Changes in Graduation Requirements

In the current biennium (1995-97), the General Education Program—and therefore the requirements for graduation—at Washington State University have changed significantly. The new program has been implemented in separate stages over the last three biennia. (Past changes are summarized in the chart on the following page.)

Outline of General Education Program Requirements Effective in the Current Biennium, 1995–97

WSU’s General Education Program has been converted from a simple system of distribution requirements into an integrated program which is organized vertically, allowing sequential study in depth from the freshman year to the junior or senior year. Distribution requirements in the Arts and Humanities, Social Sciences, and Sciences are now organized in three tiers, indicating in broad terms the academic level of the courses and the order in which they should be taken. A portion of the General Education credit hours must be taken within a designated Area of Coherence. This requirement is not an add-on to the distribution requirements, but rather a way of organizing those choices within the larger General Education curriculum. Within each of the Areas of Coherence, students will select an upper-division capstone course which provides a summative experience for that particular cluster of courses. The Area of Coherence and the three-tiered structure of the curriculum are new requirements effective this biennium.

A. The Structure of the General Education Program

Students are required to take a minimum of 40 credit hours distributed among the categories listed below. Fifteen of these credit hours (i.e., five courses), including the capstone course, must also be taken within an Area of Coherence.

**Tier I: 15 semester credit hours**

<table>
<thead>
<tr>
<th>Course Category</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Civilizations [A] GenEd 110 and 111</td>
<td>6</td>
</tr>
<tr>
<td>Written Communication [W]</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics Proficiency [N]</td>
<td>3</td>
</tr>
<tr>
<td>Sciences [Q]</td>
<td>3</td>
</tr>
</tbody>
</table>

**Tier II: 22 semester credit hours**

<table>
<thead>
<tr>
<th>Course Category</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Proficiency [W], [C]</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities# [H], [G]</td>
<td>3</td>
</tr>
<tr>
<td>Social Sciences# [S], [K]</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities/Social Sciences# [H], [G], [S], [K]</td>
<td>3</td>
</tr>
<tr>
<td>Intercultural [I], [G], [K]</td>
<td>3</td>
</tr>
<tr>
<td>Sciences* [B], [P]</td>
<td>7</td>
</tr>
</tbody>
</table>

**Tier III: 3 semester credit hours**

<table>
<thead>
<tr>
<th>Course Category</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capstone Course [T]</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Hours: 40**

# A total of 9 hours of Arts and Humanities and Social Sciences, with a minimum of 3 in either.
* At least 3 hours credit in Biological Science and 3 credits in Physical Science plus 1 additional hour for three clock hours per week of laboratory.

New Writing Proficiency Requirements

In addition to stipulating these changes within General Education, WSU faculty, administration, and regents have identified writing proficiency as a priority at WSU. Accordingly, all students will satisfy specified requirements to meet WSUs writing proficiency standards for graduation. The new requirements are outlined below:

1. Writing Experience within General Education

   a. All students must satisfy the Communication Proficiency requirement by passing 6 hours of written and oral communication courses, including at least 3 in written communication [W] at Tier I, and 3 of either [W] or [C] at Tier II.

   b. Prior to enrollment in freshman writing courses, all students must take a Writing Placement Examination for the purpose of placement in appropriate writing courses. These placements are mandatory. The Writing Placement Examination is administered during summer New Student Orientation, at the beginning of fall semester, and prior to spring registration. Examination results will place students in the core writing course, Engl 101, Introductory Writing (or equivalent), or in Engl 101 plus one hour of Engl 102, Writing Tutorial. In some instances, students may be exempted from Engl 101 on the basis of their performance in the Placement Examination.

   c. General Education courses require student writing of various kinds, both formal and informal, in order to provide adequate instruction in writing skills and to provide a wide range of student experiences in writing for many purposes and audiences.

2. The University Writing Portfolio

   Successful performance with the University Writing Portfolio is a requirement for graduation at WSU. Students may satisfy this requirement, which involves submitting three papers from previously assigned class work plus two timed and proctored writing exercises, any time after successfully completing Engl 101 (or equivalent). Students must complete the portfolio no later than the end of the first semester of upper-division standing (upon completion of 60 hours). Transfer students may elect to postpone the portfolio until they have completed at least a semester of work at WSU.

3. Writing in the Major [M]

   Two courses identified as writing in the major [M] must be included in course work taken to meet departmental requirements. Consult the requirements in the department in which you intend to major.

Transfer Students who have completed an approved Associate of Arts (AA) or Associate of Science (AS) degree at a Washington community college are considered to have fulfilled the lower-division General Education Requirements. These students will still be responsible for meeting the other requirements for graduation, including those in the college and major departments. The University Writing Portfolio and the upper-division capstone course are not lower-division requirements and therefore cannot be satisfied by the approved AA or AS degrees.
### Graduation Requirement Guide

**Program Changes Over the Past Three Biennia**

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>World Civilizations</strong> [A] 6 hours</td>
<td><strong>World Civilizations</strong> [A] 3 hours</td>
</tr>
<tr>
<td><strong>Communication Proficiency</strong> [C] [W] 6 hours</td>
<td><strong>Communication Proficiency</strong> [C] [W] 6 hours</td>
</tr>
<tr>
<td>At least 3 hours must be [W]</td>
<td>At least 3 hours must be [W]</td>
</tr>
<tr>
<td>Writing Placement Exam required if no transfer or AP credit for Engl 101 or equivalent</td>
<td>Writing Placement Exam required if no transfer or AP credit for Engl 101 or equivalent</td>
</tr>
<tr>
<td><strong>Intercultural Studies</strong> [I] [G] [K] 3 hours</td>
<td><strong>Intercultural Studies</strong> [I] [G] [K] 3 hours</td>
</tr>
<tr>
<td><strong>Arts and Humanities</strong> [H] [G] 3 hours</td>
<td><strong>Arts and Humanities</strong> [H] [G] 6 hours</td>
</tr>
<tr>
<td><strong>Social Sciences</strong> [S] [K] [U] 3 hours</td>
<td><strong>Social Sciences</strong> [S] [K] [U] 6 hours</td>
</tr>
<tr>
<td><strong>Additional Arts and Humanities or Social Sciences Course</strong> [H] [G] [S] [K] [U] [3 hours</td>
<td><strong>Mathematics Proficiency</strong> [N]</td>
</tr>
<tr>
<td><strong>Sciences</strong> [B] [P] [U]: 10 hours, including one lab</td>
<td><strong>Sciences</strong> [B] [P] [U] [Z] [O] 10 hours, including one lab</td>
</tr>
<tr>
<td>At least 3 hours [B] and 3 hours [P]</td>
<td><strong>University Writing Portfolio</strong></td>
</tr>
<tr>
<td><strong>University Writing Portfolio</strong></td>
<td>Writing in the Major [M] two courses</td>
</tr>
<tr>
<td><strong>Writing in the Major</strong> [M] two courses</td>
<td></td>
</tr>
</tbody>
</table>

**COLLEGE OF LIBERAL ARTS COLLEGE OF SCIENCES**

<table>
<thead>
<tr>
<th>Sciences [B] [P] [U] 12 hours, including two labs</th>
<th>Sciences [B] [P] [U] [Z] [O] 12 hours, including two labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least 3 hours [B] and 3 hours [P]</td>
<td>At least 3 hours [B] and 3 hours [P]</td>
</tr>
<tr>
<td><strong>Arts and Humanities, Social Sciences, Intercultural Studies</strong> 18 hours total</td>
<td><strong>Arts and Humanities, Social Sciences, Intercultural Studies</strong> 21 hours total</td>
</tr>
<tr>
<td><strong>Foreign Language</strong> - one year (two semesters or three quarters) at the university level or two years of one language at the high school level</td>
<td><strong>Foreign Language</strong> - one year (two semesters or three quarters) at the university level or two years of one language at the high school level</td>
</tr>
</tbody>
</table>

**ENTERED WSU AS TRANSFER STUDENT BEGAN POST-SECONDARY EDUCATION FALL 1991 THROUGH SPRING 1993 AND WILL GRADUATE BY AUGUST 1998**

<table>
<thead>
<tr>
<th>World Civilizations [A] not required</th>
<th>World Civilizations [A] not required</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication Proficiency</strong> [C] [W] 6 hours</td>
<td><strong>Communication Proficiency</strong> [C] [W] 6 hours</td>
</tr>
<tr>
<td>At least 3 hours must be [W]</td>
<td>At least 3 hours must be [W]</td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>Intercultural Studies</strong> [I] [G] [K] 3 hours</td>
<td><strong>Intercultural Studies</strong> [I] [G] [K] 3 hours</td>
</tr>
<tr>
<td><strong>Arts and Humanities</strong> [H] [G] 6 hours</td>
<td><strong>Arts and Humanities</strong> [H] [G] 6 hours</td>
</tr>
<tr>
<td><strong>Social Sciences</strong> [S] [K] [U] 6 hours</td>
<td><strong>Social Sciences</strong> [S] [K] [U] 6 hours</td>
</tr>
<tr>
<td><strong>Mathematics Proficiency</strong> [N] [O] not required</td>
<td><strong>Mathematics Proficiency</strong> [N] [O] not required</td>
</tr>
<tr>
<td><strong>Sciences</strong> [B] [P] [U] [Z] [O] 10 hours, including one lab</td>
<td><strong>Sciences</strong> [B] [P] [U] [Z] [O] 10 hours, including one lab</td>
</tr>
<tr>
<td><strong>University Writing Portfolio</strong> not required</td>
<td><strong>University Writing Portfolio</strong> not required</td>
</tr>
<tr>
<td><strong>Writing in the Major</strong> [M] not required</td>
<td>Writing in the Major [M] not required</td>
</tr>
</tbody>
</table>

**COLLEGE OF LIBERAL ARTS COLLEGE OF SCIENCES**

<table>
<thead>
<tr>
<th>Sciences [B] [P] [U] [Z] [O] 12 hours, including two labs</th>
<th>Sciences [B] [P] [U] [Z] [O] 12 hours, including two labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least 3 hours [B] and 3 hours [P]</td>
<td>At least 3 hours [B] and 3 hours [P]</td>
</tr>
<tr>
<td><strong>Arts and Humanities, Social Sciences, Intercultural Studies</strong> 21 hours total</td>
<td><strong>Arts and Humanities, Social Sciences, Intercultural Studies</strong> 21 hours total</td>
</tr>
<tr>
<td><strong>Foreign Language</strong> - one year (two semesters or three quarters) at the university level or two years of one language at the high school level</td>
<td><strong>Foreign Language</strong> - one year (two semesters or three quarters) at the university level or two years of one language at the high school level</td>
</tr>
</tbody>
</table>

**Minimum University Graduation Requirements:** 120 total hours

- 40 upper-division hours
- 2.0 overall g.p.a.

**NOTES:**
- Summer enrollment by itself does not constitute college admission.
- Running Start students are held to university graduation requirements based on high school graduation date.
- Acceptable Associate of Arts (AA) or Associate of Science (AS) degree from a Washington community college fulfills all lower-division university graduation requirements.
- University Writing Portfolio and Writing in the Major courses are not fulfilled by the AA or AS.

Prepared by Student Advising and Learning Center and Registrar’s Office
# Academic Calendar

#### First Semester

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Registration, Thursday*</td>
<td>Aug 24</td>
<td>Aug 22</td>
<td>Aug 21</td>
<td>Aug 20</td>
</tr>
<tr>
<td>Labor Day holiday</td>
<td>Sept 4</td>
<td>Sept 2</td>
<td>Sept 1</td>
<td>Sept 7</td>
</tr>
<tr>
<td>Midsemester grades due, 8:00 a.m.</td>
<td>Oct 23</td>
<td>Oct 21</td>
<td>Oct 20</td>
<td>Oct 19</td>
</tr>
<tr>
<td>Veterans Day holiday</td>
<td>Nov 10</td>
<td>Nov 11</td>
<td>Nov 11</td>
<td>Nov 11</td>
</tr>
<tr>
<td>Final Examinations, Monday through Friday</td>
<td>Dec 18-22</td>
<td>Dec 16-20</td>
<td>Dec 15-19</td>
<td>Dec 14-18</td>
</tr>
<tr>
<td>Final grades due, 4:00 p.m.</td>
<td>Dec 28</td>
<td>Dec 26</td>
<td>Dec 23</td>
<td>Dec 22</td>
</tr>
</tbody>
</table>

#### Second Semester

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Registration, Thursday*</td>
<td>Jan 11</td>
<td>Jan 9</td>
<td>Jan 8</td>
<td>Jan 7</td>
</tr>
<tr>
<td>Classes begin</td>
<td>Jan 16</td>
<td>Jan 13</td>
<td>Jan 12</td>
<td>Jan 11</td>
</tr>
<tr>
<td>Martin Luther King, Jr. Day holiday</td>
<td>Jan 15</td>
<td>Jan 20</td>
<td>Jan 19</td>
<td>Jan 18</td>
</tr>
<tr>
<td>Presidents Day holiday</td>
<td>Feb 19</td>
<td>Feb 17</td>
<td>Feb 16</td>
<td>Feb 15</td>
</tr>
<tr>
<td>Midsemester grades due, 8:00 a.m.</td>
<td>Mar 11</td>
<td>Mar 10</td>
<td>Mar 9</td>
<td>Mar 8</td>
</tr>
<tr>
<td>Spring Vacation</td>
<td>Mar 18-22</td>
<td>Mar 17-21</td>
<td>Mar 16-20</td>
<td>Mar 15-19</td>
</tr>
<tr>
<td>Final Examinations, Monday through Friday</td>
<td>May 6-10</td>
<td>May 5-9</td>
<td>May 4-8</td>
<td>May 3-7</td>
</tr>
<tr>
<td>Commencement</td>
<td>May 11</td>
<td>May 10</td>
<td>May 9</td>
<td>May 8</td>
</tr>
<tr>
<td>Final grades due, 4:00 p.m.</td>
<td>May 14</td>
<td>May 13</td>
<td>May 12</td>
<td>May 11</td>
</tr>
</tbody>
</table>

#### Summer Session

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Session Registration</td>
<td>May 13</td>
<td>May 12</td>
<td>May 11</td>
<td>May 10</td>
</tr>
<tr>
<td>Memorial Day holiday</td>
<td>May 27</td>
<td>May 26</td>
<td>May 25</td>
<td>May 31</td>
</tr>
<tr>
<td>Eight-Week Session Registration</td>
<td>June 10</td>
<td>June 9</td>
<td>June 8</td>
<td>June 7</td>
</tr>
<tr>
<td>Late Six-Week Session Registration</td>
<td>June 24</td>
<td>June 23</td>
<td>June 22</td>
<td>June 21</td>
</tr>
<tr>
<td>Independence Day holiday</td>
<td>July 4</td>
<td>July 4</td>
<td>July 3</td>
<td>July 5</td>
</tr>
<tr>
<td>Summer Session ends, Friday</td>
<td>Aug 2</td>
<td>Aug 1</td>
<td>July 31</td>
<td>July 30</td>
</tr>
<tr>
<td>Final grades due, 4:00 p.m.</td>
<td>Aug 6</td>
<td>Aug 5</td>
<td>Aug 4</td>
<td>Aug 3</td>
</tr>
</tbody>
</table>

*Faculty advising and preregistration for continuing students will be held prior to the end of the previous term. A one-day residual registration for those not preregistered is scheduled for the Thursday immediately before the start of each term to allow adequate time for computer processing. Registration dates are subject to change based on adoption of new technology.
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Accreditation and Associations

Washington State University is accredited by the Commission on Colleges of the Northwest Association of Schools and Colleges, the regional accrediting association. The institution is a member of the National University Continuing Education Association and is listed in the official publications of the U.S. Office of Education and the State Department of Public Instruction.

Many departments and colleges are accredited by professional accrediting associations recognized by the Council on Postsecondary Accreditation. This information is included in the introductory material of the various departments and colleges, and an abbreviated list is printed below.

*Commission on Colleges of the Northwest Association of Schools and Colleges*

*Council of Graduate Schools in the United States*

*American Assembly of Collegiate Schools of Business*

*American Association for Accreditation of Laboratory Animal Care*

*American Association of Colleges for Teacher Education*

*American Association of Colleges of Pharmacy*

*American Association of Veterinary Laboratory Diagnosticians*

*American Camping Association*

*American Chemical Society*

*American Council for Construction Education*

*American Council on Pharmaceutical Education*

*American Dietetic Association*

*American Psychological Association*

*American Society of Agricultural Engineers*

*American Society of Landscape Architects*

*American Speech-Language-Hearing Association*

*American Veterinary Medical Association*

*Association for the Advancement of International Education*

*Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology*

*Foundation for Interior Design Education Research*

*National Academy of Early Childhood Programs*

*National Architectural Accrediting Board*

*National Association of Schools of Music*

*National Athletic Trainers Association*

*National Council for Accreditation of Teacher Education*

*National League for Nursing*

*National Recreation and Park Association*

*National University Continuing Education Association*

*Society for Range Management*

*Society of American Foresters*

*State Board of Education*

*University Council on Education Administration*

*Washington State Board of Nursing*
Washington State University

Washington State University, the state’s land-grant university, is dedicated to the preparation of students for productive lives and professional careers, to basic and applied research in various fields, and to the dissemination of knowledge. Founded in Pullman in 1890, the university became a multicampus system in 1989 with the establishment of campuses in Spokane, the Tri-Cities and Vancouver.

The university consists of eight colleges, a graduate school, and the Intercollegiate Center for Nursing Education (ICNE) which is headquartered in Spokane. For more than a century, WSU has offered strong and varied academic programs. The liberal arts and sciences have always occupied an important place in the curriculum, along with business, education, architecture, pharmacy, nursing, and the traditional land-grant programs in agriculture, engineering, home economics, and veterinary medicine.

The university offers nearly 100 major fields of study. Bachelor’s degrees are available in all major areas, with master’s and doctoral degrees available in most. WSU’s University Honors Program is one of the oldest and most well-respected, all-university programs for academically talented students in the nation. The new undergraduate core curriculum, including world civilizations courses and expanded writing requirements, is nationally recognized. Money magazine has called WSU a “public Ivy” and rated the Honors Program one of the best in the nation.

Washington’s only statewide university, WSU has Cooperative Extension offices in all 39 counties, seven research and extension facilities in various locations, and 18 Small Business Development Centers statewide. The ICNE has a satellite nursing center in Yakima, and students can take WHETS courses from Wenatchee (via WSU Vancouver). WSU’s business school has a Center for Hotel and Restaurant Administration in Seattle. The university runs the Washington Higher Education Telecommunication System (WHETS), which transmits live, interactive instruction to the branch campuses and other sites. In 1992, WSU introduced a bachelor’s degree in social sciences via distance learning technologies, including cable television, for students in rural areas.

WSU’s instructional faculty of approximately 1,100, including a substantial number of scholars with national and international reputations, is responsible for instruction that opens students’ minds to the most recent knowledge and discoveries. The opportunity for students to know and work closely with their instructors is one advantage of a medium-sized, residential campus such as WSU Pullman. Personal attention from faculty is also a hallmark of the branch campuses.

The heart of the WSU system is the Pullman campus. WSU has about 16,600 students, including those in Pullman and at the ICNE. Of these, about 14,500 are undergraduates and nearly 2,100 are graduate students. Pullman is one of the largest residential campuses west of the Mississippi with about half of the student body living in residence halls, single and family student apartments, and fraternity and sorority houses. Here, students of diverse social, economic and ethnic backgrounds from throughout the nation and more than 90 countries come together in a community in which agriculture is the principal industry and human development the primary concern.

More than 2,000 juniors, seniors and graduate students are enrolled at WSU Spokane, WSU Tri-Cities and WSU Vancouver. The branch campuses serve placebound individuals who have had limited opportunities to complete bachelor’s and master’s degrees. Permanent sites have been acquired for all three campuses. Enrollment is expected to double by the beginning of the next century as facilities are built and degree offerings are expanded.

WSU’s main campus is located in the Palouse country of southeast Washington, where much of the nation’s finest wheat and legumes are produced. Several small but expanding high-tech firms are diversifying Pullman’s economy. The 600-acre campus features modern classrooms and laboratories, libraries, museums, student residences, recreational and athletic facilities, student union and a community hospital. A new library addition has doubled WSU’s library capacity.

Of special note are a one-of-a-kind alumni center, a fine arts building with galleries, a state-of-the-art chemistry building, and a 12,000-seat performing arts coliseum that is home to Cougar basketball. The football stadium, which seats 40,000, is complemented by modern track and field and baseball facilities, all for Pac-10 competition.

A nine-hole golf course, 16 all-weather tennis courts and three swimming pools, including one of Olympic dimensions, are on the Pullman campus. Special playing fields accommodate intramural sports. WSU has one of the largest university-sponsored intramural programs in the nation as well as extensive student life programming.

Degrees Granted

Academic Degrees

Accounting, M Accct
Agribusiness, BS, MA
Agricultural Economics, BS, MA, PhD
Agricultural Molecular Genetics and Cell Biology, BS
Agricultural Technology and Management, BS
Agriculture, BS
American Studies, BA, MA, PhD
Animal Sciences, BS, MS, PhD
Anthropology, BA, MA, PhD
Apparel, Merchandising, and Textiles, BA, MA
Architectural Studies, BS
Architecture, B Arch, MS
Asian Studies, BA
Biochemistry, BS, MS, PhD
Biological Systems Engineering, BS
Biology, BS, MS
Botany, MS, PhD
Business Administration, BA, MBA, PhD
Chemical Engineering, BS, MS, PhD
Chemistry, BS, MA, MS, PhD
Child, Consumer, and Family Studies, BA, MA
Civil Engineering, BS, MS, PhD
Communication, BA, MA
Comparative American Cultures, BA
Computer Science, BS, MS, PhD
Construction Management, BS
Criminal Justice, BA, MA
Crop Science, BS, MS, PhD
Economics, BA, MA, PhD
Education, BA, EdM, MA, MIT, EdD, PhD
Electrical and Computer Engineering, PhD
Electrical Engineering, BS, MS
Engineering, MS
Engineering Management, MEng, Mgt
Engineering Science, PhD
English, BA, MA, PhD
Entomology, BS, MS, PhD
Environmental Engineering, MS
Environmental and Natural Sciences, PhD
Environmental Science, BS, MS
Fine Arts, BA, BFA, MFA
Food Science and Human Nutrition, BS
Food Science, MS, PhD
Foreign Languages and Literatures, BA, MA
Genetics and Cell Biology, MS, PhD

Geological Engineering, MS
Geology, BS, MS, PhD
Health Policy and Administration, MPH
History, BA, MA, PhD
Home Economics, BS
Horticulture, BS, MS, PhD
Hotel and Restaurant Administration, BA
Human Nutrition, MS
Humanities, BA
Individual Interdisciplinary, DA, PhD
Interior Design, BA, MA
Landscape Architecture, BS
Liberal Arts, B Lib A
Materials Science, PhD
Materials Science and Engineering, BS, MS
Mathematics, BS, MA, MS, PhD
Mechanical Engineering, BS, MS, PhD
Microbiology, BS, MS, PhD
Music, BA, B Mus, MA
Natural Resource Management, BS
Natural Resource Sciences, BS, MS
Natural Resources, MS
Neuroscience, MS, PhD
Nursing, BS, M Nurs
Nutrition, MS, PhD
Pharmacology and Toxicology, MS, PhD
Pharmacy, B Pharm, DPharm
Philosophy, BA
Physical Education, BS, MS, EdM
Physics, BS, MS, PhD
Plant Pathology, MS, PhD
Plant Physiology, MS, PhD
Political Science, BA, MA, PhD
Psychology, BS, MS, PhD
Recreation and Leisure Studies, BA
Regional Planning, MRP
Science, BS
Social Sciences, BA
Social Studies, BA
Sociology, BA, MA, PhD
Soil Science, BS, MS, PhD
Speech and Hearing Sciences, BA, MA
Statistics, MS
Theatre Arts and Drama, BA, MA, MAT
Veterinary Medicine, DVM
Veterinary Science, BS, MS, PhD
Zoology, BS, MS, PhD
Zoophysiology, PhD
The Libraries

The university libraries are an integral part of the educational facilities. Books, journals, newspapers, microfilms, CD-ROMs, technical reports, maps, manuscripts, art prints, and photographs form resources of more than three million items supporting commitments in teaching, research, and public service. The libraries are depositories for U.S. documents, municipal and state documents, those from foreign countries, as well as publications of the U.N.

Reference librarians provide personal assistance using modern methods of information retrieval. For the most part, collections are maintained in easily accessible, open-stack arrangements. Limited study facilities are available. Special service programs include instruction in library use; accessing national computerized information systems; and accessing resources of other libraries, national and international, through inter-library cooperation.

Holland Library provides extensive collections in the social sciences and the humanities, as well as sophisticated service components designed to assist students, faculty, and researchers in utilizing these resources. Manuscripts, Archives, and Special Collections contain rich collections of primary resource materials books, manuscripts, photographs to support study and research in a number of fields, including Pacific Northwest history, modern British literature, regional publishing, veterinary history, agricultural history, wildlife and outdoor recreation, WSU history, and other subjects.

