td>Pol S 416 Intro Policy Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Econ 316 Urban and Reg Econ</td>
<td>3</td>
</tr>
<tr>
<td>Econ 340 Public Fin and Taxation</td>
<td>3</td>
</tr>
<tr>
<td>Econ 201 Contemporary Economics</td>
<td>3</td>
</tr>
</tbody>
</table>

**Soils**

R. L. Hausenbuil, Adviser. For instructional staff see Department of Agronomy and Soils.

The program offers courses of study on properties and uses of soils. The undergraduate courses provide background for work in practical soil management, in soil inventory, and in other selected areas, as well as preparation for advanced study.

The course of study leads to the degrees of Bachelor of Science in Soils, Master of Science in Soils, and Doctor of Philosophy.

**Description of Courses**

Soils For explanation see Index under “Symbols”

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Soils 3 Prereq Chem 102</td>
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<tr>
<td>Soil Management 21 Prereq Soils 201</td>
<td></td>
</tr>
</tbody>
</table>

Fertilizers, amendments, and soil reclamation; soil and water conservation; soils in land use planning and environmental quality control.

316 Forestry Application of Airphoto Interpretation 1 (0-3) Characteristics of aerial photographs, basic photogrammetry applied to forest management.

400 Soil Chemistry 3 I Prereq Soils 201. Water quality, salt and pesticide migration, chemistry of soil use and modification, acid and alkaline soils, fertilizer reactions, agricultural pollution.

401 Soil Analysis 2 (0-6) II Prereq Soils 301, 400, or 402; Chem 217. Chemical characterization of soils for diagnostic purposes.

402 Soil Fertility 2 II Prereq Soils 301. Plant nutrient requirements, principles of soil testing and tissue analysis, current fertilizer technology, fertilizer reactions in soils.

404 Soil Genesis, Morphology, and Classification 3 (2-3) Prereq Soils 201. Soil profiles, soil-forming processes, and soil taxonomy. Field trips required.

406 Soil Inventory 3 (2-3) II Prereq Soils 404. Design of mapping units and descriptive legends, inventory techniques and field practices, soil interpretations.

407 Soil Microbial Ecology 3 I Prereq Bact 101 or 201; Chem 240; Soils 201. Basic aspects and significance of soil flora as related to soil ecology, plant growth, and environmental problems.

408 Forest Soils 2 (1-3) II Prereq Soils 404; Geol 102. Morphology and characteristics of forest soils related to forest operation and practices.

411 Physics of Soil-Water-Plant Relations 3 (2-3) I Prereq Math 107; Soils 201. Water retention and transport in soil; water, structure, aeration, and temperature in relation to plant growth.


417 Introduction to Environmental Biophysics 2 II Same as BC/BP 417.

418 Environmental Biophysics Laboratory 1 (0-3) II Same as BC/BP 418.

499 Special Problems V 1-4 May be repeated for credit.

500 Advanced Soil Chemistry 3 II 1980-81 a/y. Prereq Soils 400; Chem 217. Chemical properties of soil colloidal systems. Joint listing with the University of Idaho.

501 Advanced Soil Analysis V 1-3 May be repeated for credit; cumulative maximum 6
hours. By interview only. Soil research techniques; application of modern instrumentation to soil analysis.


504 Advanced Soil Genesis and Classification 3 (2-3) I 1981-82 a/y. Prereq Soils 404. Genesis, classification and interpretation of soils, including field investigation emphasizing existing interrelationships. Cooperative course taught at the University of Idaho.


507 Advanced Soil Biochemistry and Microbiology 2 May be repeated for credit; cumulative maximum 4 hours. II Prereq Soils 400, 407; Chem 364. Biochemical and microbiological processes in soil-water environments; nutrient cycling; pesticide behavior; agricultural waste disposal; nitrogen fixation; advanced techniques.

509 Chemistry of Plant Nutrients 3 I 1981-82 a/y. Prereq Soils 400; Chem 217. Chemistry of plant nutrients in soils, including uptake and utilization by plants. Cooperative course taught at the University of Idaho.


512 Seminar 1 May be repeated for credit. Presentation of research information.

514 Advanced Topics in Soils 1 May be repeated for credit; cumulative maximum 4 hours. Prereq Soils 400, 404, 411. Analysis of current published research on soils, their uses, and management.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

702 Master's Special Problems, Directed Study, and/or Examination Variable credit.

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

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**General Departmental Requirements**

A Bachelor of Science degree in Soils requires completion of the Core Requirements plus courses in one of the areas of specialization. At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

**Core Requirements**

The following courses are required of all soils majors. The list includes fundamental courses in soils, supporting courses in science and mathematics, and courses that fulfill General University Requirements: six hours each of Humanities, Social Sciences, and Communications; Soils 201, 301, 400, 404, and 411; Chem 105, 106, and 217; Geol 102; Bio S 103; Bot 201 or Bio S 104; Bot 320; Bact 201; Phys 101 or 201; and Math 107 or 140.

**Areas of Specialization**

All soils majors select an area of specialization under one of the following options:

**Soil Management:** This curriculum deals mainly with factors of the soil-plant environment important to agronomic plant production. Beyond the core requirements students should complete Chem 240; Ag M 344; Agron 305; Entom 340; Plt P 329; Soils 401 and 402; 3 hours of Ag Ec; 2-4 hours Cpt S or Biom; 6 hours of plant production electives; and 15-17 hours of other electives.

**Soil Inventory:** Soils as natural components of landscapes are emphasized in this curriculum. Students are trained in techniques of inventory and basics of field identification of soils and soil properties. They should complete, in addition to the core requirements, Soils 401, 406, and 415; Chem 240; Geol 306 and 310; Bio S 372; Bot 332, and 456 or 462; Geog 311 or Ch E 174; 2-4 hours Cpt S or Biom; and 17 hours of electives.

**General:** Under this option, in consultation with an adviser, students specialize in an area other than soil management or soil inventory, e.g., soil biochemistry, soil microbiology, or land resource planning. Beyond the core requirements students should complete one course in Soils; one course in Math, Cpt S or Biom; 6 hours Chem, Phys, or Geol, or their equivalent; 11 hours of Bio S or their equivalent; and 29-30 hours of electives.

**Preparation for Graduate Study**

Preparation for graduate study implies the selection of courses that will benefit later work toward a Master of Science or a Doctor of Philosophy.
degree. Normally, preparation for an advanced degree in soils includes coursework outlined under one of the above options plus completion of Phys 102 or 202, Math 171, and, if not specified in the option, Chem 240.

Department of Speech


The Department of Speech offers courses and major sequences in three areas: communication disorders, rhetorical and communication studies, and theatre arts and drama. Some courses are designed to improve skills in speech communication, oral interpretation, clinical practice, or theatre arts. Other courses are designed to provide an understanding of the various areas—their history, modes of operation, and place in a modern society—as well as a specialized education. A wide variety of courses within the department satisfy the General University Requirements in communication proficiency, humanities, or social science.

A major in speech completes one of several course sequences which prepare a student for teaching, professional practice, continued professional education, or vocations in sales, advertising, public relations, management and related fields. Some course sequences provide the background required for related professional education such as law. Practical training and experience is provided through the forensics program, the communication disorders clinic, the university theatre, the university readers' theatre, and student teaching.

Professional services are available to students through the communication disorders clinic, including free diagnosis and treatment programs.

The department offers courses of study leading to the degrees of Bachelor of Arts in Speech, Master of Arts in Speech, and Master of Arts in the Teaching of Speech. The department also participates in the interdisciplinary programs leading to the degrees of Master of Arts in Child Development and Doctor of Philosophy (American Studies).

Description of Courses

For explanation see Index under "Symbols"

General Speech Courses

Spe 101 Principles of Interpersonal Communication 3 Theory and practice of interpersonal communication; understanding and applying intrapersonal information in interpersonal settings.


Spe 112 [H] Fundamentals of Speech 3 Various aspects of speech with primary emphasis on those of a humanistic nature: rhetoric, theatre.

Spe 160 [H] Introduction to Theatre 3 Drama as prepared and presented for the cinema, for television, and for the stage.

Spe 200 Speech Communication K-12 3 The application of speech communication to the teacher and to teaching methods in grades K through 12.

Spe 205 Introduction to Speech Pathology 3 (2-3)

Spe 206 Recreational Dramatics 3 Not open to Spe majors and those who have had Spe 364. Techniques of organizing and staging drama activities for all age groups: oral reading, story telling, choral reading, and puppetry.

Spe 250 [H] Oral Reading of Literature 3 Analyzing and oral reading of prose, poetry, and drama; sharing literature with an audience.

Communication Disorders

Spe 281 Manual Communication for the Deaf 2 Instruction and practical training in sign language for communication with the deaf.

Spe 371 Development of Speech and Language in Childhood 3 The normal development of language and speech; introduction to speech and language disorders in children and the role of the non-specialist.

Spe 372 Hearing and Hearing Disorders 2 1 Acoustic and psycho-physiologic aspects of normal hearing, and the nature and consequences of hearing disorders.

Spe 375 Phonetics 2 Prereq Spe 205.

Spe 376 Clinical Methods 1 3 Prereq Spe 205, 375. Organization of speech pathology programs in schools; methods of treatment for speech-handicapped children.

Spe 377 Anatomy and Physiology of Auditory and Vocal Mechanism 2 1 Prereq Spe 205. Anatomical and physiological mechanisms and functions involved in the speech and hearing processes.
378 Speech Science 2 II Prereq Spe 205, 375. Scientific processes involved in and accompanying the speech act.

472 Audiology 3 (2-3) II Prereq Spe 372. Principles and procedures in basic identification and assessment of hearing impairment; introduction to differential diagnosis of auditory pathologies.

473 Language and Learning Disability 3 II Prereq Spe 376. Language and learning disabilities in children; the mentally retarded and neurologically disordered.


475 Clinical Practice V 1 (0-3) to 3 (0-9) May be repeated for credit. Prereq Spe 376. Practice in diagnosis and therapy for speech and hearing disorders.

477 Audiological Rehabilitation 3 I Theories and methods involved in the audiological rehabilitation of the hearing impaired; use and care of hearing aids; counseling techniques.

478 Therapy for Language Delay and Disorders 3 I Prereq Spe 371. Assessment and habilitation for the preschool and elementary-age child with language disorders.

480 Diagnosis and Appraisal of Speech Disorders 3 I Prereq Spe 375, 471, 473. Principles, techniques, and materials involved in exploring the nature of speech disorders for planning a program of therapy.

570 Advanced Internship in Communication Disorders V 1-15 May be repeated for credit. Prereq Spe 475 or 575. Advanced practicum in diagnosis of and therapy for communication disorders.

571 Seminar in Speech Pathology 3 May be repeated for credit; cumulative maximum 9 hours. Exploration of ideas derived from current writings and research in speech pathology.


573 Cleft Palate 3 II Prereq Spe 205, 377. Speech and voice problems associated with clefts of the lip and palate.

574 Aphasia 3 I Prereq Spe 205, 377, 478. Speech and language disabilities associated with brain injury.

575 Advanced Clinical Practice V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 6 hours. Advanced clinical practice in evaluation and treatment of speech, language, and learning disorders.


578 Seminar in Audiology 3 May be repeated for credit. Explanation of ideas derived from current writings and research in selected aspects of audiology.

582 Developmental Psycholinguistics 3 II Prereq Spe 205. The nature of children's language and theories of language and speech development.

584 Differential Diagnosis in Audiology 3 I Prereq Spe 472. Principles and procedures in audiology for identification of the locus of auditory pathologies.

585 Hearing Conservation in Industry and Society 3 II Prereq Spe 577. The prevention of noise induced hearing impairment and the assessment and management of noise induced hearing impairment in industry and society.

586 Pediatric Audiology 3 II Prereq Spe 472. Auditory behavior and pathologies in children; procedures for assessment and application to others who are difficult to test.

Rhetorical and Communication Studies

234 Parliamentary Procedure 2 I History and philosophy underlying parliamentary procedure; using parliamentary procedure principles in meetings.

235 [C] Principles of Group Communication 3 (2-3) Theoretical and practical aspects of communication in groups; classroom exercises and films demonstrate theoretical principles.

301 Advanced Principles of Interpersonal Communication 3 II Prereq Spe 101 or 112. Theoretical literature relevant to analyzing relationships; students use this information to analyze a relationship.

302 [C] Advanced Public Speaking 3 II Advanced principles of public speaking and their practical implementation for effective communication.

325 [S] Language and Human Behavior 3 Use of language, both verbal and nonverbal, to influence human behavior in problem solving and conflict resolution.

330 [C] Argumentation 3 (2-3) II Theory and analysis of the types of arguments in everyday use.

Advanced Interpretation 3 II Historical approach to the oral presentation of poetry, prose, drama, and speeches with interpretative reading and scripting assignments.

Foundations of Communication Theory: Survey and Studies 3 I Criteria for theory evaluation; evaluation of a broad spectrum of extant communication theories.

Persuasion 3 II Theory and practice of persuasive speaking.

Applied Interpersonal Communication 3 II Prereq Spe 101, 301, or junior and seniors in Educ, Psych, or S W. How a person relates to others; cognitive and affective parts of the process.

Verbal and Nonverbal Systems 3 I Verbal and nonverbal symbol systems and their interrelatation in communication.

History and Criticism of Public Address 3 Critical analysis of the rhetoric of movements, campaigns, and significant speakers.

Speech Pedagogy 3 I Prereq 8 hrs Spe. Principles, history, philosophies, and methods of speech education; objectives, materials, and procedures in directing class and co-curricular activities.

Theory and Application of Readers Theatre 3 I Prereq Spe 351. Literature for oral presentation; scripting, and preparation of the literature to standards for public performance, directing readers theatre.

Forensics 1 May be repeated for credit; cumulative maximum 6 hours. Prereq Spe 331. By interview only.

Readers Theatre 1 May be repeated for credit; cumulative maximum 6 hours. Using a form of oral interpretation, selecting material for scripts, assisting in productions, and participating in public performances.

Seminar in American Studies 3 May be repeated for credit; cumulative maximum 6 hours. Same as Engl 513.

Interpersonal and Small Group Communication 3 I 1980-81 a/y. Theory and research in interpersonal and small group communication.

Rhetorical Theory and Criticism 3 Significant theories of rhetoric and rhetorical criticism from Plato and Aristotle to Kenneth Burke.

Seminar in Speech Education 3 May be repeated for credit; cumulative maximum 6 hours. II Research in current problems in the area of speech education.

Seminar in the Teaching of Speech 2 May be repeated for credit; cumulative maximum 6 hours. Problems and methods in the teaching of speech.

Seminar in Rhetoric and Communication 3 May be repeated for credit; cumulative maximum 6 hours. Special topics in rhetoric, communication and public address.

Theatre Arts and Drama

Stage Costuming 3 (2-3) II Basic costume construction techniques; sewing skills, measurement, patterns, fabrics, draping for the stage.

Beginning Acting 3 (1-6) Basic principles and techniques of acting; developing creativity through exercises for body, mind, voice.

Scenery Construction and Painting 3 (2-3) May be repeated for credit; cumulative maximum 6 hours. Basic techniques of scenery construction, scenery shifting, theatrical equipment, scene painting; required practicum.

Stage Makeup 1 (0-3) Basic techniques in the design and execution of makeup for the stage and television.

University Theatre Practicum 1 (0-3) May be repeated for credit; cumulative maximum 4 hours. Supervised backstage production work; scenery, costumes, lights, box office, publicity.

Acting II 3 Prereq Spe 260. By interview only. Continuation of Spe 260. Use of gesture, movement, timing to develop character and sustain emotion; representative scenes used.

Fundamentals of Play Directing 3 (2-3) I Prereq Spe 260. For juniors and seniors. Theories of directing; principles of composition, blocking, casting, organization, and rehearsal; scene rehearsals and presentation.

Structure of Drama 3 Aristotelian analysis of two plays and a film; action, character, thought, and language as a means to author's vision.

Lighting for the Theatre 3 (2-3) Prereq Spe 263. Design and execution of stage lighting; instruments, control systems, and principles of electricity, optics, and color; required practicum.

Creative Dramatics 3 Prereq Spe 260. Not open to students who have taken Spe 206. Purposes and methods of developing informal drama; elementary classroom use.

Theatre History 1: Beginnings to 1700 3 I Development of theatre and drama from
its beginning to 1700; major trends, playwrights, plays.

366 [H] Theatre History II: 1700 to 1900 3 II
Development of theatre and drama from approximately 1700 to 1900; major developments in theatre arts and dramatic literature.

368 Visual Communication in Theatre, Film and Television 3 II Analysis of the visual aspects of theatre, film and television applying research in perceptual psychology.

396 University Theatre Practicum II 1 (0-3)
May be repeated for credit; cumulative maximum 4 hours. Prereq Spe 296. For non-majors only. Supervised backstage production work; scenery, costumes, lights, box office and publicity.

450 Advanced Techniques of Acting 3 II Prereq Spe 360. Techniques of voice and movement for the advanced student of acting; character acting.

460 Evolution of Theatre Design 3 II 1981-82 a/y. Prereq Spe 365, 366. Visual styles in theatrical productions; development of the modern stages; design approaches to period plays.

519 Play Directing II 3 (2-3) I Prereq Spe 361, 362. Not open to juniors. Continuation of Spe 361. Director as "conductor;" tempo, pace, mood; scene rehearsals and presentation.

519 Stage Scenery and Properties Studio 2 (0-4) Prereq Spe 263. Advanced projects in stage scenery and properties; solving design and technical problems for theatrical productions.

539 Seminar in Scene Design and Technical Theatre 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Prereq Spe 163, 263, or 363. Selected problems in scene design, costumes, or lighting; advanced construction techniques, stage rigging, special effects, scenic projections.

540 Stage Lighting and Sound Studio 2 (0-4) Prereq Spe 363. Advanced projects in stage lighting and sound; solving design and technical problems for theatrical productions.

545 Historic Costume for the Stage 3 I History of western world costume with emphasis on contemporary stage adaptation.

559 Stage Costumes Studio 2 (0-4) Prereq Spe 163. Advanced projects in stage costuming; solving design and construction problems for current theatrical productions.

567 Seminar in Drama 3 may be repeated for credit; cumulative maximum 6 hours. Individualized study and discussion of drama from different eras; sources and treatment, analysis of plays as scripts.

493 Touring Theatre V 1-3 May be repeated for credit; cumulative maximum 6 hours. By interview only. Development of period acting styles; membership in touring company required.

494 Acting: Rehearsal and Performance V 1-3 May be repeated for credit; cumulative maximum 6 hours. By interview only. Practical application of acting techniques during the production of plays.

496 University Theatre Practicum III 1 May be repeated for credit; cumulative maximum 6 hours. Prereq junior or senior theatre major. Students will perform duties involving responsibility in shops and supervision of other students in production crews.

498 Repertory Theatre 3 May be repeated for credit; cumulative maximum 9 hours. By audition only. Rehearsal and performance and related technical and management work in New Summer Palace Repertory Theatre.

541 History of the Theatre 3 I 1981-82 a/y. The physical theatre and drama from preliterate times.

542 History of the Theatre 3 II 1981-82 a/y. The physical theatre and drama from 1700 to 1915.

545 American Theatre and Drama I 3 I 1981-82 a/y. The American theatre and drama from colonial origins.

551 Research in the Production of Period Plays 3 May be repeated for credit; cumulative maximum 6 hours. S Review and utilization of research techniques in the solution of production problems encountered in the staging of period plays.


565 Seminar in Drama 3 May be repeated for credit; cumulative maximum 6 hours. Seminar in various periods, movements, and phases of drama.

566 The Theory of Drama 3 The nature and structure of drama.

568 Seminar in Theatre 3 May be repeated for credit; cumulative maximum 6 hours. Research in a specific area of theatre.

Special Problems and Research

Spe 499 Special Problems V 1-4 May be repeated for credit.

501 Research Methods in Speech 3 I Theory, methods, and practice of research.
600 Special Projects or Independent Study Variable credit.
700 Master's Research, Thesis, and/or Examination Variable credit.
702 Master's Special Problems, Directed Study, and/or Examination Variable credit.
800 Doctoral Research, Dissertation, and/or Examination Variable credit.

Schedule of Studies

At least 45 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

Area Sequences

1. Communication Disorders:
The speech pathology program is accredited by the Education and Training Board—American Board of Examiners in Speech Pathology and Audiology, American Speech, Language and Hearing Association.
(a) Speech Pathology:
(b) Audiology
(c) For program options, see Department of Education.

2. Rhetorical and Communication Studies
(a) Spe 101 or 405, Spe 234, 235, 301, 302, 330, 400, 401, 415, 425. One from: Spe 250, 351 or 451.
(b) 6 hours from recommended courses in history, philosophy, political science, psychology, or sociology.

3. Theatre Arts and Drama:
(a) 13 hours of Performance: Spe 250, 260, 360, 361, and 264.
(b) 18 hours of Dramaturgy: Spe 362, 365, 366, 467, and 6 hours of approved literature electives.
(c) 15 hours of Design/Tech: Spe 163, 263, 363, 465, and 460 OR 368.
(d) 6 hours of Practicum: 2 hours of Spe 296, 2 hours of Spe 496, and 2 hours of Spe 494.

4. Speech Education Major: See listings under the Department of Education.

Preparation for Graduate Study

Students with undergraduate majors in child development, the humanities, education, the social and behavioral sciences, as well as those with undergraduate majors in speech, may be accepted for graduate study in this department.

College of Veterinary Medicine

The College of Veterinary Medicine offers courses of study leading to the degrees of Doctor of Veterinary Medicine, Bachelor of Science in Veterinary Science, Master of Science in Veterinary Science, and Doctor of Philosophy. Additional information, including requirements for admission, is contained in the general information section of this catalog.

The College of Veterinary Medicine at Washington State University is accredited by the American Veterinary Medical Association.

The following program is an outline of the minimum requirements necessary for application to professional study in the College of Veterinary Medicine. However, only a few exceptional students are accepted with this abbreviated background. The average student accepted in recent years has completed 120 hours (4 years) and maintained in excess of a "B" average in preprofessional college or university study.

Preveterninary Requirements

1. Communication Proficiency (three hours must be in written communication) 6
2. Arts and Humanities 6
3. Social Sciences 6
Courses to meet the above requirements must be selected from the list under the General University Requirements for Graduation section of the WSU catalog.

4. Physical and Biological Sciences
Except under unusual circumstances applicants will be expected to have completed courses as indicated in each of the following: chemistry including organic and biochemistry; mathematics (college level algebra); applied animal nutrition; physics including electricity, optics and sound; zoology or general biology.
5. Electives 12
   TOTAL Hours Required 75

Bachelor of Science Degree in Veterinary Science

The Bachelor of Science degree in Veterinary Science combines credit earned in the pre-veterinary curriculum and a minimum of 34 credits in the professional program. This degree was designed to benefit veterinary students in obtaining employment, applying for scholarships, and qualifying for graduate-level course enrollments. Students completing a minimum of 120 semester hours should contact the Associate Dean, Student Services, for complete information.

The minimum basic requirements for the degree are:

<table>
<thead>
<tr>
<th>Social Sciences, Arts and Humanities (not less than 6 hours in each field)</th>
<th>12</th>
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<tbody>
<tr>
<td>Communications Proficiency</td>
<td>6</td>
</tr>
<tr>
<td>Physical and Biological Sciences and Recommended Electives</td>
<td>42</td>
</tr>
</tbody>
</table>

60 additional hours of acceptable university credit of which 34 hours must be 300-level or above courses in the professional curriculum of the College of Veterinary Medicine 60

Total semester hours 120

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### Schedule of Studies

#### Professional Curriculum

The professional curriculum for the Doctor of Veterinary Medicine degree is outlined below. Two areas of concentration options are offered: Practice Option and Veterinary Science Option. A minimum of 16 semester hours of option courses must be added to the core of 124 semester hours necessary for graduation. A total of 140 semester hours are required for graduation. All courses required in the professional program are upper-division courses.

#### First Year

**First Semester**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tr>
<td>V An 401</td>
<td>Gross Anatomy</td>
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<tr>
<td>V An 405</td>
<td>Microanatomy</td>
<td>4</td>
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<tr>
<td>V Ph 417</td>
<td>Physiology</td>
<td>5</td>
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<tr>
<td>V Mic 430</td>
<td>Immunology</td>
<td>3</td>
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<tr>
<td>V Ph 356</td>
<td>Vet Prof Or</td>
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**Second Semester**

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<tr>
<td>V An 402</td>
<td>Gross Anatomy</td>
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<tr>
<td>V An 406</td>
<td>Microanatomy</td>
<td>3</td>
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<tr>
<td>V Ph 418</td>
<td>Physiology</td>
<td>4</td>
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<tr>
<td>V Ph 423</td>
<td>Neuroscience</td>
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<tr>
<td>V Pa 445</td>
<td>Gen Pathology</td>
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### Second Year

**First Semester**

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<tr>
<td>V Pa 446</td>
<td>Sp Pathology</td>
<td>5</td>
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<tr>
<td>V Ph 421</td>
<td>Pharmacology</td>
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<tr>
<td>V Mic 432</td>
<td>Microbiology</td>
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<tr>
<td>V Pa 451</td>
<td>Parasitology</td>
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**Second Semester**

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<th>Course Title</th>
<th>Hours</th>
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<tr>
<td>V Ph 422</td>
<td>Pharmacology</td>
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<tr>
<td>V Mic 431</td>
<td>Virology</td>
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<tr>
<td>V MS 460</td>
<td>Lab Diag</td>
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<tr>
<td>V MS 481</td>
<td>Radiology</td>
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<tr>
<td>V MS 463</td>
<td>Sm An Med I</td>
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### Third Year

**First Semester**

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<tr>
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<td>Sm An Med II</td>
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<tr>
<td>V MS 473</td>
<td>Sm An Surg</td>
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<tr>
<td>V MS 461</td>
<td>Lg An Med I</td>
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<tr>
<td>V Mic 433</td>
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<tr>
<td>V MS 377</td>
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**Second Semester**

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<td>V MS 472</td>
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<tr>
<td>V MS 477</td>
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<tr>
<td>V MS 478</td>
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<td>V Pa 454</td>
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### Fourth Year

**Block System (4 wks./block)**

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<tr>
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<td>V MS 565</td>
<td>Sm An Surgery</td>
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<td>V MS 570</td>
<td>Equine Med &amp; Surgery</td>
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<tr>
<td>V MS 575</td>
<td>Food An Med &amp; Surg</td>
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<td>V MS 580</td>
<td>Service</td>
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<tr>
<td>V MS 590</td>
<td>Externship (1 cr/block)</td>
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</table>

Elective Blocks (4 cr/block) 12

#### Senior Paper

Required and Elective Blocks 4 cr/block

Externship Blocks 1 cr/block

A total of 140 credit hours are required for graduation. All courses listed above plus the completion of a Senior Paper are required for graduation.

### Preparation for Graduate Study

Students meeting the requirements of the Graduate School and having the Doctor of Veterinary Medicine degree or a bachelor’s degree in allied fields may take work leading to an advanced degree in the College of Veterinary Medicine. Student without the DVM degree will take courses in preclinical fields (anatomy, microbiology, pathology, physiology, parasitology, and pharmacology).
The undergraduate preparation should include two semesters of organic chemistry or one semester of organic chemistry and one semester of physiological chemistry; one year of general physics and one semester of college algebra; one semester of comparative vertebrate anatomy and one semester of physiology.

A combined degree program is available which allows simultaneous pursuit of both DVM and graduate degrees. Admission to the College of Veterinary Medicine and to the Graduate School are prerequisite for entry into the combined degree program.

Department of Veterinary and Comparative Anatomy, Pharmacology, and Physiology

Professor and Department Head, W. G. Huber.

Anatomy: Professor and Division Head, R. P. Worthington; Professor V. K. Reddy; Associate Professors, M. H. Ratzlaff, C. S. Zamora; Assistant Professors, D. R. Hilbelink, J. W. Newbrey, T. L. Spurgeon.

Pharmacology and Toxicology: Professor and Division Head, J. O. Dickinson; Professors, R. K. Farrel, W. G. Huber, P. A. Klaavan, J. L. Way; Associate Professor, L. D. Koller; Assistant Professors, R. E. Borchard, B. G. Archer, G. A. Pollock.

Physiology: Professor and Division Head, W. M. Dickson; Professors, L. K. Bustad, K. M. Meyers; Associate Professors, R. C. Ritter, W. S. Ritter; Assistant Professor, K. B. Campbell.

Description of Courses

For explanation see Index under “Symbols”

Anatomy

308 Functional Anatomy of Domestic Animals 3 (2-3) II Prereq Chem 102; Bio S 104. For majors in the College of Agriculture. Macroscopic functional morphology of domestic animals.

401 Veterinary Anatomy 5 (1-12) I Prereq admission to Vet Med or graduate student in Vet S. Detailed macroscopic functional morphology of domestic animals.

402 Veterinary Anatomy 3 (0-9) II Prereq V An 401. Detailed macroscopic functional morphology of domestic animals.

405 Microscopic Anatomy 4 (3-3) I Prereq admission to Vet Med or graduate student in Vet S. Microscopic functional morphology of the cell, tissue, and selected organ systems in domestic animals.

406 Microscopic Anatomy 3 (2-3) II Prereq V An 405. Microscopic functional morphology of selected organ systems in domestic animals. Continuation of V An 405.

413 Advanced Anatomy 3 (1-6) May be repeated for credit; cumulative maximum 6 hours. Prereq V An 402, 406. Microscopic and gross anatomy of selected organ systems.

423 Veterinary Neuroscience 3 (2-3) II Prereq V An 401; V Ph 417. Structure and function of nervous tissues; relationships of neurophysiology and neuroanatomy to clinical medicine.

499 Special Problems V 1-4 May be repeated for credit.

511 Applied Anatomy of Large Animals 2 (1-3) II Prereq V An 402. Applied anatomy of small animals including surgical anatomy.

512 Applied Anatomy of Small Animals 2 (1-3) I Prereq V An 402. Applied anatomy of small animals including surgical anatomy.

513 Advance Neuroanatomy 3 (1-6) 1 1981-82 a/y. Advanced gross and microscopic anatomy of the nervous system and organs of special sense.

550 Research Principles and Methods of Anatomy 1 (0-3) May be repeated for credit; cumulative maximum 3 hours. Prereq graduate student in Vet S. Exposure to research performed in the laboratory of each anatomy faculty member.

592 Seminar 1 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

700 Master’s Research. Thesis and/or Examination Variable credit.

(for masters in veterinary science only)

800 Doctoral Research, Dissertation and/or Examination Variable credit.

(for PhD in veterinary science only)

Pharmacology and Toxicology

V Ph

356 Professional Orientation I Orientation of first year professional DVM students to the profession of veterinary medicine.

421 Veterinary Pharmacology 4 (3-3) I Prereq V Ph 418. The pharmacology of the systems of the body.

422 Veterinary Pharmacology 6 (5-3) II Prereq V Ph 421. Continuation of V Ph 421. Pharmacology of toxicants and poisonous plants.
524 Mammalian Physiology 3 II Prereq V Ph 519. Continuation of V Ph 519.
528 Behavioral Mechanisms in Physiology 3 II 1980-81 a/y. Examination of the physiological transduction mechanism which enable animals to interact behaviorally with their environment.
592 Seminar I May be repeated for credit.
600 Special Projects or Independent Study Variable credit.
700 Master's Research, Thesis, and/or Examination Variable credit.
(for masters in veterinary science only)
800 Doctoral Research, Dissertation, and/or Examination Variable credit.
(for PhD in veterinary science only)

Department of Veterinary Clinical Medicine and Surgery


Description of Courses

VMS For explanation see Index under "Symbols"

261 Accidents and Diseases 3 I Majors in the College of Agriculture. Common diseases and injuries of farm animals.
377 Large Animal Clinic Orientation 1 (0-3) I Prereq 3rd year in Vet Med. The restraint of large animals, examination techniques, administration of medicaments, and surgical dressing.
460 Laboratory Diagnosis 3 (2-3) II Prereq 2nd year in Vet Med. Laboratory diagnostic procedures and interpretation.
462 Large Animal Medicine II 5 I Prereq V MS 461. Diagnosis and treatment of large animal infectious diseases. Continuation of V MS 461.


464 Small Animal Medicine II 4 II Prereq V MS 463. Diagnosis and treatment of small animal diseases. Continuation of V MS 463.


473 Surgery II 3 (2-3) II Prereq V MS 472. Large animal surgical techniques.

477 Theriogenology 3 II Prereq V MS 462. Diagnosis, symptomatology, and treatment of reproductive disorders.

478 Theriogenology Laboratory 1 (0-3) II Prereq c// in V MS 477.

481 Radiology 3 II Prereq 2nd year in Vet Med. Introduction to radiography and diagnostic radiology.


499 Special Problems V 1-4 May be repeated for credit.

560 Small Animal Medicine 4 (0-12) Prereq 4th year in Vet Med. Theory and practice of small animal medicine; hospital rotation in all phases.

561 Small Animal Medicine Elective 4 (0-12) Prereq V MS 560. Theory and practice in specialized diagnostic procedures; hospital rotation.

565 Small Animal Surgery 4 (0-12) Prereq 4th year in Vet Med. Surgical cases in clinic, ward rounds, case discussions by students, seminars by faculty, designed surgical exercises.

566 Small Animal Surgery Elective 4 (0-12) Prereq V MS 565. Clinical cases; additional designed surgical exercises.


571 Equine Medicine and Surgery Elective 4 (0-12) Prereq V MS 570. Additional surgery and lameness, and advanced medicine; independent study; audio-visual aids.


576 Advanced Food Animal Medicine and Surgery 4 (0-12) Prereq V MS 575. Independent study; audio-visual aids. Cooperative course taught by the University of Idaho (Caldwell).

577 Advanced Theriogenology 4 (0-12) Prereq V MS 575. Reproductive herd health in cattle and swine; diagnostic techniques related to infertility.

578 Food Animal Preventive Medicine 4 (0-12) Prereq V MS 575 or 576. Preventive medicine and environmental impact on animal confinement; agribusiness, remnant nutrition, management practice. Cooperative course taught by the University of Idaho (Caldwell).


582 Seminar in Clinical Medicine 1 May be repeated for credit.

587 Hospital Rotation 3 (0-9) May be repeated for credit; cumulative maximum 6 hours. Prereq DVM degree. Supervised practical experience in all service areas of the veterinary hospital.

589 Advanced Clinical Veterinary Medicine 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq DVM degree. Special topics.

590 Externship 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq 4th year in Vet Med. Theory of practice of veterinary medicine in a non-university situation.

591 Advanced Clinical Diagnosis 3 (1-6) May be repeated for credit; cumulative maximum 6 hours. Prereq DVM degree. Techniques: clinical instruction, clinical chemistry, laboratory diagnosis including virus disease diagnostic procedures.

592 Seminar 1 May be repeated for credit.

593 Advanced Large Animal Surgery 3 (1-6) Prereq DVM degree. An advanced course in equine surgical techniques.


595 Advanced Laboratory Diagnosis 2 (1-3) Prereq DVM degree. Advanced clinical laboratory diagnosis and interpretation.

596 Advanced Radiology 2 (1-3) Prereq DVM degree. Advanced study in the field of veterinary radiology and radiation treatment.
Department of Veterinary Microbiology and Pathology


Description of Courses

For explanation, see Index under "Symbols"

Veterinary Microbiology

V Mic

430 Veterinary Immunology 3 (2-3) I Prereq major in Vet Med or graduate student in Vet S. Immunology for the professional veterinary student.

431 Veterinary Virology 3 (2-3) Prereq major in Vet Med or graduate student in Vet S. Virology for the professional veterinary student.

432 Veterinary Bacteriology 4 (2-6) I Prereq V Mic 431. Bacteria that produce disease in animals.

433 Veterinary Medicine and Human Health 3 II Prereq junior in Vet Med or graduate student in Vet S. Veterinary medicine related to human health; zoonoses, foods of animal origin, and epidemiologic and ecological factors leading to disease.

435 Disease Concepts for Wildlife Biologists 4 II Biologic aspects of infectious diseases and environmental contaminants in wild mammalian and avian populations.

436 (540) Diseases of Commercial Fowl 3 (1-6) II Prereq V Mic 432; V Pa 446. Diagnosis, control, and treatment of diseases in domestic fowl.

499 Special Problems V 1-4 May be repeated for credit.

431 Advanced Immunology 3 I 1980-81 a/y. Prereq V Mic 430 or Bact 412. Analysis of the immune response.


533 Advanced Veterinary Diagnostic Bacteriology 2 (0-6) May be repeated for credit. Prereq V Mic 432 or Bact 310. Isolation and identification of bacterial and mycotic agents in diseased organs and tissues of animals.


535 Advanced Readings in Veterinary Microbiology 1 (0-3) May be repeated for credit. Prereq senior in Vet Med or graduate student in Vet S. Supervised reading program which pursues publications of intermediate technical difficulty and advanced textbooks.

536 Diagnostic Microbiological Conference 1 (0-3) May be repeated for credit. Prereq student in Vet S. Identification of animal pathogens in clinical material.

537 Diagnosis of Viral and Rickettsial Diseases of Domestic Animals 3 (1-6) Prereq V Mic 430, 431; V Pa 446. Clinical, pathological, and laboratory diagnosis of viral and rickettsial diseases of domestic animals.

538 Veterinary Mycology 2 (0-6) Prereq V Mic 432 or Bact 310. Isolation and identification of fungi and mycotoxins important to veterinary medicine.

539 Pet Bird Diseases 2 (1-3) Prereq V Mic 432; V Pa 446. Diagnosis and treatment of diseases in pet, wild, and zoo birds.

542 Diseases of Wildlife 2 II Prereq junior in Vet. Management principles, epidemiology, pathology, treatment, and control of diseases in wild birds, fish, and mammals.

592 Seminar 1 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

(For master's in veterinary science only)

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

(For PhD in veterinary science only)

Veterinary Pathology

V Pa

443 Ecologic Perspectives in Veterinary Medicine 2 (1-3) Prereq Chem 102 or 106; Bio S 104; Bact 101 or 201. Veterinary related, ecological problems approached in
a multidisciplinary context; guest panelists, lectures, field trips; group projects.

444 Small Animal Pathology 3 (2-3) II Prereq V Pa 446. Pathology of diseases of small pet animals.

445 General Pathology 4 (3-3) II Prereq V An 406; V Ph 418. Structural and functional alterations in disease; elementary oncology.


447 Gross Pathology Conference 1 (0-3) May be repeated for credit. Prereq V Pa 445 or c/c. Review of current necropsy cases; experience in performing necropsies.

449 Pathology of Large Animal Diseases 3 (2-3) I Prereq V Pa 446. Diseases of cattle, horses, swine, and sheep; diagnosis at necropsy.

451 Veterinary Parasitology 5 (4-3) I Prereq soph in Vet. Arthropods, protozoa, and helminths of veterinary importance; their host-parasite relationship and control.

454 Special Animal Medicine 3 II Prereq junior in Vet. Problems concerning the common laboratory animals, e.g. rodents, logosmoris and non-human primates.

499 Special Problems V 1-4 May be repeated for credit.

529 Neurochemistry 3 II 1980-81 a/y. Same as V Ph 529.

530 Neurochemical Techniques 1 (0-3) II 1981-82 a/y. Same as V Ph 530.

542 Advanced Diagnostic Pathology V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq V Pa 445, 446. Necropsy laboratory for techniques and skills in performing and interpreting necropsy material.

543 Laboratory Animal Pathology 3 May be repeated for credit; cumulative maximum 6 hours. II 1980-81 a/y. Prereq V Pa 454.


546 Advanced Reading in Veterinary Parasitology I May be repeated for credit. Prereq graduate or advanced undergraduate. Selective reading program under tutorial guidance for important topics in veterinary parasitology.

547 Advanced Veterinary Parasitology 3 II 1980-81 a/y. Prereq graduate or advanced undergraduates. Mechanisms involved in host-parasite relationship important to control of parasitic infections.

548 Seminar in Experimental Pathology I May be repeated for credit. I

549 Advanced Systemic Pathology I 4 (2-6) II 1980-81 a/y. Prereq V Pa 446. Pathology found in selected organ systems and oncology.

550 Advanced Systemic Pathology II 4 (2-6) I 1981-82 a/y. Prereq V Pa 446. Selected organ systems.

581 Advanced Services 4 (0-12) Prereq 4th year in Vet Med. Advanced study in diagnostic pathology and microbiology.

592 Seminar 1 May be repeated for credit.

600 Special Projects or Independent Study Variable credit.

700 Master's Research, Thesis, and/or Examination Variable credit.

(for master's in veterinary science only)

800 Doctoral Research, Dissertation, and/or Examination Variable credit.

(for PhD in veterinary science only)

Department of Vocational Technical Education

Professor and Department Head, W. A. Bakamji; Professors, J. G. Cavanagh, A. D. Hill; Associate Professors, M. O. Oaks, B. L. Trout; Assistant Professors, R. P. Abendroth, M. D. Kleene, R. Martin, R. R. Murphy, M. L. Riggers, J. W. Zimmer.

The Department of Vocational Technical Education administers Agricultural Education, Home Economics Education, and Industrial Education. The curriculum in each of the three areas is designed to prepare students for careers in education and a wide variety of occupations in government, business, and industry. Theoretical and laboratory workshop methods in vocational technical education are combined with externships and internships. Technical courses are also offered in the Colleges of Agriculture, Home Economics, Engineering, and in the Departments of Fine Arts and Business Administration.

The department offers courses of study leading to the degrees of Bachelor of Science in Agricultural Education, Bachelor of Science in Home Economics, and Bachelor of Arts in Industrial Education. The department also offers courses leading to the Master of Science degree in Vocational Technical Education. All graduate students are required to complete a common core of courses and have the option of specializing in a
designated field of interest. Additional work in related fields may be taken in other WSU Departments or through exchange courses with the University of Idaho.

AGRICULTURAL EDUCATION

Students who wish to qualify as teachers of Vocational Agriculture in high schools may do so by meeting the requirements for a Bachelor of Science degree in Agricultural Education. Before the end of the sophomore year, the student should certify a major in Agricultural Education. The student must have a 2.00 grade point average and meet the requirements of the Department of Education. (See Department of Education.) Minimum requirements for the Provisional Certificate and the certificate in Vocational Agriculture are met through the schedule of studies given below.

Schedule of Studies

At least 40 of the total hours required for this degree must be in upper-division courses, with at least 20 hours in Agriculture. Students electing a major in Agricultural Education must complete at least 6 hours in Communications Proficiency, 6 hours in Arts and Humanities, 6 hours in Social Sciences, 3 hours in Mathematics (or show competency in mathematics), 8 hours in Biological Sciences, 8 hours in Physical Sciences, 29 hours in Education, 1 hour in safety education and a First Aid Card. At least 45 semester hours in agricultural science must be earned. These requirements will vary depending on the option selected.