Media Materials Services houses the Learning Resource Center and provides videotapes, films, slides, audio tapes and other media for classroom instruction, LRC use, local checkout and national circulation. Collections include the WSU-UI Regional Media Collection, the McCaw Classic Feature Films, Gnaedinger Historical Films, Pitzer Classic Radio Tapes, and others.

Owen Science and Engineering Library supports study and research in the pure and applied sciences with substantial collections in these disciplines, as well as automated bibliographic retrieval, user services, and a graduate student study room. It is conveniently located near most departments served by its collections.

The collections of the George W. Fischer Agricultural Sciences Branch Library in Johnson Hall Annex emphasize support for the plant and entomological sciences.

The biomedical collections and services offered by the Veterinary Medical/Pharmacy Library, located in Wegner Hall, primarily support the instructional and research needs of the Colleges of Veterinary Medicine and Pharmacy.

The George B. Brain Education Library in Cleveland Hall offers a wide range of materials and services to meet research and instructional needs from preschool through community college and adult education.

The Architecture Library, which supports programs in the School of Architecture, is located in Carpenter Hall.

In addition, library resources and facilities are available on the three branch campuses: Spokane, Tri-Cities, and Vancouver. The libraries operate without interruption, except for designated holidays, throughout the calendar year.

The Summer Session

Washington State University conducts a summer session for graduate, undergraduate, and visiting students as an integral part of its year-round operation. Credit earned during summer session 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 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, including early session courses varying from one to six weeks, special conferences, and institutes are also features of the summer session.

The Summer Session Bulletin, published annually in March, is available upon request to Summer Session Office, Washington State University, Pullman, WA 99164-1035. Application forms for enrollment packs and housing with published deadline dates are included in the Summer Session Bulletin.

WSU Foundation

Private support to Washington State University since the foundation was created in 1979 has had a tremendous impact on the quality of programs at WSU. The foundation is engaged in a $200 million fund-raising campaign linked directly to WSU’s priorities of furthering great teaching, increasing access and diversity, fostering WSU’s special experience for students, and advancing research to serve Washington and the world. All gifts go in full to the area designated by the donor. The foundation administers donations in the best interests of both the donor and the university. Inquiries may be addressed to the President, WSU Foundation, Pullman, WA 99164-1042.
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 student’s personal, social, and cultural development; practice in leadership; and management and enjoyment of leisure activities.

The union has facilities for student activities, conferences and conventions. Facilities include food services of all kinds, meeting rooms, a games area, guest rooms for campus visitors, movie theater, copy center, lecture notes, outdoor rental shop, art gallery, legal services, lockers, and a variety of shops (called Little Main Street) offering a US Post Office, hairstyling salon, bank, travel service, credit union, floral shop, film processing service, typing service and bank machines.

Other groups with office space include the Associated Students of Washington State University (ASWSU), Associated Women Students, Residence Hall Association, Panhellenic/Intrafraternity Council, and Graduate and Professional Students Association (GPSA).

Scholastic Societies

Alpha Epsilon Rho. Alpha Epsilon Rho is a broadcasting honorary in the Edward R. Murrow School of Communication. Represented by the National Broadcasting Society, AERho is a nationwide organization made up of the very best students, faculty, and professional communicators in the broadcasting industry. Formed in 1943, it was the first national organization whose primary purpose was to bring communication students and professionals together. The WSU Chapter of AERho is involved in many activities, including sponsoring the end-of-the-year banquet for the School of Communication.

Golden Key. Golden Key National Honor Society was established in 1977 and chartered at WSU in 1987. The society is open to the top 15 percent of the junior and senior classes in all disciplines of study. Qualification is defined at WSU as those students with over 60 credit hours, 30 of which must be from WSU, who have attained a 3.4 cumulative g.p.a. Golden Key offers not only recognition for superior academic achievement, but opportunities for service and leadership. The WSU Golden Key Chapter annually recognizes the two outstanding academic advisers of the year at its annual induction reception.

Mortar Board. Mortar Board is a national honor society of college seniors recognized for their scholarship, outstanding and continual leadership, and dedicated service to the college or university community. It is a member’s willingness to continue to serve that differentiates Mortar Board from an honorary organization. Acceptance of membership indicates the person’s agreement to fulfill the responsibility for active participation in the chapter. Members must have at least a 3.0 cumulative grade point average to be considered for membership.

Omicron Delta Kappa. Omicron Delta Kappa is the national leadership honor society for juniors, seniors, graduate, and professional students. For eighty years, the society has recognized achievement and leadership in scholarship, athletics, campus and community service, social and religious activities, campus government, journalism, speech and the mass media, and the creative and performing arts. Students of any discipline who are in the top 35 percent academically are invited to apply for lifetime membership.

Phi Delta Kappa. Phi Delta Kappa is an international professional fraternity for men and women in education. The membership is composed of recognized leaders in the profession and graduate students in education whose leadership potential has been identified. Members include classroom teachers, school administrators, college and university professors, and educational specialists of many types. In Phi Delta Kappa, they find a fellowship based on common interests and ideas devoted to the promotion of free public education. Membership is by chapter invitation.

Phi Kappa Phi. Phi Kappa Phi, the first national scholastic society to recognize superior scholarship in all fields of study, was established in 1897. The WSU chapter was founded in 1919. Students from all disciplines within the university are eligible for membership. Candidates are selected from the upper 10 percent of the senior class and the top 5 percent of the junior class each year. Graduate students are also eligible for membership.

Phi Sigma Iota. Phi Sigma Iota was founded in 1922 to recognize outstanding ability and high standards of excellence in the field of foreign languages. It is an international society, and, as such, promotes international communication and understanding. Candidates are selected from undergraduates majoring or minoring in a foreign language who maintain at least a 3.0 g.p.a. Graduate students are also eligible for membership.

Student Clubs, Organizations, and Honorary Organizations

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 extracurricular interests through service, recreation, religious, and other specialized interest groups.

ASWSU and the Activities and Recreational Sports Office coordinate and guide existing student organizations and assist 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 needs and interests.

Student Government

Undergraduate students at Washington State University are represented by 18 elected representatives who serve on the Associated Students of Washington State University (ASWSU) Senate. 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 and vice president. The senate is directly involved in the allocation of ASWSU funds for programming and the establishment of operating procedures. Through the senate, ASWSU has developed a number of student committees and programs in the areas of education, entertainment, and recreation.

Graduate and professional students are members of the Graduate and Professional Students Association (GPSA). Five members of the GPSA represent their constituents on the Faculty Senate.

Student Publications

Student publications provide opportunities for students to express themselves, to serve the university 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 five times per week on campus during the nine months of the regular academic year. The Summer Evergreen is issued twice a week during summer session.

The Chinook is the university yearbook issued each August to over 9,000 buyers.

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Student Services and Facilities

Career Services

Career Services is a student service. Three goals have been identified which are aimed at assisting students during their residence at Washington State University: (1) to aid students in defining career goals and aspirations while presenting them with future viable employment opportunities, (2) to assist students in setting themselves on paths to success, and (3) to bring together qualified applicants and prospective employers in a mutually satisfying manner. In order to accomplish these goals, Career Services has developed programs and services which benefit all students.

The Career Development Program offers career planning and counseling for students. Services include assistance with selecting a major, individual and group career exploration, vocational testing, and a 1-credit class entitled College Majors and Career Choice. Resources available to students include a career library and an interactive computerized vocational exploration system (SIGI Plus).

The Career Employment Program provides graduating baccalaureate, master's, and doctoral candidates access to full-time employment opportunities through on-campus interviewing with 300 employers annually and job vacancy listings. Individual and group assistance with job search strategies, enhancement of interviewing skills, and resume and cover letter development are regularly offered.

CEP also provides access to cooperative education opportunities. Cooperative education is a joint effort between the student, an employer and the university which combine the student's academic studies with practical experience. Students learn by using work experience with an employer in their major, as a supplement to textbooks.

In addition, CEP offers students access to part-time, temporary and summer employment off campus. Campus announcements are solicited, processed and posted for student review and application. Those vacancies include all off-campus state work study job vacancies.

WSU Children’s Center

WSU Children’s Center offers part- or full-time child care for six-week- to 12-year-old children of WSU students, staff and faculty in two locations. Ninety-six children (ages 18 months to 12 years) are housed in the main center on Olympia Avenue and 20 children (ages six week to 18 months) are located in Commons Hall 103. Licensed by the Washington Department of Social and Health Service and accredited by the National Academy for Early Childhood Programs, the centers are designed to meet child care needs of parents while providing intellectual, social, emotional, and physical growth opportunities for children. Activities vary from quiet to active, group to individual, structured to unstructured. Children are grouped developmentally by age. Snacks and lunches are provided.

The centers are also available to students for observation and participation for classes. Further information may be obtained by calling (509) 335-8847.

Communication Disorders Clinic

The Communication Disorders Clinic provides complete evaluative and rehabilitative services to students with speech, language, or hearing problems, including communication disorders involving defective articulation, stuttering, voice pitch and quality, and speech and language problems resulting from brain injury or neuromuscular disability. Students with specific learning disabilities may receive special help at the clinic. Speechreading and auditory training, as well as evaluations for fitting of hearing aids and assistive listening devices, are conducted.

Application may be made to the Communication Disorders Clinic of the Department of Speech and Hearing Sciences, Daggy Hall 133, (509) 335-1509.

Conflict Resolution Program

The Conflict Resolution Program (CRP) is an innovative, joint program created by and for the students, faculty, and staff at Washington State University. Its main purpose is to provide members of the university community direct assistance in creatively and nonviolently resolving their interpersonal disputes. The CRP offers a number of services including: mediation consultation, facilitation, conciliation, and a variety of educational workshops and educational services. The office, located in Daggy Hall, room 4, is open all year, including summer. The telephone number is (509) 335-6648.

Counseling Services

WSU Counseling Services 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 personal, social, or couple concerns. Group counseling and workshops are provided to help students with personal development and adjustment and to cope with such issues as eating disorders and sexual assault and abuse. Crisis services and consultation are available on a 24-hour basis. Call (509) 335-4511 for appointments or information.

Counseling Services provides the university with a comprehensive testing program. National, state, and personal testing is available by appointment, (509) 335-4513.

The Disability Resource Center Program

The Disability Resource Center (DRC) Program plans for and coordinates services for students with physical disabilities, permanent health problems, and learning disabilities.

DRC works with the entire campus community to increase accessibility and to increase sensitivity to the needs of disabled students, particularly regarding classroom accommodation, financial aid, and housing. The program includes direct and referral services for students.

Services include modified test-taking accommodations, text taping, and accessible van transportation for on-campus activities for mobility-impaired students.

Other services include assistance with obtaining tutors and volunteer note-takers, assistance with campus orientation and mobility training.

For additional information on the availability of these services, contact the DRC Office, Room 57, Cleveland Hall, (509) 335-1566.

Gay, Lesbian, Bisexual Program

The Washington State University Gay, Lesbian, Bisexual (GLB) Program and GLB Center is committed to assisting the university in fulfilling its goal of a diverse campus. In so doing, the program and the center create an environment that acknowledges, respects, and enhances diversity and provides programs and services for lesbian, gay, and bisexual students, helping them achieve their highest educational potential and meet the challenges of a multicultural society. The goals of the GLB Program are:

- To create a positive social, academic and employment environment at WSU for lesbian, gay, and bisexual students, faculty, staff, and visitors;
- To increase campuswide understanding and awareness of the needs, issues, and realities of lesbian, gay, and bisexual people, as well as confronting and reducing negative attitudes toward the lesbian gay population;
- To reduce the effects of alienation among members of the gay, lesbian and bisexual community by actively supporting the concept of WSU as a place which accommodates and accepts diverse lifestyles;
- To ensure enforcement of established campus policies which prohibit harassment of and discrimination against lesbians, gays and bisexuals at WSU;
- To establish, maintain and enhance relationships with all student centers and organizations.

The GLB Program provides an outreach and service component for students, faculty and staff through the GLB Center. The program also has an education component to provide information and referral for the gay, lesbian and bisexual community and other members of the WSU community. The GLB speakers bureau and the GLB newsletter (both entitled Breaking the Silence) function under the education component. A research component to actively support research and curricular developments which help integrate gay/lesbian/bisexual scholarship into the academic life of the WSU community is also supported by the GLB Program.

The GLB Program and Center are located in the Compton Union Building, Room B17.
The Museum of Art

The Museum of Art was established in 1974 around a core collection of American paintings assembled by former WSU President E. O. Holland and former WSU Regent Charles Orton. Dedicated to serving the educational purposes of WSU and the people of the state of Washington, the museum presents a wide variety of changing exhibitions ranging from antiquity to the contemporary, from design and photography to sculpture and painting. Exhibitions originated by the museum staff have toured the nation. The museum also offers a wide variety of speakers, films, and other special events.

The museum’s collection of American nineteenth- and twentieth-century paintings, drawings, and prints has grown in the past years through financial donations and important gifts from collectors and alumni in the Northwest. This permanent collection is seen in a special exhibition each summer.

The exhibition gallery of the Museum of Art is open and free to the public seven days a week from September to July. The gallery is closed for university holidays and in order to install new exhibitions. For more information on hours and exhibitions, call (509) 335-6607. Guided tours for groups are available upon request and free of charge. An active Friends of the Museum association hosts public receptions and supports museum programs through memberships and volunteer work. Call (509) 335-1910 for all details.

Conner Museum

The Charles R. Conner Museum, located on the first floor of Science Hall, exhibits fishes, amphibians, reptiles, and several hundred mounted birds and mammals, including deer, antelope, mountain sheep, mountain goat, moose, bison, caribou, cougar, and small species. The displays are open to the public from 8:00 a.m. to 5:00 p.m. weekdays and Saturdays.

The museum also maintains a separate research collection of about 50,000 specimens of birds, mammals, reptiles and amphibians, including skins, skeletons and specimens preserved in alcohol and formalin. These collections are used for teaching and research in anatomy, systematics, evolution, biogeography, ecology and conservation, and are loaned throughout the world for research purposes.

The collection is located in 101 Science Hall and is available to qualified workers. Tours can be arranged by writing to the Department of Geology, (509) 335-3515 or (509) 335-1977 well in advance.

Culver Memorial and Jacklin Collection

The Culver Memorial, located in the Physical Sciences Building, houses the Jacklin Petrified Wood Collection. This spectacular collection contains more than 2000 cut and polished specimens of petrified wood from all major localities in the western U.S. It is the largest display of its kind in the western U.S. Also included in the collection is a large selection of cut and polished agate, geodes and dinosaur bone.

The Culver Collection includes over 100 classic rock and mineral specimens from localities throughout the world. Both the Jacklin and Culver Collections may be viewed Monday through Friday, 8:00 a.m. to 5:00 p.m. Group tours may be arranged by calling the Department of Geology, (509) 335-3009.

Drucker Collection

The Minnie Barstow Drucker Memorial Collection of Oriental Art consists of oriental furniture, accessories, art, textiles, and costumes. The collection was given to the university in 1944 by the late Arthur Eilert Drucker in memory of his wife. The Chinese, Korean, and Japanese artifacts were collected during the years the Druckers made the Orient their home. The collection may be viewed in White Hall by writing directly to the Department of Apparel, Merchandising, and Interior Design or by calling (509) 335-3823 for an appointment.

The Historic Textiles and Costume Collection

The Historic Textiles and Costume Collection contains approximately 2000 items of women’s, children’s and men’s clothing and costume accessories from 1835 to the present and quilted and woven coverlets. It also contains a limited number of ethnic textiles and costumes from around the world. The collection is housed in White Hall. Tours may be arranged by calling (509) 335-3823.

James Entomological Collection

One of the largest insect collections in the Pacific Northwest, the Maurice T. James Collection houses over one million insect specimens and an extensive working library. Adult and immature stages of all insect groups and many related arthropods are represented with particular strengths in the flies, beetles,
and butterflies. Primarily of regional significance, the collection also includes considerable material from the New World tropics, eastern North America, and Asia. The collection functions essentially as a research facility by providing specimens on loan to recognized scientists worldwide, by offering identification services to university extension entomologists, and by serving as a repository of type specimens and other materials. Public tours and interpretive presentations for groups can be arranged in advance by calling (509) 335-3394. The collection is located in Room 157 of the Food Science and Human Nutrition Building.

Mycological Herbarium

The Mycological Herbarium of Washington State University is housed in, and maintained by, the Department of Plant Pathology, third floor, Johnson Hall. The herbarium was founded by Frederick D. Headl, the first chairman of the department, in 1915 and now contains more than 68,000 specimens of fungi. Included are representative materials of all the major groups from the slime molds and true molds to the larger, fleshy mushrooms. The parasitic fungi of northwestern North America have been emphasized; however, through exchange and purchase, representative materials of all groups from all over the world have been incorporated. Loans are freely available to individuals associated with recognized botanical institutions anywhere in the world. Specialists wishing to utilize the facilities of the Mycological Herbarium are welcome and are asked only to inform the Department of Plant Pathology, (509) 335-9541, of their desires in advance so that members of the department may be of maximum assistance to them.

Ownbey Herbarium

The Marion Ownbey Herbarium is an internationally recognized resource for research, teaching, and service. Located in Heald G-9, the herbarium houses 335,000 preserved plant specimens, primarily from the Pacific Northwest but including worldwide collections. In addition to native vascular plants and weeds, the herbarium contains mosses, liverworts, lichens, and special collections of seeds and cultivated plants. The herbarium is open from 9:00 a.m. to 4:00 p.m. five days a week and by appointment by calling (509) 335-3250; staff provide assistance to persons wanting to identify and learn about plants. Facilities include a small reference library, a wet lab, reprint and slide collections, computers, and special botanical indices.

Smith Soil Monolith Collection

The Henry W. Smith Soil Monolith Collection contains more than 150 preserved soil profiles, some as much as eight feet in length, representing soils from all of the geographic regions in the state of Washington and nine of the 11 soil orders in soil taxonomy. Soils that are particularly well represented in the collection are those of the Palouse region and those from eastern and central Washington that contain layers of volcanic ash from the many prehistoric and historic eruptions of volcanoes in the Cascade region. The collection is the work of Henry W. Smith, emeritus professor of soils at Washington State University. The soil monoliths constitute a very valuable resource for both teaching and research within the Department of Crop and Soil Sciences. The collection is located in Johnson Hall 114 and may be viewed from an observation window any time the building is open. Persons or groups interested in touring the collection should contact Alan Busacca at (509) 335-1859.

Music and Theatre

Music presents a varied program of concerts, recitals, workshops, and master classes each year. These presentations given by faculty, students, and visiting artists are listed in “Arts on the Palouse” calendar and in a monthly calendar of events which is available from the Kimbrough Music Office on request or by calling (509) 335-8525. The music program supports several performance organizations with enrollment open to all WSU students by audition. Students interested in continuing their musical experience through participation in one of the ensembles are encouraged to contact the Music Office for further information, call (509) 335-8524.

Theatre presents a widely varied year-round program offering many opportunities for participation: eight productions in Daggy Hall theatres, an eight-week Summer Palace repertory season, theatre for children and young people, and many experimental and student-directed productions. Interested students should contact the Theatre Office at (509) 335-7447 for information regarding any aspect of the program: performance, technical, or management. Auditions are open to all members of the university and community.

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 12-inch refractor with a visual lens and a 25-foot revolving dome.

The University Planetarium is located in Sloan Hall 231. Information about open house and group tours of either the observatory or the planetarium can be obtained by contacting the Program in Astronomy, (509) 335-6868.

KWSU Radio-Television Services

KWSU Radio-Television Services operates Northwest Public Radio, a network of six radio stations; Northwest Public Television, a network of two public television stations; and the Washington Higher Education Telecommunication System (WHETS).


Northwest Public Television, a member of the Public Broadcasting Service, produces and broadcasts local and national programs. KTNW-TV extends coverage to the Tri-Cities and Walla Walla areas while KWSU-TV broadcasts in the Pullman region. The signal of Northwest Public Television is extended by two community-owned translators in central Washington.

WHETS is a statewide interactive distance learning video system which serves classrooms in Moscow, Pullman, Richland, Seattle, Spokane, Tukwila, Vancouver, Wenatchee and Yakima. Instructional support activities also include Cable 8, a university-oriented Pullman cable channel; KUGR-FM, a student-operated commercial radio station; and telecommunications support for academic departments.

Student Advising and Learning Center (SALC)

The Student Advising and Learning Center, located in Cleveland Hall 57, is designed to help students improve academic performance. Students with questions on academic programs, degree requirements, certification into majors, regulations, and services, or students in need of help with study skills, reading, writing, test-taking, or advising should call the center, (509) 335-4357. The center faculty and staff are responsible for:

- Coordination of advising.
- Assistance with study skills.
- Assistance with writing skills (in cooperation with the Writing Lab).
- Assistance with test-taking skills.
- Access to computer-based learning and multimedia development.
- Tutoring in a wide range of subjects.

SALC provides educational opportunities and retention services for students throughout the university. The center offers academic advising and counseling, individual and group tutoring, assistance to students with special learning needs, and media-based learning skills classes. Tutorial assistance in reading, writing, science, math, and study and test-taking skills is available. Tutorial assistance in most General Education Requirement courses is provided.

Students may be assigned an adviser in the SALC program upon entrance to the university or as a retention condition. Students may also be referred to the SALC at any time by faculty members, counselors, and others for any of the services it provides. The staff is available daily in Cleveland Hall, Room 57, (509) 335-4357.

Student Computing Labs

Student computing labs are located around the campus—public microcomputer labs and special-purpose computer labs.

The public microcomputer labs are made available to all WSU students. Students may elect either to purchase a pass which provides access to any and all
public microcomputer labs for $50.00 per semester or to pay $1.50 per hour of lab use. These labs are equipped with IBM and Apple microcomputers. A variety of software and printing services are available. Some of these labs are available 24 hours per day, seven days per week, to facilitate student access. Contact Information Technology at (509) 335-0522 to obtain further information about the public microcomputer labs.

Some departments maintain special-purpose computer labs. These labs are available to students enrolled in certain courses with computer lab fees associated with them. Contact the department to obtain further information about these special-purpose computer labs.

Student Health and Wellness Services

Health and Wellness Services provide primary health care to students, including treatment for acute and chronic illness, injuries, accidents, women’s health, contraception, STDs, eating disorders, pregnancy tests, allergy shots, immunizations, wart treatments, counseling, and information on health and preventive care. Our staff of MDs and RNs and nurse clinicians see patients by appointment, with urgent care for emergencies available as well. The Wellness Resource Center is staffed by a nutritionist, a substance abuse counselor, health educators, and nutrition interns. Located in the same building with Pullman Memorial Hospital on the south end of campus, the clinic is open 9:00 a.m. to 5:00 p.m., Monday through Friday, and 8:00 a.m.-noon, Saturdays. After-hours care is available through the clinic for emergencies evenings and weekends. When the clinic is closed, emergency care can be obtained through the hospital emergency room. Call (509) 335-3575 for information and appointments.

Information Technology Telephone Services

The telephone lines into students’ rooms are operated by WSU. Students are not allowed to bill a third party call to a university telephone number. Students cannot accept collect calls.

Students will be personally responsible for all long distance charges. Recognizing students’ need to take care of business and keep in touch with family and friends away from campus, the Information Technology Help Desk can provide students with a PAC (personal authorization code) number which allows them to make long distance calls at a lower than the direct-distance-dialed rate. For international rates please contact our office. Call waiting, busy-number redial, three-party conference, and electronic voice mail (answering machine) are available as additional line features. Contact the Help Desk, (509) 335-0522, Information Technology Building, Room 2091, between 8:00 a.m. and 5:00 p.m., Monday through Friday.

Women’s Resource Center

The Women’s Resource Center acts as an advocate for diversity by supporting the perspectives of women in institutional goal setting and programming. The purpose of the center is to facilitate a supportive and welcoming environment for women of all races, classes, ages, ethnic origins and sexual orientations.

The Women’s Resource Center provides specialized programs and services which address the unique concerns and needs of women. The Women’s Transit Program and the Sexual Assault Prevention Program are coordinated by the center. Support services for women student organizations are provided, as well as individual referral services to university and community agencies.

For additional information, contact the Women’s Resource Center, Wilson Hall, Room 8, (509) 335-6830. The Women’s Resource Center is open from 8:00 a.m. to 5:00 p.m., Monday through Friday.
Cooperative Courses with the University of Idaho

Cooperative courses between Washington State University and the University of Idaho provide enriched educational opportunities for students of both universities and allows better utilization of supporting resources such as libraries and laboratories. The sharing of faculty and facilities fosters the exchange of ideas and enhances academic ties between the two communities.

Approved cooperative courses are listed in the departmental section of this catalog and include the University of Idaho (UI) equivalent course prefix and number within the course description. Courses are identified as (1) cooperative course taught by UI, open to WSU students; (2) cooperative course taught by WSU, open to UI students; and (3) cooperative course taught jointly by WSU and UI.

Cooperative courses taught by the University of Idaho are footnoted with an i in the Time Schedule. WSU students desiring to enroll in cooperative courses taught by UI will register for the course at WSU but attend class at UI in accordance with the dates and times listed in the WSU Time Schedule. Students will follow the regular WSU registration procedure and will be charged according to the WSU fee structure. Upon completion of the course, the credit and grade will be recorded on the student’s official WSU transcript.