A program in Agricultural Education has four options available: Production Agriculture—Mechanics, Production Agriculture—Business, Agricultural Resources—Forestry, and Horticulture. All options require a total of 120 semester hours for graduation.

PRODUCTION AGRICULTURE—MECHANICS

Freshman Year

First Semester

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<tr>
<td>Agron 101 Flid Crop Sci</td>
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<td>Chem 101 Intro Chem</td>
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<tr>
<td>Engl 101 Composition</td>
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<td>Psych 102 Hum Behavior</td>
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Second Semester

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<td>Chem 102 Chem Rel Man</td>
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<td>Hort 101 Plts &amp; Gard</td>
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<td>Hum Elective</td>
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Sophomore Year

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<td>Math 101 or Elective</td>
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<td>Spe 112 Fundamentals</td>
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First Semester

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<td>Agron 201 Crop Gro Dev</td>
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<tr>
<td>Bio S 103 Intro Biol</td>
<td>4</td>
</tr>
<tr>
<td>Econ 201 Principles</td>
<td>4</td>
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<tr>
<td>Ag 205 Human Rel</td>
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Second Semester

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<tr>
<td>Ag M 201 Metals Shop</td>
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<tr>
<td>A S 213 Nutrition</td>
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<tr>
<td>Bio S 104 Intro Biol</td>
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Junior Year

First Semester

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<td>Ag M 312 Eng &amp; Tract</td>
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<td>Educ 301 Educ Psych</td>
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<td>Soils 201 Soils</td>
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<td>Ag M Elective</td>
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Second Semester

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<td>Ag Ec 340 Farm Mgmt</td>
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<td>Educ 402 Eval Lrn Sec</td>
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<td>Entom 340 Ag Entom</td>
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<tr>
<td>Ag M 402 Meth and Mat</td>
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<tr>
<td>Educ 358 Current Issues</td>
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Senior Year

(interchangeable semesters)

First Semester

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<tr>
<td>VTE 342 Methods of Ag</td>
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<tr>
<td>Educ 403 Curriculum</td>
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<tr>
<td>Soils 301 Management</td>
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<td>Ag Elective</td>
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Second Semester

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<td>VTE 407 Dir Tchg Ag</td>
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<td>VTE 440 Fdns VTE</td>
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<td>VTE 442 Prog Planning</td>
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<tr>
<td>VTE 345 Safety</td>
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<tr>
<td>Ag M 313 Sm Engine</td>
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AGRICULTURAL RESOURCES—FORESTRY

The schedule of studies is the same as in the Production option above except as follows:

Sophomore Year

Second Semester

<table>
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</thead>
<tbody>
<tr>
<td>Ag M 201 Metals Shop</td>
<td>3</td>
</tr>
</tbody>
</table>

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HOME ECONOMICS EDUCATION
Minimum requirements for the Provisional Certificate and the Certificate in Vocational Home Economics are met after completion of studies given below. The course of study leads to the degree of Bachelor of Science in Home Economics.

Schedule of Studies
At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses. A minimum of 42 hours of home economics is required for graduation.

Required Courses

<table>
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<th>Course</th>
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<td>Engl 101 Composition</td>
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<tr>
<td>Com Prof Elect</td>
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<tr>
<td>Arts and Hum Electives</td>
<td>6</td>
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<tr>
<td>Soc 101 Introduction</td>
<td>3</td>
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<tr>
<td>Psych 102 Intro Psych</td>
<td>3</td>
</tr>
<tr>
<td>Econ 201 Principles</td>
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<tr>
<td>Bact 101 Elem Bact</td>
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<tr>
<td>Chem 101 or 105</td>
<td>4</td>
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<tr>
<td>Zool 251 Intro Hum Physiol</td>
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<tr>
<td>CFS 247 Family Relationships</td>
<td>3</td>
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<tr>
<td>CFS 240 Child Development</td>
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<td>CFS 242 Directed Observation</td>
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<td>CFS Elective</td>
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<tr>
<td>CFS 350 Decision Making</td>
<td>3</td>
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<td>CFS 353 Family Housing</td>
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<tr>
<td>CFS 450 Home Management</td>
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<td>CFS 352 or 452</td>
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<td>C T 107 Design Awareness</td>
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<tr>
<td>C T 215 Textiles</td>
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<td>C T 216 Cloth Constr</td>
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<td>C T 217 Clothing</td>
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<td>FNIM 120 or 220</td>
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<td>FNIM 130 or 333</td>
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<tr>
<td>Educ 300 Intro Field Expers</td>
<td>1</td>
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<tr>
<td>Educ 303 Secondary Schools</td>
<td>4</td>
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<tr>
<td>VTE 343 Teaching Home Ec</td>
<td>2</td>
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<tr>
<td>Educ 402 Eval of Learn</td>
<td>3</td>
</tr>
<tr>
<td>Educ 358 or 359</td>
<td>2</td>
</tr>
<tr>
<td>Educ 403 or 404</td>
<td>3</td>
</tr>
<tr>
<td>Educ 405 or 406</td>
<td>10</td>
</tr>
<tr>
<td>VTE 345 or 346</td>
<td>1</td>
</tr>
<tr>
<td>VTE 440 or 441</td>
<td>2</td>
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<td>VTE 434 Home Ec Ed</td>
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Option A
(In addition to required courses above)

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<tr>
<td>Chem 102 or 106</td>
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<tr>
<td>Chem 240 Organic</td>
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**Option B**
(In addition to required courses above)

<table>
<thead>
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<tr>
<td>Soc 270, 330, 331, 351 or Econ 312 or Anth 301</td>
<td>3</td>
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<tr>
<td>Social Science Elective</td>
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**INDUSTRIAL EDUCATION**
There are two types of programs leading to the degree of Bachelor of Arts in Industrial Education. The first gives a broad and carefully planned preparation for students who intend to teach industrial education (industrial arts) in the public schools. It gives a prospective teacher a sequence of courses in many of the major industrial technical fields and comprehensive combinations of industrial education and related fields. It also fulfills the requirements for the Provisional Certificate.

The second type of program prepares the student for entrance into industrial or commercial activities such as small manufacturing and business, contracting, representing manufacturers, and the installation, maintenance, sales and service of industrial products.

**Schedule of Studies**
At least 40 of the total hours required for the bachelor's degree in these programs must be upper-division courses.

**Industrial Education (Teaching)**

**Freshman Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Educ 300 Intro Fld Exp</td>
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<tr>
<td>M E 101 Graphic Design</td>
<td>2</td>
</tr>
<tr>
<td>Engl 101 Composition</td>
<td>3</td>
</tr>
<tr>
<td>VTE 110 Orientation</td>
<td>2</td>
</tr>
<tr>
<td>M E 210 Production Proc</td>
<td>4</td>
</tr>
<tr>
<td>Ag M 201 Metals Shop</td>
<td>3</td>
</tr>
<tr>
<td>Science Elective (GUR)</td>
<td>3</td>
</tr>
<tr>
<td>VTE 121 Wood Tech</td>
<td>3</td>
</tr>
<tr>
<td>VTE 221 Wood Tech</td>
<td>3</td>
</tr>
<tr>
<td>Psych 101 or 102</td>
<td>3</td>
</tr>
<tr>
<td>VTE 250 Metal Tech</td>
<td>3</td>
</tr>
<tr>
<td>Spe 102 Pub Spkg</td>
<td>3</td>
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<td>Hum Elective (GUR)</td>
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**Sophomore Year**

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>VTE 325 Bldg Const</td>
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<tr>
<td>Phys 101 General</td>
<td>4</td>
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<tr>
<td>VTE 130 Basic Electricity</td>
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</tr>
<tr>
<td>VTE 272 Basic Design</td>
<td>3</td>
</tr>
<tr>
<td>Chem 101 Intro</td>
<td>4</td>
</tr>
<tr>
<td>Educ 301 Educ Psych</td>
<td>4</td>
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<td>Hum Elective (GUR)</td>
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<tr>
<td>VTE 131 Basic Electronics</td>
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<td>Soc S Elective (GUR)</td>
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<tr>
<td>VTE 486 (Practicum)</td>
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**Junior Year**

<table>
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<tr>
<td>VTE 316 Power Tech</td>
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<tr>
<td>Educ 402 Eval Sec</td>
<td>2</td>
</tr>
<tr>
<td>VTE 350 Metal Tech</td>
<td>3</td>
</tr>
<tr>
<td>Educ 303 Tchg Sec Sch</td>
<td>4</td>
</tr>
<tr>
<td>VTE 333 Methods Tchg</td>
<td>3</td>
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<tr>
<td>VTE 416 Auto Tech</td>
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</tr>
<tr>
<td>VTE 426 Graphics</td>
<td>3</td>
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<tr>
<td>Educ 358-359 Current Issues</td>
<td>2</td>
</tr>
<tr>
<td>VTE 433 Lab Org &amp; Mgmt</td>
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<td>Approved Technical Elective</td>
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**Senior Year**

(Interchangeable Semesters)

**First Semester**

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<tr>
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<tbody>
<tr>
<td>Educ 405-406 Direct Tchg</td>
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<tr>
<td>H Ed 480-481 Sch Health</td>
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<tr>
<td>VTE 345-346 Ind Saf Hygiene</td>
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<tr>
<td>Educ 403-404 Curriculum</td>
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**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>VTE 464 Metal Tech</td>
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<tr>
<td>VTE 424 Curric Mat I Ed</td>
<td>3</td>
</tr>
<tr>
<td>VTE 440-441* or Approved</td>
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<tr>
<td>Technical Elective</td>
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<tr>
<td>Approved Technical Elective</td>
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*recommended choice

**Industrial-Technical Option**

**Freshman Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Engl 101 Composition</td>
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<tr>
<td>M E 101 Graphic Design</td>
<td>2</td>
</tr>
<tr>
<td>M E 210 Production Proc</td>
<td>4</td>
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<tr>
<td>Hum Elective (GUR)</td>
<td>3</td>
</tr>
<tr>
<td>VTE 121 Wood Tech</td>
<td>3</td>
</tr>
<tr>
<td>Psych 101 or 102</td>
<td>3</td>
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<tr>
<td>Ag M 201 Metals Shop</td>
<td>3</td>
</tr>
<tr>
<td>VTE 250 Metal Tech</td>
<td>3</td>
</tr>
<tr>
<td>Spe 102 Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>Soc S Elective (GUR)</td>
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<tr>
<td>Science Elective (GUR)</td>
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**Sophomore Year**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>VTE 272 Basic Design</td>
<td>3</td>
</tr>
<tr>
<td>VTE 130 Basic Electricity</td>
<td>3</td>
</tr>
<tr>
<td>Phys 101 General</td>
<td>4</td>
</tr>
<tr>
<td>VTE 221 Wood Tech</td>
<td>3</td>
</tr>
<tr>
<td>Hum Elective (GUR)</td>
<td>3</td>
</tr>
<tr>
<td>Chem 101 Intro</td>
<td>4</td>
</tr>
<tr>
<td>VTE 131 Basic Electronics</td>
<td>3</td>
</tr>
<tr>
<td>Cpt S 200 or 201, or 210</td>
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<tr>
<td>Econ 201 Contemp Econ</td>
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<tr>
<td>B A 201 Org &amp; Mgt</td>
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**Junior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTE 325 Bldg Const</td>
<td>3</td>
</tr>
<tr>
<td>VTE 350 Metal Tech</td>
<td>3</td>
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</tbody>
</table>
Approved Technical Elective 3-4
VTE 316 Power Tech 3
VTE 416 Auto Tech 3
VTE 426 Graphics 3
Major Electives 6-9

Senior Year Hours
VTE 464 Metal Tech 3
VTE 333 Methods 3
Approved Technical Elective 3
VTE 480 App Lab Pro 3
B A 230 Prin Acctg* 4
B A 350 Pers Admin* 3
Psych 306 Industrial 3
VTE 486 Applied Lab Proc (Internship) 3

*recommended choice

Preparation for Graduate Study
As preparation for work toward an advanced degree in Vocational Technical Education a student should complete a 30-hour major in the field and apply for a Master of Science degree in Vocational Technical Education.

Vocational Technical Education

VTE

110 (I Ed 110) Industrial Education Orientation 2 I Foundations, objectives, and administration of industrial education in the public schools.

121 (I Ed 121) Woodworking Technology I 3 0-6 I Prereq M E 101 or c/c. Wood identification, design and fabrication of wood products, basic finishing techniques and related materials.

130 (I Ed 130) Basic Electricity 3 1-6 I Basic electrical theory and construction practices related to measurement and evaluation, as well as graduate work in the field of vocational technical education.

131 (I Ed 130) Basic Electronics 3 1-6 I Basic electrical theory and construction practices related to measurement and evaluation, as well as graduate work in the field of vocational technical education.

221 (I Ed 221) Woodworking Technology II 3 0-6 Prereq VTE 121. Elements in nomenclature; operation of power equipment, working drawings, bill of materials, and routing procedures; use of jigs and fixtures.

250 (I Ed 250) Metalworking Technology I 3 0-6 II Prereq M E 203; Ag M 201. Design, research, planning, and construction utilizing arc, heliarc, gas welding, machine tools, bench metals, foundry, forging, and heat treatment.

272 (I Ed 272) Basic Industrial Design 3 1-6 Prereq M E 101. Design fundamentals; techniques, materials, and tools employed in the fabrication of industrial products.

316 (I Ed 316) Power Technology 3 2-3 Prereq VTE 130. Power sources and mechanisms; classroom applications.

325 (I Ed 325) Building Construction Technology and Practice 3 2-3 Prereq VTE 121; M E 101.

333 (I Ed 333) Methods of Teaching Industrial Education 3 Prereq VTE 110.

342 Methods of Teaching Agriculture 2 For juniors and seniors.

343 Methods of Teaching Home Economics 2 or 3 Prereq Educ 303 or c/c. 18 hrs H E.

345 Industrial Safety and Hygiene 1 Safety and industrial hygiene principles; federal and state regulations. Required for vocational certification.

346 Industrial Safety and Hygiene 1 Same as VTE 345.

350 (I Ed 350) Metalworking Technology II 3 0-6 I Prereq VTE 250. Product planning, designing, and fabrication incorporating mass production methodology; industrial organization, design, setups, jigs, fixtures, fabrication, methods, cost accountability.

360 (I Ed 360) Industrial Craft Processes 3 1-6 I Prereq VTE 121, 250. Industrial plastics, art metal, graphic communication; leather, industrial and educational applications.

407 Directed Teaching, Agriculture V 8 1-21 to 12 1-33 May be repeated for credit. Prereq VTE 442; 300; senior standing; permission of department. Supervised teaching in public schools for agriculture education majors (full day for twelve weeks). Includes a 2-hour weekly seminar in problems of teaching.

416 (I Ed 416) Automotive Technology 3 1-6 II Prereq VTE 130, 316. Theory and practice related to recent automotive technology.

420 Student Evaluation Techniques 3 Application of basic statistical tools and evaluation procedures to student evaluation in the classroom; grading procedures; analysis and construction of object, subject, and performance tests. Cooperative course taught at the University of Idaho.

421 (534) Vocational Guidance 3 Vocational guidance needs and objectives, principles and practices; organization and utilization of occupational information. Credit not granted for both VTE 421 and 521. Joint course taught with the University of Idaho.

424 (I Ed 420) Curriculum Materials in Industrial Education 3 Prereq 15 hours VTE.
Zoology is the basic animal science. The courses offered in this department meet the needs of three groups of students: those who plan to specialize in general zoology, zoophysiology, or some other area of biological science; those who wish to study biological science for its cultural or educational value; and those who plan to enter an applied science such as medicine, pharmacy, dentistry, veterinary medicine, or wildlife biology.

There are ample facilities for graduate study in environmental biology, development, systematics, physiology, and wildlife biology.

Special facilities include the Vertebrate Collections of the Charles R. Conner Museum, and Electron Microscope Center and the Computing Center.

The department offers courses of study leading to the degrees of Bachelor of Science in Wildlife Biology, Bachelor of Science in Zoology, Master of Science in Wildlife Biology, Master of Science Zoology, Doctor of Philosophy (Zoology), and Doctor of Philosophy (Zoophysiology).

**Description of Courses**

**Zool** For explanation see Index under "Symbols"

135 [B] Animal Natural History 2 I Identification, life history, and behavior of animals commonly found in the Pacific Northwest.

224 Adaptive Strategies of Animals 3 I Prereq Bio S 103. Animal structure, function, behavior, reproduction and life history as viewed from an adaptational perspective.

225 General Zoology Laboratory 1 (0-3) I Invertebrate and vertebrate animals; structural features, adaptations, diversity and systematic relationships.


315 Gross and Microanatomy 4 (3-3) Prereq 1 sem Bio S. Gross and microscopic anatomy of the human.

320 Principles of Animal Development 4 (3-3) II Prereq Zool 224. Experimental analyses of development and a descriptive and comparative examination of embryology; emphasis on the chordates.

322 (222) Invertebrate Biology 4 (3-3) I Prereq Zool 224. Systematics, development and evolution of the invertebrate phyla.

324 Comparative Vertebrate Anatomy 4 (2-6) I Prereq Zool 224. Evolution of vertebrates and their organ systems; correlation of structural modification with function.

330 [B] Principles of Conservation 3 II Prereq Bio S 101 or 102 or 103 or Bact 101. Conservation of major natural resources through a biological approach; philosophical, economic, and political aspects of important conservation issues.

332 Wildlife Techniques 3 (1-6) I Prereq 2 sem biology. Field and laboratory techniques utilized in wildlife research and management.

335 Fisheries Biology 3 (2-3) I 1980-81 a/y. Prereq Bio S 104, Math 141 or 171. Identification, life history, population dynamics and management of important fish species.

352 Principles of Zoophysiology 4 (3-3) I Prereq Org Chem; Bio S 104. Function and control at the cell-tissue level.

353 Principles of Zoophysiology 4 (3-3) II Prereq Org Chem; Bio S 104. Function and control at the organ-organismic level with emphasis on mammals.

393 Seminar 1 Prereq 16 hrs biology. Training in abstracting and reporting recent and classical research in zoology.

408 (308) Introduction to Mathematical Biology 3 II Prereq Math 141 or 171; 3 sem biology. Fundamental mathematical principles applied to the study of biological systems.

414 Fishery Ecology 2 (1-3) or 3 (2-3) I Racial discrimination, migration, and spawning activities of salmonids; environmental stress with reference to physiology, competition, predation, and pollution. Field trip required. Cooperative course taught at the University of Idaho.

417 Parasitology 4 (3-3) II Prereq Bio S 104. Types of associations, life cycles, control, prevention, and modifications of parasites; examination of parasitic protozoa and helminths.

420 Microanatomy 5 (3-6) II Prereq Zool 320. Microscopic analysis of selected cell types,
tissue, and organ structure; organization, evolution, and function.

423 Ornithology 3 (1-6) II Prereq Bio S 104. Ecology, systematics, and evolution of birds. Field trips required.


430 Biology of Amphibians and Reptiles 4 (3-3) II Prereq Bio S 104. Characteristics and systematics; origins and phylogenetic; patterns of distribution; adaptive strategies; interactions between man and the lower vertebrates.

432 Wildlife Nutrition 3 (2-3) II Prereq Org Chem. Nutritional requirements and interactions of wildlife populations.

435 Principles of Wildlife Ecology 4 (3-3) II Prereq general course in ecology. Integration of basic and applied aspects of wild vertebrate populations.

438 Animal Behavior 3 (2-3) II Prereq Zool 224. The biological study of animal behavior as viewed from ethological, genetic, developmental, ecological, and evolutionary perspectives.


448 Evolutionary Ecology of Populations 3 II Prereq Zool 305; Biol 372. Ecological and evolutionary factors influencing the life histories and the population structure and dynamics of plants and animals. Credit not granted for both Zool 448 and 548.

450 Cell Biology 4 I Same as Genet 450.

497 Instructional Practicum V 1-4 Traineeship in laboratory teaching and tutoring.

499 Special Problems V 1-4 May be repeated for credit.

501 Raptor Population Ecology 2 II The natural history of North American raptorial birds; population dynamics and food habits. Cooperative course taught at the University of Idaho.

503 Workshop: Wildlife Topics 2 May be repeated for credit; cumulative maximum 10 hours. Prereq Zool 435. Selected topics in the conservation and management of wildlife. Cooperative course taught at the University of Idaho.


511 Principles of Systematic Biology 3 I 1980-81 a/y. Prereq Bio S 103, 104; 10 additional hours Zool. Principles, methods, and literature of systematic biology; speciation mechanisms; concepts and problems of species and higher taxa; codes of nomenclature.

512 Limnology 3 (2-3) I 1981-82 a/y. Chemical, physical, and biological characteristics of inland waters. Field trip required.

513 Advanced Fishery Management 3 II 1980-81 a/y. Compensation as a phenomenon basic to exploitation; yield in numbers and weight; models of yield; stock recruitment functions; economic yield. Field trip required. Cooperative course taught at the University of Idaho.

520 Ecological Genetics 2 II Prereq Genet 301; a course in ecology. The effects of physical and biological factors on the genetic structure of populations and their relationship to evolutionary processes.

527 Radioactive Tracer Techniques 2 (1-3) II Same as Bot 527.


531 (431) Mathematical Ecology 3 II Prereq course in calculus; 6 hrs Zool, Bot, or Biol. Mathematical methods in the study of population and community ecology.