Extended University Services

Extended University Services (EUS) is a diverse organization involved in the outreach efforts of Washington State University. EUS units work with university departments and administrative units to provide distance education programs, conferencing services, and telecommunication services to people throughout the state of Washington and beyond.

Extended Academic Programs (EAP): EAP provides support services for on-campus colleges and departments to deliver selected degree programs and credit courses to various sites in the state of Washington and around the world. Staff provide support in course design and delivery, admissions and registration, and advising. EAP assists the College of Liberal Arts in delivering a BA in Social Sciences by distance learning technologies. The degree completion program, the Extended Degree Program, was designed for adult learners in Washington and throughout North America.

Independent Study: As part of EAP, the Independent Study Program allows independent and highly motivated individuals to work at their own pace through courses by correspondence. Up to 25 percent of the credits for a baccalaureate degree may be taken from WSU by correspondence. Catalogs are available through EAP.

Conferences and Institutes (C & I): This division plans and conducts conferences, institutes, seminars, short courses and workshops in Pullman and various locations throughout the state. Offices are located in Pullman, Puyallup, and the Tri-Cities. The division draws upon the instructional resources of the university and outside content experts to meet a diversity of continuing education, professional and training needs. Clients include business and industrial firms, schools, professional associations and other interest groups who seek to increase their knowledge and professional competencies.

The Central Administrative Office: The EUS Administrative Office provides overall administrative coordination for the organization and has responsibility for accounting, personnel and travel originating in Pullman.

Washington Higher Education Telecommunication System (WHETS): WHETS, a two-way audio-video interactive microwave system, brings WSU classes and programs to specified sites in the state including the WSU branch campuses in Spokane, Vancouver, and Tri-Cities. Other sites include the Intercollaborate Center for Nursing Education in Spokane, Seattle Central Community College, University of Washington, and Central Washington University. Yakima Valley College will be included as January, 1995. EUS works closely with WSU Radio-TV Services to provide technical and academic coordination for the system. WHETS is delivering 65 courses during fall semester 1994 in addition to providing extensive video conferencing services between sites.

University Honors Program

The University Honors Program (UHP) at Washington State University is one of the oldest and most well-known honors programs in the nation. A free-standing academic unit, the UHP offers highly motivated and talented students an alternative curriculum taken in place of general undergraduate requirements. The UHP provides an enriched intellectual experience for its students. They pursue a broad and comprehensive general program as they specialize in their chosen majors. Through completion of an enriched series of small classes, seminars and independent study options, students admitted into the program acquire a greater 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 University Honors Program aims to support the best possible teaching and learning circumstances for participating faculty and students. It has as its primary goal the fostering of genuine intellectual curiosity and the encouragement of a lifelong commitment to learning.

Approximately 700 students are enrolled in the University Honors Program. They come from all departments and colleges of the university, from agriculture to zoology, from engineering to English, from fine arts to economics. Honors is not a major in and of itself. Honors students, like other students, major in particular departments in preparation for professional careers. Yet in place of fulfilling the General Education Requirements expected of other students, honors students pursue an enriched, often interdisciplinary curriculum designed for active learners. During their four years at the university, university honors students receive extensive advising through the Honors Program and through their own academic departments. Honors students and regular students fulfill approximately the same number of required general education hours, but they do so in different classes. Honors courses are small and are taught by established faculty members. Based on an enriched, interactive model rather than an accelerated curricular model, honors courses offer students the opportunity to establish close intellectual relationships with their instructors and peers.

Admission to the University Honors Program

Each year approximately 10 percent of entering first-year students are invited to join the University Honors Program. Incoming students are selected on the basis of high school grade point average, scores from college and pre-college testing programs, and information obtained from the student and from high school advisers. During the spring or summer preceding their first year, eligible students will receive letters inviting them to join the University Honors Program. Those who do not receive such letters but wish to investigate possible participation in the program should contact the Honors Center for information.

The eligibility of transfer and foreign students is evaluated on a case-by-case basis. Ordinarily, students are not considered for admission to the University Honors Program after the beginning of their junior year. Students who are not admitted in the initial selection may petition to enter the University Honors Program at any time after the end of their first semester but no later than the beginning of their junior year. To continue participation in the UHP a student must maintain an overall B+ average (3.2) and must maintain the same average in honors work. Students in the University Honors Program are not required to complete the General Education Requirements for Graduation. For more information on the University Honors Program, please refer to the departmental section of this catalog.

International Programs

International Program (IP) at Washington State University has the overall responsibility for the university’s international activities and promotes, supports, and coordinates them. As the land-grant institution for the state of Washington, internationalization of its curricula and programs is an established priority. Internationalization is the incorporation of appropriate international content, materials, activities and understandings into the teaching, research and public service/outreach programs to enhance their relevance in an increasingly interdependent world.

International Programs at WSU is organized into programmatic areas to serve the university-wide responsibilities of academic support, internationalization of the curriculum, public service/outreach, and research.

Study Abroad provides both undergraduate and graduate students with academically sound overseas study and exchange programs.
International Students and Scholars assists international students and visiting faculty at WSU in the legal, academic, and social adjustments necessary for a successful educational, research, and cultural experience at WSU.

Intensive American Language Center has administrative responsibility for the teaching of English language to international students and scholars, many of whom then attend WSU.

Development Cooperation has administrative responsibility for the establishment, facilitation and coordination of university linkage programs and collaborative activities in developing and industrialized countries.

Intensive American Language Center

The Intensive American Language Center provides concentrated English language training for nonnative speakers of English who are preparing for university studies or who seek to improve their English for professional or personal purposes. Classes meet four to five hours per day, five days per week for 18-week sessions. Sessions run concurrently with WSU’s academic calendar. Thus, students who wish to enter WSU and who are otherwise eligible for admission can move directly to university studies upon successful completion of the Language Center curriculum.

The Language Center provides non-university credit classes in reading, speaking, composition, grammar, listening, various special interest courses, and the Test of English as a Foreign Language (TOEFL) preparation, using both in-class and microcomputer lab. Advanced students concentrate on academic studies. Students are placed in one of six levels, according to their individual proficiencies in English.

Any non-native speaker of English, who is at least 18 years of age, knows the English alphabet and corresponding sounds, and has completed secondary school may attend the Intensive American Language Center. Students may enroll full- or part-time, depending on their visa status. The Language Center also negotiates special courses or package programs with domestic and foreign agencies on a contract basis. To apply or to obtain more information about the Language Center, contact the Office of International Education, Room 108, Bryan Hall, (509) 335-6675.
Research Facilities

Office of Applied Energy Studies
The Office of Applied Energy Studies was established in 1979. The office is responsible for the promotion of research by various faculty groups having common energy-related interests in applied research. The office responds to the energy problems facing society by mobilizing highly trained faculty members into effective research teams and disseminating the results of their research to campus and off-campus groups. A forum is also provided to help educate faculty, students, and the general public on current energy issues.

Laboratory for Atmospheric Research
The Laboratory for Atmospheric Research provides a recognized center of atmospheric studies at Washington State University. The laboratory, which is administered through the Department of Civil and Environmental Engineering, provides students with graduate training in the atmospheric sciences. Students are encouraged to participate in the various grant-supported research projects of the laboratory. Since atmospheric research requires an interdisciplinary approach, both the faculty within the laboratory and those who work cooperatively on joint research programs have diverse disciplinary backgrounds. Research areas include those of interest to the citizens and industries of the state, the nation, and the world. Thus, the laboratory is engaged in research aspects of meteorology, atmospheric chemistry, pollution abatement, global climate issues, and effects of atmospheric pollutants. Much of the research involves field measurement programs which have taken the faculty, staff, and students to such diverse places as China, the Antarctic Continent, the Caribbean, and the Pacific Ocean as well as numerous sites in the United States. Sampling platforms used include mobile trailers, towers, aircraft, and ships. Analytical technique development in the laboratory and computerized data interpretation including atmospheric modeling round out the laboratory research.

Electron Microscopy Center
The Electron Microscopy Center (EMC) is a research and training facility for the study of biological and non-biological materials. The EMC provides electron microscopy and light microscopy equipment for observation and analysis of a diverse array of specimens. Students, faculty and staff can access the EMC for formal and informal training, and for conducting research through flexible conditions designed to ensure success in acquiring and analyzing specimen images. The center offers courses in electron microscopy for graduate and undergraduate students each semester.

The EMC maintains two TEMs, a STEM, a SEM and various light microscopes. Three of the electron microscopes also have EDX analyzers for elemental analysis. All necessary ancillary equipment, computers for image processing and analysis, and three photographic darkrooms are also maintained for student and faculty use. The center provides project consultation and has a skilled staff capable of assisting students and faculty in a wide range of research projects. Faculty and students are welcome to visit the EMC located on the ground floor of Science Hall. Inquiries about services and courses offered or class tours of the facilities can be made by calling (509) 335-3025.

Environmental Research Center
The Environmental Research Center is an all-university research unit. The center is the focal point for university development of interdisciplinary research on problems related to the environment. It provides an organizational and administrative structure 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 Regional Planning, and students are encouraged to participate in the research projects carried out through it. In order to stimulate an awareness of environmental problems and contributions the university can make in solving them, 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 inter-university and other cooperative activities dealing with environmental matters.

The center provides some direct support for graduate students and has sponsored a number of conferences and seminars on regional environmental problems.

GeoAnalytical Laboratory
The GeoAnalytical Laboratory is housed in the Geology Department and provides elemental and isotope analyses of rocks and minerals using the most up-to-date analytical equipment and radioisotopic dating. Individual mineral grains are analyzed on an automated Cameca electron microprobe (elemental analyses) and/or an automated Siemens X-ray powder diffractometer (phase identification and structure). Powdered mineral separates and whole-rock samples are analyzed on automated XRF equipment (27 major and trace elements) and/or on the ICP/MS (routine analyses for rare earth elements and Th, Pb, Hf, Ta and U). Lower detection limits for XRF are approximately 10 ppm; but for the ICP/MS may be as low as 0.1 ppb in hydrous samples. A gas source mass spectrometer is also available for oxygen and hydrogen isotope determinations.

Other facilities available in the laboratory include rock-slabbing, the making of thin and polished petrographic sections, and microphotography.

Information Technology
Information Technology (IT) provides an extensive offering of information processing services to the university community, as well as to a number of other governmental agencies and institutions in the Pacific Northwest. The primary resource for computing power is an IBM 3090-400J, an 80 MIP (Million Instructions Per Second) processor with 256 megabytes of real memory, 512 megabytes of expanded memory, 64 I/O channels, over 118 gigabytes of on-line disk storage, 8 cartridge tape drives, two reel tape drives, a 20,000 magnetic tape library, two impact printers, and two high-speed laser printers. Also available to users are the computing resources of a VAX 8350, a VAX 6320, a VAX 8200 and an AT&T 3B2/1000-80 supporting dial-in access, plus a variety of IBM and Apple microcomputers, and several special purpose computing systems.

IT supports in excess of 4,000 computer workstations on both dedicated and switched and ethernet data communications networks. The workstations have access to the central administrative systems, an on-line library catalog, and all of the systems resident on IT’s processors. Communication links are also available to colleagues at other institutions and to supercomputing facilities via national and international networks such as NorthWestNet and NSFnet.

IT makes available to its users both interactive and batch computing support. The basic operating systems include VM/CMS, MVS, VMS, and UNIX. Available through these systems are programmer utilities, compilers, modeling languages, statistical packages, text processors, mathematical routines, graphics programs, image analysis systems, word processors, office automation systems, spreadsheet packages, database systems, and a myriad of other software products.

International Marketing Program for Agricultural Commodities and Trade Center
IMPACT is the acronym for the International Marketing Program for Agricultural Commodities and Trade established in the College of Agriculture and Home Economics in June 1985.

The IMPACT Center funds interdisciplinary research, extension and teaching to assist the state in exporting its agricultural products. Its major thrusts are in uncovering marketing opportunities, developing strategies to exploit those opportunities, solving economic and technical impediments to current agricultural exports, and finding alternative products or processes with export market potential.

The IMPACT Center receives its funding from state, federal and private sources. Its programs are closely integrated with those of the Department of Agriculture and of WSU’s College of Agriculture and Home Economics. In carrying out its mission, the IMPACT Center funds faculty and staff for both
long- and short-term assignments. Personnel are housed in the appropriate academic department or outlying station. While the IMPACT Center gives assistance to departments in providing graduate-level courses in international agricultural marketing, it does not offer graduate programs.

Nuclear Radiation Center

The Nuclear Radiation Center (NRC) is an education, research and service facility supporting the entire university. The center has a one-megawatt TRIGA reactor, a cobalt-60 irradiation unit, and numerous state-of-the-art radiation detectors and counting systems.

The center supports undergraduate and graduate education, with both facilities and instruction. Graduate students in engineering, physics, chemistry, geology, anthropology, food science, animal science, veterinary science and other fields may conduct their thesis research at the NRC.

Trace element analysis using neutron activation analysis (NAA) is routinely available at the center. This technique is applicable to analytical chemistry, geology, material science, biomedical research, environmental science, physics and other areas. Consultation is available to investigators with elemental analysis needs.

Radiation detection and analysis is practical for many radionuclides. Gamma ray spectroscopy, using Ge(Li), LEP or NaI(Tl) detector systems, and isotopic identification are available. Liquid scintillation and alpha-beta counting equipment is available also.

Neutron irradiation service is provided by the NRC’s one-megawatt fission reactor. The reactor also supports other research projects. Gamma irradiation services are offered on the cobalt-60 unit.

The NRC provides laboratory space for radiochemistry researchers and other projects and programs. A wide range of services and capabilities make the Nuclear Radiation Center ideally suited to support elemental analysis or radiation-related studies at Washington State University. Tours of the reactor facility can be arranged by calling (509) 335-7592.

Social and Economic Sciences Research Center

The Social and Economic Sciences Research Center has three primary goals: (1) to conduct research in the social, economic, and behavioral sciences that is responsive to the needs and concerns of the state, region, and local communities; (2) to maintain a telephone, mail, and face-to-face survey capability that can be utilized by university faculty and others for conducting research that improves the quality of social science, behavioral, and economic data; and (3) to provide research training for both undergraduate and graduate students in the social sciences. The clientele of the Social and Economic Sciences Research Center include the students, faculty, and administration of Washington State University, and the citizens and agencies of the state. Research facilities include the Public Opinion Laboratory, consisting of 30 personal computers, interviewing stations, laser printers, and related mail survey equipment, and a data processing center. The professional-technical staff of the center provides assistance in all facets of the research enterprise.

Faculty and students from social, behavioral, economic, and educational disciplines participate in center projects. Cooperation with other research centers and departments in the university lends a strong interdisciplinary emphasis to the work of the center.

Further information may be obtained by calling (509) 335-1511.

State of Washington Water Research Center

Federal legislation establishing the State of Washington Water Research Center, along with the 54 other water research centers and institutes throughout the United States and territories, outlines three major directives:

(1) support of research in multi-disciplinary and interdisciplinary water-related studies;
(2) assistance in the education and training of undergraduate and graduate students toward degrees in water-related professions through active participation in research projects; and
(3) dissemination of results of research and other current information on water-related issues through the distribution of technical and popular publications and through the sponsorship of conferences, seminars, workshops, and other meetings.

The State of Washington Water Research Center was established in 1964 as a joint agency of Washington State University and the University of Washington with the directorate located in Pullman, at the land-grant university. Programs and policies of the center are determined by the director with the assistance of the Joint Scientific Committee, composed of faculty members from the state’s universities and representatives from state and federal agencies. Washington State University, the University of Washington, The Evergreen State College, and the three regional universities have all participated in the center’s program through specific research projects, making the center a truly statewide activity.

The center has fostered extensive research on Washington state’s water-related problems. Much of this research is also of regional and/or national significance. By 1994, almost 400 projects had been funded through the center and completed with technical reports and journal articles distributed to the professional community and appropriate agencies. More than 900 undergraduate and graduate students have been assisted in meeting their educational goals through their work on these projects to become the water scientists and engineers of today and tomorrow.

The research projects in the center, supported by the federal cooperative program and other grants, may be basic or applied in nature, depending upon the interests of the sponsor. The center does not maintain a regular scientific or engineering staff, but instead provides funds to individual investigators through departments and research units of the state’s universities.

Further information regarding the program may be obtained by writing the Director, State of Washington Water Research Center, Washington State University, Pullman, WA 99164-3002, or by calling (509) 335-5531.
Admission and Financial Aid

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. Admission to the university is granted to eligible applicants prior to registration but not after the tenth day of classes for each semester.

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 or in any specific department or program 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 Office 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 community colleges of Washington and from the Office of Admissions, 342 French Administration Building, Pullman, WA 99164-1036, or by calling (509) 335-5586.

Any freshman applicant planning to compete in intercollegiate athletics must submit scores on the College Board Scholastic Aptitude Test (SAT) to meet National Collegiate Athletic Association (NCAA) regulations.

Retention of Students
The grade point average for freshmen entering from high school in the fall semester 1993 was 3.35. Of the 2,437 freshmen who entered in the fall semester 1993, 2,255 were enrolled in the spring of 1994, and 2,015 were eligible to continue their enrollment in the fall semester 1994.

Freshman Admission Requirements
Freshman applicants will be considered for admission on the basis of an Admissions Index (AI) which will be calculated using the high school grade point average and test information taken from the results of the Washington Pre-College Test (WPCT) if taken prior to June 1, 1989, the Scholastic Aptitude Test (SAT) or the American College Test (ACT). The AI is calculated on the official transcript information provided at the time of application. In addition, freshman applicants will be required to submit a high school transcript showing completion of no less than the following course work in grades 9-12:

- **English:** Four years (three of which must be composition and literature).
- **Mathematics:** Three years college preparatory mathematics (one year of geometry and two years of algebra including an introductory component of trigonometry).
- **Science:** Two years (including at least one year of laboratory science: biology, chemistry or physics).
- **Social Science:** Three years (including at least one year of history).
- **Foreign Language:** Two years of a single foreign language (or approved sign language).
- **Fine Arts:** One year of fine, visual or performing arts or one additional year of academic elective.

It is strongly recommended for students planning to major in science or science-related fields to complete at least three years of science (including at least two years of laboratory science).

Applicants who have not graduated from high school at the time of application must maintain a satisfactory record, complete all required courses specified for admission to WSU, and provide evidence of graduation prior to enrollment.

Freshman applicants over 21 years of age should contact the Office of Admissions concerning requirements for re-entry students.

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

Preference will be given qualified freshman applications received by May 1. Applications for spring semester admission are accepted from September 15 to December 1.

A complete application includes the application form, the official high school transcript, the Washington Pre-College Test Data Sheet or the score report of the SAT or ACT, and a $35 nonrefundable application fee.

Transfer Admission Requirements
Transfer students with 27 semester (40 quarter) hours of transferable college credit at time of application will normally be admitted as space allows if they show evidence of a 2.0 (C) or higher cumulative grade point average in transferable work completed at an accredited post-secondary institution.

Transfer applicants with fewer than 27 semester (40 quarter) hours of transferable credit must also meet the admission requirements for freshmen, including meeting the current admission index (based on high school grade point average and standardized test scores) and course requirements. Students with fewer than 27 semester hours of credit should refer to the Freshman Admission section in this bulletin for details on admission requirements. In all cases, students must maintain a cumulative college grade point average of at least 2.0 in transferable work to remain eligible for admission.

For fall semester, qualified students will be offered admission on a first-come, first-served basis from December 1 to May 1 (or until the class is filled). For spring semester, qualified students will be offered admission on a first-come first-served basis from September 15 to December 1 (or until the class is filled).

Eligible transfer students who hold the approved Associate Degree from a Washington community college who apply before May 1 for fall or December 1 for spring, but after the class is filled, will be assigned a priority number to ensure priority consideration for the next available term.

A complete application includes the application form, an official transcript sent directly from each college or university attended showing work completed at the time of application, and a $35 nonrefundable application fee. Final and complete transcripts must be submitted prior to the student’s initial enrollment. Students must maintain a minimum 2.0 cumulative g.p.a. in all transferable credits to remain eligible for admission. Students whose cumulative grade point average falls below 2.0 in all transferable college work will not be allowed to enroll.

Transfer Credit Policy
College-level work completed at institutions which are regionally accredited is given appropriate credit upon transfer to Washington State University.

The maximum transfer credit allowed from accredited two-year community or junior colleges shall be 60 semester (90 quarter) hours toward a baccalaureate degree irrespective of when those credits were earned. The maximum allowable credit toward a four-year degree from a four-year institution or from a combination of all institutions shall be 90 semester (135 quarter) hours. For a five-year degree program the maximum credit allowed for transfer from a four-year institution or a combination of all institutions shall be 120 semester (180 quarter) hours of credit.

Associate Degree Transfer
Students who have completed an approved Associate of Arts or Associate of Science degree at a Washington community college, including a course pattern which approximates the General Education Requirements (GERs) for graduation from Washington State University, as determined by the Office of Admissions at Washington State University, will be considered to have fulfilled the lower-division General Education Requirements for graduation. Students will also be required to meet the upper-division General Education Requirements as well as any departmental and college graduation requirements.

Washington State University recognizes academic credits earned at other collegiate institutions which are essentially equivalent in academic level and content to work offered at WSU. Toward this end, the university subscribes to the “Policy on Inter-College Transfer and Articulation Among Washington Public Colleges and Universities” endorsed by the public colleges and
universities of Washington and the State Board for Community and Technical Colleges and published by the Higher Education Coordinating Board. The policy deals with the rights and responsibilities of students and the review and appeal process in transfer credit disputes.

Transfer students are encouraged to contact the Transfer Center in the Office of Admissions, (509) 335-5586, with any questions regarding the transfer of credit.

Adult Student Admission
Washington State University recognizes that students who have been away from the classroom for extended periods of time may have special needs. Therefore, in accordance with the policies set forth by the Higher Education Coordinating Board, applications from students who are 21 years of age or over may be considered for admission on the basis of alternative criteria. Students are encouraged to contact the Office of Admissions for details.

Admission to WSU Spokane, WSU Tri-Cities, WSU Vancouver
The WSU branch campuses, located in Spokane, Tri-Cities, and Vancouver, offer a variety of undergraduate and graduate degree programs. All three branches have graduate education; WSU Tri-Cities and WSU Vancouver also offer baccalaureate degrees. WSU Tri-Cities and WSU Vancouver provide upper-division undergraduate education for individuals in those urban areas. Students need to complete their lower-division course work before enrolling at a branch campus. In some instances, students are allowed to attend a local community college and a WSU branch campus concurrently. Contact the branch campus directly for more information about this policy as well as specific admission requirements.

Academic programs offered and branch campus addresses are listed on pages 38 and 39 of this catalog. Applications can be obtained from the branch campuses or the Pullman Office of Admissions. A complete application includes the application form, an official transcript sent directly from each college or university attended showing work completed at the time of application, and a $35 nonrefundable application fee. Applications will not be considered or processed after the tenth day of classes for any semester. Final and complete transcripts must be submitted prior to the student’s initial enrollment.

The policies regarding the transfer of credit are described within the Transfer Admission Requirements as explained above.

Former Students Returning Not Enrolled the Previous Semester
Students formerly enrolled at Washington State University and who wish to return must submit a Former Student Application for Admission. Preference will be given to applications received by May 1 for fall semester and December 1 for spring semester. Applications submitted after the tenth day of classes, in any semester, will not be considered.

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

Former students returning who have attended other institutions since last enrolled at Washington State University must submit an official transcript directly from each institution attended. Applicants will normally be required to have at least a 2.0 (C) cumulative g.p.a. in all such work. Requests for a Former Student Application should be made to the Office of Admissions.

Foreign Student Admission Requirements
Washington State University encourages the application of qualified students from other nations to complement 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. Each application is carefully considered on its individual merits.

High School Cooperative Program
High school students may enroll as part-time students at Washington State University provided they are admitted to the university as space allows and pay the appropriate fees. Such enrollments may be for high school or university credit. If for high school credit, a special fee applies.

Limited Enrollment Programs
Since academic departments may establish additional requirements for admission or certification to specific programs, eligibility for admission to Washington State University does not ensure acceptance into any department or program as a certified major and degree candidate. Several academic programs including, but not necessarily limited to, architecture, business administration, communication, computer science, construction management, economics, education, engineering, fine arts, hotel and restaurant administration, interior design, landscape architecture, mathematics, music, nursing, psychology, pharmacy, and veterinary medicine are unable to accept all interested students. In these situations, and others which may arise in the future, the most highly qualified students will be selected up to the enrollment limits in the specific programs. Students applying for admission to selective programs should contact the Office of Admissions regarding special requirements and application deadlines. For instance, applicants for veterinary medicine must apply by October 31; architecture and pharmacy by March 1; nursing by February 15 for fall and September 1 for spring. Deadlines are subject to change.

Selection of a Major
Students seeking a university degree must organize their efforts in a particular department or group of related courses. This is the student’s major interest area. Some academic majors have specific requirements which must be met before a student is allowed to certify a major. These requirements are listed in the departmental section of this catalog.

If an entering freshman knows with reasonable certainty what the major interest is to be, that interest may be specified on the 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 an adviser in the major interest area by the Student Advising and Learning Center. This adviser can be changed if the student’s original interest should change. Students choosing not to specify a major interest area will be assigned to a general adviser.

Students who have met departmental certification requirements may be eligible to certify a major after the completion of the freshman year (30 semester hours). The chair of the major department then becomes the adviser of record.

Students with advanced standing who transfer more than 30 semester hours normally are certified upon admission as departmental majors unless they are uncertain about their majors or have not met departmental certification requirements. Transfer students who are not certified to a major are assigned to advisers in their areas of interest by the Student Advising and Learning Center. Students interested in completing a minor or second major should consult the department concerned. Formal certification of a minor or second major is completed after the student has finished 90 semester hours. Approved minors are identified in the departmental section of this catalog.

Credit by Examination
Recognizing the natural ability and education experience of many of its applicants, Washington State University has developed a broad program of credit by examination.

Credit and placement may be granted for students who submit scores of three or higher on College Board Advanced Placement (AP) Examinations. The College Board College Level Examination Program (CLEP) may also yield credit. Credit is given for some CLEP general examinations. Subject examinations of CLEP yield variable credit as determined by the appropriate academic departments. No CLEP credit will be granted to students with 60 or more semester hours of credit.

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 Education Requirements for graduation. For further information contact the Registrar’s Office or see academic regulations printed in the Fall Time Schedule.
Advance Payment on Tuition and Fees

All undergraduate applicants including former students returning, except special students, contract students, and foreign students living outside the USA (except Canada), are required to submit a nonrefundable advance payment on tuition and fees in the amount of $50 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, WSU, Pullman, WA 99164-1025, not later than May 1 for freshmen, transfers and former students returning seeking admission for the fall semester. The payment deadline is December 1 for all spring semester applicants.

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 the Graduate School listing in this catalog.

Estimated 1995-1996 Undergraduate Yearly Expenses

<table>
<thead>
<tr>
<th>Direct Costs</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition</td>
<td>$3024*</td>
<td>$8528*</td>
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<tr>
<td>Room and Board</td>
<td>4952</td>
<td>4952</td>
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<tr>
<td>Indirect Costs</td>
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<tr>
<td>Books/Required Fees</td>
<td>763</td>
<td>763</td>
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<tr>
<td>Transportation</td>
<td>834</td>
<td>834</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1256</td>
<td>1256</td>
</tr>
<tr>
<td>Totals</td>
<td>$10,829</td>
<td>$16,333</td>
</tr>
</tbody>
</table>

Note: The above costs are subject to change.

*Tuition charges are estimates, awaiting legislative action by the state of Washington.

Other Costs

- $120 Summer New Student Orientation Program.
- $15 Refundable damage deposit required of all students.
- $60 Security deposit required of those living in residence halls.
- $39 Motor vehicle registration for on-campus students.
- $45 Motor vehicle registration for off-campus students.

Tuition and fees are due the first day of each term. Incoming students receive information about registration and orientation activities prior to coming to campus.

Suggested methods of payment are International Postal Money Orders or Checks, traveler’s checks, and bank money orders which are payable through a United States financial institution. Other methods of payment may subject you to charges for expenses incurred by Washington State University to collect US funds.

Student Financial Assistance/Scholarships

Federal assistance programs include Federal Perkins Loans (National Direct Student Loans), Federal Family Education Loan Program, Federal Pell Grants, Federal Supplemental Educational Opportunity Grants, Federal College Work Study employment, and Federal Health Professions and Nursing Loans. State-sponsored programs include tuition and fee waivers, State Work Study employment and State Need Grants. University sources of aid include scholarships, institutional grants, and part-time job opportunities. Financial aid counselors are available to assist students and families in planning to meet their costs of education through financial aid and/or other alternative financial services.

Students wishing to apply for financial aid to attend WSU must submit the federal form called the Free Application for Federal Student Aid (FAFSA) listing Washington State University as one institution for receipt of information. These applications are available from all colleges and universities, public high schools and public libraries. Priority deadlines for receipt of completed application forms are determined on an annual basis. The specific deadline dates are published in the brochure, Financial Aid and Scholarship Opportunities. Full consideration for all types of aid can be given only to those whose forms are received by the deadline. Students who apply late will be assisted on the basis of available funds and will be counseled about possible alternative resources. Questions should be directed to the Office of Student Financial Aid, French Administration Building 123, (509) 335-9711.

A wide variety of scholarships is also available to new and continuing students. These opportunities may be through the university-wide application, the student’s academic college or department, or through outside scholarship donors. Application requirements and due dates vary and many are listed in the brochure noted above. Questions should be directed to the Office of Scholarship Services, Arthur E. McCartan Suite, Streit-Perham Hall, (509) 335-1059.

Students with Disabilities

The state of Washington administers several programs of assistance to disabled students.

Blind students who are residents of the state of Washington may receive financial assistance under provisions of either RCW 28B.10.210 through 28B.10.220 or RCW 74.16.011 through 74.16.183. Inquiries concerning eligibility under this program should be addressed to Services for the Blind, 3411 South Alaska Street, Seattle, WA 98118.

Other students or prospective students who are residents and have a vocational handicap may be eligible for assistance through the vocational rehabilitation program administered by the state of Washington. Information concerning eligibility should be directed to the Department of Social and Health Services, Division of Vocational Rehabilitation, Olympia, WA 98504.

Federal Veterans Benefits

The Veterans Affairs Office cooperates with the Veterans Administration in carrying out the provisions of the public laws established to give educational benefits to veterans and qualifying dependents of veterans whose death or permanent and total disability is service connected.

Students should apply for admission to the university and for their VA benefits simultaneously. Application for benefits should be made to the WSU Veterans Affairs Office. There is currently at least a two-month delay between approval of the application and receipt of the first monthly benefits check for most students.

Students receiving benefits may be eligible for tutorial assistance or for Veterans work study. Information and application forms for all veterans programs may be obtained from the Veterans Affairs Office, 346 French Administration Building, Pullman, WA 99164-1035, or by calling (509) 335-1857.

Waiver of Fees for Children of Law Enforcement Officers and Firefighters

Students who are the children of law enforcement officers or firefighters who lost their lives or became totally disabled in the line of duty while employed by any public law enforcement agency or full-time or volunteer fire department in the state of Washington may be exempted from the payment of tuition and fees. Washington law defines a totally disabled individual for waiver purposes as a person who has become permanently disabled for life by bodily injury or disease and is thereby prevented from performing any occupation or gainful pursuit. Students claiming this special exemption should apply to the Veterans Affairs Office, French Administration Building 346, and provide legal documentation of the death or disablement under the conditions prescribed for eligibility in RCW 28B.15.380.

Waiver of Fees for Persons Age 60 and Over

Persons age 60 or over who are residents of the state of Washington may enroll under the tuition and fee waiver. Applicants will be asked to sign a statement that courses taken under the fee waiver will not be used toward credentials, salary schedule increases or degrees. Tuition-exempt students will be admitted to class on a space-available basis. All students enrolling under the fee waiver are responsible for paying a $5 nonrefundable registration fee, plus any special course fees, or other fees as appropriate.

Individualized instruction such as independent study, thesis, dissertation, research, internships, tutorials, private lessons, practica, or self-sustaining courses (including summer session) may not be taken under the fee waiver. Credit Enrollments: Enrollment for credit under the fee waiver is limited to 6 hours per semester. Applicants must be admitted to the university and obtain the fee waiver form from the Registrar’s Office, prior to registration. Detailed procedures for credit enrollments under the fee waiver are listed in the Time Schedule.
Audit Enrollments: Auditing under the fee waiver is limited to two courses per semester. Laboratory courses may not be audited. Applicants wishing to audit should report to the Registrar’s Office during the first week of classes to obtain the permission to audit card. The instructor’s signature is required for auditing and cannot be obtained prior to the first day of classes.

Waiver of Fees for WSU Staff/Faculty
A fee waiver option is available to full-time classified staff, faculty, and exempt employees who wish to enroll for up to 6 credits per semester or 4 credits in summer session. Employees enrolling for more than the credit limit pay full fees for all credits over the limit. Qualified personnel who wish to enroll under this program must follow regular admission procedures and present a completed staff/faculty registration authorization form at the time of enrollment. Complete information on this fee waiver program is listed in the Time Schedule.

Waiver of Fees for State of Washington Classified Employees
A fee waiver option is available to full-time permanent classified employees of a state agency who have been certified by the agency as eligible. The state employee must be admitted to the university and submit an approved tuition waiver request form to the Registrar’s Office 15 working days before the beginning of each semester. Participants will be assessed a $30 nonrefundable fee and are subject to the same limitations as fee waiver students age 60 and over, listed above. Contact the branch campus registration office or the Pullman Registrar's Office for forms.
Housing

Twenty-three residence halls, including co-educational, single-sex and age-restricted halls, provide space for 5,300 students at the university. Additionally, 2,200 students reside in Greek chapter houses. Many of these living communities focus around particular academic, social or international issues. These include a Wellness Hall and a Math, Science and Engineering Hall, as well as an International House and halls designed specifically for the success of new students. Twenty-six (Inter)National Fraternities and 14 (Inter)National Sororities currently maintain chapters ranging in size from 40 to 110 people. Most sororities and fraternities maintain chapter houses. Facilities for physically challenged students are also provided.

Students living in residence halls, fraternities and sororities elect their own officers, and each community affords many opportunities for leadership experience. The Residence Hall Association acts on behalf of the residence halls, as well as coordinates university-wide hall programming. Panhellenic and Interfraternity Council are the governing bodies for the Greek system and work together to promote scholarship and other programming activities. Residence hall information may be obtained by writing to Housing Services, Streit-Perham Administrative Office, Pullman, W A 99164-1724.

All single undergraduate freshmen under 20 years of age are required to live in organized living groups which are officially recognized by the university (residence halls, fraternities, and sororities) unless they are residing with parents or legal guardians. Exemptions are granted when students demonstrate to Student Affairs that (1) they have attended an institution of higher education as regularly enrolled students for at least two regular semesters or until they have 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, (2) they are 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) they have 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) they would experience undue financial hardship.

Residence Halls and Dining Centers

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 with a level-three dining account for the 1995-96 academic year is $4,022. This amount is to be paid prior to registration or on an arranged installment basis. A security deposit and a signed housing and dining 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 Housing Reservations for Residence Halls, Streit-Perham Administrative Office. Once the applicant has been assigned to a hall, the security deposit is initially held to ensure occupancy of the space and then to guarantee against damage, breakage, and loss during the student’s stay in the hall. The deposit is held until the individual permanently leaves the residence hall system.

All students residing in the residence halls purchase the Residence Dining Account for use in residence hall dining centers. The dining centers 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 689 apartments for students with legal dependents in residence. A rental request for such a unit will be considered when an application and a security deposit of $60 are received. Units for use by handicapped students are available on a limited basis. For detailed information write to Family Housing, Housing Services, Streit-Perham Administrative Office, Pullman, WA 99164-1726.

Single Student Apartments

The university operates 266 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 available on a limited basis. An application and $60 security deposit are required before a request will be considered. Most units are two-, three-, or four-bedroom and are completely furnished except for linen, kitchen utensils, cleaning equipment, and study lamps. Normally two, three, or four students make up each living group. For further information, write to Single Student Apartments, Housing Services, Streit-Perham Administrative Office, Pullman, WA 99164-1726.
Tuition and Fees

Tax sources of the state finance the major portion of facilities and operation of the instructional programs, student services, and related activities. Students share in the costs by paying tuition, fees, and other charges as established by the Board of Regents.

Payment of registration fees is due on or before the first day of the term.

### ESTIMATED 1995-96 REGISTRATION FEES

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate</th>
<th>Graduate</th>
<th>DVM</th>
</tr>
</thead>
<tbody>
<tr>
<td>FULL-TIME FEES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident (10-18)</td>
<td>$1512.00</td>
<td>$2374.00</td>
<td>$3878.00</td>
</tr>
<tr>
<td>19 hrs and above</td>
<td>$1512.00+</td>
<td>2374.00+</td>
<td>3878.00+</td>
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<tr>
<td>Nonresident (10-18 hrs)</td>
<td>4264.00</td>
<td>5947.00</td>
<td>9846.00</td>
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<td>19 hrs and above</td>
<td>4264.00+</td>
<td>5947.00+</td>
<td>9846.00+</td>
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<tr>
<td>Resident-WAMI</td>
<td>3800.00</td>
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<td></td>
</tr>
<tr>
<td>Nonresident</td>
<td>4435.00</td>
<td>6185.00</td>
<td>10240.00</td>
</tr>
<tr>
<td>19 hrs and above</td>
<td>4435.00+</td>
<td>6185.00+</td>
<td>10240.00+</td>
</tr>
<tr>
<td>PART-TIME FEES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td>$151.00</td>
<td>$237.00</td>
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<tr>
<td>Nonresident</td>
<td>443.00</td>
<td>619.00</td>
<td>1024.00</td>
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<tr>
<td>Vietnam Veteran</td>
<td>30.00</td>
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</tr>
<tr>
<td>Persian Gulf Veteran</td>
<td>98.00</td>
<td>152.00</td>
<td>246.00</td>
</tr>
</tbody>
</table>

1 Fees are based on credit hour enrollments: 1-9 credits are charged part-time fees; 10-18 credits are charged full-time fees; 19 credits and above are charged full-time fees plus an additional charge per credit hour for each credit over 18. The credit hours listed in this table are for fee purposes only. Full-time enrollment is normally 12 credit hours. See definitions listed in the catalog.

2 The special reduction in fees for Vietnam Veterans is available for students previously certified for this exemption. New applicants must have been enrolled in a Washington state college or university prior to May 7, 1990. This exemption expires on June 30, 1998.

3 The special reduction in fees for Persian Gulf veterans is available for students enrolled in a Washington state university after August 10, 1990, who were unable to complete their period of enrollment or academic term due to deployment in the Persian Gulf. This provision expires June 30, 1998.

### ESTIMATED 1996-97 REGISTRATION FEES

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate</th>
<th>Graduate</th>
<th>DVM</th>
</tr>
</thead>
<tbody>
<tr>
<td>FULL-TIME FEES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident (10-18)</td>
<td>$1572.00</td>
<td>$2469.00</td>
<td>$4033.00</td>
</tr>
<tr>
<td>19 hrs and above</td>
<td>$1572.00+</td>
<td>2469.00+</td>
<td>4033.00+</td>
</tr>
<tr>
<td>Nonresident (10-18 hrs)</td>
<td>4435.00</td>
<td>6185.00</td>
<td>10240.00</td>
</tr>
<tr>
<td>19 hrs and above</td>
<td>4435.00+</td>
<td>6185.00+</td>
<td>10240.00+</td>
</tr>
<tr>
<td>Resident-WAMI</td>
<td>3952.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonresident</td>
<td>4435.00</td>
<td>6185.00</td>
<td>10240.00</td>
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<tr>
<td>19 hrs and above</td>
<td>4435.00+</td>
<td>6185.00+</td>
<td>10240.00+</td>
</tr>
</tbody>
</table>

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### ADVANCE PAYMENT

(See page 15.) $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. (The $15 damage deposit is used for the Chinook yearbook, if Chinook is ordered at the time of registration.)

### SPECIAL REGISTRATION FEES

<table>
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</tr>
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<tr>
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<td>$157.00</td>
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<tr>
<td>1996-97</td>
<td>$246.00</td>
<td>$400.00</td>
<td></td>
</tr>
</tbody>
</table>

### OTHER FEES AND CHARGES

(Not necessarily applicable to all students)

- Adding a course charge for each course added or dropped after 10th day of semester $5.00
- Admission application, undergraduate (nonrefundable) 35.00
- Basic Skills Proficiency Test 35.00
- Copyright 20.00
- Dishonored checks, service charge 15.00
- Entrance qualifying graduates of unaccredited high schools test 10.00
- Foreign language reading examination 10.00
- Foreign Student Orientation (required of all new foreign students) 25.00
- Graduate School application 25.00
- Graduation application, bachelor’s degree 25.00
- Graduation application, master’s and doctor’s degrees 40.00
- ID card, charge for replacement 15.00
- Late payment after third week of semester 50.00
- Late registration on or before 10th day of semester 25.00

(continued)
Tuition and Fees

(continued)

Late registration after 10th day of semester 100.00
Medical expense insurance (estimated annual cost) 450.00
( optional for all but foreign students)  
Microfilming
(applicable to PhD and EdD degree candidates only) 55.00
Placement Bureau Credential Service 3.00
(fee assessed after graduation for each set of credentials)
Re-enrollment fee (charged to students who pay tuition and fees after disenrollment for nonpayment) 100.00
Sponsored Foreign Student Administrative Charge (each term) 225.00
Sports Pass (optional)  
Fall and Spring Semester All-Sports Pass 70.00
Fall Semester Sports Pass 60.00
Spring Semester Sports Pass 35.00
WSU Health and Wellness Services Fee (per semester) 63.50
(fee assessed to every student registered for 7 credits or more)
Teacher’s Statutory Certification 22.00
Transcript (per copy) 3.20
Veterinary Medicine application 25.00
Washington Student Lobby (optional) 1.00

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

Resident Status

Residency for tuition and fee purposes is determined by the Washington State Legislature.

The administration of resident status shall be the responsibility of the Board of Regents. The Director of Admissions is assigned the responsibility to represent the Board of Regents on questions of resident status.

A resident student is one who is either financially dependent upon a parent or legal guardian who maintains a bona fide domicile in the state of Washington or a financially independent student who maintains a bona fide domicile in the state of Washington for other than educational purposes. Financial dependence or independence shall be determined by the amount and source of student finances and whether or not the student has been claimed as a deduction on federal income tax forms in the calendar year immediately preceding the semester for which residency is sought. The term domicile denotes a person’s true, fixed and permanent home and place of habitation.

Active duty U.S. military personnel stationed in Washington may request a waiver of non-resident fees through the WSU Veterans Affairs Office. Their spouses and dependent children shall be classified resident.

Evidence to be considered in verifying Washington residency primarily for purposes other than education must have been extant no less than 12 consecutive months and may include the following:

1. Registration of motor vehicles, motor homes, travel trailers, boats or other personal property.
2. Driver’s license.
3. Employment records.
4. Income tax returns.
5. Voter registration.
6. Selective service registration.
7. Purchase of primary residence, lease agreement or monthly rental receipts.
8. Resident status of students in schools attended outside the state of Washington.
9. Membership in professional, business, civic or other organizations.
10. Records of checking or savings accounts and safety deposit box rental.

Once a student’s residency classification has been determined, that classification will remain unchanged in the absence of written evidence justifying change during the time the student is in continuous enrollment.

Applications for change in resident status and all supporting evidence must be submitted to the Office of Admissions no later than the 30th calendar day following the first day of instruction of the semester for which application is made. The burden of proof of resident status lies with the student.

Appeals of institutional determination of classification shall be subject to court review only under procedures described in Chapter RCW 28B.19. If erroneous, untrue, or incorrect information submitted on an application results in an improper classification of resident or nonresident status or a final determination is reversed through the appeals process, institutions shall recover from the student or refund to the student, as the case may be, an amount equal to the total difference in tuition and fees had proper classification been made.

In accordance with RCW 28B.15.014 certain nonresidents may be exempt from paying the nonresident tuition and fee differential. To be eligible for an exemption a nonresident student must provide documented evidence that the student resides in the state of Washington and (1) holds a graduate service appointment involving not less than 20 hours per week; (2) is employed for an academic department in support of instructional or research programs involving not less than 20 hours per week; (3) is a faculty member, classified staff member, or administratively exempt employee holding not less than a half-time appointment or the spouse or dependent child of such a person; (4) is active-duty military personnel for the first 12 months stationed in the state of Washington; or (5) is an immigrant having refugee classification from the U.S. Immigration and Naturalization Service or the spouse or dependent child of such refugee, if the refugee (a) is on parole status, or (b) has received an immigrant visa, or (c) has applied for United States citizenship. Exemption from nonresident tuition and fee differential shall apply only during the term(s) such person shall hold such classification, appointment, or be employed. To determine if you qualify for one or more of these exemptions, graduate students may apply at the Graduate School, Room 324, French Administration Building, and undergraduates may apply at the Office of Student Affairs, Room 332, French Administration Building.

Refund Policy

Tuition, operating, and student services and activities fees will be refunded in full if the student officially withdraws from the university prior to the sixth day of class of the semester for which fees have been charged. If official withdrawal occurs after the fifth day of the semester, the following refund will apply:

<table>
<thead>
<tr>
<th>Week</th>
<th>Percentage Refund</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>80%</td>
</tr>
<tr>
<td>3</td>
<td>60%</td>
</tr>
<tr>
<td>4</td>
<td>40%</td>
</tr>
<tr>
<td>5</td>
<td>20%</td>
</tr>
</tbody>
</table>

Weeks during which the university is on vacation for the entire week do not count in this refund schedule.

For students disenrolled for nonpayment, only 60% of the charges for tuition, operating, and student service and activity fees will be cancelled. Thus, such students will be liable for the balance remaining.

If a student has the optional student medical insurance, the student must come to French Administration, Room 232, and cancel it or the student will be liable for the premium. An administrative fee of the lesser of 5% of the assessed tuition and mandatory fees or $100 will be charged against the refund. Other amounts owed by students, for benefits or services received, will be deducted from the refunded fees.

For short courses and sessions of less than four weeks’ duration, the refund period is 24 hours after the official start of the session.
Academic 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 policies and procedures for dropping and adding classes are included in the Time Schedule, available in the Registrar’s Office and the Student Book Corporation. Students are encouraged to preregister, but may register just prior to the start of each term, with class schedules/fee statements distributed the day before classes begin. For the fall and spring semesters, students have three weeks to pay tuition and fees. For summer session, see Summer Session Bulletin.

Class Attendance

Students who have not attended class and laboratory meetings during the first week of the semester may be dropped from the course by the department. (Students should not assume that they have been dropped without verification from the department or Registrar’s Office). Students having extenuating circumstances which prevent their attendance during the first week should notify the Office of Student Affairs. Student Affairs will notify instructors of the absence and the reason for it. Valid reasons for missing classes do not relieve the student of making up the work missed.

Enrollment Limit

The average semester credit load for undergraduate students is 15 or 16 credit hours. Students are not normally advised to enroll for more than 18 credit hours. When warranted, 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 chair or Student Advising and Learning Center adviser. (See Tuition and Fees for additional credit hour charge over 18 hours.)

Student ID Card

Student photo ID cards are required for library privileges, admission to events and activities, obtaining and cashing checks, and general university use. New students will have their photos taken during orientation. Photo ID cards are validated each term during registration. The photo ID card and the athletic sports pass are required for all WSU athletic events. The photo ID card with validated food service privileges will be required for service in all university dining halls.

Credit

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

One semester hour of credit is assigned in the following ratio of component hours per week devoted to the course of study: (1) lecture—one contact hour per week for each credit hour (two hours outside preparation implied); (2) studio—two contact hours per week for each credit hour (one hour of outside preparation implied); (3) laboratory—three contact hours per week for each credit hour; (4) independent study—three hours of work per week for each credit hour; (5) ensemble—four contact hours per week for each credit hour. The proportion of time in each course assigned to lecture, studio, laboratory, independent study, or ensemble 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.

Credit Hour Requirements for Full-Time Enrollment

The normal load for an undergraduate student is 15 or 16 credit hours per semester. Twelve credit hours per semester is considered a full load for undergraduate students. Ten credit hours per graduate student. (Six hours in summer session is full time for undergraduates; 5 hours for graduate students.) Part-time students do not share in certain student body privileges such as participation in recognized activities, WSU Health and Wellness Services, and student publications.

Graduate students on half-time teaching or research assistantships are expected to carry 10-14 credits per semester with no more than 12 hours of graded credit (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: Based on credit hour enrollment. See page 19 of this catalog.

Financial Aid: For financial aid purposes, full-time enrollment for an undergraduate student is 12 hours and half-time enrollment is considered to be 6-11 hours. For graduate students, full-time enrollment is 10 hours and half-time enrollment is considered to be 5-9 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.

Loan Deferments: Enrollment certifications for deferments on Perkins Loans (National Direct Student Loans) and Federal Family Education Loans with no break in enrollment, require at least half-time enrollment (6 semester hours) for undergraduate and graduate students. Five semester hours constitute half-time enrollment for a graduate student on a half-time assistantship.

Federal Family Education Loans deferments, with a break in enrollment, require full-time enrollment (12 semester hours for undergraduates; 10 for graduate students). Ten semester hours constitute full-time for a graduate student on half-time assistantship, for this purpose.

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

Veterans Benefits: For veterans benefits, full-time enrollment for an undergraduate student is 12 hours, three-quarters-time is 9-11 hours, half-time is 6-8 hours, and less than half-time is 5 or fewer hours. For graduate students, full-time enrollment is 8 hours, three-quarters-time is 6 or 7 hours, half-time is 4 or 5 hours and less than half-time is 3 or fewer hours. Generally, 7 hours for undergraduates and 4 hours for graduate students is considered full-time during summer session. Detailed information on training time eligibility can be obtained from the WSU Veterans Affairs Office.