542 Wetland Habitat Management 3 II Prereq Zool 435. Ecology and management of species using wetland habitats and current practices, problems, and procedures for managing such habitats. Cooperative course taught at the University of Idaho.

544 Big Game Management 3 II Prereq Zool 435. Big game species and their populations and habitats; objective balance of the components of habitats with population levels. Cooperative course taught at the University of Idaho.


548 Evolutionary Ecology of Populations 3 Graduate level counterpart of Zool 448; additional requirements. Credit not granted for both Zool 448 and 548.

552 Comparative Physiology 4 (3-3) I 1981-82 a/y. Prereq Zool 322, 352 or 353; 8 additional hrs Bio S or Ph S. Mechanisms of basic functions in the important animal phyla.

553 Comparative Neurophysiology and Endocrinology 4 (3-3) II 1981-82 a/y. Prereq
Zool 224, 225; Zool 352 or 353. Comparison of control mechanisms in invertebrate and vertebrate systems.


**Environmental Physiology 3 I** Prereq Zool 353, V Ph 420, or A S 403. Physiological modes of adaptation of vertebrates to their temporal and physical environments.

**Laboratory in Environmental Physiology 1** 3 (0-3) 1 Prereq Zool 550 or c/. Measuring physiological response to environmental variation.


**Experimental Analysis of Development 2** 3 (0-6) II 1980-81 a/y. Prereq Zool 320 or 573 or c/. Experiments on sea urchin, amphibian, and chicken embryos; tissue culture techniques in developmental biology.

**Advanced Topics in Zoology 2** May be repeated for credit; cumulative maximum 10 hours. Recent advanced in zoology.

**Advanced Topics in Cell Biology 1-3** May be repeated for credit; cumulative maximum 10 hours. Same as Genet 592.

**Seminar 1** May be repeated for credit. Prereq 20 hrs Zool. Literature and problems.

**Teaching Practicum 1** Zoology laboratory teaching internship.

**Colloquium 1** May be repeated for credit. II

**Special Projects or Independent Study** Variable credit.

**Master's Research, Thesis, and/or Examination** Variable credit.

**Master's Special Problems, Directed Study, and/or Examination** Variable credit.

**Doctoral Research, Dissertation, and/or Examination** Variable credit.

### Schedule of Studies

At least 40 of the total hours required for the bachelor's degree in this program must be in upper-division courses.

A candidate for the bachelor’s degree must fulfill the graduation requirements of the College of Sciences and Arts and the general departmental requirements for graduation.

#### Zoology Option

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<th>Course</th>
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<tr>
<td>Engl 201 or 301 or 402</td>
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<tr>
<td>Chemistry</td>
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<td>Physics</td>
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<td>Math or Statistics</td>
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<td>Math or Statistics to include one course in calculus</td>
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<td>Additional Ph S or Math</td>
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<td>Foreign Language—two semesters in one language at the college level or two years in high school or the intensive summer course</td>
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<tr>
<td>Bio S 103, 104</td>
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<tr>
<td>Bot 320 or 332, or Bact 201</td>
<td>3-5</td>
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<td>Genet 301</td>
<td>3</td>
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<tr>
<td>Zool 224, 225</td>
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<td>Zool 320</td>
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<td>Zool 305</td>
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<td>Zool 310 or 330 or Bio S 372</td>
<td>3-4</td>
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<td>Zool 322 or 324</td>
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<td>Zool 352 or 353 or Bio S 305, 306</td>
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<td>Zool 393</td>
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<td>One from Zool 335, 417, 423, 428, 430, Entom 434, 448</td>
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<td>Electives, General University and College of Sciences and Arts Requirements</td>
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<td>TOTAL</td>
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#### Wildlife Biology Option*

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<td>Bio S 372</td>
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<td>Genet 301</td>
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<td>Zool 224, 225, 332, 353 or 432, 423, 428, 435</td>
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<td>Bot 332, 462</td>
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<td>One additional course from: Bot 421, 436, 460, 463</td>
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<tr>
<td>Chem 105, 106, 240</td>
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<td>Two courses in Ph S from: Phys 101, 102, 201, 202; Geol 102, 120, 402; Soils 201, 301, 400, 404, 406, 407; Ch E 174</td>
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<td>Math 107, 171 or 140, 141</td>
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<td>Biom 310 or 412</td>
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<tr>
<td>Engl 201 or 301 or 402</td>
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<td>General University and College of Sciences and Arts Requirements</td>
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Students are encouraged to select electives from the following: wildlife & fisheries biology, zoology, botany,
forestry & range management, environmental science, statistics & biometrics veterinary subjects, entomology, criminal justice  26-31
TOTAL  130

*The core requirements plus electives meet U.S. Civil Service requirements for wildlife biology, wildlife refuge management, general biology, and zoology.

Through judicious use of electives, the student can also meet additional Civil Service requirements for fishery biologist, range conservation, and soil science.

**Minor in Zoology**
Requires a minimum of 16 hours to include Zool 224, Zool 225 and Zool 320 or Zool 322 or Zool 324; 8 additional hours of Zoology, 6 of which must be upper-division. Not more than 2 hours of Zool 499 may be included in the 16 hours.
Education, College of 47
Education, Department of 137
Electrical Engineering 153
Electron Microscope Center 14
Engineering, College of 48
Engineering Science 49
English 157
Entomology 160
Environmental Health 90
Environmental Research Center 15
Environmental Science 163
Examination, Credit by 19
Exchange Awards 11
Expenses 33

F
Fees 33
  Advance Payment 19
  Staff/faculty fee waiver 37
  Student 33
  Persons Age 60 and Over 37
  Transcripts 34
Fellowships 52
Financial Assistance 35
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Change in Academic Policy

Graduate Credit for 300-Level Courses

At its meeting on May 7, 1981, the University Senate approved the following recommendation from the Graduate Studies Committee:

1. Revoke the "approved for graduate credit" status of all currently approved 300-level courses and authorize removal of the currently listed courses from the Graduate Studies Bulletin.

2. Authorize the master's degree advisory committee to recommend no more than 3 hours credit of 300-level course work taken outside the major area for inclusion in the master's program as supporting work.

3. Authorize the doctoral degree advisory committee to recommend no more than 6 hours credit of 300-level course work for inclusion in the doctoral program under the research and supporting studies heading.

4. Require that any 300-level course used on a student's graduate program must be approved for such use before the student enrolls in the course.

5. Authorize the approval of specific lists of 300-level courses which individual degree-granting units wish to have available for inclusion on the programs of their graduate majors. This list, after approval by the Department and the Graduate Studies Committee, will be kept on file with the Graduate School. Exceptions to the above would be through action of the thesis committee and appropriate administrative officers, in which case a 300-level course would be authorized by approval of a graduate degree program for the individual student prior to the time the student enrolls in the course. The policy change is effective at the beginning of the Fall Semester, 1981.
Adult and Continuing Education

ACE
510 Development and Evaluation of Adult Education Programs 3(3-0) Development, implementation, and evaluation of adult education programs.
515 Teaching Methods 3 Methods and procedures of informal adult and continuing education.
525 Foundations of Community 3 Same as Educ 525.
526 Community Education Resources for new Problem Solving 3 Same as Educ 526.

Aging

Aging
130 [2] Nutrition for Man 3 Same as HINF 130.
320 Perspectives on Aging 3 II Same as CFS 320.
321 Topics in Aging 2-3 May be repeated new for credit; cumulative maximum 6 hours. Prereq CFS 320.
363 Psychology of Aging 3 I Same as Psych 363.
499 Special Problems V I-3 May be repeated for credit.

Agricultural Economics

Ag Ec
425 Economic Analysis of Projects and Programs 3 I Prereq 300-level course in Econ or Ag Ec. Principles and procedures for valuing project effects, estimating, distributional and environmental consequences, and making social choices; case studies.

Agricultural Engineering

Ag E
354 Agricultural Engineering Analysis 3 (2-3) II Prereq Cpt S 205; Math 315 or c/. Analysis of physical and biological systems by digital computer methods.
361 Principles of Farm Machinery 3(2-3) II Prereq C E 212. Operating principles functional components and related motion, force, and power requirements.
363 Power and Machinery Laboratory 1 drop (0-3)
380 (486) Farm Electrification Engineering 3 (2-3) II Prereq E E 214 or c/. Design and practice with electric power and electronics in agriculture; motors; controls; instrumentation.
385 Principles of Environmental Control 3 I Prereq C E 315, M E 301, or c/. Principles of heat and mass transfer applied to agricultural structures; system design; equipment selection.
390 Introduction to Soil and Water Engineering 3(2-3) II Prereq C E 315; Soils 201. Fundamentals of soil and water engineering including agricultural hydrotechnology and hydraulics, erosion control, and water quality.
393 Conservation Engineering 2 drop
455 Agricultural Engineering Design I 1 new (0-3) I Prereq senior in Engr. Determination of background information for design; selection and evaluation of design concepts.
456 (472) Agricultural Engineering Design II 3(1-6) II Prereq Ag E 455. Continuation of Ag E 455. Detailed design of an agricultural engineering-related process, machine, structure, or system.
462 (562) Internal Combustion Engines 3 (2-3) I Prereq C E 212. Theory and design; effect of compression ratio, fuel, weight transfer, traction, and hitches on tractor performance.
471 Farm Structures Design 3 II Prereq C E 314. Engineering analysis and practice applied to concrete foundations and structural design in wood and steel for farm buildings.
482 Microcomputer Controls in Agriculture 3 new (2-3) II Prereq Ag E 380; E E 314. Microcomputer-based control systems with emphasis on agricultural applications. Credit not granted for both Ag E 482 and 582.
487 Food Process Engineering 3 I Prereq Ag E 385 or FS 433 and Math 140. Design of food processing systems; food properties; thermal and physical processes. Credit not granted for both Ag E 487 and 582.
491 Irrigation Engineering 3(2-3) I Prereq Ag E 390. Theory and design of gravity, sprinkler, and trickle irrigation systems; water requirements and sources; efficient use of water and energy. Credit not granted for both Ag E 491 and 591.
492 Irrigation and Conservation Laboratory 1 new (0-3)
496 Conservation Engineering 3(2-3) II Prereq Ag E 390. Predicting occurrence and disposition of water on agricultural watersheds; erosion processes; water and construction practices. Credit not granted for both Ag E 496 and 596.
582 Irrigation and Conservation Laboratory 1 new (0-3) Graduate level counterpart of Ag E 482; additional requirements. Credit not granted for both Ag E 482 and 582.
587 Food Process Engineering 3 Graduate level counterpart of Ag E 487; additional requirements. Credit not granted for both Ag E 487 and 587.
591 Irrigation Engineering 3(2-3) Graduate level counterpart of Ag E 491; additional requirements. Credit not granted for both Ag E 491 and 591.
594 Drainage Investigation and Design 3 (2-3) I Prereq Ag E 593. Systematic study of drainage investigation, design, materials, construction, and inspection applied to agricultural water uses.
596 Conservation Engineering 3(2-3) Graduate level counterpart of Ag E 496; additional requirements. Credit not granted for both Ag E 496 and 596.

Agricultural Mechanization

Ag M
416 Mobile Hydraulics 3(2-3) I Prereq Ag new M 512. Fluid power principles applied to the operation, selection, and maintenance of agricultural machinery.
451 Seminar 1 Same as Ag E 451.

Agriculture, General

Ag
101 Introduction to Agriculture I Survey of the broad field of agriculture; its relation to society, government, and business.
102 Exploring Agricultural Opportunities new I I Major areas of study in the College of Agriculture and an overview of career choices in agriculture.
201 Introduction to Pest Management in a drop Quality Environment 2
380 (199) Current Issues in Agriculture I I Current agricultural issues such as zoning agricultural land, protecting the food supply, a quality environment for agriculture, and energy use.

Agronomy

Agron
304 (474) Cereal Products 2 Same as F S 304.
411 Environmental Crop Physiology 3 I Prereq Bot 320. Effects of environment and management on crop growth and development.
445 (345) Plant Breeding 3 (3-0) II Prereq Genet 301. Genetic principles applied to the improvement of crop plants. Field trip required.
469 Vegetable Seed Production 1 I 1982- new 83 a/y. Survey of vegetable seed industry, production methods and quality evaluation. Joint course taught with the University of Idaho.
519 Physiology of Flowering 2 I 1981-82 new a/y. Prereq Bot 320. Vernalization photoperiodism and biochemistry of flowering processes; models. Cooperative course taught at the University of Idaho.
538 Properties and Functions of Herbicides new 2 I 1982-83 a/y. Prereq Bot 320. Physical and chemical properties and mode of action of herbicides, their effects on plant structure, internal mechanisms, processes and sites of action. Cooperative course taught at the University of Idaho.
569 Applied Seed Physiology 2(1-3) II 1982-
new 83 a/y. Pre req Bot 320. Effect of en-
vironment on development aspects of
important seed species, storage, lon-
gevity, dormancy, seed and seedling
vigor and early events in germination.
Cooperative course taught at the Un-
iversity of Idaho.

Animal Sciences
A S
301 Principles of Nutrition 3 I Pre req Bio
S 102 or 104; Chem 102; Chem 240 or
c/. Digestion, absorption, metabolism,
and function of nutrients.
383 Dairy Cattle Production 3(2-3) II Pre-
req A S 301; Genet 301. Principles of
breeding, feeding, and management of
dairy cattle. Field trip required.
428 Topics in Animal Breeding 2 May be
repeated for credit; cumulative maxi-
mum 4 hours. II Pre req A S 330. Sys-
tems of selection and mating for genetic
improvement in farm animals. Credit
not granted for both A S 428 and 528.
454 Artificial Insemination and Pregnancy
Detection 2(0-6) Pre req A S 351. Tech-
niques in semen collection, processing,
insemination and pregnancy detection
of farm animals.
510 Animal Nutrition 3(2-3) I 1982-83
new a/y. Pre req A S 410; 3 hrs microbiol-
ogy. Identify and characterize bacteria
and protozoa and their metabolism in
the rumen of domestic and wild herbi-
vores.
528 Topics in Animal Breeding 2 May be
repeated for credit; cumulative maxi-
mum 4 hours. Graduate level counter-
part of A S 428; additional require-
ments. Credit not granted for both A S
428 and 528.
548 (522) Endocrine Physiology 3 I Pre-
req BC/BP 364. Physiology and chem-
inistry of endocrine systems and mecha-
nisms of action of hormones on or-
gans and cellular processes in mammals.
549 Endocrine Physiology Laboratory 1-
new 3 I Pre req BC/BP 364; A S 548 or
c/. Modern techniques in endocrinol-
yogy; immunoassays, receptor assays;
hormone measurement and hormone
effects in animals.
575 Analysis and Interpretation of Animal
new Experiments 2 I Pre req Biom 412, 512.
Analysis and interpretation of animal
experiments and the use of computers in
processing data; discussion of stu-
dents' research problems.

Anthropology
Anth
395 Introduction to Museology 3 (Idaho)
drop 402 Introduction to Kinship Studies 3 I
Pre req Anth 101; Soc 101; Psych 350.
The sociology of kinship and social or-
ganization; social forms and processes
in a comparative perspective. Credit not
granted for both Anth 402 and 502.
451 Intermediate Museology 3 (Idaho)
drop 452 Advanced Museology V 1-4 (Idaho)
drop 451 Native American Language and Tra-
drop dition 3
462 Human Issues in International Devel-

opment 3 I Pre req senior or graduate
student. Interdisciplinary analysis of
complex interaction between tradition
and modernity in Third World society,
and its attendant human predicament.
502 Introductory to Kinship Studies 3 Grad-
new level counterpart of Anth 402; ad-
ditional requirements. Credit not grant-
ed for both Anth 402 and 502.
506 Research Methods 3
drop 506 Seminar in Primitive Art 3 I 1981-82
new a/y. By interview only. Art as an ex-
pression of social and cultural systems
in nonliterate societies; art is examined
as affective behavior.
513 Kinship and Social Organization 3
drop 513 Applied Anthropology 3 II By inter-
view only. History and contemporary
directions of applied anthropology;
theory and method; international and
community development issues; case
studies.
537 Analytic Archaeology 3 May be re-
peared for credit; cumulative maximum
6 hours. Pre req undergraduate Stat-
course. Exploratory data analysis, in-
ferential statistics, locational analysis,
interactive terminal use and batch sta-
tistical processing applied to archaeo-
logical problems.
546 Prehistory of the Desert West 3
drop 549 Lithic Technology 3 II Pre req Anth
412. Basic concepts involved in the in-
terpretation of lithic artifacts via rep-
llicative systems analysis.
553 Socio-Cultural Linguistics 3
drop 554 Seminar in Anthropological Methods 3
II Pre req Anth 450, 510. Elicitation,
recording techniques and analysis of
sociocultural, and linguistic field data;
field work and seminar orientation.

Architecture
Arch
101 Graphic Communication I 3(1-6)
Drawing to perceive three-dimensional
space; freehand (architectural) draw-
ing, drafting, isometric and ortho-
graphic drawing; perspective, shades
and shadows, lettering, and rendering
techniques.
102 Graphic Communication II 3(0-6) Pre-
req Arch 101. Continuation of Arch
101. Refinement of presentation tech-
niques; exposure to other perspective
drawing and presentation methods.
120 [H] Architectural History I 3 I De-
velopment from prehistory to the
Gothic Cathedral; influences of society,
climate, materials on buildings from
simple shelters to monumental archi-
tecture.
201 Introductory Design I 3(0-6) I Pre req
Arch 101, 102. Two- and three-di-
ensional basic design as visual and struc-
tural phenomena.
202 The Built Environment 3 II Planning
and design of the built environment;
products, interiors, structures, land-
sapes, cities, regions, earth; factors
and process effecting environmental
quality.
203 (207) Introductory Design II 3(0-6) Pre-
req Arch 201. Determinants of tradi-
tional, contemporary and future space
closure systems.
325 Ancient to Medieval Architecture 2 I
Pre req major in Arch. Development of
western architecture from prehistory to
late medieval; social, technical and
scientific influences.
324 Renaissance to Modern Architecture 2
II Pre req Arch 323. From Renaissance
to the present day; European and North
American developments.
331 Materials and Construction I 3 Pre-
req Arch 101. Properties of building ma-
terials and construction applications.
352 Materials and Construction II 3(2-3) Pre-
req major in Arch or Cat M. Theory and
application of various construction
systems and materials; wood, masonry,
concrete, steel utilizing contem-
porary communication.
351 Architectural Structures I 3 I Pre req
major in Arch. Introduction to statics and
mechanics; analysis and design of statical
determine architectural structures using
timber, steel and reinforced concrete
systems.
352 Architectural Structures II 3 II Pre req
Arch 351. Continuation of Arch 351.
386 Reading Examination V 1-3 Pre req
major in Arch or Cat M. Examination of
summer reading from lists prepared
by department.
413 Terminal Design Project 6(0-18) II
Pre req Arch 411, 415. Architectural
project selected by the student and ap-
proved by the faculty.
423 History for Designers 2 I Pre req Arch
324. Solutions to design problems
throughout history; form, space, struc-
ture, enclosure, decoration; site, cli-
mate, materials, human needs.
424 Case Studies in Architectural History
2 II Pre req Arch 324. Case studies of
historical and modern buildings; theo-
retical and functional influences; de-
gnisions, construction; subsequent use,
decay, and preservation.
425 Architectural Theory I 2 I Pre req Arch
324. Historical context of contem-
porary architecture; social, psycho-
logical and technological factors; aesthetic
judgment, style, taste, functional fit-
ness.
426 Architectural Theory II 2 II Pre req
Arch 324. Architectural theory; philos-
ophical and historical roots of contem-
porary architectural doctrines and sys-
tems theories.
432 Environmental Control of Buildings I
3(2-2) II Pre req major in Arch or Cat
M. Building heating, ventilating, air
conditioning systems, large and small
scale; heat flow concepts; plumbing and
water supply systems.
433 Environmental Control of Buildings II
3(2-2) I Pre req Arch 432. Building
lighting, performance criteria and de-
gnion; electrical distribution for large
and small buildings, vertical transpor-
tation; building communication sys-
tems.
434 Acoustics 1 Pre req major in Arch or
461 Architectural Structures III I Prereq Arch 303, 352. Wind and seismic loads on architectural structures; high-rise structure systems; reinforced masonry systems, earth retaining structures and foundation systems.

462 Architectural Structures IV 3 II Prereq Arch 401, 352. Deflection theory; analysis of statically-indeterminate architectural structure systems; case studies in preliminary architectural engineering for buildings.

472 Constructions, Communications, Costs, Codes 2.1 Prereq major in Arch. Design and construction delivery systems; codes, costs, specifications, manuals and contract documents.

473 Architectural Business 2 II Prereq Arch 472. Architect licensing process; techniques for and rationale of marketing architectural services; office organization and business methods applied to architecture.

480 Architecture Internship V 1-16 May be repeated for credit; cumulative maximum 16 hours. Placement in an approved industrial, professional, or governmental situation for specialized or general experience.

493 Seminar in Environmental Control I 1 May be repeated for credit; cumulative maximum 4 hours. Prereq major in Arch or Cst M. Advanced study in environmental control of buildings.

498 Stuctures in Architectural Structures I 1 May be repeated for credit; cumulative maximum 4 hours. Prereq Arch 301, 351 or C/. Design principles of architectural structure systems; available systems for spanning and enclosing architectural space.

Astronomy

Astr 390 Aspects of the Night Sky 1 I Prereq new Astr 135 or 345 or Hist 381. Star names, magnitude scales, constellation identification and mythology, astronomical coordinates, solar, lunar and planetary motions, practical astronomy.