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 for the entire semester. ( Twelve semester hours for undergraduate students and 10 semester hours for graduate students per semester excluding summer session is considered full-time.) Additional information on these requirements may be obtained from the Office of International Education.

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’s Office. The written permission of the adviser and the instructor is required. Ordinarily audit cards will be issued only for lecture courses or the lecture portion of laboratory courses. An audit fee is charged for other than regularly enrolled full-fee-paying students.

Cancellation of Enrollment

(See Academic Regulations, Rule 70, Withdrawal from the Institution.) Students wishing to cancel their enrollment must do so during the first five days of the semester to avoid further financial obligation. Cancellation of enrollment (withdrawal from the university) is initiated through the Office of Student Affairs. Dropping all courses constitutes withdrawal from the university.

Classification of Students

Undergraduate students who have completed less than 30 semester credits are classified as freshmen, 30-59 1/2 semester credits as sophomores, 60-89 1/2 semester credits as juniors, and 90 and above as seniors.
Post-baccalaureate students are those who have received the baccalaureate degree but have not been admitted to the Graduate School. Sometimes called postgraduates, 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.

Numbering System of Courses

Lower-division
Courses numbered below 100 do not carry university credit.
Courses numbered 100-199 inclusive are normally taken by freshmen.
Courses numbered 200-299 inclusive are normally taken by sophomores.

Upper-division
Courses numbered 300-399 inclusive are normally taken by juniors and seniors.
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
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 take these courses for undergraduate credit with permission of their department chair.

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 prefix and number, 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 Precalculus Algebra (Math 107) and Precalculus Trigonometry (Math 108), meaning that the student may not enroll for Math 171 until successfully completing Math 107 and 108. Prereqs may also be general 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.

Recommended prerequisites are listed, aswell, preceded by the abbreviation: rec.

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 prerequisites based on demonstrated competence or equivalent academic experience.

Field Trip Guidelines

For classes or other instances in which students are expected to participate in field trips, this expectation should be included in the catalog and/or course syllabus. For classes, the reference to the field trip listed in the course syllabus should include any required fees, how travel would be accomplished, alternatives (if any), and the consequences of not participating in the required field trip.

When travel is required, the responsible faculty or staff member should arrange for the transportation. If classes are to be missed, the responsible faculty or staff member should also provide the student participants with a statement concerning absence from classes that can be given to the students’ instructors. Transportation can be scheduled through the university motor pool in accordance with section 95.35, Business Policies and Procedures Manual. The university’s liability coverage is provided by Chapter 4.92 of the Revised Code of Washington (RCW). In those instances where students are permitted to drive their own cars and other students are permitted to ride with them, the responsible faculty or staff member, acting as the university’s representative, should request the student drivers to verify that:

1. They have valid driver’s licenses.
2. They have minimum liability insurance required by the state of Washington ($25,000 bodily injury per person, $50,000 per accident, $10,000 property damage).
3. The student drivers’ vehicles meet the state’s standard safety requirements.
4. The passenger capacity of the vehicles will not be exceeded.

The supervising university representative should also ensure that participants are appropriately dressed and properly advised as to safety requirements for the activity involved.

Certification of a Major

An undergraduate may certify an academic major upon completion of 30 semester hours with the approval of the Director of Advising and the appropriate department chair.

A student who has completed 60 semester hours must certify a major as a condition to further enrollment. The student initiates the certification procedures at the Student Advising and Learning Center (SALC), acquires the signatures of the academic adviser and the department chair, and returns the signed documents to the SALC Office. Certified majors who wish to transfer to another academic major do so by requesting, from the Registrar’s Office, a change of major card, and obtaining the approval and signature of the department chairs of the former major and the new major.

Students who satisfy the minimum university requirements plus any departmental core requirements with a 2.0 cumulative g.p.a. are qualified for certification except in those departments which are impacted or must meet special certification standards. Consult the departmental section of this catalog for specific departmental requirements.

SPECIAL NOTE ON UNDERGRADUATE CERTIFICATION: Since academic departments may establish additional requirements for those seeking admission to specific programs, students are reminded that admission to Washington State University does not ensure acceptance into any department or program as a certified major and degree candidate. Several academic programs including architecture, business, communication, computer science, construction management, economics, education, engineering, environmental science, fine arts, hotel and restaurant administration, interior design, landscape architecture, mathematics, music, nursing, pharmacy, psychology, and veterinary medicine are unable to accept all qualified students. In these situations, and others which may arise in the future, the most highly qualified students will be selected up to the enrollment limits in the specific program.

Departments and programs designated as impacted or those units directed to raise certification standards by external or certifying agencies may require more than the minimum 30 hours for certification and a g.p.a. higher than the minimum 2.0. Academic units may also require completion of one or more specific courses prior to certification. Units must include in their certification requirements a mechanism whereby qualified transfer students can be certified upon admission. These requirements for immediate certification may include standards more rigorous than the minimum requirements, but prior enrollment per se at WSU cannot be a condition for certification of transfer students.

Minor or Second Major

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 the department concerning hours and grade point requirements and an approved schedule of studies to meet such requirements.

A second major requires completion of departmental requirements for the major exclusive of General Education Requirements. A minor requires a minimum of 16 semester hours, half of which must be in upper-division course work. Upon completion of the requirements, the department will notify the Registrar’s Office, and the minor or second major will be posted on the student’s permanent record (transcript). A list of approved minors is published in the Time Schedule and Catalog Supplement.

Grading System

Washington State University uses letter grades and the four-point maximum grading scale. The grade A is the highest possible grade, and grades below D are considered failing. Plus or minus (+) symbols 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 (-) 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.

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A–4 grade points per credit hour. Excellent.
B–3 grade points per credit hour. Strong pass.
C–2 grade points per credit hour. Average pass.
D–1 grade point per credit hour. Weak pass.
F–no credit; 0 grade points. (Credits attempted are calculated in g.p.a.) Fail.
S (Satisfactory)–no grade points. (Credit not calculated in g.p.a.) 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 Faculty Senate. (Courses approved for S, F grading are footnoted in the Time Schedule.) A, S, or F grades only are used for physical education activity courses. 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 g.p.a.) A satisfactory grade for a course taken under the pass, fail grading option. (See below.) 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 (Failing).
I (Incomplete)–no credit or grade points. The term is 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. Undergraduates or graduates who receive an I grade in an undergraduate course (100–499) have up to the end of the ensuing year to complete the course, unless a shorter interval is specified by the instructor. If the incomplete is not made up during the specified time or if the student repeats the course, the I is changed to an F. (See Rule 34.) Faculty are required to submit an instructor’s Incomplete Grade Report (IGR) to the departmental office for every I given. The IGR must specify conditions and requirements for completing the incomplete, as well as any time limitations less than one year.
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 or the end of the 9th 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 (g.p.a.) 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 g.p.a. Credits attempted for F grades are calculated into the g.p.a. Transfer and other nonresident credit is not computed in the Washington State University grade point average. The following example illustrates computation of the g.p.a.:  

<table>
<thead>
<tr>
<th>course</th>
<th>credits</th>
<th>grade</th>
<th>grade points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 301</td>
<td>3</td>
<td>A</td>
<td>12.0</td>
</tr>
<tr>
<td>Bio 422</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 491</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 (9) divided into total grade points earned (27) = g.p.a. (3.00)
Total hours earned: 15
Note: P and S grades yield no grade points, thus are excluded from the g.p.a. calculation.

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

Grade Reports
Midsemester grades are issued to freshmen students with fewer than 24 semester hours of credit and are mailed to the student’s local address. Final grade reports for all students are mailed to the student’s permanent home mailing address at the end of the fall and spring semesters. Only one grade report is produced per student. Students requesting an additional grade report must order a copy of their official transcripts.

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. The transcript must include all work taken at Washington State University. Requests for transcripts must be accompanied by the student’s signature and a $3.20 fee per copy. Phone orders for transcripts cannot be accepted. NOTE: Financial indebtedness to the university will prevent the release of a student’s transcript.

Transcripts of secondary or higher education study that have been submitted to WSU as a requisite for admission cannot be returned to the student. Students desiring transcripts from other institutions must order official transcripts directly from the institution at which the work was taken. WSU does not issue or certify copies of transcripts from other institutions.

Repetition of Courses
Courses completed with a grade of C or above may not be repeated for credit or grade points.
Students may repeat courses in which they have received a grade of C- or below only if there is space available in the course. If a student repeats a course in which an I (incomplete) grade was received, the I grade will be changed to F.
When a student repeats a course and earns another grade, the series of repeats and grades will be retained on the student’s official record. However, the last grade only shall be calculated in the cumulative grade point average and contribute to the total number of hours required for graduation.
In determining scholarship for graduation honors, the first grade only shall be used. It is the student’s responsibility to indicate repeat courses on the registration form. Repeats by correspondence, extension, or in residence at other institutions must be reported orally or in writing to the Registrar’s Office. If a student transfers a course to WSU from another institution and subsequently repeats the course at WSU, only the credit and grade points earned at WSU will be allowed.

Courses Approved for Repeat Credit
Some courses have been approved for repeat credit, i.e., the student may enroll in the same course during a subsequent semester and additional credit and grade points will be accumulated. An example of such a course would be Special Topics in which the course content may vary from semester to semester. Courses approved for additional credit, with maximum credit allowable, if any, will be indicated in the catalog, e.g., may be repeated for credit; cumulative maximum 6 hours.

Pass, Fail Grading Options
Pass, fail options are available for undergraduate and graduate students. Specific characteristics of the two options are listed below. During registration, students indicate on the registration form that they wish to enroll in the course on a pass, fail basis. The adviser’s approval is required for undergraduates. 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’s Office will change all grades of A through D to P for those enrolled pass, fail. The P grades earned by pass, fail enrollments will not be included in computing the g.p.a.; however, F grades earned by pass, fail enrollees will be included in g.p.a. computations. Courses approved for S, F grading (Rule 90f) are excluded from the pass, fail option. Courses approved for S, F grading are footnoted in the Time Schedule.
A student 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 15th week), a pass, fail enrollment can be changed to a letter-graded enrollment.

Undergraduate Pass, Fail Option: A total of six 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 Education Requirements for Graduation may be taken pass, fail. No more than two courses may be taken on a pass, fail basis during any given semester. One course is the limit for summer session. 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:

<table>
<thead>
<tr>
<th>Credits</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-44</td>
<td>six</td>
</tr>
<tr>
<td>45-59</td>
<td>five</td>
</tr>
<tr>
<td>60-74</td>
<td>four</td>
</tr>
<tr>
<td>75-89</td>
<td>three</td>
</tr>
<tr>
<td>90 and above</td>
<td>two</td>
</tr>
</tbody>
</table>

Univeristy 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:** Class 5 (except those working on a second baccalaureate degree) and Class 6 (graduate) students are eligible 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. There is no limit on the number of hours a graduate student may take on a pass, fail basis.

**Honors**

**President’s Honor Roll.** An undergraduate student will be named to the President’s Honor Roll under either of the following conditions:

(a) By achieving a grade point average of 3.75 in at least 9 graded hours in a single term at Washington State University.

(b) By achieving a cumulative grade point average of 3.50 based on at least 15 cumulative 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 3.50 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 final semester to allow for publication of the appropriate honors in advance of graduation. However, following the student’s final semester, the Registrar’s Office will recompute the student’s g.p.a. 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 chair of the department in which the course is offered. The chair, if not able to resolve the problem to the student’s satisfaction, will refer the complaint, presumably with the chair’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 Vice Provost for Student Affairs, and the 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 careers at WSU. A student who falls below a 2.00 cumulative g.p.a. or who falls below a 2.00 semester g.p.a. for two consecutive semesters is considered academically deficient.

Students in the Advisory Program of the Student Advising and Learning Center who are deficient must apply to the Office of Academic Standing for reinstatement. For certified majors the Office of Academic Standing 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 whose cumulative g.p.a. is deficient for two consecutive semesters is normally dropped. A student who feels there are important extenuating circumstances can appeal to the Office of Academic Standing. A student whose work is improving (semester g.p.a. of 2.00 or better), even though the cumulative g.p.a. is below a 2.00 for two semesters, is usually reinstated.

All students reinstated under any of the above provisions will be on academic probation and must abide by specific probationary conditions or be subject to denial of registration in succeeding semesters.

**Decertification**

Once certified, a student cannot be decertified by the department unless the student becomes academically deficient under Academic Regulations, Rules 37, 38, or 39. Students decertified under these rules must meet the approved additional criteria for recertification, if any. Some departments and programs may decertify students who fall below the g.p.a. required for certification.

**Student Rights Regarding Education Records**

Federal law requires Washington State University to annually notify students currently in attendance at the university of their rights under the Family Educational Rights and Privacy Act (FERPA). Under FERPA, a student has the right to:

1. Inspect and review his or her education records. "Education records" means those records that are directly related to a student and are maintained by Washington State University or by a party acting for Washington State University;

2. Request the amendment of the student’s education records to ensure that they are not inaccurate, misleading, or otherwise in violation of the student’s privacy or other rights;

3. Consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent;

4. File with the Department of Education a complaint concerning alleged failures by Washington State University to comply with the requirements of FERPA; and

5. Obtain a copy of the Washington State University policy regarding student records showing how the university meets the requirements of FERPA.

Washington State University may release directory information contained in a student's education records. "Directory information" means information contained in an education record which would not generally be considered harmful or an invasion of privacy if disclosed. Directory information includes name (including any former name), local and permanent addresses, telephone numbers, major and minor fields of study, class, participation in officially recognized activities in sports, weight and height of members of athletic teams, dates of attendance including number of hours enrolled, degrees, certificates, and awards received including the President's Honor Roll, and the most recent previous educational institution attended by the student. Students may request that the university not release directory information by filing a request with the Registrar's Office or in the Office of Payroll Services.

The Washington State University policy on student records can be found in the Washington Administrative Code 504-21. A complete text of this policy is available upon request from the Registrar’s Office, 346 French Administration Building.

**Application for Graduation**

A student who has (a) completed any of the four-year collegiate curricula, and (b) satisfied the University Requirements for Graduation and any additional departmental or college requirements with a minimum 2.00 g.p.a. may become a candidate for the bachelor’s degree, depending upon the field of study.

Application for a bachelor’s or DVM degree should be made at the Registrar’s Office near the end of the junior year and at least 60 days prior to the expected graduation date. A graduation application must be on file in the Registrar’s Office before a student can graduate. A graduation fee must be paid at the time of application.

Candidates must present a minimum of 120 semester hours of credit for graduation including a minimum of 40 semester hours of credit in upper-division
courses and a minimum of 30 hours earned at WSU for a four-year degree. 500-level courses will count toward the upper-division requirements, but an undergraduate may not be required to enroll in or complete a 500-level course as a requirement for a baccalaureate degree.

A student desiring a second bachelor’s degree shall satisfy the second degree program and college requirements 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 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 that 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 curriculum will be found in the material for the college or department concerned.

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

For otherwise qualified students with disabilities, 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 university requirements must be made directly to the Senior Petitions Committee and be approved by the student’s department chair and college dean. Petition forms for waiving university and college requirements are available in the Registrar’s Office.

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 Faculty 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.

Official name changes in degree titles will go into effect automatically for all students according to the effective date approved by the Faculty Senate. Students currently enrolled and certified in a degree program at the time of a name change will have the privilege of graduating with either the old or the new degree title. The option of selecting the old degree title will originate with the student, and it will be the responsibility of the department, in signing the degree application, to determine whether or not the student is eligible (i.e., when the student certified).

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 neither require a student to drop the degree, and every effort will be made to allow currently enrolled majors and graduate degree candidates to complete their degrees within a reasonable period of time. To facilitate this process, department and program chairs (or the appropriate dean) have the obligation to provide for the individual needs of these students: e.g., (1) students may be encouraged to complete their requirements in similar or related degree tracks; (2) although University Requirements for Graduation and the minimum total hours for the degree may never be waived, the student’s major department may waive or substitute departmental degree requirements (approval of the Graduate School required for graduate students); (3) undergraduate students may be allowed to complete remaining requirements at another institution under Rule 114(a)5. Graduate students may be allowed to take courses or conduct research at another institution when approved by the student’s graduate committee and the Graduate School.

In all cases, all financial obligations are the responsibility of the individual student involved, except as otherwise noted in this catalog or the Graduate Studies Bulletin.

University Requirements for Graduation

University requirements for the baccalaureate degree have been established by the faculty as an expression of the common degree expectations for all Washington State University graduates. While the greater part of students’ courses of study will be devoted to their major field or specialization, the foundation of the undergraduate curriculum is the General Education Program. General Education is, in fact, an attempt to accommodate the increasing specialization of the university within the broader, traditional objectives of higher education while encouraging students to develop themselves to the fullest extent possible. The role of General Education in the modern higher educational curriculum is to address needs and objectives not adequately served by academic specialization. It encompasses the following aims:

Realizing Individual Student Potentials: One purpose of higher education is to foster and nurture potentials in the individual; hence, General Education aims at personal enrichment, cultural awareness, and breadth of knowledge. These goals imply a curriculum that emphasizes the aesthetic and appreciative faculties, encourages experimentation and creativity, and offers opportunities for introspection and the testing of one’s own values.

Preparation for Membership in the Community: General Education is also a recognition of the value of higher education within the larger community; it prepares people for their common activities as citizens in a free society. Thus, it should provide opportunities for leadership and service while attending to education for the common life. Shared values growing out of common educational experience help to bind society together and to make communication possible. Consequently, the General Education curriculum attempts to define and explore the ever-changing body of knowledge which is deemed valuable for all to know. The needs of citizens include the development of higher-level intellectual skills, including formal literacy and critical thinking. The faculty has identified writing proficiency in particular as a priority at WSU. Accordingly, all students will satisfy WSU’s writing proficiency standards for graduation. In addition, the curriculum is designed to emphasize study of the relevant past, with the objective of developing an informed, mature, and critical mind.

Providing a Foundation for the Major: Education for the common life, however, must also include the skills and knowledge useful as a base for careers as well as for citizenship. Communication and reasoning skills have multiple functions; they serve as a base for the major, and they enhance the student’s overall abilities and intellectual maturity. To function well in the workplace, one must be able to see beyond its confines. Consequently, exposure to different values, perspectives, and cultural traditions is a valuable preparation for the kinds of work that college graduates do, and the General Education curriculum can enrich the student’s sense of the context and meaning of his or her career activities.

Methodological Competence and Integration of Knowledge: The organization of the General Education curriculum is an expression of our historical experience of how new knowledge has been acquired in the past and how it is likely to be acquired in the future. Consequently, the curriculum stresses the acquisition of a working knowledge of a broad range of scholarly disciplines. One of the goals of General Education is therefore understanding of the major fields of knowledge and the interrelationships between them. However, since students cannot possibly learn everything they need in the four or five years of their undergraduate experience, the curriculum prepares students for continued, lifelong learning. Library skills and a general competence with computers are increasingly important in learning to learn.
These four goals of General Education promote not only awareness of the world, but self-awareness within the students expanding knowledge. They also encourage integration of the students’ anticipated economic roles within the whole of their experience. Toward the attainment of those goals, the faculty has established minimum standards in terms of credit hours, grade points, and distribution requirements within the General Education Program.

Requirements for Graduation
1. Hours and grade points - a minimum of 120 semester hours with a grade point average of 2.0 or better.
2. Upper-Division (300-400-level) - a minimum of 40 semester hours
3. The University Writing Portfolio - Successful performance with the University Writing Portfolio is a requirement for graduation at WSU. Students must satisfy this requirement, which involves submitting three papers from previously assigned class work plus two timed and proctored writing exercises, any time after successfully completing Eng 101 (or equivalent). Students must complete the portfolio no later than the end of the first semester of upper-division standing. Transfer students may elect to postpone the portfolio until they have completed the required work at WSU. For details, consult the Portfolio Office, (509) 335-7959.
4. Writing in the Major [M] - Two courses identified as writing in the major [M] must be included in course work taken to meet departmental requirements. Consult the requirements in the department in which you intend to major.
5. General Education Program requirements - All students regardless of major must fulfill the minimum requirements of WSU’s General Education Program, which are described below.

College of Liberal Arts
College of Sciences
Graduation Requirements

All students in the College of Liberal Arts and College of Sciences must satisfy the following requirements in addition to the University Requirements for Graduation, as listed above.

Transfer students holding the approved Associate of Arts or Associate of Science degree from a Washington community college are responsible for the additional requirements of the College of Liberal Arts and College of Sciences. Please note especially the Foreign Language requirement and Sciences requirement.

Arts and Humanities [H],[G] and Social Sciences [S], [K] 18 hours
9 additional hours in either Arts and Humanities or Social Sciences. Students may use a 3-hour Intercultural Studies course as part of these 9 hours. All courses must be outside the student’s major department or program.

Intercultural Studies [I], [G], [K] 3 hours (same as GERs)
Students may use a 3-hour Intercultural Studies course as part of the 9 additional hours in Arts and Humanities and Social Sciences. All courses must be outside the student’s major department or program.

Sciences [B], [P] 12 hours
At least 12 total hours including the Sciences General Education Requirements and one additional three clock hour per week laboratory (for a total of two laboratory courses). All courses must be outside the student’s major department or program.

Foreign Language
One year (two semesters or three quarters) 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.
The General Education Program

WSU’s General Education Program has been converted from a simple system of distribution requirements into an integrated program which is organized vertically, allowing sequential study in depth from the freshman year to the junior or senior year. Distribution requirements in the Arts and Humanities, Social Sciences, and Sciences are organized in three tiers, indicating in broad terms the academic level of the courses and the order in which they should be taken. A portion of the General Education credit hours must be taken within a designated Area of Coherence. This requirement is not an add-on to the distribution requirements, but rather a way of organizing those choices within the larger general education curriculum. Within each of the Areas of Coherence, students will select an upper-division capstone course which provides a summative experience for that particular cluster of courses. Writing instruction and writing experiences are integrated in course work throughout the three tiers.

A. The Structure of the General Education Program

Students are required to take a minimum of 40 credit hours distributed among the categories listed below. Fifteen of these credit hours (i.e., 5 courses), including the capstone course, must also be taken within an Area of Coherence.

Tier I: 15 semester credit hours

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Civilizations [A] GenEd 110 and 111</td>
<td>6</td>
</tr>
<tr>
<td>Written Communication [W]</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics Proficiency [N]</td>
<td>3</td>
</tr>
<tr>
<td>Sciences [Q]</td>
<td>3</td>
</tr>
</tbody>
</table>

Tier II: 22 semester credit hours

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Proficiency [W], [C]</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities# [H], [G]</td>
<td>3</td>
</tr>
<tr>
<td>Social Sciences# [S], [K]</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities/Social Sciences# [H], [G], [S], [K]</td>
<td>3</td>
</tr>
<tr>
<td>Intercultural [I], [G], [K]</td>
<td>3</td>
</tr>
<tr>
<td>Sciences* [B], [P]</td>
<td>3</td>
</tr>
</tbody>
</table>

Tier III: 3 semester credit hours

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capstone Course [T]</td>
<td>3</td>
</tr>
</tbody>
</table>

Total hours: 40

* A total of 9 hours of Arts and Humanities and Social Sciences with a minimum of 3 in either.
* At least 3 hours in Biological Science and 3 hours in Physical Science plus 1 additional hour for three clock hours per week of laboratory.

B. General Rules

No course taken to fulfill General Education Requirements (GERs) can be taken on a pass, fail basis. Courses in, or crosslisted with, a student’s major field may not be used to satisfy General Education Requirements, except in Written Communication Proficiency (see C below).

Transfer Students who have completed an approved Associate of Arts (AA) or Associate of Science (AS) degree at a Washington community college including a course pattern which approximates the General Education Requirements for Graduation of Washington State University, as determined by the WSU Office of Admissions, will be considered to have fulfilled the lower-division General Education Requirements. These students will still be responsible for meeting the other requirements for graduation, including those in the college and major department. The University Writing Portfolio and the upper-division capstone course are not lower-division requirements and therefore cannot be satisfied by the approved AA or AS degrees.

C. General Education Distribution Requirements

1. World Civilizations [A] — 6 hours (GenEd 110 and 111)
2. Communication Proficiency [C] — 6 hours including at least 3 in written communication [W] at Tier I, and 3 of [W] or [C] at Tier II
3. Mathematics Proficiency [N] — This requirement can be satisfied by passing a designated course or courses in mathematics (see below), through satisfactory performance on an Advanced Placement examination, or by passing a calculus course beyond Math 171.
4. Arts and Humanities [H], [G] — 3 hours minimum; a total of 9 hours at Tier II must be satisfied within Arts and Humanities and Social Sciences
5. Social Sciences [S], [K] — 3 hours minimum; a total of 9 hours at Tier II must be satisfied within Arts and Humanities and Social Sciences
6. Intercultural Studies [I], [G], [K] — 3 hours at Tier II
7. Sciences [B], [P], [Q] — 10 hours including at least 3 hours in Biological Sciences and 3 hours in Physical Sciences, plus 1 credit for three clock hours of laboratory.