435 Astronomy and Astrophysics 3 May be repeated for credit; cumulative maximum 6 hours. II Prereq Math 172. Advanced topics in modern astronomy and astrophysics.

Bacteriology

Bact 365 Microbiology and Chemistry of Waters 3(1-6) II Prereq Bact 201. Major microbiological and chemical water pollutants; detection and removal.

410 Advanced Medical Microbiology and Mycology Prereq Bact 310. Analysis of bacterial virulence determinants; fungal infections of man.

414 General Virology 3 II Prereq Genet 301; Chem. The biology of bacterial, animal, and plant viruses. Credit not granted for both Bact 414 and 514.

424 Basic and Applied Microbial Physiol-
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<td>Cost Accounting 3</td>
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<td>430</td>
<td>Advanced Accounting 3 Prereq Acctg 331. Partnership equities and extended forms of corporate ownerships and entities.</td>
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<td>431</td>
<td>Accounting Theory II Prereq Acctg 331. Accounting theory and contemporary issues.</td>
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<td>Accounting Systems 3</td>
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<td>433</td>
<td>Accounting for Not-For-Profit Organizations 2 II Prereq Acctg 331. Theory and practice of fund accounting; not-for-profit entities including governmental, hospital, and university organizations.</td>
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<td>434</td>
<td>Advanced Tax Accounting 3 Prereq new Acctg 335. Corporate, partnership, estate, trust, and fiduciary taxation.</td>
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### Business Law

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<tr>
<td>210</td>
<td>Law and Business I 3 Not open to freshmen. Fundamentals of business law: the legal system, legal reasoning and the law of contracts, torts, and agency.</td>
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<td>410</td>
<td>Law and Business II 3 Prereq B Law 210. Legal aspects of government regulation of business; administrative law, anti-trust law, labor law.</td>
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<td>414</td>
<td>Law of Real Estate 3 I Prereq B Law 210. Legal principles and precedents as they apply to the real estate environment.</td>
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<tr>
<td>510</td>
<td>Law for the Business Manager 3 Contract, tort, constitutional and administrative law; impact of government regulation on business. Credit not granted for both B Law 410 and 510.</td>
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### Finance

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<td>325</td>
<td>Finance 3 Prereq QMath 215 or C/; Acctg 231 or C/; Econ 201 or 203.</td>
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<td>424</td>
<td>Commercial Bank Management 3 II Prereq Fin 325; Econ 260. Banking policies; regulatory activities; analysis of sources and uses of funds; estate planning; business development; earnings; expense, and dividend policies.</td>
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<td>Security Analysis and Portfolio Management 3 I Prereq Fin 427. Efficient capital markets; market theories, portfolio performance, management of portfolios; statement deficiencies; selection techniques; institutional analysis; investment timing.</td>
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<td>428</td>
<td>Analysis of Financial Institutions 3 II Prereq Fin 427; Econ 520. Management of assets/liabilities of financial institutions—mutual savings banks, savings and loan associations, credit unions, finance companies, and investment companies.</td>
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### Seminar

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### Financial Management 3 I Prereq Acctg 534; Econ 201 or 203. Financial management of the firm: capital budgeting, working capital management, capital acquisition, and dividend policy. |

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<td>Problems in Financial Management 3</td>
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<td>Investment Analysis and Portfolio Management 3</td>
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### Master's Special Problems, Directed Study, and/or Examination Variable credit |

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<td>520</td>
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### Management

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<td>201</td>
<td>Introduction to Business Administration 3 Not open to freshmen. For non-majors. Management, marketing, production, finance, law, work behavior, organization theory.</td>
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<td>Principles of Management and Organization 3</td>
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### Operations Management 3

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<td>Operations Management 3</td>
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### Organizational Behavior 3 Prereq Mgt 301. Organizational behavior, motivation, leadership, communications, decision making, group dynamics. |

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<td>440</td>
<td>Advanced Operations Management 3 Prereq Mgt 340. Advanced concepts of production and operations management; development of analytical skills in identifying and solving production and operations management problems.</td>
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### Introduction to Management Information Systems 3 Prereq Cpt S 220; Mgt 301. Systems design principles, computer capabilities and information management theory that contribute to the requirements of decision makers. |

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### Comparative International Management 3 II Comparison of management systems of selected countries. |

### Business Strategy and Policy 3 Prereq Fin 325; Mgt 340; Mktg 360; and a 400-level management course. Overall management of the firm; top-level decision making and planning. |

### Small Business Policy 3 Prereq Fin 325; Mgt 340; Mktp 360; 400-level management course. Application of management theory and principles to small firms; applied consulting experience with operating businesses. By interview only. |

### Seminar

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### Management of Organizations 3 Leading, organizing, decision making, planning, controlling, conflict management, and behavior in organizations. |

### Information Systems Management 3 Prereq Mgt 501. Data processing organization; operations, application development, computer selection, management of computer personnel and systems. |

### Operations Management 3 Prereq Math 202; QMath 215; Mgt 340. Analytical approach to solving problems in production and operations management. |

### Personnel and Human Resource Management 3 Prereq Mgt 301. Human resources and personnel administration; selection, training, compensation, performance appraisal, labor relations, health and safety, EEO legislation. |

### Contemporary Management Thought 3 |

### Organizational Behavior 3 Prereq Mgt 301. Theory and models of organizational behavior; individual, interpersonal, and group dynamics; influence, motivation; communication; change; organization climate. |

### Business Strategy and Policy 3 Overall management of the firm; top-level decision making and planning. |

### Seminar

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### Master's Special Problems, Directed Study, and/or Examination Variable credit |

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Diffusional and equilibrium operations. Joint listing with the University of Idaho.

546 Mass Transfer Operations II 2-3 II Diffusional and equilibrium operations. Joint listing with the University of Idaho.

551 Discrete Digital Control 3(2-3) II Prereq. Ch E 41. Design and implementation of digital control algorithms; Z-transforms; state space methods.

557 Advanced Plant Design 2-3 Design of new process plants for optimum cost and economic return; scale-up of pilot plants. Cooperative course taught at the University of Idaho.

560 Biochemical Engineering 2-3 II Application of chemical engineering to biochemical systems; fermentation processes, biochemical reactor design, transport phenomena in biological systems, biochemical technology. Cooperative course taught at the University of Idaho.

561 Advanced Nuclear Engineering 3 drop (Idaho)

582 Advanced Topics in Chemical Engineering II V 1-2

Chemical Physics

Ch P

510 Solid State Direct Energy Conversion new 3 Same as E E 510.

517 Electrical, Magnetic, Optical and Conducutive Properties of Solids 3 Same as E E 517.

538 Special Topics V 1-3 May be repeated for credit. Selected subjects in molecular structure, spectroscopy, solid state, and surface physics.

561 Atomic and Molecular Physics 3 I Same as Phys 561. Graduate level counterpart of Ch P 461; additional requirements. Credit not granted for both Ch P 461 and 561.

Chemistry

106 [P] Principles of Chemistry 3(3-0) Prereq Chem 105 or 111. Acid, base; ionic, molecular, solubility, and redox equilibria; bonding; electrochemistry; coordination compounds; systematic chemistry of the elements.

107 Qualitative Analysis 2(0-0) Prereq new Chem 106 or c/. Qualitative analysis; identification of various cations and anions.

383 [P] Chemistry and Contemporary Isotope Issues 2

420 (305) Introductory Radiochemistry 3 (2-3) I Prereq Chem 106 and 107 or 212; Phys 202. Radioactivity applied to the physical and biological sciences.


425 Quantitative Instrumental Analysis 2 I Prereq Chem 212, 217, or 221; Chem 352. Electronics and operational amplifier circuitry applicable to chemical instrumentation; principles and applications of modern chromatography, spectrophotometry and electrochemical techniques.

Quantitative Instrumental Analysis Laboratory 2(0-6) I Laboratory experience in modern analytical methods.

427 (480) Environmental Chemistry 3 II 1981-82 a/y. Prereq Chem 212, 217 or 221; Chem 240 or 340. Chemical aspects of selected pollution problems; analytical methods for pollutants; chemical control measures; chemical synergism.


528 Microprocessors 1 II 1982-83 a/y. Prereq Chem 425.

529 (525) Selected Topics in Analytical Chemistry 2 May be repeated for credit. II 1981-82 a/y. Prereq Chem 401, 425. Selected current developments.

539 Group Representation Theory and Applications 3 Same as Math 559.

546 Spectroscopic Identification of Organic Compounds V 1-1 May be repeated for credit; cumulative maximum 3 hours. Prereq Chem 542. Structural interpretation of 1H and 13C NMR, vibrational mass spectra of organic compounds; audio-tutorial.

572 (552) Magnetic Resonance 3 (transfer to BC/BP)

581 Chemistry of Natural Waters 3 drop

Child and Family Studies

CFS

435 History and Philosophy of Child Development 2 (Idaho)

544 (452) Topics in Family Financial Problems 1-3 May be repeated for credit; cumulative maximum 9 hours. I Prereq Econ 102 or 203; Soc 101; CFS 350; or 9 hrs social science. Role of family in economy; effect of specified social, economic, legal and political issues on family; financial management. Credit not granted for both CFS 454 and 554.

540 Theories of Human Development 2 or 3 Prereq new Graduate level counterpart of CFS 440; additional requirements. Credit not granted for both CFS 440 and 540.

546 Organization and Administration of Human Service Programs 3 II Legislation, management, programs, personnel, finances, resources and relationships with other agencies.

548 Topics in Child and Family Studies 2 or 3 May be repeated for credit; cumulative maximum 9 hours. By interview only. Current topics in child and family studies. (from Permanent SS to I, III)

Family Decision Styles 3 II 1980-81 a/y. Prereq 12 hrs Soc S. Effects of varying value patterns and decision styles on individuals within a family.

554 Topics in Family Financial Problems 1-3 May be repeated for credit; cumulative maximum 9 hours. Graduate level counterpart of CFS 454; additional requirements. Credit not granted for both CFS 454 and 554.

595 Instructional Practicum V 1-4 Prereq new senior or graduate student. Supervised instructional practicum for departmental majors.

Chinese

Chin

301 First Semester 4 I Fundamentals of speaking, reading, and writing.

302 Second Semester 4 II Continuation of Chin 301.

303 Intensive Chinese 10(5-15) S Provides new active knowledge of listening to, speaking, reading and writing Chinese. For students with little or no experience in Chinese. Open to undergraduate and graduate students. Permanent Summer Session Course.

Cinema

Cine

375 Photographic History and Criticism 3 new Prereq Cine 253. Photography as an art form.

423 Film Theory 3 drop

433 Film Criticism and Analysis 3 Prereq new Cine 323, 333. For juniors and seniors. (363) Evolution of Cinematic Styles 3 Prereq Cine 323, 333.

463 Advanced Film Production 3(2-3) May be repeated for credit; cumulative maximum 6 hours. I Prereq Cine 353.

473 (393) Film Scriptwriting 3 Prereq Cine 443.

Civil Engineering

Enrollment in the following courses will be restricted to certified majors in engineering:

C E

301 426

302 450

315 431

318 433

322 453

330 455

351 436

403 437

414 450

416 451

418 463

421 464

422 475

424 480

425 495
211 Statics 3 Prereq Math 172 or c/c. Phys 201 or c/c. Engineering mechanics concepts; force systems; static equilibrium; centroids; centers of gravity; shear and moment diagrams; friction; moments of inertia.

212 Dynamics 3 Prereq C E 211. Kinematics and kinetics of particles and rigid bodies; introduction to mechanical vibrations.

213 Statics and Mechanics of Materials 4 new Prereq Math 172; Phys 201. Introduction to statics and mechanics of materials.

214 Introductory Dynamics 2 Prereq C E new 211 or 213. Kinematics and kinetics of particles and rigid bodies.

216 Mechanics of Materials 3 Prereq C E 211. Concepts of stress, strain and their relationships; axial loads, torsion and bending; combined stresses; properties of materials; columns, repeated loading.

217 Geotechnical Engineering 1 2 Prereq Geol 102; C E 314 or c/c. Required for students in C E and Geol Engr. Historical and current developments, index properties, hydraulic and drainage phenomena, equilibrium, consolidation, shear applications.

218 Geotechnical Engineering Laboratory I 1(0-3) Prereq C E 317 or c/c. Required for students in C E and Geol Engr. Evaluation of soil index properties, permeability, consolidation and shear strength parameters.

322 Transportation Engineering 3 Prereq Stat 350; C E 235. Transportation engineering; demand and performance functions; geometric design; capacity and control of transport modes.

330 Mechanics of Structures 4 Prereq Cpt S 203; Math 220; C E 314. Classical analysis of statically determinate and indeterminate structures; deflections; influence lines and moving loads; introduction to matrix analysis.

331 Structural Analysis for Architects 4(3-3) drop

341 Water Supply and Wastewater Engineering 3 I Prereq Bact 101; Chem 105. Water supply development; wastewater collection systems, water transportation and distribution; engineering aspects of water quality.

342 Water and Wastewater Treatment 3 II Prereq C E 341. Water and wastewater treatment processes and design.

343 Structural Design Laboratory 2(0-6) II Prereq C E 431, 433. Senior design lab on the integration of course work into the execution of design.

345 Environmental Measurements 3(1-6) I Prereq Chem 105. Theory and laboratory measurement techniques used in analyzing environmental quality parameters.

347 Geotechnical Engineering II 2 I Prereq C E 317, 318. Slope stability, seepage, groundwater control, improvement in soil properties, field measurements, performance observations, case studies.

348 Geotechnical Engineering Laboratory II 1(0-5) Prereq C E 417 or c/c. Soil and rock mechanics testing; unconfined and triaxial testing of soil and rock; rock quality and identification, deformation, field measurements.

421 (418) Transportation Laboratory 2(0-6) I Prereq C E 322. Field work to provide practical application experience in transportation systems problems.

422 Pavement Design 3 II Prereq C E 322. Structural analysis and design of flexible and rigid pavements for highways and airports.

424 Transportation Engineering and Planning 3(2-3) II Prereq C E 322. Basic principles and methods used by engineers and planners in the planning, designing, and operation of transportation systems.

425 Planning for Civil Engineering 3 I Prereq C E 322. Analytical techniques used by civil engineers in project planning.

426 Engineering Geology and Geotechnics new 3 I Prereq senior or graduate student in C E or Geol. Procedures and techniques used to evaluate geologic data for site selection and design of engineering structures. Credit not granted for both C E 426 and 526.

434 Design of Concrete Structures 3 II Prereq C E 433. Concrete design; two-way slab systems; prestressed concrete; ACI code.

435 Foundations 3 II Prereq C E 317, 433. Analysis and design of foundations; footings, piles, retaining walls, sheet piling; caissons; waterfront structures, piers and abutments. Joint listing with the University of Idaho.

436 Design of Timber Structures 3 II Prereq C E 330. Engineering properties of wood products; analysis and design; connection details, durability and moisture effects; lumber, plywood, glulam, poles, adhesives.

437 Statically Indeterminate Structures 3 I Prereq C E 330. Classical methods of frame analysis; moment distribution; slope-deflection; prismatic and non-prismatic members; matrix stiffness method using computer programs.

440 Rock Mechanics 3(2-2) Same as Geol 440.

471 Structural Design for Architects 4 new

475 Ground-Water Hydrology 3 I Same as Geol 475.

501 Advanced Topics in Transportation Engineering 2-4 May be repeated for credit; cumulative maximum 9 hours. Prereq C E 322; Stat 360. Analysis; planning, design, and evaluation of transportation modes and systems.

513 Environmental Measurements 3(1-6) new Graduate level counterpart of C E 413: additional requirements. Credit not granted for both C E 415 and 513.

526 Engineering Geology and Geotechnics new 3 Graduate level counterpart of C E 426; additional requirements. Credit not granted for both C E 426 and 526.

530 Advanced Theory of Structures 3 drop

530 Computer Methods of Structural Analysis 3 II Matrix-stiffness method applied to trusses and frames; elastic-plastic analysis of frames; non-linear and stability analysis of frames.

531 Advanced Structural Design 3(3-0) II 1981-82 a/y. Advanced concepts in structural design; computer aided design. Joint listing with the University of Idaho.

533 Limit Design of Structures 3 drop new

534 Advanced Topics in Structural Engineering 3 May be repeated for credit; cumulative maximum 6 hours. Prereq C E 431, 433. Material properties; design criteria; structural reliability; computer aided design.


541 Environmental Engineering Unit Operations 3 I Prereq Math 315; C E 342. Theory and design of physical and chemical unit operations of water and wastewater treatment systems. Joint listing with the University of Idaho.

543 Advanced Topics in Environmental Engineering Practice V 2-4 May be repeated for credit; cumulative maximum 8 hours. Analysis and evaluation of water and wastewater systems; problems associated with solid waste, radiological health, environmental health or air pollution.

544 Wastewater Treatment System Design 3(2-3) II Prereq C E 542 or c/c. Application of unit operations and processes to design of integrated treatment systems; critical review of designs. Joint listing with the University of Idaho.


547 Radiological Health 3(2-3) II 1981-82 a/y. Sources and units of radiation and radioactivity, radiological health, radiation detection, and radioactive waste disposal.

548 Advanced Topics in Water Quality Engineering Systems V 2-4 May be repeated for credit; cumulative maximum 6 hours. Analysis and evaluation of natural water systems for retention and transport of pollutants and their associated impacts.

549 Solid Waste Management and Design new 3(2-3) I 1982-83 a/y. Prereq C E 342. Solid waste management with emphasis on design of processing and disposal facilities.

552 Advanced Topics in Hydraulic Engineering V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq C E 315. Water hammer, surge tanks, hydraulic machinery, similarity, mixing in rivers and estuaries, hydraulic design.

555 Natural Channel Flow V 203 (Idaho)

560 Advanced Hydrology V 1-3 May be repeated for credit; cumulative maximum
577 (575) Advanced Ground-Water Hydrology 3 Same as Geol 577 580 Graduate Seminar 1 May be repeated for credit; cumulative maximum 2 hours. Lectures and reports on current developments in research and practice. (From S, F to regular letter grading.)

581 Sanitary Engineering Analysis 2(1-3) II Prereq C E 541. Theoretical and laboratory methods for development of design criteria for sanitary engineering systems. Joint listing with the University of Idaho.

583 Engineering Aspects of Aquatic Chemistry V 2-4 I Prereq C E 542. Chemical principles applied to water supply and pollution control engineering.

584 Engineering Aspects of Aquatic Biology 4(3-3) II Prereq C E 583. The role of microorganisms; bacteria, algae, fungi, viruses and protozoa in water and wastewater systems.

Classics
Class (new prefix; changed from Latin)
101 Beginning Latin 4 I For students who have had no Latin or who need a review course before taking advanced work.
102 Selections from Latin Prose and Poetry 4 II Prereq Class 101.
299 Readings from Latin and Conferences V 1-4 May be repeated for credit. Prereq Class 102.

Clothing, Interior Design and Textiles
CT
217 Introduction to Clothing 2 Prereq Soc 101; Psych 101. Introduction to aesthetic, social, psychological, and economic aspects of clothing.
419 Seminar 1 From S, F to regular letter grading.
477 Display Design 2(1-3) I Prereq C T 107 or F A 105. Design principles and elements as they relate to display.
515 Textile Evaluation 3(2-3) Graduate level counterpart of C T 415; additional requirements. Credit not granted for both C T 415 and 515.
518 Topics in Clothing and Textiles V 1-3 May be repeated for credit; cumulative maximum 3. Current topics in clothing and textile theory and research. (from Permanent SS to I, II)

Communications
Com
470 Mass Communications Theories and New Theory Construction 3 Traditional and new theories of mass communications and the process of theory construction.

Computer Science
Cpt S
201 Introduction to FORTRAN Programming 2 FORTRAN programming language and its use in computational problems; practice in programming for the university's computer. Credit not granted for more than one of Cpt S 201, 203, 220.
203 Computer Programming for Engineers 2(1-3) Prereq Math 171. Use of FORTRAN in solving problems related to engineering applications; WSU Scientific Subroutine Library; laboratory practice in programming. Credit not granted for more than one of Cpt S 201, 203, 220.
210 (Z) Introduction to Computer Science 4(3-3) Formulation of problems and the design of procedures for their solution; programming languages; computer systems; laboratory practice in programming.
211 Advanced Programming 3 Prereq Cpt S 210. Advanced programming techniques, stepwise refinement, elementary data structure, string and list processing, recursion.
220 Computers in Business 4(3-3) Capabilities and applications of computers in organizational management; laboratory practice in programming. Credit not granted for more than one of Cpt S 201, 203, 220.
314 Microprocessor Systems 3(2-3) new Microprocessor Systems and Programming 3(2-3) Prereq E E 214; Cpt S 213. Microprocessor system architecture; microprocessor software; laboratory practice in programming microprocessors.
480 The Use of Computer Systems 3 Advanced use of computer systems for non-programmers.
500 Theory of Programming 3 Prereq Cpt S 516 and programming knowledge. Credit not granted for Cpt S 500 and 401. Execution environments, storage management, data structures, searching, sorting, symbol tables, translators, string and list processing, block structured languages, programming theory.
501 Artificial Intelligence 3 Intelligent computer programs; simulation of cognitive processes.
502 Operating Systems 3 Prereq Cpt S 515, 401. Structure of multiprogramming and multiprocessing; efficient allocation of system resources; design, implementation and performance measurement.
503 Compiler Theory and Design 3 Prereq Cpt S 401 or 500; Cpt S 516. Scanning, parsing, code generation, code optimization; theory and practical limitation.
511 Software Development 3 Top down new structured design; validation techniques; large scale software development; programming teams.
514 Advanced Digital System Design new Same as E E 514. Computer architecture; processor, memory, input/output and system organizations; pipeline, parallel computing and multi-processing; microprogramming; performance evaluation; distributed computing.
517 Complexity of Algorithms 3 Prereq Cpt S 516. Time and space complexity of algorithms; asymptotic optimality; searching, sorting, pattern-matching, and graph algorithms; parallel algorithms, reducibilities and NP-completeness.
520 Advanced Topics in Computer Science 3 May be repeated for credit.
530 Programming Language Theory 3 Prereq Cpt S 516 or Math 421. Syntax; operational and denotational semantics.
540 Database Systems 3 I Prereq Cpt S 500. Data models; file organization and search; database system design.
596 Operating Systems Seminar 1 new
597 Parallel Processing Seminar 1 May be repeated for credit; cumulative maximum 3 hours.