Prior to enrollment in freshman writing courses, all students must take a Writing Placement Examination for the purpose of placement in appropriate writing courses. These placements are mandatory. The Writing Placement Examination is administered during summer New Student Orientation, at the beginning of fall semester, and prior to spring registration. Examination results will place students in the core writing course, Engl 101, Introductory Writing (or equivalent), or in Engl 101 plus 1 hour of Engl 102, Writing Tutorial. In some instances, students may be exempted from Engl 101 on the basis of their performance in the Placement Examination. Questions should be directed to the WSU Writing Lab, Avery Hall, (509) 335-4072.

8. Capstone course [T] — 3 hours at Tier III; capstone courses are upper-division (400-level) and function as summations of the Area of Coherence, integrating and unifying the body of material identified as the subject of the Area of Coherence (see description below).

1. Students are required to take a minimum of 15 credit hours or five courses in an Area of Coherence which consists of a group of related courses designated in the WSU Catalog.
2. All three tiers must be represented in the course selections fulfilling the Areas of Coherence requirement, including a capstone course of the student’s chosen Area of Coherence; only 3 of the 15 hours can be in Tier I. Neither capstone courses nor any course taken for General Education may be within or cross-listed with a student’s own major.
3. Students may take Tier III courses only after completion of the required Tier I and II courses within the selected Area of Coherence, and after earning approximately 60 total hours.

Total hours of General Education: 40

D. The Tiers in the General Education Program

Courses satisfying the distribution requirements listed above are organized conceptually in three tiers.

Tier I is designed for entering freshmen and addresses the essential knowledge and skills needed for success in the rest of the undergraduate curriculum. It is intended to provide a common foundation for later learning, to establish connections among the principal areas of scholarship, and to convey a sense of the fundamental issues and methods in these areas. Tier I consists of core courses (required of all entering freshmen) in World Civilizations (GenEd 110 and 111) and English composition (Engl 101); broad introductory courses in the sciences (designated [Q]); and a selection of courses in mathematics (designated [N]). With the exception of some of the mathematics courses, Tier I courses are numbered at the 100 level.

Tier II courses are typically introductions to the scholarly disciplines and constitute the bulk of the distribution requirements in the several academic areas: Arts and Humanities, Social Sciences, Intercultural Studies, Biological and Physical Sciences, and Communication Proficiency. Some more advanced Tier II courses provide continued experience with representative scholarly approaches, methods, and issues. Courses in this tier
will commonly be taken in the student’s first two years of study. While Tier II courses are designed to build on Tier I, the demands of scheduling may make it necessary to take courses from these two tiers concurrently. Hence, Tier I courses are not absolute prerequisites for Tier II courses. Tier II courses are designated at the 100, 200, or 300 level, as appropriate.

Tier III provides the final component of sequential study in general education, the capstone course, which is designed to assist students in integrating and synthesizing knowledge from previous course work. Tier III courses are upper-division (400-level) and function as the capstone of the Area of Coherence, integrating and unifying the body of material identified as the subject of the Area of Coherence. Tier III capstone courses have as a general prerequisite 60 hours of course work; there may be additional prerequisites for specific courses. Capstone courses which are broadly interdisciplinary or topical in nature will carry [T] designations in the WSU Catalog and Time Schedule. In some instances, if a capstone course has a clear focus within one of the knowledge domains [e.g., H, S, P, or B], it may be so designated, with its status as a capstone course in Tier III indicated by its 400-level number.

E. The Areas of Coherence

Five courses (i.e., 15 hours) of the General Education distribution requirements must be taken within a cluster of courses which organize related material on a broad designated topic (see list of Areas of Coherence below). These courses are organized sequentially through progressively more sophisticated and detailed examinations of the subject. The Area of Coherence is a subset of the distribution requirements in general education, not an add-on. The purpose of the Area of Coherence requirement is study in depth within General Education. The Area of Coherence is intended to assist students’ integration of knowledge from various knowledge domains and to permit more sharply focused study within related course work.

The specific Areas of Coherence are:

1. Foundations of Western Civilization
2. Foundations of the Modern World
3. American Cultures
4. The Nature of Humanity
5. The Structure of Society
6. Forms of Artistic Expression
7. Human Values and Religious Thought
8. Global Perspectives
9. Ecology of the Planet
10. The Nature of Matter and Energy
11. Science and Society
12. Measures of the World

Policy relating to the Areas of Coherence

1. Students are required to take a minimum of 15 credit hours (i.e., five courses) in an Area of Coherence, which consists of a group of related courses designated in the WSU Catalog; see pages 33-38.

2. All three tiers must be represented in the course selections fulfilling the Areas of Coherence requirement; only 3 hours can be at Tier I.

3. Tier I courses are numbered at the 100-level; Tier II courses at the 100-, 200-, and 300-levels; and Tier III at the 400-level.

4. The Tier III course functions as the capstone of the student’s Area of Coherence. Tier III capstone courses have two functions: bringing the perspectives of several disciplines or knowledge domains to bear on a topical subject and providing a more advanced treatment of material representative of the Area of Coherence. Neither capstone courses nor any course taken for General Education may be within or cross-listed with a student’s own major.

5. Tier III courses are offered exclusively at the upper-division level and are therefore, by definition, upper-division graduation requirements not fulfilled by AA or AS degrees.

6. Students may take Tier III courses only after completion of the required Tier I and II courses within the selected Area of Coherence and after earning approximately 60 hours.

7. Some General Education courses may play a role in more than one Area of Coherence. Consult the specific course lists for each Area of Coherence below on pages 33-38.

F. Courses Which Satisfy the Distribution Requirements in General Education

WORLD CIVILIZATIONS

[A] (6 hours)
The World Civilizations Tier I core courses provide an overview of the human past and an introduction to the academic culture of the university. The course work is designed to provide integrated study of the social, political, philosophical, and religious systems of the major world civilizations, along with an introduction to their distinctive art forms.

Tier I
GenEd 110 World Civilizations I
GenEd 111 World Civilizations II

COMMUNICATION PROFICIENCY

[W, C] (6 hours)
Requirements in Communication Proficiency may be satisfied by courses (see below) emphasizing the improvement of communication skills in the English language in both oral and written performances. Courses designed to improve writing and speaking skills primarily in a specific discipline or profession will not be acceptable for GER status.

W WRITTEN COMMUNICATION PROFICIENCY

Tier I
Engl 101 Introductory Writing
Engl 198 English Composition Honors

Tier II
Engl 200 Expository Writing
Engl 201 Expository Writing
Engl 301 Advanced Writing
Engl 302 Writing About Literature
Engl 402 Technical and Professional Writing
Engl 403 Technical and Professional Writing ESL
GenEd 302 Advanced Writing Tutorial
PhiL 200 Writing and Reasoning

C COMMUNICATION PROFICIENCY

Tier II
H&D 205 Communication in Human Relations
SpCom 102 Public Speaking: Theory, Models, and Practice
SpCom 235 Principles of Group Communication
SpCom 302 Advanced Public Speaking
SpCom 324 Argumentation

MATHEMATICS PROFICIENCY

[N] (0-6 hours)
The objectives of the Mathematics Proficiency requirement are to establish a foundation of understanding of mathematics beyond arithmetic and algebraic manipulations and to establish a foundation of understanding of the uses of mathematics in applications to real-world problems. This requirement can be satisfied by passing a designated course or courses in mathematics (see below), through satisfactory performance on an Advanced Placement examination, or by passing a calculus course beyond Math 171.

Tier I

Math 140 Mathematics for Life Scientists
Math 171 Calculus I
Math 202 Introduction to Mathematical Analysis
Math 205 Statistical Thinking
Math 206 Mathematical Analysis for Architects
Math 210 Introduction to Mathematics

Math 212 Introduction to Statistical Methods
Math 251 Mathematics for Elementary School Teachers I and
Math 252 Mathematics for Elementary School Teachers II
Stat 205 Statistical Thinking
Stat 212 Introduction to Statistical Methods

ARTS AND HUMANITIES

[H, G*] (3-6 hours)
Requirements in the Arts and Humanities may be satisfied by courses (see below) which take a historical, critical, or appreciative approach to the study of human culture as manifested in literature, languages, philosophy, art, music, or drama. These courses should introduce the student to the record of human creativity and provide a basis for assessing its value and significance in human development.
*G* designates courses which meet GERs in either Arts and Humanities or Intercultural Studies.

**Tier II Arts and Humanities [H]**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>Am St 216</td>
<td>Main Currents in American Culture</td>
</tr>
<tr>
<td>Arch 202</td>
<td>The Built Environment</td>
</tr>
<tr>
<td>Arch 220</td>
<td>Architectural History I</td>
</tr>
<tr>
<td>Arch 221</td>
<td>Architectural History II</td>
</tr>
<tr>
<td>Drama 160</td>
<td>Introduction to Theatre</td>
</tr>
<tr>
<td>Drama 365</td>
<td>Theatre History I: Beginnings to 1700</td>
</tr>
<tr>
<td>Drama 366</td>
<td>Theatre History II: 1700 to 1900</td>
</tr>
<tr>
<td>Engl 108</td>
<td>Reading Literature</td>
</tr>
<tr>
<td>Engl 199</td>
<td>English Composition and Literature Honors</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Readings in Literature in English Through the 18th Century</td>
</tr>
<tr>
<td>Engl 210</td>
<td>Readings in Literature in English Since the 18th Century</td>
</tr>
<tr>
<td>Engl 216</td>
<td>Main Currents in American Culture</td>
</tr>
<tr>
<td>Engl 261</td>
<td>Literary Masterpieces</td>
</tr>
<tr>
<td>Engl 305</td>
<td>Shakespeare</td>
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<tr>
<td>Engl 306</td>
<td>Shakespeare</td>
</tr>
<tr>
<td>Engl 308</td>
<td>Introductions to Literary Criticism</td>
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<tr>
<td>Engl 309</td>
<td>Women Writers</td>
</tr>
<tr>
<td>Engl 335</td>
<td>The Bible as Literature</td>
</tr>
<tr>
<td>Engl 366</td>
<td>The English Novel to 1900</td>
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<tr>
<td>Engl 368</td>
<td>The American Novel to 1900</td>
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<td>EXSRP 370</td>
<td>Environmental Ethics</td>
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<tr>
<td>F A 101</td>
<td>Introduction to Art</td>
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<td>F A 201</td>
<td>World Art History</td>
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<tr>
<td>F A 202</td>
<td>World Art History</td>
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<td>F A 303</td>
<td>Modern Art—19th Century</td>
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<tr>
<td>F A 304</td>
<td>Modern Art—20th Century</td>
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<tr>
<td>Ger 315</td>
<td>Germanic Civilization</td>
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<td>Hist 101</td>
<td>Classical and Christian Europe</td>
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<td>Hist 102</td>
<td>Modern Europe</td>
</tr>
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<td>Hist 216</td>
<td>Main Currents in American Culture</td>
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<tr>
<td>Hist 340</td>
<td>Ancient Greece</td>
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<tr>
<td>Hist 341</td>
<td>Rome: Republic and Empire</td>
</tr>
<tr>
<td>Hist 342</td>
<td>History of England Since 1485</td>
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<tr>
<td>Hum 101</td>
<td>Humanities in the Ancient World</td>
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<td>Hum 103</td>
<td>Mythology</td>
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<td>Hum 198</td>
<td>Humanities in the Ancient World: Honors</td>
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<tr>
<td>Hum 202</td>
<td>Humanities in the Middle Ages and Renaissance</td>
</tr>
<tr>
<td>Hum 303</td>
<td>Reason, Romanticism, and Revolution</td>
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<td>Hum 304</td>
<td>Humanities in the Modern World</td>
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<td>Hum 335</td>
<td>The Bible as Literature</td>
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<td>Hum 340</td>
<td>American Foundings</td>
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<td>ID 202</td>
<td>The Built Environment</td>
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<tr>
<td>LA 202</td>
<td>The Built Environment</td>
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<td>Mus 153</td>
<td>Musical Style in Composition</td>
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<tr>
<td>Mus 160</td>
<td>Survey of Music Literature</td>
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<tr>
<td>Mus 362</td>
<td>History of Jazz</td>
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<tr>
<td>Mus 363</td>
<td>Women of Note</td>
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<td>Mus 364</td>
<td>Musical Theatre</td>
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<td>Phil 101</td>
<td>Introduction to Philosophy</td>
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<td>Phil 198</td>
<td>Philosophy Honors</td>
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<tr>
<td>Phil 201</td>
<td>Elementary Logic</td>
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<tr>
<td>Phil 207</td>
<td>Philosophy of Religion</td>
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<tr>
<td>Phil 220</td>
<td>Aesthetics</td>
</tr>
<tr>
<td>Phil 260</td>
<td>Introduction to Ethics</td>
</tr>
<tr>
<td>Phil 290</td>
<td>History of Ancient and Medieval Philosophy</td>
</tr>
<tr>
<td>Phil 305</td>
<td>History of Modern Philosophy</td>
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<tr>
<td>Phil 310</td>
<td>Nineteenth-century Philosophy</td>
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<tr>
<td>Phil 350</td>
<td>Philosophy of Science</td>
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<tr>
<td>Phil 370</td>
<td>Environmental Ethics</td>
</tr>
<tr>
<td>Rus 323</td>
<td>Masterpieces of Russian Literature in Translation</td>
</tr>
<tr>
<td>Span 315</td>
<td>Hispanic Civilization</td>
</tr>
<tr>
<td>W St 216</td>
<td>Main Currents in American Culture</td>
</tr>
<tr>
<td>W St 306</td>
<td>Introduction to Literary Criticism</td>
</tr>
<tr>
<td>W St 309</td>
<td>Women Writers</td>
</tr>
<tr>
<td>W St 363</td>
<td>Women of Note</td>
</tr>
</tbody>
</table>

**Tier II Arts and Humanities or Intercultural Studies [G]**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anh 201</td>
<td>Art and Society</td>
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<tr>
<td>Asia 270</td>
<td>Introduction to South Asian Culture</td>
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<tr>
<td>Asia 273</td>
<td>Foundations of Islamic Civilization</td>
</tr>
<tr>
<td>Asia 314</td>
<td>Philosophy and Religion of India</td>
</tr>
<tr>
<td>Asia 315</td>
<td>Philosophy and Religion of China and Japan</td>
</tr>
<tr>
<td>Asia 370</td>
<td>Civilization of Classical India</td>
</tr>
<tr>
<td>Asia 373</td>
<td>Chinese Civilization</td>
</tr>
<tr>
<td>CAC 151</td>
<td>Introduction to Chicano Studies</td>
</tr>
<tr>
<td>CAC 171</td>
<td>Introduction to Native American Studies</td>
</tr>
<tr>
<td>CAC 271</td>
<td>Native Music of North America</td>
</tr>
<tr>
<td>CAC 313</td>
<td>Asian American Literatures</td>
</tr>
<tr>
<td>CAC 331</td>
<td>Introduction to African American Literature</td>
</tr>
<tr>
<td>CAC 353</td>
<td>Introduction to Chicano/Chicana Literature</td>
</tr>
</tbody>
</table>

**Social Sciences**

*S, K#* (3-6 hours)

Requirements in Social Sciences may be satisfied by courses (see below) with primary emphasis on the social, political, economic, and religious institutions of human society. These courses expose students to data used by the various disciplines to test, explain, or create the concepts, theories, principles, and laws underlying those institutions. These courses may focus upon how social sciences use these constructs to evaluate issues and how such knowledge enhances the understanding of human behavior within society’s institutions.

#K designates courses which meet GERs in either Social Sciences or Intercultural Studies.

**Tier III Social Sciences [S]**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>Ag Ec 201</td>
<td>Economics in Agriculture</td>
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<tr>
<td>Ag Ec 320</td>
<td>American Agriculture and Rural Life</td>
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<tr>
<td>Anth 101</td>
<td>General Anthropology</td>
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<td>Anth 198</td>
<td>Anthropology Honors</td>
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<td>Anth 330</td>
<td>Origins of Culture and Civilization</td>
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<tr>
<td>Anth 350</td>
<td>Speech, Thought and Culture</td>
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<tr>
<td>CAC 300</td>
<td>Intersections of Race, Class and Gender</td>
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<tr>
<td>CAC 335</td>
<td>Civil Rights Movement in America</td>
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<tr>
<td>Com 101</td>
<td>Mass Communications and Society</td>
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<td>Hist 381</td>
<td>Science in Western Civilization from Newton to Einstein</td>
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**Tier II Arts and Humanities or Intercultural Studies [G]**

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<td>Foundations of Islamic Civilization</td>
</tr>
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<td>Asia 314</td>
<td>Philosophy and Religion of India</td>
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<td>Asia 315</td>
<td>Philosophy and Religion of China and Japan</td>
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<td>Civilization of Classical India</td>
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</tr>
<tr>
<td>CAC 151</td>
<td>Introduction to Chicano Studies</td>
</tr>
<tr>
<td>CAC 171</td>
<td>Introduction to Native American Studies</td>
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<tr>
<td>CAC 271</td>
<td>Native Music of North America</td>
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<td>Asian American Literatures</td>
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<td>Introduction to African American Literature</td>
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<tr>
<td>CAC 353</td>
<td>Introduction to Chicano/Chicana Literature</td>
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</table>

The General Education Program
Tier II Social Sciences or Intercultural Studies [K]

Anth 203 Peoples of the World
Anth 231 America Before Columbus
Anth 307 Contemporary Cultures and Peoples of Africa
Anth 309 Cultural Ecology
Anth 316 Gender and Culture
Anth 320 Native Peoples of North America
Asia 275 Introduction to East Asian Culture
CAC 211 Introduction to Asian American History
CAC 212 Peoples of the World
CAC 217 Introduction to East Asian Culture
CAC 276 America Before Columbus
CAC 377 Native Peoples of North America
Hist 201 Introduction to Asian American Studies
Hist 230 Latin America, The Colonial Period
Hist 231 Latin America, The National Period
Hist 275 Introduction to East Asian Culture
Hist 325 The City and Its People: Medieval to Modern
Hist 331 Cultural History in Latin America
W St 316 Gender and Culture

Tier III

CAC 459 [K] African Politics
Pol S 474 [K] African Politics
Soc 430 [K] Society and Technology

INTERCULTURAL STUDIES

[Q*, G*, K#] (3 hours)

Requirements in Intercultural Studies may be satisfied by courses (see below) which enable the student’s personal perspective or increase the student’s sensitivity to cultural differences. These courses employ a variety of methodologies and focus on diverse subject matter, but should emphasize non-Western cultures and may include ethnic minorities studies. Such courses should foster an awareness of the diversity of human values and present a coherent view of the cultures studied.

In regard to substitutions by transfer students or students in approved study abroad programs, only equivalent, formal academic course work which focuses on the study of non-Western cultures or the experiences of American ethnic minorities may satisfy the Intercultural Studies requirement. That is, culture, non-Western culture, must be the formal subject of the academic work. Non-academic work, or academic work on other topics, foreign travel or life-experience abroad cannot qualify.

*G designates courses which meet GER in either Arts and Humanities or Intercultural Studies.
#K designates courses which meet GER in either Social Sciences or Intercultural Studies.

Tier II

Anth 130 Great Discoveries in Archaeology
Anth 201 [G] Art and Society
Anth 203 [K] Peoples of the World
Anth 231 [K] America Before Columbus
Anth 307 [K] Contemporary Cultures and Peoples of Africa
Anth 309 [K] Cultural Ecology
Anth 316 [K] Gender and Culture
Anth 330 [K] The Native Peoples of North America
Asia 270 [G] Introduction to South Asian Culture
Asia 272 Introduction to Middle Eastern History
Asia 273 [K] Foundations of Islamic Civilization
Asia 275 [K] Introduction to East Asian Culture
Asia 314 [G] Philosophies and Religions of India
Asia 315 [G] Philosophies and Religions of China and Japan
Asia 370 [G] Civilization of Classical India
Asia 373 [G] Chinese Civilization
CAC 101 Introduction to Comparative American Cultures
CAC 111 Introduction to Asian/Pacific American Studies
CAC 131 Introduction to Black Studies
CAC 151 [G] Introduction to Chicano Studies
CAC 171 [G] Introduction to Native American Studies
CAC 211 [K] Introduction to Asian American History
CAC 212 [K] Peoples of the World
CAC 217 [K] Introduction to East Asian Culture
CAC 227 Introduction to African Studies
CAC 235 African-American History
CAC 271 [G] Native Music of North America
CAC 276 [K] America Before Columbus
CAC 313 [G] Asian American Literatures
CAC 331 [G] Introduction to African American Literature
CAC 339 Black Politics
CAC 353 [G] Introduction to Chicano/Chicana Literature
CAC 373 [G] Native American Literature
CAC 377 [K] The Native Peoples of North America
Com 321 Intercultural Communication
Engl 222 [G] Anglophone Literature
Engl 311 [G] Asian American Literature
Engl 321 [G] Introduction to African American Literature
Engl 341 [G] Native American Literature
Engl 345 [G] Introduction to Chicano/Chicana Literature
Hist 201 [K] Introduction to Asian American History
Hist 205 African American History
Hist 230 [K] Latin America, The Colonial Period
Hist 231 [K] Latin America, The National Period
Hist 270 [G] Introduction to South Asian Culture
Hist 272 Introduction to Middle Eastern History
Hist 273 [G] Foundations of Islamic Civilization
Hist 275 [K] Introduction to East Asian Culture
Hist 325 [K] The City and Its People: Medieval to Modern
Hist 331 [K] Cultural History in Latin America
Hist 370 [G] Civilization of Classical India
Hist 373 [G] Chinese Civilization
Hist 374 Pre-modern History of East Asia
Mus 265 [G] Native Music of North America
Phil 314 [G] Philosophies and Religions of India
Phil 315 [G] Philosophies and Religions of China and Japan
Pol S 324 Black Politics
Rus 317 [G] Contemporary Russian Culture and Society
Span 316 [G] Hispanic American Culture
W St 235 African American History
W St 316 [K] Gender and Culture

Tier III

CAC 459 [K] African Politics
Pol S 474 [K] African Politics
Soc 430 [K] Society and Technology

SCIENCES

[Q*, B, P] (10 hours)

Requirements in Sciences may be satisfied by courses (see below) which acquaint the student with the basic physical and/or biological principles of the world. The student should gain an understanding of the scientific method, including experimentation and data interpretation involving biological, mathematical, and/or physical systems. The curriculum is designed to enable the student to understand scientific developments and to evaluate as an informed lay person the significance of those developments and their association with other areas of human endeavor. Laboratory experience satisfying the laboratory credit requirement should focus on the interplay among hypothesis, observation, experiment, theory, and understanding.

(L) designates courses which include laboratory work.
*Q designates Tier I science courses.

Q Tier I Science courses are designed to serve as introductions to science and scientific thinking in general, including the historical development of science, its relationship to civilization, and its relevance to contemporary society. Tier I Science courses also explore the impacts of modern technology on the individual, society, and the environment, including the benefits, problems and limitations of technology, while examining how the scientific method can be used to solve problems. Tier I Science courses employ writing as a learning tool and emphasize a hands-on approach which actively involves students in the collection, interpretation, and presentation of data. The hands-on component of Tier I Science courses, including separately scheduled recitation sections, does not fulfill the Tier II laboratory requirement. During the 1995-97 biennium, when only a few Tier I science courses are available, students may elect to fulfill the Science requirement by taking all 10 credits in Tier II.

Tier I

Chem 150 Molecules and Science
ES/RP 150 Natural Science in the Environment
Zool 150 Evolution
<table>
<thead>
<tr>
<th>Tier II</th>
<th>B Biological Sciences</th>
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<tbody>
<tr>
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<td>Aging 130 Nutrition for Living</td>
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<td></td>
<td>Bio S 101 Direction in Biological Sciences</td>
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<td></td>
<td>Bio S 102 (L) General Biology</td>
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<td>Bio S 103 (L) Introductory Biology</td>
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<td></td>
<td>Bio S 104 (L) Introductory Biology</td>
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<td></td>
<td>Bio S 105 (L) Biological Science Laboratory</td>
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<td>Bio S 201 Contemporary Biology</td>
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<td>Bio S 298 (L) Biological Science Honors</td>
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<tr>
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<td>Bot 120 (L) Introduction to Botany</td>
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<td>Entom 101 Insects and People: A Perspective</td>
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<td></td>
<td>ES/RP 101 The Environment and Human Life</td>
</tr>
<tr>
<td></td>
<td>FSHN 130 Nutrition for Living</td>
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<td>Micro 101 (L) Introductory Microbiology</td>
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<td>Zool 135 Animal Natural History</td>
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<td>Zool 330 Principles of Conservation</td>
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<tr>
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<tbody>
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<td>Astr 135 Descriptive Astronomy</td>
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<td>Chem 101 (L) Introduction to Chemistry</td>
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<td>Chem 102 (L) Chemistry Related to Life Sciences</td>
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<td>Geol 101 (L) Introduction to Geology</td>
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<td>Geol 102 (L) Physical Geology</td>
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<td>Geol 310 (L) Evolution and Earth</td>
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<td>Phys 102 (L) General Physics</td>
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<td>Phys 201 (L) Classical Physics for Scientists and Engineers</td>
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<td>Phys 202 (L) Classical Physics for Scientists and Engineers</td>
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<td></td>
<td>Phys 380 Physics and Society</td>
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NOTE: Crosslisted courses appear in italics.
The Areas of Coherence

Five courses (i.e., 15 hours) of the General Education distribution requirements listed above must be taken within one of the clusters of courses listed below. The Area of Coherence is not an add-on requirement but rather a way of organizing choices within the General Education curriculum. All three tiers must be represented in the course selections within the Area of Coherence; only 3 hours can be at Tier I. The Tier III course functions as the capstone of the student’s Area of Coherence. Students may take Tier III courses only after completion of the required Tier I and II courses within the selected Area of Coherence and after earning approximately 60 hours. Tier III courses are upper-division graduation requirements not fulfilled by AA or AS degrees. GER courses, including capstone courses, may not be taken within a student’s own major.