Computer Science Seminar 1 new

East and South Asia
As St
310 [H] Eastern Civilization 3 Same as For new L 310.
497 Seminar 3 drop

Economics
Econ
505 Microeconomics for Decision Making new 4 Prereq Math 201, 202. For MBA and other master's-level students with limited training in microeconomics.
Education

Electrical Engineering

EE

Distributed Parameter Systems 3 Prereq E E 351. Transmission lines, high frequency electronics, antennas, fiber optics.

EE 395

Internship in Electrical Industry I V 1-4 new May be repeated for credit; cumulative maximum 6 hours. For sophomores and juniors in E E. Students work full time in engineering assignments in approved industries, S, F grading.

EE 441

Digital Control Systems 3 II Prereq E E 341. Data conversion and sampling, sample-data control systems, digital control systems analysis, computer aided design and simulation microprocessor control.

EE 450


EE 464

Digital Signal Processing 3 Prereq E E 341. Discrete and fast Fourier transforms; discrete convolution; sampling theorem; digital filtering; pulse transmission; effects of quantization and round-off.

EE 486

Power Electronics 3 II Prereq E E 311, new 341, 361. High power electronic devices; theory, limitations and applications; analysis and design of sources, motor controllers and switching circuitry.

EE 489

Introduction to Control Systems 3 I Prereq E E 341. Analysis, synthesis, stabilization, and optimization of closed-loop systems.

EE 493

Protection of Power Systems 3 II Analysis and equipment fundamentals of power system protection; symmetrical components, relays, fuses and circuit breakers with burden and fault calculations.

EE 494


EE 501

Linear System Theory 3 I Prereq E E 489 or 441. Dynamic systems from the state variable approach; observability, controllability, stability, and sensitivity of differential and non-differential systems.

EE 502

Optimal Control Theory 3 II Prereq E E 489. Nonlinear and sampled data systems; optimization of deterministic systems.

EE 510

Solid State Direct Energy Conversion 3 II Prereq one sem. thermo. Analysis of homojunction and heterojunction solar cells and thermoelectric generators and refrigerators; optimization and design.

EE 514

Digital System Architecture 3 Prereq E E 314, 414. Realization of modern developments in digital system design; associative memory; pattern recognition; special purpose input-output devices; parallel computing techniques.

EE 516

Microwave and Optical Communications 3 I 1981-82 a/f. Prereq E E 351. Microwave and optical waveguides, active and passive devices, communications systems.

EE 517

Electrical, Magnetic, Optical and Conductive Properties of Solids 3 I Prereq one sem. thermo. Macroscopic, tensor representation of dielectricity, magnetoelectricity, piezoelectricity, magnetostriiction; electro- and magneto-optical effects; thermoelectricity; Hall, Nernst and Ettingshausen effects.

EE 522

High Voltage Engineering 3 new new Drop Communication Theory I 3 or 4 new new Drop Communication Networks 3 II Prereq E E 314, 507. Packet switching networks; local area networks; polled and random access systems; routing; flow control; capacity assignments; statistical multiplexing systems; applications.

EE 586

Microprocessor System Design 3(2-3) Prereq E E 414, 466 or C/F. Design with microprocessors and associated MSI and LSI devices in instrumentation, control, and other applications.

English

Engl

106 Conversion-ESL 1 May be repeated for credit; cumulative maximum 2 hours. Oral communication designed specifically to fit the needs of international students with such difficulties.

Asian Americans in Literature and the Arts 3 II Same as AASI 311.

Engl 338

[HI] Topics: Major Trends 3 May be repeated for credit; cumulative maximum 6 hours. Movement in literature. e.g., Existentialism, Romanticism. Women in Literature, Theater of the Absurd.

Engl 339

Topics: Major Figures 3 May be repeated for credit; cumulative maximum 6 hours. Major figures or major group of figures in British, Continental, or American Literature.

Engl 490

Seminar in Literature 3

Engl 501

Topics in Teaching Writing 3 May be repeated for credit; cumulative maximum 9 hours. Theory and practice of the teaching of English composition from remedial to advanced levels.

Engl 541

Creative Writing 3

Engl 544

TESOL: Theory and Methods 3 May be repeated for credit; cumulative maximum 6 hours. Theory and practice of the ESL classroom situation.

Entomology

Entom

201 Insects and Our Environment 2 I 1981-
new 82 a/y. The world of insects, their natural history and relationship with humans and their environment.

441 Taxonomic Entomology 5(3-6) 1982-83 a/y. Prereq Entom 340 or 343. Biology, literature and identification of all orders and important families of insects; classification; theory, techniques and history of insect classification.

446 (447) Biological and Cultural Suppression of Insect Pests 3 1982-83 a/y. Prereq Entom 217. Plant resistance, parasitoids, predators, pathogenic microorganisms; environmental manipulation; cultural practices; other biological means for suppression of plant insect pests. Cooperative course taught at the University of Idaho.

452 Pesticides and the Environment 2 drop

472 Aquatic Entomology 1 II Identification and biology of insects associated with aquatic and subaquatic environments. Cooperative course taught at the University of Idaho. (restoration)

474 Aquatic Entomology Lab 2(0-6) II Prereq c// in Entom 472. Field trips required. Cooperative course taught at the University of Idaho.

498 Insect Morphogenesis 4(3-3) (Idaho) drop

511 Principles of Systematic Biology 3(2-3) Same as Zool 511.

540 Taxonomy of Immature Insects 5(3-6) II 1981-82 a/y. Prereq Entom 441. The orders and families of insects as distinguished by characteristics of eggs, nymphs, larvae, and pupae.

549 Insect Pest Management 2 drop

561 Quantitative Methods in Enomological Research 3 II 1982-83 a/y. Prereq Math 171; Cpt $ 201; 20 hrs biological sciences. Practical methods for the acquisition, storage, analysis, and presentation of entomological data.

Environmental Health

Env H

365 Microbiology and Chemistry of Water 3(1-0) Same as Bact 365.

420 Epidemiology 3 Same as Bact 420.

Environmental Science

Env S

427 (480) Environmental Chemistry 3 Same as Chem 427.

549 Local Government and Land Use Planning Law 3 I Legal analysis of local government organization and powers; land use control. Cooperative course taught at the University of Idaho.

581 Chemistry of Natural Waters 3 Same as Chem 581.

586 Applied Stream Sanitation 3(2-3) drop

588 Land and Resource Regulation 3 I Prereq R P 350. Legal analysis methods and concepts for non-law students in resource management. Cooperative course taught at the University of Idaho.

Fine Arts

F A

310 Women Artists in History 3 I Same as new W St 310.

312 Drawing 3(0-6) May be repeated for credit. Prereq F A 103, 110 or 111.

313 Figure Drawing 3(0-6) May be repeated for credit. Prereq F A 103, 111.

320 Beginning Painting 3(0-6) Basic painting; introduction to composition and color structure.

321 Painting 3(0-6) May be repeated for credit; cumulative maximum 9 hours. Prereq F A 320.

322 Transparent Watercolor 3(0-6) May be repeated for credit; cumulative maximum 9 hours. Prereq F A 320.

323 Advanced Painting V 3(0-6) to 6(0-12) May be repeated for credit. Prereq F A 321.

325 Illustration V 3(0-6) to 6(0-12) May be repeated for credit. Prereq F A 311, 320. Editorial, scientific, and advertising. F A majors only.

344 Graphic Design V 3(0-6) to 6(0-12) May be repeated for credit. Prereq F A 351, 352. F A majors only.

442 Ceramics V 3(0-6) to 6(0-12) May be repeated for credit. Prereq F A 341. F A majors only.

522 Sculpture V 3(0-6) to 6(0-12) May be repeated for credit. Prereq F A 351. F A majors only.

561 Metalworking V 3(0-6) to 6(0-12) May be repeated for credit. Prereq F A 361. F A majors only.

471 Printmaking V 3(0-6) to 6(0-12) May be repeated for credit. Prereq F A 370. F A majors only.

483 Photography V 3(0-6) to 6(0-12) May be repeated for credit. Prereq F A 382. F A majors only.

Food Science

F S

301 (472) Diary Products 2(1-3) I Prereq Bact 101 or 201; Org and Quant Chem. Specialized techniques and practices of dairy products: buying and marketing. Field trip required.

302 (473) Meat and Poultry Products 3 (2-3) I Prereq Bact 101 or 201; Org and Quant Chem. Specialized techniques and practices of meat, poultry, and egg processing and marketing. Field trip required.

304 (474) Cereal Products 2 II Prereq Org Chem. Technical principles relating to the production and commercial processing of legumes and cereal foods. Field trip required.

340 Food Preservation Technology 3 drop

401 Topics in Food Science I-3 May be repeated for credit; cumulative maximum 6 hours. II Selected topics in food science and technology. Credit not granted for both F S 401 and 501.

420 Comparative Foods 2 Same as HNF drop 420.

426 Advanced Bacteriology of Animal Products 4(3-3)

434 Food Engineering Laboratory 1(0-3) II Prereq F S 453 or c//. Experiments in heat transfer, fluid flow and dehydrotrans.

450 Food Fermentation 3(2-3) II 1982-83 a/y. Prereq microbiology; Org Chem. Principles and procedures of fermentation of fruits, vegetables, meats and dairy products. Credit not granted for both F S 450 and 530.

470 Advanced Food Technology 3 II Prereq F S 446, 453 or c/. Physical principles of food preservation and recent advances in food technology. Credit not granted for both F S 470 and 370.

(470) Food Chemistry 3 I Prereq Org Chem and Biochem. Fundamentals of food chemistry; composition of foods and their changes that occur during processing.

481 Food Chemistry Laboratory 1(0-3) I Prereq F S 480 or c//. Experiments related to the properties, reactions and interactions of chemical components of foods.

(482) Food Analysis 4(2-6) II Prereq Chem 217; one sem. Bact. Introductory food analysis; methods common to many food commodities.

487 Food Process Engineering 3 I Same as new Ag E 487. Credit not granted for both F S 487 and 587.

493 Internship in Food Science and Technology 2 May be repeated for credit; cumulative maximum 4 hours. Not open to freshmen. Students work full time in industrial assignments with prior approval of adviser and industrial supervisor. S, F grading.

501 Topics in Food Science V 5-3 May be repeated for credit; cumulative maximum 6 hours. Graduate level counterpart of F S 401; additional requirements. Credit not granted for both F S 401 and 501.

502 Seminar—Written 1 May be repeated for credit. I Development of skills in writing and reporting current food science research.

503 Seminar—Oral 1 May be repeated for credit. II Development of skills and communication tools and techniques for oral presentations of current food science research.

550 Food Fermentation 3(2-3) Graduate level counterpart of F S 450; additional requirements. Credit not granted for both F S 450 and 550.

570 Advanced Food Technology 3 Graduate level counterpart of F S 470; additional requirements. Credit not granted for both F S 470 and 570.


587 Food Process Engineering 3 I Same as new Ag E 587. Graduate level counterpart of F S 487; additional requirements.
Forestry and Range Management
(prefix changed from For to FRM)
FRM
10 Introduction to Forest and Range Management I Orientation on the forest and range land base, basic ecological relationships, institutions, and job appreciation.
110 Forest Orientation I drop
201 Dendrology 3(2-3) drop
300 Professional Development I II Organizational structure and personnel policies of leading land management agencies, both public and private.
302 Advanced Forest and Range Environment 3(2-3) I Prereq FRM 301; Bot 332. Classification systems used in characterizing Pacific Northwest forest and range communities including indicator and economically important species.
320 Timber Harvesting 3(2-3) II Not open to freshmen or sophomores. Current practices and problems; planning and coordinating timber harvesting with forest management.
350 (250) Wildland Fire Management 3 I Causes, behavior, and effects of forest fires; techniques of prevention, suppression and suppression; uses of fire in wildland management.
371 Wildland Recreation 3 I For juniors and seniors. Historical development, benefits, federal, state, and local involvement; current problems and trends in the fields of wildland recreation.
375 Recreation Programs 3 Same as RPA drop 375.
400 (405) Professional Development I I Prereq FRM 399. Integration of summer professional experience with curriculum.
407 Forest Populations I II Prereq enrollment in CEFES Program. Concepts of genetics, population dynamics and pest management applied to forest management.
493 Land Use Seminar 1 drop
517 Advanced Forest Mensuration I II Prereq enrollment in CEFES Program. Evaluation of forest growth and yield in forest ecosystem management.
543 Population Management 2(1-3) I 1981-82 a/y. Same as Entom 543.
545 Advanced Forest Environments 4 II Prereq in CEFES Program Meteorology, soils, and vegetation classification of forest environments.
551 Advanced Range Ecology 3 (Idaho) drop
581 Big Game Habitat Studies 1(0-3) II Prereq FRM 480; c// in FRM 519, 559, or 600. Development of big game habitat management decision models. Field trip over spring break required.

French
Fren
330 Advanced Intensive French for Undergraduate Students 6(3-9) S Prereq Fren 303 or equivalent. Continuation of Fren 303. Permanent Summer Session Course.
421 (425) [H] French Literature of the Seventeenth Century 3 I 1981-82 a/y. Prereq Fren 322, 323, or 333. Selected works and authors; the classical period.
431 (452) [H] French Literature of the Eighteenth Century 3 I 1982-83 a/y. Prereq Fren 322, 323, or 334. French Enlightenment; selected writings of Montesquieu, Voltaire, Diderot, Rousseau, and others.
501 (500) Seminar in Old French 3 I 1982-83 a/y. Selected works and authors from the 12th to 15th centuries.
530 Advanced Intensive French for Graduate Students 6(3-9) S Prereq Fren 303 or equivalent. Continuation of Fren 303. Permanent Summer Session Course.
550 (550) Seminar in Twentieth Century French Literature 3 May be repeated for credit; cumulative maximum 6 hours.

Genetics
Genet
201 [B] Genetics and Society 3 II Prereq HS or freshman biology. Introduction to the genetic background of current societal problems.
402 (302) General Genetics Laboratory 2 (0-6) I Prereq Genet 301 or c/. Basic principles of modern and classical genetics utilizing several species.
430 (330) Human Genetics 3 II Prereq Genet 301 or 201. Exploitation of individual and population genetics leading to critical discussion of current social, medical, and scientific issues.
450 Cell Biology 4 II Prereq BC/BD 564: Genet 301. Cellular structure and function.
520 Ecological Genetics 2 Same as Zool 520.
548 Teaching Advanced Biology Topics 2 drop Same as Bio S 548.
570 Eukaryotic Gene Organization and Regulation 3
575 Cellular and Molecular Aspects of Development 3 Same as Zool 575.
592 Advanced Topics in Cell Biology 1-3 May be repeated for credit; cumulative maximum 7 hours. Current research in cell structure and function.

Geology
Geol
317 Geotechnical Engineering I 2 Same as C E 317.
318 Geotechnical Engineering Laboratory I 1(0-5) Same as C E 318.
365 Pacific Volcanoes I Geologic development and eruption history of volcanoes of the Pacific Coast. Permanent SS course.
400 Environmental Geology 3 II (delete GUR in Physical Sciences).
440 Rock Mechanics 3(2-3) II Prereq Geol 340, C E 317, 318. Mechanical behavior and properties of rocks using data from laboratory experiments and field observations.
475 Ground-Water Hydrology 3 I Prereq Geol 340 or C E 351. Fundamentals of ground water accumulation, storage, exploration, and development.
498 Undergraduate Seminar I May be repeated for credit, cumulative maximum 3 hours. Prereq major in Geol or related field. Research papers by students, faculty, and visiting scientists on geological research.
500 (500) Seminar in Ground-Water Hydrology 3 Prereq graduate student in Geol. By interview only. Instruction and practice of laboratory teaching in geology. S, F grading.
523 Advanced Topics in Stratigraphy 3 May be repeated for credit. II 1982-83 a/y. Prereq Geol 421.
556 Electron Microprobe 3(2-3) (Idaho) drop
577 Advanced Ground-Water Hydrology 3 II Prereq Geol/C E 475. Ground-water flow systems; modeling and resource management.
598 Graduate Seminar I Prereq graduate student in Geol or related field. Papers presented by students, faculty, and visiting scientists on geological research. S, F grading.
702 Masters' Special Problems, Directed new Study, and/or Examination Variable credit. (for non-thesis Master's degree)

German
Ger
205 [H] Third Semester German 4 Prereq Ger 102: Cultural readings and expansion of grammatical concepts.
315 [H] Germanic Civilization 2 I The cultural development of the Germanic peoples to 1750; readings, lectures, and discussions in English.
316 [H] German Culture and Civilization 2 II The cultural development of Germany from 1750 to the present; readings, lectures, and discussions in English.
596 Resources for Teaching German 1 drop

History
Hist
322/323 History of Washington 2 drop
331 Race and Social History in Latin Amer-
Horticulture

Hort
251 Propagation of Plants 3(2-3) Prereq Hort 101 or 201 or Bot 201. Principles and methods of propagating herbaceous and woody plants and their handling up to usable size.

380 Food Preservation Technology 3 Same drop as F S 380.

420 Potato Physiology and Production Technology 2(1-3) I 1981-82 a/y. Prereq Bot 320. Plant and tuber physiology, physical, chemical, physiological, and genetic principles of production, storage, and processing of potatoes. Field trial required. Joint listing with the University of Idaho. Credit not granted for both Hort 420 and 520.

445 (345) Plant Breeding 3(3-0) Same as Agron 445.

509 Seminar 1 May be repeated for credit; cumulative maximum 4 hours. Recent developments in horticulture.

510 Graduate Seminar 1 May be repeated for credit; cumulative maximum 2 hours. Literature reviews and research progress reports.

520 Potato Physiology and Production Technology 2(1-3) Graduate level counterpart of Hort 420; additional requirements. Credit not granted for both Hort 420 and 520.

Hotel Administration

H A
280 Lodging Systems and Procedures 3 II Prereq H A 181; Accctg 230. Management functions relating to the planning and operational policies of various hotel departments.

510 Hospitality Industry Financial Control 3 Prereq Accctg 230, 231. Internal control through financial and accounting systems for hotels and restaurants.

535 Food and Beverage Systems Design and Analysis 3 II Prereq H A 280. Management theory, problems, and cases in food and beverage operations; work methods; sanitation; research.

357 Food and Beverage Systems Control 3 I Prereq H A 381. Problems encountered in the management of food and beverage operations such as control and forecasting.

381 Hospitality Management and Organization 3 I Prereq H A 181. Advanced management methods and concepts utilized in the administration of hospitality service industries.

420 Marketing Strategy and Development 3 I Prereq Mktg 350. Theory and practice; problems in guest relations, special sales efforts, intramural promotion, research.

483 Current Issues in Hospitality Management 3
505 Survey of Marketing
506 Marketing Management and Administrative Policy
507 Research Methodology 3 Prereq QMeth 215. Types of data needed and available, collection and analysis of data as they relate to decisional research.
565 Seminar in Marketing—Behavior/Economics Aspects
567 Consumer Behavior Theory 3
568 Social Issues in Marketing 3
600 Special Projects or Independent Study Variable credit
702 Master's Special Problems, Directed Study, and/or Examination Variable credit

Office Administration

Of Ad
151 Beginning Typewriting 2(1-3)
152 Intermediate Typewriting 2(1-3)
155 Beginning shorthand 4(3-3)
251 Advanced Typewriting 2(1-3)
255 Intermediate shorthand 3(2-3)
256 Advanced shorthand 3(2-3)
257 Beginning transcription 2(1-3)
258 Advanced transcription 2(1-3)
259 Calculating Machines 1(0-3)

[Data not clearly visible, may be tables or lists of courses]

Chemical Engineering

Ch E
101 (110) Engineering Orientation 1(0-3)
Engineering as a profession; career opportunities; general orientation for freshmen engineers.
174 [2] Introduction to Meteorology and the Atmospheric Environment 3(2-3)II Introduction to meteorology, the atmospheric processes; weather, air pollution, and environmental topics.
201 (221) Chemical Process Principles and Calculations 4 Prereq Chem 106 or 212; Math 172. Fundamental concepts of chemical engineering; problem-solving techniques and applications in stoichiometry, material and energy balances, and phase equilibria.
301 (407) Chemical Engineering Thermodynamics 3 II Prereq Ch E 201; Chem 331; major in Ch E. Definitions, basic concepts and laws, property relationships, construction of thermodynamic charts and tables; compression and liquefaction of gases; power cycles; refrigeration.
336 (430) Unit Operations I 4 I Prereq Ch E 201. Design calculations, operation, and evaluation of equipment used in fluid flow, heat transfer, and evaporation.
351 (431) Unit Operations II 4 I Prereq Ch E 330. Design calculations, operation, and evaluation of equipment used in distillation, extraction, absorption, adsorption, drying, humidification, filtration, and other unit operations.
406 Industrial Chemical Processes 3 I Prereq Chem 342 or C/; Ch E 331. The chemistry, chemical engineering, and economics involved in modern chemical process industries.
411 (304) Chemical Process Simulation 3 (3-0) I Prereq Math 315; Ch E 301; 331; major in Ch E; Ch E 421 or C/; Simulation of chemical and other processes using digital devices.
421 (412) Kinetics and Reactor Design 3 I Prereq major in Ch E; Chem 331; Math 315. Chemical reaction kinetics applied to the design of reactors, non-ideal flow, mixing, catalysis.
432 Unit Operations III 3 drop
433 Chemical Engineering Laboratory 2 (0-6) May be repeated for credit; cumulative maximum 4 hours. Prereq Ch E 331, 421 or C/; major in Ch E Laboratory experiments in heat and mass transfer; separations, other unit operations, kinetics, control; design calculations and report writing.
441 (409) Process Control 3 II Prereq Ch E 411. Measuring instruments, automatic control, process and instrument characteristics and theory applied to industrial control problems.
451 (423) Process Development, Design, and Evaluation 4 II Prereq Ch E 501, 531; major in Ch E. Development, design, and economic evaluation of chemical and related processes as practiced in industry.
461 (414) Introduction to Nuclear Engineering 3 I Prereq junior in Engr or Ph D. Nuclear physics and radiation calculations; conceptual design of a nuclear reactor core and shielding using basic formulations of nuclear engineering.
503 Heat Transmission 3
drop
504 Advanced Topics in Nuclear Engineering 3 drop
508 Air Pollution Control Engineering 3 II Prereq senior in Engr or Ph D. Measurement and control of air pollution; engineering design calculations; equipment and processes.
515 Convective Heat Transfer 3 Same as new M E 515.
522 Viscous Fluid Flow 2-3 Same as M E 522.
523 Basic Concepts in Calculus 2 Preparation and characterization of supported heterogeneous catalysts, mechanistic interpretation of surface reactions and chemisorption, deactivation, and kinetics from lab experiments.
525 Polymer Reactor Engineering 3 I Prereq Ch E 412. Reaction engineering applied to polymerization reactions; effects on polymerization rate, molecular weight, and copolymer composition.
527 Advanced Chemical Engineering Thermodynamics 2-3 I Equilibrium in physical and chemical systems; generalized prediction of thermodynamic properties, nonideal systems. Joint listing with the University of Idaho.
529 Chemical Engineering Kinetics 2-3 II Interpretation of kinetic data and design of nonideal chemical reactors; fundamentals of heterogeneous catalysis, catalyst preparation, characterization, and testing. Joint listing with the University of Idaho.
532 Transport Phenomena in Non-Newtonian Systems 3 II Prereq Ch E 330, 331. Momentum, heat and mass transfer in non-Newtonian systems as relevant to polymer, food, biochemical, biological, and chemical processing.
541 Chemical Engineering Analysis 1 2-3 I new Mathematical analysis of chemical engineering operations and processes; mathematical modeling and computer applications. Joint listing with the University of Idaho.
545 (505) Mass Transfer Operations 1 V 2-3
IPM-oriented businesses, organizations, and government agencies; professional related field interaction. S, F grading.

452 (Entom 452) Pesticides and the Environment II Prereq 12 hrs Bio S. Immediate and longed effects of pesticides on man and other animals; legal and moral repercussions of pesticide use.


Interior Design
I D
101 (C T 107) Basic Environmental Design 3(1-4) The sensory environment as a design determinant; emphasis on problem-formulating and problem-solving processes.

102 (207) Perception and Communication 2(1-2) I Prereq c// in I D 101. Theoretical concepts relating to design objects and elements explored through various design and communication media.

103 Perception and Communication II 2(1-2) new II Prereq I D 191, 192. Developing perceptual awareness and use of media to convey sensory data and meaning.

211 (372) History of Design I 3 I Design forms from prehistoric periods through the Gothic period.

212 (373) History of Design II 3 II Prereq I D 211. Interiors and furnishings from Renaissance period through the contemporary movement in Europe and the United States.

221 (170) Fundamental Residential Planning 3(1-4) I Prereq I D 103. Design investigations of personal space of limited size and complexity for people of varying social, economic, educational, and cultural backgrounds.

222 (271) Advanced Residential Design 3 (1-4) II Prereq I D 221. Design of multi-function, multi-unit living environments; future trends in urbanization, technology, and population needs in housing.

333 (370) Fundamental Commercial Planning 3(1-4) I Prereq I D 103. Design of commercial environmental situations to aid students in developing insights into needs of the corporate client.

334 (371) Advanced Commercial Design 3(1-4) II Prereq I D 333. Complex commercial design problems; problem identification and design development through collaborative efforts of a design team.

401 (475) Residential Interior Design 3 (2-2) II Prereq I D 101 or F A 103; CES 247, 350. For non-majors only. Elements and principles of design as they relate to interiors.

425 (470) Thesis in Residential Design 4 (1-6) I Prereq I D 222. Thesis or terminal project in residential design.

436 (472) Thesis in Commercial Design 4 (1-6) II Prereq I D 334. Thesis or terminal project in commercial design.

472 Preservation/Restoration of Interiors drop and Furnishings 3(2-3) (Permanent SS course drop)

477 Display Design 2(1-3)

490 (375) Professional Internship V 1-12 May be repeated for credit; cumulative maximum 12 hours. S Prereq I D 334. Supervised experience in an approved design firm or related business. Academic supervision by faculty advisor; professional supervision by project manager. Permanent SS course.

491 (479) Seminar I May be repeated for credit; cumulative maximum 4 hours.

507 (570) Advanced Design Theory 3(1-6) I Prereq I D 436. Current research in environmental or product design and development.

598 (573) Topics in Interior Design II Perception and use of interior space on human behavior and interaction patterns in both residential and commercial interiors.

Italian
Ital
303 Intensive Italian 10(5-15) S Provides new active knowledge of listening to, speaking, reading and writing Italian. For students with little or no experience in Italian. Open to undergraduate and graduate students. Permanent Summer Session Course.

Journalism
Jour
125 Press and Society 3 I new
430 Critical Writing 2

Landscape Architecture
L A
450 Principles and Practice of Planning and Design New Same as R P 450.

468 Advanced Projects in Planning and Design 5(0-15) II Prereq L A 467. Individual or group studio project in landscape architectural design or regional planning; exploring advanced techniques, methods and programming.

480 Professional Practice I Prereq senior new in L A. Current business practices and project management techniques used in the profession.

Latin

The prefix Latin (Lat) has been changed to Classics (Clas).

Library Science
Lib S
510 Advanced Reference in Print Materials drop 2

520 Advanced Reference in Nonprint Materials drop 2

Materials Science and Engineering
MSE
331 Process Metallurgy I Prereq Chem 105; Phys 201 or c//. Mineral preparation, steel making, extraction and refining of selected metals; casting, working, machinery, welding; powder metallurgy; heat treatment of metals.

332 (332) Metallic Materials 3 II Prereq MSE 301. Physical metallurgy of engineering metals and their alloys.

341 (414) Thermodynamics and Phase Equilibrium 3 I Prereq c// in MSE 301; Phys 202. Concepts of activity, equilibrium, solution properties; relationship between free energy, composition, and temperature; heterogeneous equilibria.

414 Equilibrium Diagrams 2 II 1982-83 new a/y. Prereq MSE 301, 412. Interpretation of equilibrium diagrams; ternary systems, pressure-temperature relationships.

416 Phase Transformations 3 I Prereq MSE 301, 421, 412. Thermodynamics of solid phases; mechanisms and kinetics of diffusion; nucleation and growth; recrystallization; boundary migration; eutectoid and martensitic transformations.

418 Chemical Properties 3 II 1982-83 a/y. Prereq MSE 301, 412. Thermodynamics and kinetics of heterogeneous chemical reactions at metallic surfaces; oxidation and other electrochemical reactions: electrolysis corrosion.

425 Physical Metallurgy Laboratory 2(0-6) II Prereq c// in MSE 416. Selected experimental work in physical metallurgy.

426 Physical Metallurgy Laboratory 2(0-6) II Prereq MSE 425. Selected experimental work in physical metallurgy.

436 Gilded Wood Products 3(2-3) (Idaho)

503 (519) Advanced Topics in Materials Engineering 3 Chemical reactions of solids with their environment; fracture mechanics; adhesion; rheology; natural and synthetic composites.

508 (504) Fundamentals of Research 2 II Development of research projects, research plans, oral presentations, publications. Cooperative course taught at the University of Idaho.

511 Deformation and Fracture 3 (Course credit will be retained at the Joint Center for Graduate Study only). New
522 Advanced Topics Laboratory I or 2 new May be repeated for credit; cumulative maximum 4 hours. Advanced topics laboratory; electron diffraction, microscopy, rheology and other laboratory techniques.

531 Advanced Wood Technology 3(2-3) drop (Idaho)

536 Wood Chemistry 3(2-3) (Idaho)

Mathematics
Math
105 (Z) Mathematics for Elementary Education I 3 Number systems, informal geometry, measurement, probability, problem solving, use of hand-held calculators.

109 Auditorial Precalculus Mathematics drop 3(2-3)

200 (Z) Mathematics for Elementary Education II 3 Prereq Math 105. The nature of mathematical thought patterns.
concrete foundations of the natural and rational number systems, the development of mathematical operations.  
348 Numerical Analysis and Calculators 2
new Prereq Math 171. Numerical analysis using programmable pocket calculators. Students will furnish their own programmable calculators.
466 Optimization in Networks 3 Prereq new Math 364 or 325. Formulation and solution of network optimization problems including shortest path, minimum cost flow, assignment, covering, postman, traveling salesman and location.
525 Topology I 3
525 General Topology 3 Graduate level new counterpart of Math 425; additional requirements. Credit not granted for both Math 425 and 525.
526 Advanced Topology 3 Prereq Math 421; Math 425 or 525. General topology; basic ideas of algebraic topology.
602 Internship V 2-12 May be repeated for credit. Three to nine month internship; teaching at the postsecondary level or applied work in a non-academic environment.
603 Service Internship V 2-12
Mechanical Engineering
M E
201 (FJ) Technology Today 3
drop
313 Engineering Analysis 3 Prereq Math 315; Cpt S 203; major in engr. Analysis and modeling of engineering problems utilizing numerical and mathematical techniques and the computer, including the analog computer.
324 Mechanical Equipment 3
drop
326 Heat Transfer and Compressible Fluid drop Flow 3
348 Dynamic Systems 4(3-3) Prereq M E new 315. Fundamentals of vibration analysis, control systems, system modeling, and dynamics analysis; laboratory investigations.
473 Computer Aided Design 3(2-3) II Prereq new Cpt S 203; M E 315; major in engr. Interactive computer programming and graphics in the design of engineering systems.
534 Advanced Production Engineering 3
drop
Basic Medical Sciences
502 Directed Study V 1-6
drop
Military Science
Mil S
101 The United States Army I 1 Role of the Army in contemporary society.
102 The United States Army II 1 Role of the Army in today's international affairs.
201 (202) American Military History 2 I American military history from Revolutionary War to present; evolution of the US Army; strategy and tactics.
202 (201) Introduction to Leadership 3 II Multi-disciplinary approach to military leadership; theory with gaming to reinforce selected leader skills; orienteering.
206 Military Science Overview 5 S Preparation for advanced military science program; map reading, tactics, leadership, U.S. military history, fundamentals of army duty, Personnel SS course.
401 Advanced Military Leadership 3 I An empirical examination of military leadership; military justice administration, motivational skills, systems evaluation, and social issues.
402 Advanced Military Management 3 II Theory and practice of Army personnel administration and management; staff planning and correspondence; military research design.
Music
Mus
234 Symphony Orchestra 1
drop
237 Wind Ensemble 1
drop
242 Chamber Orchestra 1
drop
244/444 Marching Band/Varsity Band 1 (0-3) May be repeated for credit. Open to all university students by audition.
352 Applied Theory I 1(0-3) I Prereq Mus 254. Continued musical development in ear training, sight singing, applied theory, keyboard, dictation.
354 Applied Theory I 1(0-3) II Prereq new Mus 252. Continued development in ear training, sight singing, keyboard, dictation, emphasizing 20th century music.
360 History of Music I Baroque and Classic Periods 3(2-2) I Prereq Mus 251, 252, 161. Development and change in the musical culture of Western Europe from 1600 to 1815.
361 History of Music II: Romantic Period and the 20th Century 3(2-3) II Prereq Mus 251, 252, 360. Development and change in the musical culture of Western Europe and the U.S. from 1815 to the present.
381 Fundamental Brass Techniques 1(0-3)
drop
383 Voice Techniques I 1(0-3)
drop
384 Fundamental Woodwind Techniques 1 (0-3)
386 Percussion Techniques I 1(0-3)
drop
393 Wind and Percussion Techniques I 2 new (0-6) I Prereq Mus 152. Brass, woodwind and percussion techniques; elementary instrumental conducting.
394 Wind and Percussion Techniques II 2 new (0-6) II Prereq Mus 152. Brass, woodwind and percussion techniques; elementary instrumental conducting.
464 Seminar and Colloquium in Music 2 Developing a critical attitude toward the composition and performance of music of all periods; aesthetic success, style, and performance.
466 Seminar in Band Literature and Performance 1 May be repeated for credit; cumulative maximum 4 hours. Survey and analysis of recently published literature for use in instrumental music programs of the public schools.
492 Choral Literature I 1(0-3)
drop
550 Seminar in Analysis 2 May be repeated for credit; cumulative maximum 4 hours. II Prereq Mus 453 or c/.. Application of analytical techniques to develop a basis for musical understanding and interpretation.
552 Seminar in Acoustics 2
554 Seminar in Twentieth Century Styles 2 II 1980-81 a/y. Original writing utilizing contemporary idioms.
Nursing
Nurs
410 Advanced Concepts in the Care of the Critically Ill and Injured Patient V 3 (3-0) to 5(3-6) Prereq senior in Nurs; Nurs 406. Open to RN with basic critical care course. Exploration of nursing care of critically ill patients; new and advanced concepts.
411 Emergency Nursing V 3(3-0) or 4(3-3)
new Prereq senior in Nurs; Nurs 406 or RN. Application of the nursing process to clients and families experiencing traumatic injury/sudden illness; examination of emergency health care delivery.
Pharmacy
Phar
200 Seminar 1
drop
310 The Pharmacist and Social Health 2 II Prereq c// in Bact 101. The pharmacist's role in individual and group health problems.
404 Hospital Pharmacy 2 II Prereq Phar new 406 or c//. By interview only. Responsibilities and services of institutional pharmacists in community hospitals; distribution systems, audits, standards, policies and procedures, and quality control.
413 Seminar 1
drop
542 Plants and Drugs 2(2-3)
drop
546 Advanced Pharmacognosy 3
drop
554 Chemistry of Natural Products 3
drop
561 Advanced Pharmacology-Toxicology I 3 I Prereq Phar 472. Lectures and conferences on the more advanced concepts and applications of drug action.
562 Advanced Pharmacology-Toxicology II new 3 II Prereq Phar 561. Continuation of Phar 561.
Physical Education

PEP

104 Art and Science of Movement 1
113 Fitness 2 (1-3) Introduction to skills and new progressions in fitness.
114 (196) Tumbling and Trampoline 1 (0-3)
115 (197) Gymnastics Apparatus 1 (0-3)
116 Introduction to Recreational Dance 2 new (1-3) Same as RPA 116.
117 Modern/Ballet/Jazz 2 (1-3) Introduction to skills and techniques in pommel horse, rings, vaulting, parallel bars, horizontal bars and spotting.
118 Track 1 (0-3) Introduction to skills and new progressions in track.
119 Field Events 1 (0-3) Introduction to new skills and progressions in field events.
120 Tennis 1 (0-3) Introduction to skills and new progressions in tennis.
121 Badminton 1 (0-3) Introduction to skills and new progressions in badminton.
122 Golf 1 (0-3) Introduction to skills and new progressions in golf.
123 Bowling 1 (0-3) Introduction to skills and new progressions in bowling.
124 (190) Field Sports 1 (0-3) Techniques, individual and team tactics, and officiating.
125 (191) Volleyball 1 (0-3) Techniques, individual and team tactics, and officiating.
126 (192) Basketball 1 (0-3) Techniques, individual and team tactics, and officiating.
127 (193) Softball 1 (0-3) Techniques, individual and team tactics, and officiating.
128 Tumbling and Trampoline 1 (0-3) drop
129 Women's Gymnastics Apparatus 1 (0-3) drop
130 Care and Prevention of Athletic Injuries 2 (1-3) Prereq PEP 261 or 330.
131 Motor Skill Acquisition 2 (1-3) Prereq new 4 hrs PEP 100-level skills classes. The learner as an input-integration-output-feedback system; implications for the acquisition of perceptual and motor skills in the schools.
132 Advanced Analysis of Performance in Individual Sports V 1-2 May be repeated for credit; cumulative maximum 4 hours. Prereq appropriate 100-level skills class or competency exam; PEP 315. Analysis of performance with implications for teaching of selected motor activities: track, field events, tumbling, apparatus.
133 Recreational Dance for the Teacher V new 1 (0-3) to 2 (0-6) Same as RPA 316.
134 Modern/Jazz/Ballet V 1 (0-3) to 2 (0-6) Prereq PEP 117 or competency; PEP 313. Methods and materials for the teaching of modern dance, jazz dance, and ballet.
135 Advanced Analysis of Performance in Recreational Sports V 1-2 May be repeated for credit; cumulative maximum 4 hours. Prereq appropriate 100-level skills class or competency exam; PEP 313. Analysis of performance with implications for teaching of selected motor activities: tennis, badminton, golf, bowling, lifetime sports.
136 Advanced Analysis of Performance in Team Sports V 1-2 May be repeated for credit; cumulative maximum 4 hours. Prereq appropriate 100-level skills class or competency exam; PEP 313. Analysis of performance with implications for teaching of selected motor activities: field sports, football, basketball, softball.
137 Dance/Movement Therapy 2 (1-3) I new 1981-82 a/s. Prereq Psych 101 or 102. Theories, methods, and practices in dance/movement therapy.
138 Advanced Analysis of Performance in Physical Activity 1 (0-3) drop
139 Advanced Analysis of Performance in Individual and Team Sports 2 (1-3) drop
140 Secondary Physical Education Programs 4 (0-3) Prereq PEP 315, 300; major or minor in PE. Methods, materials and directed teaching in secondary school physical education activities.
141 Motor Learning and Motor Development 2 Prereq PEP 379, 380, 261, 362; c/ in PEP 389. Physical education principles related to elementary schools; newer trends in motor learning including theories, programs, and movement education.
142 Physical Education for the Handicapped 2 or 3 (0-2) Prereq for PE majors — PEP 382 or 383, for Educ majors— Educ 303 or 320; for RPA majors—RPA 353; for PrePT majors—PEP 362. Individual differences as they relate to physical education.
143 Advanced Athletic Training 1 May be repeated for credit; cumulative maximum 4 hours. Advanced care and prevention of athletic injuries.
144 Facilities and Equipment for Physical Education, Recreation and Athletics 2 or 3 Graduate level counterpart of PEP 487; additional requirements. Credit not granted for both PEP 487 and 587.
145 (587) Research Lab Techniques 2 (1-3) or 3 (0-2) Application and use of laboratory equipment in physical education.
146 Methods of Research, Experimental Design and Data Analysis 3

Physiology

Phys

100 Preparation for Physiology 2 drop
103 Modern Physics 3 II Prereq Math 172; Phys 202. The quantum theory and relativity with applications from atomic, nuclear and solid state physics.
105 [P] Revolutions in Physics 3 drop
145 Astronomy and Astrophysics 3 May be repeated for credit; cumulative maximum 6 hours. II Same as Astr. 435.
153 Advanced Topics in Statistical Mechanics and Thermodynamics 3 Same as Chem 533.
154 Thermodynamics 3 I Prereq Phys 330; new Math 440. Physical theories of equilibrium thermodynamics and irreversible thermodynamics with applications in thermodynamics, superfluids, and superconductivity.
155 Group Representation Theory and Its Applications 3 Same as Math 530.
156 Quantum Mechanics 3 Graduate level counterpart of Phys 450; additional requirements. Credit not granted for both Phys 450 and 550.
157 Atomic and Molecular Physics 3 Graduate level counterpart of Phys 461; additional requirements. Credit not granted for both Phys 461 and 561.
158 Physics of the Solid State 3 Graduate level counterpart of Phys 463; additional requirements. Credit not granted for both Phys 463 and 563.
159 Introductory Nuclear Physics 3 Graduate level counterpart of Phys 465; additional requirements. Credit not granted for both Phys 465 and 565.
160 Advanced Mathematical Physics 2 drop
159 Teaching Physics Undergraduate Laboratories I May be repeated for credit; cumulative maximum 4 hours. Princi-
Plant Pathology
Pl P
330 Introductory Plant Pathology Laboratory 1-0(3) II Prereq PI P 329 or C/. Laboratory study of plant diseases, their identification, symptomatology, causes, and epidemiology.
421 General Mycology 4(2-6) I Prereq Bot 201. The structure, life histories, classification, and economic importance of the fungi.
501 Diseases of Plants 4(3-3) I Prereq PI P 329. Representative types of plant diseases (non-infectious, bacterial, fungal, viral).
511 Viruses and Virus Diseases of Plants 4(3-3) II Prereq course in biocen or adv genetics. Nature of plant viruses, vector-virus relationships and virus diseases of plants.
513 Nematodes and Nematode Diseases of Plants 2(1-3) S Prereq PI P 329. Anatomy, identity, and diseases caused by nematodes; techniques and control.
514 Phytophotobacteriology 4(2-6) I Prereq BC/ new BP 364; Bact 201. Isolation and characterization of bacteria having a saprophytic, symbiotic, or pathogenic association with plants—molecular structure, function, and genetics.
520 Methods and Techniques 4 drop
550 Field Mycology 3(1-6) Perament SS drop course