1. Foundations of Western Civilization

This area of concentration examines the distinctive cultural forms and historical developments of early Western civilization approximately A.D. 1500. Courses explore the political, economic, and social developments within early Western civilization; the sources of its culture and influences upon it; its interactions with other peoples and cultures; its history, art, philosophy, religious thought and practices; its literatures and languages.

Students will be expected to understand and integrate an extensive body of knowledge on the above topics, and, in Tier III, to analyze a significant set of issues or expressions of early Western civilization and to place them in context.

**Tier I**

GenEd 110 [A] World Civilizations I

**Tier II**

Anth 130 [I] Great Discoveries in Archaeology
Anth 330 [S] Origins of Culture and Civilization
Arch 220 [H] Architectural History I
Drama 160 [H] Introduction to Theatre
Drama 365 [H] Theatre History to 1700
Engl 209 [H] Readings in Literature Through the 18th Century
Engl 335 [H] The Bible as Literature
FA 101 [H] Introduction to Art
Ger 315 [H] Germanic Civilization
Hist 101 [S] Classical and Christian Europe
Hist 340 [H] Ancient Greece
Hist 341 [H] Rome: Republic and Empire
Hist 342 [S] History of England to 1485
Hist 381 [S] Science in Western Civilization to Newton
Hum 101 [H] Humanities in the Ancient World
Hum 103 [H] Mythology
Hum 202 [H] Middle Ages and Renaissance
Hum 335 [H] The Bible as Literature
Mus 153 [H] Musical Style in Composition
Mus 160 [H] Survey of Music Literature
Phil 101 [H] Introduction to Philosophy
Phil 201 [H] Elementary Logic
Phil 207 [H] Philosophy of Religion
Phil 290 [H] History of Ancient and Medieval Philosophy

**Tier III**

Note: Tier III capstone courses for each Area of Coherence will be developed over the next biennium.

2. Foundations of the Modern World

This area of concentration examines the variety of cultural forms, issues, and historical developments which characterize modern culture since its emergence around A.D. 1500. Course work examines the scientific and industrial revolutions and their impacts upon modern cultures; the role of Western civilization in these events and its subsequent interactions with other cultures; colonialism and imperialism; the roles of class, gender, and ethnicity in modern society; the history, art, thought, and social and political developments of the world since approximately A.D. 1500. Students are expected to understand the modern world as a global economic and political system and to analyze modern culture in a variety of forms.

**Tier I**

GenEd 111 [A] World Civilizations II
Zool 150 [Q] Evolution

**Tier II**

Asia 270 [G] Introduction to South Asian Culture
Asia 272 [H] Introduction to Middle Eastern Culture
Asia 275 [I] Introduction to East Asian Culture
Asia 373 [G] Chinese Civilization
CAC 101 [H] Introduction to Comparative American Cultures
CAC 111 [H] Introduction to Asian/Pacific American Studies
CAC 131 [I] Introduction to African American Studies
CAC 151 [H] Introduction to Chicano Studies
CAC 172 [I] Introduction to Native American Studies
CAC 227 [I] Introduction to African Studies
CAC 235 [I] African American History
Com 101 [S] Mass Communication and Society
Drama 160 [H] Introduction to Theatre
Drama 366 [H] Theatre History, 1700-1900
Econ 102 [S] Fundamentals of Macroeconomics
Engl 209 [H] Readings in Literature through the 18th Century
Engl 210 [H] Readings in Literature since the 18th Century
Engl 216 [H] Main Currents in American Culture
Engl 261 [H] Literary Masterpieces
Engl 305 [H] Shakespeare
Engl 306 [H] Shakespeare
Engl 366 [H] English Novel to 1900
Engl 368 [H] American Novel to 1900
FA 202 [H] World Art History
FA 303 [H] Modern Art—19th Century
FA 304 [H] Modern Art—20th Century
Ger 317 [S] Contemporary German Culture and Society
Hist 102 [H] Modern Europe
Hist 110 [S] American History to 1877
Hist 111 [S] American History since 1877
Hist 205 [H] African American History
Hist 216 [H] Main Currents in American History
Hist 230 [K] Latin America: The Colonial Period
Hist 231 [K] Latin America: The National Period
Hist 270 [G] Introduction to South Asian Culture
Hist 272 [H] Introduction to Middle Eastern Culture
Hist 275 [K] Introduction to East Asian Culture
Hist 325 [S] The City and Its People: Medieval to Modern
Hist 331 [K] Cultural History of Latin America
Hist 343 [H] History of England since 1485
Hist 373 [G] Chinese Civilization
Hist 382 [S] Science in Western Civilization since Newton
Hum 303 [H] Reason, Romanticism, and Revolution
Hum 304 [H] Humanities in the Modern World
Hum 340 [H] American Foundings
Mus 153 [H] Musical Style in Composition
Mus 160 [H] Survey of Music Literature
Mus 363 [H] Women of Note
Phil 101 [H] Introduction to Philosophy
Phil 201 [H] Elementary Logic
Phil 207 [H] Philosophy of Religion
Phil 305 [H] History of Modern Philosophy
Phil 310 [H] Nineteenth-century Philosophy
Phil 350 [H] Philosophy of Science
Phys 101 [P] General Physics
Phys 102 [P] General Physics
Pol S 102 [S] Comparative Politics
Pol S 103 [S] International Politics
Pol S 333 [S] Marxist Thought
Psych 105 [S] Introductory Psychology
Rus 317 [G] Contemporary Russian Culture and Society
Rus 323 [H] Masterpieces of Russian Literature in Translation
Soc 101 [S] Introduction to Sociology
Soc 340 [S] Social Inequality
Span 315 [H] Hispanic Civilization
Span 316 [G] Contemporary Hispanic American Culture
W St 235 [I] African American History
W St 363 [H] Women of Note

**Tier III**

Note: Tier III capstone courses for each Area of Coherence will be developed over the next biennium.
The Areas of Coherence

3. American Cultures
This area of study examines the variety of cultural forms, historical developments, and issues which characterize American cultures. Course work examines the history and diverse origins of American peoples, the origin and development of American political processes and institutions, social and cultural forms, values, artistic traditions and literatures, and America's influence on and interactions with other peoples and cultures. Students are expected to understand and analyze the origins, and development of significant and characteristic features of American cultures, including issues relating to gender, class, and ethnicity.

4. The Nature of Humanity
This area deals with alternative ways of studying, defining, and understanding human nature, its origins and diversity, its limitations and potentials. Course work in the area offers a variety of scholarly approaches to the study of ourselves, from the scientific (biology, genetics, psychology and other social sciences) to philosophic and religious views. Students will be expected to examine critically various fundamental assumptions about human nature, as well as the implications and consequences of those assumptions.

Tier I

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Tier II

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<tr>
<td>Tier II</td>
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</tbody>
</table>

Note: Tier III capstone courses for each Area of Coherence will be developed over the next biennium.
5. Structure of Society

This area of study focuses on the nature and functions of institutions, their origins and growth, and their influence on society. Course work focuses on societies, past and present, with an emphasis on institutional structures, including familial, cultural, political, and economic systems. Individual courses may be comparative in approach or explore a single social system in depth.

Students will study a variety of institutional systems and explore their characteristics, functions, and significance, with the aim of understanding how social groups function at many levels.

### Tier I

<table>
<thead>
<tr>
<th>GenEd</th>
<th>World Civilizations I</th>
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<tbody>
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### Tier II

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<tr>
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<td>203 [K] Peoples of the World</td>
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<td>307 [K] Peoples of Africa</td>
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<td>309 [K] Cultural Ecology</td>
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<td>202 [H] The Built Environment</td>
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<td>275 [K] Introduction to East Asian Culture</td>
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<td>Asia</td>
<td>373 [G] Chinese Civilization</td>
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<td>Asia</td>
<td>374 [G] Premodern History of East Asia</td>
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</tr>
<tr>
<td>CAP</td>
<td>131 [I] Introduction to Latin American and Caribbean Studies</td>
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<tr>
<td>CAP</td>
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<td>212 [K] Peoples of the World</td>
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<tr>
<td>CAP</td>
<td>227 [I] Introduction African Studies</td>
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<td>CAP</td>
<td>300 [S] Intersections of Race, Class, and Gender</td>
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<td>355 [S] Civil Rights Movement</td>
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<td>Com</td>
<td>101 [S] Mass Communication and Society</td>
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<tr>
<td>Ger</td>
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<td>Hist</td>
<td>101 [H] Classical and Christian Europe</td>
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<td>Hist</td>
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<td>Hist</td>
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6. Forms of Artistic Expression

This area of study explores the variety of artistic forms and traditions through which human beings have explored the world and their own relationship to it, affirmed or challenged the values of their cultures, or expressed their own personal visions. Courses in this area focus on the history, criticism, theory, or creation of the arts, including music, theater, dance, literature, sculpture, painting and other graphic arts, and architecture.

Students are expected to gain an historical perspective on the major art traditions of the world, become familiar with some of the world’s most important genres, achievements, and artists, and to be able to analyze and appreciate a variety of art forms.

### Tier I

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### Tier II

| Anth | 201 [G] Art and Society |
| Arch | 220 [H] Architectural History I |
| Arch | 221 [H] Architectural History II |
| CAC | 271 [G] Native Music of North America |
| CAC | 313 [G] Introduction to Asian American Literature |
| CAC | 353 [G] Introduction to Chicano/Chicana Literature |
| CAC | 375 [G] Native American Literature |
| Drama | 160 [H] Introduction to Theatre |
| Drama | 365 [H] Theatre History I: Beginnings to 1700 |
| Drama | 366 [H] Theatre History II: 1700-1900 |
| Engl | 108 [H] Reading Literature |
| Engl | 209 [H] Readings in Literature through the 18th Century |
| Engl | 210 [H] Readings in Literature since the 18th Century |
| Engl | 222 [G] Anglophone Literature |
| Engl | 261 [H] Literary Masterpieces |
| Engl | 305 [H] Shakespeare |
| Engl | 306 [H] Shakespeare |
| Engl | 309 [H] Women Writers |
| Engl | 311 [G] Introduction to Asian American Literature |
| Engl | 321 [G] Introduction to African American Literature |
| Engl | 341 [G] Native American Literature |
| Engl | 345 [H] Introduction to Chicano/Chicana Literature |
| Engl | 366 [H] English Novel to 1900 |
| Engl | 368 [H] American Novel to 1900 |
| FA | 101 [H] Introduction to Art |
| FA | 202 [H] World Art History |
| FA | 303 [H] Modern Art—19th Century |
| FA | 304 [H] Modern Art—20th Century |
| Hum | 101 [H] Ancient World |
| Hum | 103 [H] Mythology |
| Hum | 202 [H] Middle Ages and Renaissance |
| Hum | 303 [H] Reason, Romanticism, and Revolution |
| Hum | 304 [H] Humanities in the Modern World |
| Mus | 153 [H] Musical Style in Composition |
| Mus | 160 [H] Survey of Music Literature |
| Mus | 265 [G] Native Music of North America |
| Mus | 362 [H] History of Jazz |
| Mus | 363 [H] Women of Note |
| Mus | 364 [H] Musical Theatre |
| Phil | 220 [H] Aesthetics |
| Rus | 323 [H] Masterpieces of Russian Literature in Translation |
| W St | 309 [H] Women Writers |
| W St | 363 [H] Women of Note |

### Tier III

Note: Tier III capstone courses for each Area of Coherence will be developed over the next biennium.
The Areas of Coherence

7. Human Values and Religious Thought

This area of concentration examines the values reflected in the literature, philosophies and religions of diverse civilizations, past and contemporary. Course work in the area investigates the nature of values and explores significant world views, philosophies, and religions (i.e., a system of belief and the way of life that follows from such belief). Students will be expected to acquire a critical understanding of the nature, characteristics, and significant expressions of a variety of human values and world views.

Tier I

| GenEd | 110 [A] | World Civilizations I |

Tier II

| Anth  | 201 [G] | Art and Society |
| Anth  | 203 [K] | Peoples of the World |
| Asia  | 270 [G] | Introduction to South Asian Culture |
| Asia  | 273 [G] | Foundations of Islamic Civilization |
| Asia  | 275 [K] | Introduction to East Asian Culture |
| Asia  | 314 [G] | Philosophies and Religions of India |
| Asia  | 315 [G] | Philosophies and Religions of China and Japan |
| CAC   | 212 [K] | Peoples of the World |
| Engl  | 335 [H] | The Bible as Literature |
| Engl  | 368 [H] | American Novels to 1900 |
| Hist  | 270 [G] | Introduction to South Asian Culture |
| Hist  | 275 [K] | Foundations of Islamic Civilization |
| Hist  | 275 [K] | Introduction to East Asian Culture |
| Hist  | 370 [G] | Civilization of Classical India |
| Hist  | 373 [G] | Chinese Civilization |
| Hist  | 374 [G] | Premodern History of East Asia |
| Hum   | 101 [H] | Ancient World |
| Hum   | 103 [H] | Mythology |
| Hum   | 335 [H] | The Bible as Literature |
| Mus   | 265 [G] | Native Music of North America |
| Phil  | 207 [H] | Philosophy of Religion |
| Phil  | 260 [H] | Introduction to Ethics |
| Phil  | 290 [H] | History of Ancient and Medieval Philosophy |
| Phil  | 314 [G] | Philosophies and Religions of India |
| Phil  | 315 [G] | Philosophies and Religions of China and Japan |
| Soc   | 341 [S] | Sociology of Religion |
| Soc   | 351 [S] | Sociology of the Family |
| W St  | 351 [S] | Sociology of the Family |

Tier III

Note: Tier III capstone courses for each Area of Coherence will be developed over the next biennium.

8. Global Perspectives

This area of coherence aims at increasing students’ international awareness and knowledge of major world geographical and cultural area beyond the United States. It also addresses many transnational processes and global issues affecting all world regions and cultures. Courses included in this area examine a variety of world cultures, religions, historical developments, socio-economic and political systems, and transnational or global issues (e.g., technological change, global environmental or economic issues, population, demographics, gender, hunger, health, human rights).

Through study of these global perspectives, students are expected to become more knowledgeable of, and sensitive to, our multicultural and increasingly interdependent world. Students are expected to analyze global issues and broad cultural and international problems from a number of perspectives.

Tier I

| ES/RP | 150 [Q] | Science and the Environment |
| GenEd | 111 [A] | World Civilizations II |

Tier II

| Anth  | 101 [S] | Introduction to Anthropology |
| Anth  | 201 [G] | Art and Society |
| Anth  | 203 [K] | Peoples of the World |
| Anth  | 231 [K] | America Before Columbus |
| Anth  | 307 [K] | Contemporary Cultures and Peoples of Africa |
| Anth  | 309 [K] | Cultural Ecology |
| Anth  | 316 [K] | Gender and Culture |
| Anth  | 320 [K] | Native Peoples of North America |
| Anth  | 350 [K] | Speech, Thought, and Culture |
| Asia  | 270 [G] | Introduction to South Asian Culture |
| Asia  | 272 [I] | Introduction to Middle Eastern Culture |
| Asia  | 273 [G] | Foundations of Islamic Civilization |
| Asia  | 275 [K] | Introduction to East Asian Culture |
| Asia  | 314 [G] | Philosophies and Religions of India |
| Asia  | 315 [G] | Philosophies and Religions of China and Japan |
| CAC   | 212 [K] | Peoples of the World |
| CAC   | 227 [I] | Introduction African Studies |
| CAC   | 276 [S] | America Before Columbus |
| CAC   | 377 [K] | Native Peoples of North America |
| Econ  | 101 [S] | Fundamentals of Microeconomics |
| Econ  | 102 [S] | Fundamentals of Macroeconomics |
| Engl  | 222 [G] | Anglophone Literature |
| ES/RP | 101 [B] | Environment and Human Life |
| Entom | 101 [B] | Insects and People |
| F A   | 201 [H] | World Art History |
| For L | 350 [K] | Speech, Thought, and Culture |
| Ger   | 317 [S] | Contemporary German Culture and Society |
| Hist  | 101 [H] | Classical and Christian Europe |
| Hist  | 102 [H] | Modern Europe |
| Hist  | 230 [K] | Latin America: Colonial Period |
| Hist  | 231 [K] | Latin America: National Period |
| Hist  | 270 [G] | Introduction to South Asian Culture |
| Hist  | 272 [I] | Introduction to Middle Eastern History |
| Hist  | 273 [G] | Foundations of Islamic Civilization |
| Hist  | 275 [K] | Introduction to East Asian Culture |
| Hist  | 325 [S] | The City and its People: Medieval to Modern |
| Hist  | 331 [K] | Cultural History in Latin America |
| Hist  | 370 [G] | Civilization of Classical India |
| Hist  | 373 [G] | Chinese Civilization |
| Hist  | 374 [G] | Premodern History of East Asia |
| Phil  | 314 [G] | Philosophies and Religions of India |
| Phil  | 315 [G] | Philosophies and Religions of China and Japan |
| Pol S | 102 [S] | Introduction to Comparative Politics |
| Pol S | 103 [S] | International Politics |
| Pol S | 333 [S] | Development of Marxist Thought |
| Rus   | 317 [G] | Contemporary Russian Culture and Society |
| Span  | 315 [H] | Hispanic Civilization |
| Span  | 316 [G] | Contemporary Hispanic American Culture |
| W St  | 316 [G] | Contemporary Hispanic American Culture |

Tier III

Note: Tier III capstone courses for each Area of Coherence will be developed over the next biennium.
9. Ecology of the Planet

Ecology is the study of living systems and their interactions with the environment, including human interactions with those systems. This area of study encompasses those systems and their interactions, together with enquiries into the scientific principles involved in current ecological problems and issues. Courses included in this area address such topics as evolutionary theory; the nature, functional properties, and current conditions of the ecosphere; the underlying physical and biological principles and the transformations of matter and energy involved in natural systems; and human interactions with these natural systems.

Students are expected to acquire an understanding of the natural systems of the planet—geological forces, climatic variation, evolutionary changes, biomes, etc.—and to understand how they interact with each other. Students should be able to depict these phenomena and their interactions in some detail. Students will study human dependence on these planetary natural systems and understand human impacts on them, both positive and negative, and be able to discern the implications of those impacts for human and planetary health.

Tier I

ES/RP 150 [Q] Science and the Environment
Zool 150 [Q] Evolution

Note: All introductory B courses in Tier II will be allowed to substitute for Tier I courses in this Area of Coherence during 1995-97.

Tier II

Tier III

Note: Tier III capstone courses for each Area of Coherence will be developed over the next biennium.

10. The Nature of Matter and Energy

This area of study examines the nature of the universe and its development from its origins to the present. It encourages exploration of the natural world from several different scientific and scholarly perspectives. Courses in this area will explore the basic scientific principles of physics and chemistry; the basic biological sciences; theories of the development and nature of the universe; the history of planet Earth and the solar system; and the history of human knowledge of these subjects.

Students are expected to acquire an understanding of the structure of matter and the principles governing the transformations of matter and energy that constitute the natural world. In addition, they will become familiar with the ways in which human understanding of the natural world has developed over time.

Tier I

Chem 150 [Q] Molecules and Science
GenEd 111 [A] World Civilizations II
Zool 150 [Q] Evolution

Tier II

Astr 135 [P] Descriptive Astronomy
Bio S 101 [B] Directions in Biological Sciences
Bio S 102 [B] General Biology
Bio S 103 [B] Introductory Biology
Bio S 104 [B] Introductory Biology
Bot 120 [B] Introduction to Botany
Chem 101 [P] Introduction to Chemistry
Chem 102 [P] Chemistry Related to Life Sciences
Chem 105 [P] Principles of Chemistry I
Chem 106 [P] Principles of Chemistry II
Geol 101 [P] Introduction to Geology
Geol 102 [P] Physical Geology
Geol 210 [P] Evolution and Earth
Hist 381 [S] Science in Western Civilization through Newton
Hist 382 [S] Science in Western Civilization since Newton
Micro 101 [B] Introduction to Microbiology
Phil 305 [H] History of Modern Philosophy
Phil 350 [H] Philosophy of Science
Phys 101 [P] General Physics
Phys 102 [P] General Physics
Phys 201 [P] Physics for Scientists and Engineers
Phys 202 [P] Physics for Scientists and Engineers
Phys 380 [P] Physics and Society
### 11. Science and Society

This area of study explores the interrelationships between society and science and technology in the modern world, including the transformation of civilization as the result of scientific and technological advances. The focus of the area includes both the cultural environment of scientific and technological change and the impacts of science and technology on culture itself. Course work in this area includes a foundation of basic science, the history and philosophy of science, ethics, and the social and economic developments of the modern world with a special emphasis on the role of institutions and interest groups in modern society.

Students will be expected to acquire a basic knowledge of the most significant technological/scientific developments which have transformed the world since the European Renaissance and to have some understanding of the ways in which societies and institutions, as well as resource and other constraints, impact and shape technological development. Students are expected to analyze the technical components of complex social and economic changes and to understand the ethical implications of such changes.

#### Tier I

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</table>

#### Tier III

Note: Tier III capstone courses for each Area of Coherence will be developed over the next biennium.

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### 12. Measures of the World

This area of concentration deals with the philosophical, societal, and practical issues involved with humanity’s attempts to measure the cultural and physical world; both the scientific and cultural aspects of attempts to understand the world constitute the focus of study. Courses in this area address significant aspects of measurement processes and milestones in the development of ways of understanding the world—e.g., the history and sociology of mathematics and science, of economic thought, psychology, and the other social sciences, and the alternative statistical approaches to analysis.

Students completing this area will be able to understand and analyze the developmental history, the philosophical issues, and the current status of measurement practices.

#### Tier I

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#### Tier III

Note: Tier III capstone courses for each Area of Coherence will be developed over the next biennium.

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**NOTE:** Crosslisted courses appear in italics.
Agriculture and home economics expertise is vital to the well-being of the state and nation. The College of Agriculture and Home Economics is responsible for generating and disseminating knowledge about physical, biological, social, and economic aspects of agriculture, natural resources, and family. These responsibilities are met through formal classroom instruction, ongoing research programs, and outreach programs of cooperative extension. All of these contribute to the development of Washington’s human and natural resources.

The college’s 11 teaching departments offer 30 majors that prepare professionals for careers in food production, processing, and distribution and in areas of individual and family health and well-being. Students receive a solid base in science and a technological grounding that enables them to remain abreast of the dynamic fields of agriculture and home economics. Study programs also help prepare graduates to live and work in our environmentally conscious and globally focused economy and society.

Agriculture is one of the most important industries in the state of Washington. Although the number of individuals directly involved in production agriculture has declined, the overall agricultural industry offers an increasing number of job opportunities. Programs in agriculture prepare students for a wide variety of careers including food processing, pest management, natural resource management, business and finance, and sales and distribution of food products. Graduates are qualified to be agriculture teachers, extension educators, or newspaper, radio or television journalists. Students who earn graduate degrees are prepared to be agriculture teachers, extension educators, or newspaper, radio or television journalists. Students who earn graduate degrees are prepared to follow scientific careers in research, cooperative extension, governmental agencies, foreign service, college teaching, and business.

Admission
The requirements for admission to the College of Agriculture and Home Economics are the same as those for WSU. High school students planning to enroll in the college are urged to work closely with their counselors and with representatives from WSU in developing an appropriate background of high school courses in biological, physical, and social sciences, mathematics, and other elective areas.

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’s degrees 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 and Home Economics at Washington State University should concentrate as much as possible on general education and departmental requirements normally scheduled during the freshman and sophomore years, with particular attention to those subjects required for the intended majors.