Political Science
Pol S
315 Introduction to Political Analysis 3 drop
317 Mass Media and the Political Process 3 I 1982-83 AY. Relationship between the media and political institutions and processes of the United States and American political institutions and the public.
410 Government of Canada 3 II Political institutions and processes of Canada.
415 Government Policy and Black Americans 3 Same as BI St 415.
462 Human Issues in International Development 3 Same as Anth 462.
472 Governments of Great Britain and France 3 I Political institutions and policy-making processes in Great Britain and France. Credit not granted for both Pol S 472 and 572.
473 Governments of the German Federal Republic and Italy 3 II Political institutions and policy-making processes in the German Federal Republic and Italy. Credit not granted for both Pol S 472 and 573.
497 Political Science Internship 1-12 May be repeated for credit; cumulative maximum 12 hours. Prereq Pol S 101 or 206. Participation as intern in federal, state, or local governmental unit.
550 Seminar in British Politics 3 drop
551 Seminar in Western European Politics 3 drop
560 Comparative State Political Analysis 3 drop
570 Seminar on Political Violence 3 (Idaho) drop
572 Governments of Great Britain and new France 3 Graduate level counterpart of Pol S 472; additional requirements. Credit not granted for both Pol S 472 and 572.
573 Governments of the German Federal Republic and Italy 3 Graduate level counterpart of Pol S 473; additional requirements. Credit not granted for both Pol S 473 and 573.
580 Seminar in Administration and Coordination: Temporally 3 (Idaho) drop
584 Seminar in African Politics 3 (Idaho) drop

Psychology
Psych
563 Psychology of Aging 3 Prereq Psych 101 or 102; one Bio S course. Psychological processes of aging; changes in sensory, motor, cognitive, motivational and personality characteristics; research methodologies for the study of aging.
565 Operant Behavior 3 Prereq Psych 101 or 102. Principles of operant and classical conditioning.
464 Psychological Disorders of Children 3 Prereq Psych 101 or 102; Psych 360 or CPS 240. Intellectual and emotional disorders of children.
498 Research Participation V 2(0-6) to 4 (0-12). May be repeated for credit; cumulative maximum 8 hours. Prereq 9 hrs Psych including a lab course. By interview only. Participation in the current research of departmental faculty. S, F grading.
501 Research Colloquium I drop
504 History of Psychology: Theoretical and new Scientific Foundations 3 Roots of scientific explanation in psychology are traced through various philosophical schools and psychological movements.
522 Cognitive Behavior 3 drop
530 Professional Issues 3 Ethical and philosophical issues faced in the practice of psychology.
545 Clinical Methods 3(0-9) May be repeated for credit. Prereq Psych 320, 530, 535, 536, 539 or C/. By interview only. Supervised practice in the clinical application of psychology.
546 Advanced Clinical Methods V 1-3 May be repeated for credit; cumulative maximum 12 hours. Prereq Psych 545 or C/. By interview only. Advanced practice in the clinical application of psychology.
552 Integrational Dynamics 3 Theories and research in interpersonal dynamics; cognitive, learning, equity and attributional concepts.
565 Seminar in Problems of Alcoholism 3 drop
574 Physiological Psychology 3 Neuroanatomical, neurochemical, and other biochemical bases of human and animal behavior.

Recreation and Park Administration
RPA
116 (151) Introduction to Recreational Dance 2(1-3) Techniques of folk, square, and social dancing.
316 (351) Recreation Dance for the Teacher I V 1(0-3) to 2(0-6) Preq PEP/RPA 116 or competency; PEP 513.
327 Dance/Movement Therapy 2(1-3) I new 1981-82 AY. Same as PEP 527.

Regional Planning
R P
450 Principles and Practice of Planning 3 II Preq Env S 101. History, theory, methods, and processes in regional planning, contemporary issues, and professional practices.
535 Regional Planning Theory 2 II Preq new Pol S 102; Econ 203. Theories of planning: synthetic, incremental, transactive, advocacy and radical planning traditions; quantitative planning theories.
540 History of Regional Planning 2 I Preq new Soc 101. Development of regional planning in various civilizations from classical times to present day.
550 Methods and Processes in Regional Planning 3(2-3) I Preq R P 540; BIom 412. Basic analysis and approaches to planning; implementation techniques; planning agencies.
568 Advanced Regional Planning Studio 3 new (1-6) II Preq L A 467 or R P 567. Programming and management of regional planning suitability analysis and resource management strategies, techniques; computerized evaluation and assessment of resource information.
571 Advanced Projects in Planning and Development 5 Same as L A 468.
570 Cartography for Planners 3(2-3) I Preq new R P 550, 557. Map design and production techniques for planners and land resource managers. Cooperative course taught at the University of Idaho.

Russian
Rus
315 [TH] Russian Civilization 3 II Russian culture taught in English with readings and lectures in English.

Social Work
S W
393 Community Organization I: Political Processes 3 I Theoretical and technical aspects of social legislation; its content and impact; role of social worker in delivering services through government.
394 Community Organization II: Methods and Implementation 3 II Preq S W 393: Theory and practice in organizing
community efforts to confront and deal with changing social problems.

493 Social Work Theory and Methods I 3 I
Prereq S W 190. Social work values, ethics, skills, theoretical and technical aspects of working with individuals, families, groups, and communities.

494 Social Work Theory and Methods II 3 II
Prereq S W 190, 493. Theoretical and technical aspects of contemporary theories of counseling; use of community resources, community change, social action.

Sociology

Soc

521 Quantitative Techniques in Sociology I 4
Prereq Soc 320. Levels of measurement; measures of central tendency, dispersion and association; probability, normal curve; use of computer packages as learning tools.

522 Quantitative Techniques in Sociology II 3
Prereq Soc 320. Probability theory; inference theory; one and two sample tests; regression and correlation analysis; log-linear models for contingency table analysis.

524 Sociology and Public Policy 3 II
Prereq Soc 320. Relationship between sociology and public policy; effective utilization of concepts and methods in applied settings.

430 World Population: Issues and Debates 3
drop

441 Education and Society 3 I
Eduction as a social institution; its relationship to socialization, social inequality, and social change.

462 Human Issues in International Develop-
ment 3 I
Same as Anth 462.

521 Special Topics in Quantitative Tech-
niques 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Soc 321, 421. Multiple and partial correlation and regression; factor analysis; advanced experimental design; categorical variables.

524 Sociology and Public Policy 3 Graduate
level counterpart of Soc 424; additional requirements. Credit not granted for both Soc 424 and 524.

530 Demography 3 Prereq Soc 430. Popula-
tion studies; causes, effects and measure-
ment of changes in fertility, mortality, and migration; population estimation and projection.

531 Human Ecology 3 Ecosystem context of
human life; change viewed ecologically; sociological use and misuse of ecological concepts; issues in theory and research.

543 Sociology of Work 3
drop

545 Social Impact Assessment 3 II
Sociology's contributions to environmental impact assessments; methods, contents and context of assessing social impacts of proposed developments.

552 Practicum in Family Research V 1-4
May be repeated for credit; cumulative maximum 12 hours. Research design, measurement, data collection, analysis and manuscript writing. S, F grading.

556 Sociology of Aging 3 II Theory and

new methods in social gerontology; effects of age and aging on human behavior and social interaction.

564 Seminar in Problems of Alcoholism 3
drop Same as Psy 565.

565 Seminar in Problems of Alcoholism 3
Same as Psy 565.

591 The Sociology Profession 1 May be repeated for credit; cumulative maximum 2 hours. Requirements, operations, problems, and possibilities of the sociology profession.

Soils

Soils

315 Fundamentals of Remote Sensing 1 II
new Physical basis of remote sensing, characteristics of aerial photographs, reflection from earth surface features.

316 Forestry Application of Aerial Photo Inter-
pretation 1 II Prereq Stereo Vision; Soils 315.
Characteristics of aerial photographs, basic photogrammetry applied to forest management.

401 Soil Analysis 1(0-3) Prereq Soils 400 or 402 or c/. Chemical characterization of soils for diagnostic purposes.

402 Soil Fertility 3 II Prereq Soils 301.
Plant nutrient requirements, principles of soil testing and tissue analyses, current fertilizer technology, fertilizer reactions in soils.

408 Soil Microbiology Lab 1(0-5) I
Prereq Soils 407 or c/. Characterization of soil microflora and microbial processes.

415 Remote Sensing Applied to Terrain
Evaluation 3(2-3) I Prereq physical geology; Soils 315. Remote sensing and photo interpretation methods applied to terrain-landforms, soils, land use.

472 Remote Sensing of Environment 3 I
new Basic remote sensing applied to inventory of natural resources, use of remote sensing methods in research. Cooperative course taught at the University of Idaho.

500 Advanced Soil Chemistry 3 I II 1981-82
a/y. Prereq Soils 400; Chem 217. Chemical properties of soil colloidal systems. Joint listing with the University of Idaho.

512 Seminar 1 May be repeated for credit.
Preparation of visual aids for presenting research information.

579 Advanced Remote Sensing 3 I II
Prereq basic remote sensing; digital computer programming. Digital image processing systems applied to satellite and other remote sensing systems. Cooperative course taught at the University of Idaho.

573 Advanced Aerial Photo Interpretation
3(2-3) or 3(1-6) II Prereq Soils 315.
Flight planning, interpretation of vegetation (disease and insect infestation), landforms, land use, pollution, temporal changes, photo measurement, multistage sampling. Cooperative course taught at the University of Idaho.

Spanish

Span

198 Beginning Spanish Honors 4 I
Prereq new language aptitude test. Spanish language

skills and cultural appreciation of Span-

ish speaking people.

199 Continuing Spanish Honors 4 II
Pre-

ew Span 198. Continuation of Span 198.

Speech

Spe

118 Voice and Diction for Foreign Students
new 2 May be repeated for credit; cumulative maximum 4 hours. Instruction in production of the sounds and pattern of general American speech. S, F grading.

206 Drama in Recreation 3 II
Not open to Spe majors and those who have had Spe 364. Informal dramatic experiences (pantomime, improvisation, story dramatization, puppetry), in recreation programs for children, young people, and adults.

206 (163) Stage Costuming 3(2-2) Basic
costume construction techniques, sewing skills, measurement, patterns, fabrics, draping for the stage.

304 Creative Dramatics 3 Not open to stu-
dents who have taken Spe 206. Pur,
poses and methods of developing inform-

al drama; elementary classroom use.

377 Anatomy and Physiology of the Speech
Mechanism 4 Anatomical and physio-

logical basis of speech production and the pathologies and aberrations that require the services of a Communication Disorders specialist.

400 Application of Communication Theory 3 Extant communication theory; its appli-
cation in an occupational setting.

495 Speakers Forum 1 May be repeated for credit; cumulative maximum 6 hours. Practicum in public advocacy on contro-

versial issues.

504 Instructional Practicum 1 May be repeated for credit; cumulative maximum 3 hours. Instruction and guidance in teaching the basic courses in Speech, S, F grading.

545 American Theatre and Drama I 3
drop

551 Research in the Production of Period
drop Plays 3 (Permanent SS course)

572 Hearing Aids and Advanced Rehabili-

tative Audiology 3 II Prereq Spe 372, 472, 477. Hearing aid technology, eval-

uation and fitting; counseling in the rehabilitative process; re-

habilitative considerations for the geri-

atric population.

575 Advanced Clinical Practice V 1(0-3) to
3(0-9) May be repeated for credit; cumu-

lative maximum 6 hours. Advanced clinical practice in evaluation and treat-

ment of speech, language, and learning disorders. From S, F to regular letter grading.

580 Advanced Diagnosis of Communica-
tion Disorders 3 II 1981-82 a/y. Prereq

Spe 480. Rationale, professional litera-

ture, and practical application relative to differential diagnosis and current technology in assessment of communica-
tion disorders.

584 Advanced Auditory Procedures 3 II
Prereq Spe 472. Behavioral and physiological principles and procedures in
audiology for the differential diagnosis of auditory pathologies; considerations for geriatric clients.

588 Phonological Acquisition and Behavior

Statistics
Stat

562 Mathematical Genetics 3 Same as Math new 562.

571 Reliability Theory 3 II 1982-83 a/y. new Prereq: Stat 429 or 443. Statistical concepts; stochastic material strengths and lifetimes; strength vs safety analysis; reliability of coherent systems; maintenance models; complex systems.

University Honors
U H
370 Ancient Civilizations 3 drop
430 Foreign Study Practicum and Reports 2 new By interview only. Special assignments and reports related to foreign study programs.

Veterinary Anatomy
V An
350 Skeletal Preparation V 1-3 May be repeated for credit; cumulative maximum 3 hours. Technique of skeletal preparation. S, F grading.

Veterinary Clinical Medicine and Surgery
VMS

462 Small Animal Medicine II 5 I Prereq VMS 463. Diagnosis and treatment of small animal diseases. Continuation of VMS 463.

471 Introduction to Surgery I 2 I Prereq 2nd year in Vet Med. Wound healing and introduction to surgical instrumentation, techniques and organization.

485 Diseases and Management of Pet and Wild Birds 2(1-3) I Prereq junior in Vet Med. Management and handling, diagnosis and treatment of various disease conditions of pet and wild birds.

489 Large Animal Preventive Medicine I 3 II Prereq 3rd year in Vet Med. Veterinary's role in the interrelationship between management disease and productivity, and the quality of the marketed food or product.

562 Small Animal Medicine 4(0-12) Same new as VMS 560.

567 Small Animal Surgery 4(0-12) Same new as VMS 563.

591 Advanced Clinical Diagnosis V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq: DVM degree. Advanced course in system's clinical and laboratory examination.

Seminar I (From regular letter grading to S, F grading)

Veterinary Microbiology
V Mic
452 Veterinary Bacteriology 5(3-6) I Prereq V Mic 431. Bacteria that produce disease in animals.

453 Veterinary Medicine and Human Health 3 I Prereq 2nd year in Vet Med. Prepares undergraduate veterinary students in public health, epidemiology, and food hygiene.

539 Pet Bird Diseases 2(1-3) drop

Veterinary Pathology
V Pa
443 Ecologic Perspectives in Veterinary drop Medicine 2(1-3)

447 Gross Pathology Conference 1(0-3) Prereq V Pa 445 or c/f. From S, F to regular letter grading.

454 Small Animal Medicine I 2 I Prereq junior in Vet. Handling, restraint, care, normative features, procedures and diseases of unusual animals as pets or used in food production or research.

529 Neurochemistry 3 Same as V Ph 529 drop

530 Neurological Techniques 1(0-3) Same drop as V Ph 530.

545 Mechanisms of Disease 4 I Prereq V Pa 445; V Mic 430 or Bact 412. Biochemical and immunological mechanisms involved in disease processes studied from the comparative standpoint.

549 Advanced Systemic Pathology I 4(2-6) drop

550 Advanced Systemic Pathology II 4 drop (2-6)

Veterinary Physiology
V Ph
517 (417) Veterinary Physiology I 3 I Prereq admission to Vet Med. Physiology of domestic animals.

518 (418) Veterinary Physiology II 4 I Prereq V Ph 517. Continuation of V Ph 517.

519 Mammalian Physiology I 4 I For non-veterinary medicine majors. Advanced physiology of the organ systems of mammals.

521 Cardiorespiratory Systems 3(2-3) II 1980-81 a/y. A system and quantitative treatment of physiological processes in the heart, blood vessels, and lungs.

522 Mammalian Neurology 3(2-3) drop

526 Veterinary Physiology Laboratory I 1 new (0-3) Prereq admission to Vet Med. Laboratory exercises illustrating the physiology of domestic animals.

527 Veterinary Physiology Laboratory II 1 new (0-3) II Prereq V Ph 526. Continuation of V Ph 526.

531 (419) Veterinary Pharmacology 4(3-3) I Prereq: V Ph 518. The pharmacology of the systems of the body.

532 Toxicology 3 II Prereq V Ph 531. Pharmacology of toxicants and poisonous plants.

533 (422) Veterinary Pharmacology/Aesthesiology 3(2-3) II Prereq V Ph 531. Continuation of V Ph 531. Anesthesiology techniques and pharmacological applications.

535 Pathophysiology of Blood 3(2-3) II new 1981-82 a/y. Physiology of erythron, hemostatic system and effector; cells including granulocytes and natron killer cells.

Vocational Technical Education
VTE
110 Foundations of Industrial Education and Technology 2 I History, goals, methods, curriculum, contemporary programs, and professional organizations.

222 (121) Woodworking Technology I 3(0-6) Prereq: M E 101 or c/f. Wood identification, design, and fabrication of wood products, basic finishing techniques and related materials.

250 (130) Electricity 3(1-6) I Electrical theory and construction practices relevant to contemporary technology and the needs of the teacher. Cooperative course taught at the University of Idaho.

352 (221) Woodworking Technology II 3 drop (0-6) Prereq: VTE 222. Elements in nomenclature; operation of power equipment; working drawings, bill of materials, and routing procedures; use of jigs and fixtures.

330 (131) Electronics 3(1-6) I Prereq VTE 230. Advanced electronic concepts and device applications to electronic systems. Cooperative course taught at the University of Idaho.

372 (272) Industrial Education Design 3 drop (1-6) Prereq M E 101; VTE 222; Ag M 201. Design fundamentals; techniques, materials, and tools employed in the fabrication of industrial products.

431 Career Education 2 Principles, organization, current practices, and program development. (change from University of Idaho course to WSTU)

478 Career Development and Vocational new Guidance for the Handicapped 3 Same as Educ 478.

481 Vocational Education Methods in new Secendary Special Education 3 Same as Educ 481.

Women Studies
WS
290 Women in the Workplace 2 Career new and life planning based on an understanding of the historical and contemporary situation of women in the workplace.

310 Women Artists in History 3 I A his- torical study of women artists.

410 Racism and Sexism in Language 3 Same new as For L 410.

Zoology
Zool
390 Special Topics in Research Methods 2 new (0-6) Prereq junior in Zoology; Org
Chem; Phys. May be repeated for credit; cumulative maximum 4 hours. Laboratory and field experience; research equipment and techniques. S, F grading.


505 Generation, Degeneration, Regeneration in the Nervous System 2 I 1981-82 a/y. Plasticity and specificity of neural connections of invertebrates and vertebrates. Cooperative course taught at the University of Idaho.

506 Electron Microscope Laboratory 3(0-9) new Prereq 1 yr biology; 1 yr Org Chem; 1 yr Phys; Bio S 405 or c//. By interview only. Techniques of transmission and scanning electron microscopy, especially those applicable to biological materials. (transferred from Bio S).


520 Ecological Genetics 2 drop

532 Wildlife Nutrition 3(2-3) Graduate new level counterpart of Zool 432; additional requirements. Credit not granted for both Zool 432 and 532.

542 Waterfowl Management 3 II Prereq Zool 435. Ecology and management of species using wetland habitats and current practices, problems, and procedures for managing such habitats. Cooperative course taught at the University of Idaho.


589 Advanced Topics in Zoology * 2 May be repeated for credit; cumulative maximum in Zool 589, 590, 591—10 hours. Recent advances in zoology.

590 Advanced Topics in Zoology II 2 May be repeated for credit; cumulative maximum in Zool 589, 590, 591—10 hours. Recent advances in zoology.

591 Advanced Topics in Zoology III 2 May be repeated for credit; cumulative maximum in Zool 589, 590, 591—10 hours. Recent advances in zoology.
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Explanation</th>
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<tbody>
<tr>
<td>New</td>
<td>The word &quot;new&quot; printed directly under the course number indicates the course does not appear in the current catalog.</td>
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<tr>
<td>Drop</td>
<td>The word &quot;drop&quot; printed directly under the course number indicates that the course no longer exists.</td>
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<tr>
<td>210 (101)</td>
<td>Changes in course number appear under the new number only with the old number following in parentheses.</td>
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<tr>
<td>3</td>
<td>The number following the course title indicates the hours of credit.</td>
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<td>(2-3)</td>
<td>The numbers in parentheses following the credit indicate the lecture, laboratory, or studio hours of contact required each week during a semester.</td>
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<tr>
<td>I, II, S</td>
<td>I indicates the course is normally offered first semester; II the second semester; and S, summer session.</td>
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<tr>
<td>a/y</td>
<td>course is taught alternate years.</td>
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<td>c / /</td>
<td>concurrent enrollment.</td>
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<td>V 1-4</td>
<td>The letter &quot;V&quot; preceding the credit indicates the course is approved for variable credit within the semester.</td>
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<tr>
<td>[ ]</td>
<td>Course partially meets a General University Requirement for Graduation, i.e., [B] biological science; [C] communications proficiency; [H] humanities; [P] physical science; [S] social science; [U] science or social science; [W] written communications; [Z] science.</td>
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The course changes printed in this supplement are for the purpose of updating the catalog only and do not necessarily reflect when the courses will be taught. Check the 1981-82 Time Schedules to determine which semester each course will be offered.

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