Requirements for Graduation
Requirements for graduation in the College of Agriculture and Home Economics vary according to the major and the degree to be granted as described in the 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 professional interests consistent with departmental and general education requirements. Students are encouraged to do more than satisfy the minimum requirements.
### Agriculture Degrees

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Science in Agriculture</td>
<td>Biological Systems Engineering, Integrated Pest Management, Plant Pathology</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>Agribusiness, Agricultural Economics, Agricultural Molecular Genetics and Cell Biology, Agricultural Technology and Management, Animal Sciences, Biological Systems Engineering, Crop Science, Entomology, Environmental Science, Food Science and Human Nutrition, Horticulture, Landscape Architecture, Natural Resource Management, Natural Resource Sciences, Soil Science</td>
</tr>
<tr>
<td>Master of Arts</td>
<td>Agricultural Economics, Crop Science, Entomology, Environmental Science, Food Science, Genetics and Cell Biology, Horticulture, Natural Resource Sciences, Natural Resources Nutrition, Plant Pathology, Plant Physiology, Soil Science</td>
</tr>
<tr>
<td>Master of Regional Planning</td>
<td>Environmental Science, Food Science, Genetics and Cell Biology, Horticulture, Natural Resource Sciences, Natural Resources Nutrition</td>
</tr>
<tr>
<td>Master of Science</td>
<td>Agricultural Economics, Animal Sciences, Crop Science, Entomology, Environmental Science, Food Science, Genetics and Cell Biology, Horticulture, Natural Resource Sciences, Plant Pathology, Plant Physiology, Soil Science</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>Agricultural Economics, Animal Sciences, Crop Science, Entomology, Environmental Science, Food Science, Genetics and Cell Biology, Horticulture, Natural Resource Sciences, Soil Science</td>
</tr>
</tbody>
</table>

### Home Economics Degrees

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts</td>
<td>Apparel, Merchandising, and Interior Design Child, Consumer, and Family Studies</td>
</tr>
<tr>
<td>Bachelor of Science in Food Science and Human Nutrition</td>
<td>Apparel, Merchandising, and Interior Design Child, Consumer, and Family Studies</td>
</tr>
<tr>
<td>Master of Arts in Apparel, Merchandising, and Textiles</td>
<td>Apparel, Merchandising, and Interior Design Child, Consumer, and Family Studies</td>
</tr>
<tr>
<td>Master of Arts in Child, Consumer, and Family Studies</td>
<td>Apparel, Merchandising, and Interior Design Child, Consumer, and Family Studies</td>
</tr>
<tr>
<td>Master of Arts in Interior Design</td>
<td>Apparel, Merchandising, and Interior Design</td>
</tr>
<tr>
<td>Master of Science in Food Science</td>
<td>Apparel, Merchandising, and Interior Design</td>
</tr>
<tr>
<td>Master of Science in Human Nutrition</td>
<td>Apparel, Merchandising, and Interior Design</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>Program in Nutrition</td>
</tr>
</tbody>
</table>

### Majors

In agriculture, the student has a choice of 26 undergraduate majors, six with separate curricula, and a choice of a minor in many of the departments.

#### Major

<table>
<thead>
<tr>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agribusiness Agricultural Communications Agricultural Economics Agricultural Molecular Genetics and Cell Biology Agricultural Technology and Management Animal Sciences Agricultural Systems Engineering Crop Science (including technical, business and industry, and science)</td>
</tr>
<tr>
<td>Agricultural Economics Biological Systems Engineering Genetics and Cell Biology Biological Systems Engineering Animal Sciences Crop and Soil Sciences (including technical, business and industry, and science)</td>
</tr>
</tbody>
</table>

In home economics, each department offers several major options as indicated below. Students may also select any of these options as minors. In addition, a minor in aging is available through the Department of Human Development.

#### Major

<table>
<thead>
<tr>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Development (including early childhood, family studies, home and family life education, and preschool-third grade)</td>
</tr>
</tbody>
</table>

### Notes

1. degree and administration by College of Engineering and Architecture
2. accredited by Society of American Foresters
3. accredited by the American Society of Landscape Architects
4. accredited by the Society of Range Management
The curricula of the College of Business and Economics lead to the following degrees:

**Degrees:** Pullman Campus

- Bachelor of Arts
  - Business Administration
  - Economics

- Master of Accounting
- Master of Arts
- Master of Business Administration
- Doctor of Philosophy

- Degrees: Tri-Cities Campus
  - Bachelor of Arts
  - Master of Business Administration

- Degrees: Vancouver Campus
  - Bachelor of Arts
  - Master of Business Administration

Within the college a specialized degree is offered in the area of hotel and restaurant administration.

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

- Economics of Financial Markets
- International Economic Development
- Economics of Public Policy
- Economics of Regulation, Industrial Organization, and Law

To meet the demand for graduates with training in both business administration and one or more technical fields such as agriculture, chemistry, engineering, natural resources, journalism and psychology, a minor in business administration is available.

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

Admission requirements to the programs of the College of Business and Economics may vary. 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, students may certify as business administration, economics, or hotel and restaurant administration majors only after earning a minimum of 30 semester hours, 6 of which must be in business or economics core courses, with a cumulative g.p.a. and business or economics g.p.a. which meet current standards determined by competitive ranking of students. Because of differences in demand for major certification at the respective campuses, guidelines are set independently for each campus and certification is campus specific.

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 chair.

**Degrees**

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

**Degrees: Pullman Campus**

- Bachelor of Arts
  - Business Administration
  - Economics

- Master of Accounting
- Master of Arts
- Master of Business Administration
- Doctor of Philosophy

**Degrees: Tri-Cities Campus**

- Bachelor of Arts
- Master of Business Administration

**Degrees: Vancouver Campus**

- Bachelor of Arts
- Master of Business Administration

**Accounting**

- Risk Management and Insurance

**Decision Sciences**

- International Business

**Economics**

- Law and Public Policy

**Finance**

- Management

**General Business**

- Marketing

**Human Resources/Personnel**

- Real Estate

**Information Systems**

- Internet Services

1 accredited by the American Dietetic Association

2 accredited by the Foundation for Interior Design Education Research

**COLLEGE OF BUSINESS AND ECONOMICS**

Rom J. Markin, Dean

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 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 designated 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 inter-disciplinary 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 levels 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 four business departments, accounting and business law, finance, marketing, and management and systems, offer the following specializations:

**Accounting**

- Risk Management and Insurance

**Decision Sciences**

- International Business

**Economics**

- Law and Public Policy

**Finance**

- Management

**General Business**

- Marketing

**Human Resources/Personnel**

- Real Estate

**Information Systems**

- Internet Services

1 accredited by the American Dietetic Association

2 accredited by the Foundation for Interior Design Education Research
The graduate degrees offered by the College of Education are:

- Bachelor of Science in Physical Kinesiology and Leisure Studies
- Bachelor of Arts in Recreation Kinesiology and Leisure Studies
- Bachelor of Arts in Education Teaching and Learning

The undergraduate degrees offered in the College of Education are as follows:

- Degrees
- Master in Teaching
- Master of Science in Physical Education
- Doctor of Education
- Doctor of Philosophy (Education)

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

The college offers undergraduate degree programs of sufficient breadth to enable its graduates to choose employment from a large number of specialities within their general fields. Engineering degrees are offered primarily in traditional engineering areas rather than in industry-specific areas. Opportunities for specialization are made available to qualified students through graduate programs in the various departments.

The College of Engineering and Architecture provides instruction, research, and public service in the areas of engineering, architecture, construction management, computer science, and environmental science. Departments in the college offering engineering degree programs are chemical engineering, civil and environmental engineering, electrical engineering and computer science, and mechanical and materials engineering. The biological systems engineering degree, offered by the Biological Systems Engineering Department, is also administered by this college. The School of Architecture is the administrative unit within the college providing degrees in architecture and construction management. Environmental science and regional planning degrees are available through the interdisciplinary Program in Environmental Science and Regional Planning in which this college participates.

The college’s undergraduate degree programs prepare graduates for both professional careers and advanced study and are known for their practical, hands-on component coupled with a strong foundation of basic principles. The college is providing national leadership in its integration of social considerations in design from the freshman through senior years. The college’s programs use formal classroom instruction, with individual and group projects, seminars, and individual directed studies to prepare students to develop solutions that are both technically and contextually appropriate. Many students also gain work experience in their fields of interest through employment on college research projects or internships in industry.

Faculty, graduate students and staff in the college perform basic and applied research addressing problems of state, national, and international importance. Research projects are designed to enhance economically, ecologically and culturally sound use of our material resources and to promote well-balanced industrial and professional development. Research is an integral part of graduate degree programs, providing graduate project topics and opportunities for graduate student interactions with outside professionals. The college’s research also strengthens its undergraduate programs by involving undergraduate students in relevant creative exploration and by keeping undergraduate course content current with the latest research developments.

The college provides important educational services to industries, professions, and the general public. Short courses, conferences, and workshops taught by college faculty produce valuable interactions among professionals and deliver current technical information to these audiences. Faculty of the college also serve as editors, authors, and reviewers for professional journals serving the nation and the world.

The college offers undergraduate degree programs of sufficient breadth to enable its graduates to choose employment from a large number of specialities within their general fields. Engineering degrees are offered primarily in traditional engineering areas rather than in industry-specific areas. Opportunities for specialization are made available to qualified students through graduate programs in the various departments.

**COLLEGE OF EDUCATION**

Bernard Oliver, Dean

The College of Education consists of the Departments of Educational Leadership and Counseling Psychology, Kinesiology and Leisure Studies, and Teaching and Learning.

The College of Education prepares teachers for elementary school, secondary school, and college instruction; specialists in a variety of educational fields; administrators for schools, colleges, and universities; and sport and recreation specialists for private and community agencies. The college also provides professional training in physical education, recreation, athletic training, and counseling. It offers a variety of educational services to local school systems.

The General Education Requirements provide a foundation for professional work in the College of Education through offerings in the arts and humanities and in the social and natural sciences. Practical experiences are integrated with course work throughout professional preparation curricula.

The mission of the certification programs in the College of Education is to furnish intensive preparation for persons who serve or aspire to serve in teaching, supervisory, special services, or administrative fields at all levels of education as well as in related areas of professional services. Candidates for certification must demonstrate knowledge and competencies at qualified levels of professional practice.

Graduate programs in the College of Education offer advanced course work and field experience in education and human services including specialists in exercise, human movement, and leisure services. Certification programs in administration and counseling are available at the graduate level. Doctoral programs focus on preparation of administrative personnel for the schools, counselors, teacher educators, and educational researchers. Graduate programs stress scholarship as a basis for all professional endeavors.

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, the University Council on Educational Administration, and the American Educational Research Association. State education agencies 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 schools and communities in the state of Washington. Applied research services are provided to education and health-related agencies throughout the United States and internationally. Services of faculty are available for consultant purposes, school studies, professional development programs, school seminars, and community conferences in the departmental specialties.

**Degrees**

The undergraduate degrees offered in the College of Education are as follows:

**Degree**
- Bachelor of Arts in Education
- Bachelor of Arts in Recreation Administration and Leisure Studies
- Bachelor of Science in Physical Education

**Department or Area**
- Teaching and Learning
- Kinesiology and Leisure Studies

The graduate degrees offered by the College of Education are:

**Degree**
- Master of Education

**Areas of Specialization**
- Administration
- Administration/Supervision of Physical Education Activities
- Counseling
- Curriculum
- Educational Psychology
- Elementary Education
- Reading/Language Arts

**Administration Counseling Curriculum Educational Psychology Elementary Education Exercise Science Movement Studies Recreation and Leisure Studies Administration Curriculum Educational Psychology Elementary Education Reading/Language Arts Counseling Psychology Educational Administration Teaching and Learning**
Students majoring in degrees offered by the College of Engineering and Architecture are guided in selection of courses in arts and humanities, social sciences, intercultural studies, and communication to develop a coherent plan for integrating general education with needs of the major. In engineering programs, students are encouraged to select elementary and advanced arts and humanities and social science courses that follow a rationale in support of their professional education. In architecture, 6 of the 9 required hours of architectural history help fulfill the arts and humanities and social science requirements. Students are encouraged to take general education courses concurrently with the technical courses in the major to facilitate effective integration of these subjects for practical application. Students planning to transfer to Washington State University after completing general education requirements at other institutions should obtain sample schedules of studies for their proposed major at WSU to be familiar with specific requirements for that major. Transfers into engineering programs should include a transferable course in economics as part of their general education course work. Engineering majors generally require additional advanced social science or arts and humanities course work beyond the community college level.

Degrees

Degrees offered in the College of Engineering and Architecture are listed below:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department or Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Architecture</td>
<td>Architecture</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>Architectural Studies</td>
</tr>
<tr>
<td></td>
<td>Biological Systems Engineering</td>
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<tr>
<td></td>
<td>Chemical Engineering</td>
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<tr>
<td></td>
<td>Civil Engineering</td>
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<tr>
<td></td>
<td>Computer Science</td>
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<tr>
<td></td>
<td>Construction Management</td>
</tr>
<tr>
<td></td>
<td>Electrical Engineering</td>
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<tr>
<td></td>
<td>Materials Science and Engineering</td>
</tr>
<tr>
<td>Master of Engineering Management</td>
<td>Engineering Management</td>
</tr>
<tr>
<td>Master of Science</td>
<td>(Spokane, Tri-Cities, Vancouver)</td>
</tr>
<tr>
<td></td>
<td>Architecture</td>
</tr>
<tr>
<td></td>
<td>Chemical Engineering</td>
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<tr>
<td></td>
<td>Civil Engineering</td>
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<tr>
<td></td>
<td>Computer Science</td>
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<tr>
<td></td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td></td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>Environmental Engineering</td>
</tr>
<tr>
<td></td>
<td>Materials Science and Engineering</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td></td>
<td>Civil Engineering</td>
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<tr>
<td></td>
<td>Computer Science</td>
</tr>
<tr>
<td></td>
<td>Electrical and Computer Engineering</td>
</tr>
<tr>
<td></td>
<td>Engineering Science</td>
</tr>
<tr>
<td></td>
<td>Materials Science</td>
</tr>
<tr>
<td>Engineering</td>
<td>Mechanical Engineering</td>
</tr>
</tbody>
</table>

Engineering practice is based on sound fundamental and practical knowledge of mathematics, the sciences, and liberal arts. Basic sciences and mathematics form the foundation on which engineering science and engineering design courses are built. Engineering courses prepare students to solve problems in society by quantitatively analyzing alternatives and making decisions guided by economics and an awareness of social and ethical issues.

All existing undergraduate engineering degrees offered by the college are accredited by the Accreditation Board for Engineering and Technology (ABET). The Biological Systems Engineering degree program, initiated in the fall of 1993, is a replacement for the accredited Agricultural Engineering degree program. Accreditation will be sought for the new Biological Systems Engineering degree for its earliest graduating class. Students desiring a specialization in computer engineering may follow a curriculum for that specialization as an option under the Bachelor of Science in Electrical Engineering degree.

Graduate degrees in engineering, listed previously, are offered at the master’s and doctoral levels. Students desiring graduate degrees in areas not listed may arrange with the program of interest to pursue a Master of Science in Engineering or Doctor of Philosophy in Engineering Science, allowing their programs of study to be designed for their particular need and interest. Admission to engineering graduate programs is open to qualified students with a recognized degree in engineering, mathematics, a physical science, or a biological science. Additional information about specific areas of active research may be obtained by contacting the Associate Dean for Research or the appropriate department chair.

Strong supporting courses are available from the Departments of Mathematics, Physics, Chemistry, and the Program in Biology. The graduate programs are also supported by many excellent university facilities such as the Water Research Center, Albrook Hydraulics Laboratory, Laboratory for Atmospheric Research, Wood Materials and Engineering Laboratory, Information Technology, Spectrographic Laboratory, the Electron Microscopy Center, Erosion Research and Outdoor Irrigation Laboratories, Food Science Pilot Plant, and the National Science Foundation Center for Design of Analog/Digital Integrated Circuits.

Computer Science

Computer science has its principal bases in engineering and mathematics. 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, the step-by-step procedures for solving a problem or accomplishing some goal. Students study computer software and hardware systems for efficient solution of practical problems. Curricular specializations available include artificial intelligence, scientific computation, mathematics, management information systems, and electrical engineering. Students use WSU’s central computers and a variety of departmental scientific workstations, graphic workstations, and microcomputer laboratories, all of which are connected to each other and to national networks.

Architecture and Construction Management

The School of Architecture offers programs of study in architecture and construction management. Practice in these fields relies on studies of the arts and humanities as well as the sciences and technologies. Courses are designed to provide both professional fields the breadth and depth of knowledge necessary to respond to the environmental and cultural forces which continually shape the decision-making processes associated with each field.

Programs of studies in the school as outlined in the different curricula lead to the following degrees: Bachelor of Science in Architectural Studies (a four-year degree program); Bachelor of Science in Construction Management (a five-year professional degree program); Bachelor of Architecture (a five-year professional degree program) accredited by the National Architectural Accreditation Board (NAAB); and Master of Science in Architecture with emphasis on energy and resource management.

Admission

Due to limitations on resources, enrollment limits have been established for all undergraduate engineering and architecture degree programs. Thus, students must apply and be accepted (certified) into these programs before they may enroll in upper-division courses in the major. When admitted to Washington State University, students are placed into the advising program within the Student Advising and Learning Center (SALC) where they are assigned advisers in their indicated major interest for the period prior to their being certified in a major. Students must certify into a major after they have completed 30 semester credit hours and a prerequisite set of courses for the specific major.

Engineering and Computer Science

Prospective engineering students who have completed 30 semester credit hours (including core courses of one year of calculus and one year of chemistry and/or physics) but have not been certified into an engineering degree program may apply for temporary certification in pre-engineering. Transfer students having these accomplishments will be considered automatically for pre-engineering status. Acceptance into pre-engineering is based on a combination of factors including enrollment limits in the desired majors, the student’s overall grade point average, and grade point average in the core courses. Pre-engineering certification does not guarantee subsequent certification in an engineering major, but allows the student to complete course work required for certification in engineering majors.
Upon completion of specific departmental requirements, qualified students may apply for admittance (certification) into the engineering or computer science major of their choice. Prospective students should contact the departments administering their choice of majors to determine specific courses to be completed, application procedures, and application deadlines for certification. Factors considered in certification decisions include grades in science and math courses, grades in the major, overall grade point average, course repeats, professional experience and goals, and other indicators of the student’s potential for successful completion of the curriculum. Students denied certification into an engineering program may appeal to the Associate Dean, College of Engineering and Architecture, for a review to ensure that departmental procedures were followed.

Architecture and Construction Management
Prospective students in architecture are assigned to an architecture adviser in the SALC and go through a step-by-step screening process scheduled at the end of the first and second years of their studies.

Prospective students in construction management are assigned to a construction management adviser in the SALC and go through a step-by-step screening process scheduled at the end of their second year of studies.

THE GRADUATE SCHOOL
Robert V. Smith, Dean

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 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.

The period of study for the Doctor of Philosophy degree is at least three years (six semesters) beyond the baccalaureate degree. At least two of these three years shall be in residence at Washington State University, including a minimum of four semesters, two of which must be continuous, when the student is enrolled full-time and present on the Pullman campus. Full-time enrollment for three summer sessions may be substituted for two academic year semesters. Summer session cannot be substituted for the two continuous semester requirements for the doctoral degree. The period of study for the Doctor of Education degree is at least three years (six semesters) beyond the baccalaureate degree. At least two of these three years shall be in residence at Washington State University, including a minimum of four semesters, with at least one summer session and one semester being contiguous, when the student is enrolled full-time and present on the Pullman campus. Full-time enrollment for four summer sessions may be substituted for two academic year semesters. Summer session cannot be substituted for the semester contiguous with a summer session requirement for the doctoral 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. 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 School Policies and Procedures.

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 governance of the Graduate Studies Committee.

The graduate faculty consists of the President of Washington State University, the deans of the various academic units, the chairs of the academic departments and programs in which advanced degree programs are offered, and selected other 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 doctoral) and, from time to time, serving as members of the Graduate Studies Committee. Graduate students have opportunities for studying and working in a close professional relationship with the members of the graduate faculty who have been selected because of their special competence and interest.

Degrees Granted

Doctor of Philosophy

Programs leading to this degree are available in the following fields of study: agricultural economics, American studies, animal sciences, anthropology, biochemistry, botany, business administration, chemical engineering, chemistry, civil engineering, computer science, crop science, economics, education, electrical and computer engineering, engineering science, English, entomology, environmental and natural resource sciences, food science, genetics and cell biology, geology, history, horticulture, individual interdisciplinary studies, materials science, mathematics, mechanical engineering, microbiology, neuroscience, nutrition, pharmacology and toxicology, physics, plant pathology, plant physiology, political science, psychology, sociology, soil science, veterinary science, zoology, and zoophysiology.

Doctor of Arts

The program of study leading to the degree Doctor of Arts is offered in individual interdisciplinary studies and in 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 Educational Leadership and Counseling Psychology and the Department of Teaching and Learning.

A student may undertake a program for the degree of Master of Accounting, Master of Adult and Continuing Education, Master of Business Administration, Master of Engineering Management, Master of Fine Arts, Master of Health Policy and Administration, Master of Nursing, Master of Regional Planning or Master in Teaching.

A program of study leading to the degree of Master of Arts in Teaching (MAT) is offered in theatre arts and drama.

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. For admission to the Graduate School, Washington State University requires official transcripts from each of the following: (1) colleges or universities from which any degrees have been granted or are expected and those transcripts which show the last 60 graded semester or 90 graded quarter hours of undergraduate work.
taken; (2) colleges or universities showing graded graduate-level (including doctoral) course work taken after the bachelor’s degree. Note: Students intending to request transfer credit for their Program of Study will need to submit official transcripts from colleges or universities showing such credit. Departments and programs are free to request additional transcripts as deemed appropriate. Official transcripts are those mailed directly to the Graduate School from the registrar of the institution attended. One set is to be sent to the Graduate School and a second set is to be sent to the chair of the department or program concerned. 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 on a 4.00 scale) average for the last 60 semester hours of graded undergraduate work. Admission is to be on the basis of graduate study elsewhere, when it has been accomplished in a recognized graduate school with at least a B (3.00) average in 12 or more semester hours of graded graduate work beyond the bachelor’s degree. 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, and to those who have not submitted GRE or GMAT scores.

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. Use of WSU credit earned prior to formal admission to the Graduate School is restricted. 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 fall and spring semesters.

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

Graduate Work Through Continuing Education
Credit earned in graduate-level courses taken through the WSU Office of Extended University Services will be accepted on graduate student programs without limit, subject only to customary admission and 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 60 hours of their undergraduate work at Washington State University may register for up to 6 semester hours of work in the Graduate School in excess of the number of hours required to complete the bachelor’s degree. Graduate School approval is required at the time of registration. Only grades of B or higher may be applied toward an advanced degree. 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 chair 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; 2. Part-time enrollment; 3. Graduate leave status enrollment.

Students on graduate leave status may discontinue enrollment for credit for a period of 12 months without penalty. After that time, graduate leave status students will be assessed a fee of $25. Students on graduate leave status will be considered by the Graduate School to be in good standing for up to four consecutive years. 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 or provisional student status in the Graduate School.

Registration Policy for Graduate Students Completing Degree Requirements
Graduate students must register for the required amount of 700, 702, or 800 credit during the semester or summer session in which they take their final examinations. Fall and spring semesters and summer session officially end at the time final grades are due in the Registrar’s Office. Examinations are not normally scheduled between regular terms. However, students who have received special permission from the Graduate School to schedule final master’s or doctoral oral examinations in the interim nonclass period after the end of a term will be required to register for the following semester or summer session.

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 C-, 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 chair 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 School Policies and Procedures Manual 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 department chair, 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 and Graduate School Policies and Procedures 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 half-time service or more by the Board of Regents and who reside in the state of Washington while attending WSU may receive waivers of the resident operating fees and the nonresident portion of the tuition. 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 support (such as a graduate scholarship, fellowship, traineeship, or assistantship) for the next academic year by a prospective or enrolled graduate student completes an agreement that both student and graduate school expect to honor. In that context, conditions affecting such offers and their acceptance must be defined carefully and understood by all parties.

Students are under no obligation to respond to offers of financial support prior to April 15; earlier deadlines for acceptance of such offers violate the intent of this Resolution. In those instances in which a student accepts an offer before April 15, and subsequently desires to withdraw that acceptance, 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 organization subscribing to the above Resolution that a copy of this Resolution should accompany every scholarship, fellowship, trainees, and assistantship offer.”

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

COLLEGE OF LIBERAL ARTS

John Pierce, Dean

As a bearer of the tradition of liberal education, the College of Liberal Arts places much importance upon soundly conceived and well taught courses developed 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, students are encouraged to supplement their programs with elective courses of special cultural values such as those in art, literature, and music.

The College of Liberal 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.

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

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

Washington State University’s graduate training program in clinical psychology is accredited by the American Psychological Association. The speech-language-pathology and audiology programs are accredited by the State Board of Education and the American Speech-Language-Hearing Association, Educational Standards Board. The Music Program is a full member of the National Associate of Schools of Music.

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

Admission

The requirements for admission to the College of Liberal 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: at least four years of English, at least two years of one foreign language, three years of mathematics, two years of science, and three years of social sciences; participation in music, art, speech, and communication is also recommended.

Requirements for Graduation

The requirements for graduation include the university requirements for graduation plus additional College of Liberal Arts requirements in the humanities, social sciences, and sciences. See graduation requirements on page 26 of the catalog.

Departmental units include anthropology, communication, comparative American cultures, English, fine arts, foreign languages and literatures, history, philosophy, political science, psychology, sociology, speech and hearing sciences, music and theatre and drama. In addition, several special curricula are offered and are listed alphabetically in this catalog as follows: alcohol studies, American studies, Asia program, Canadian area studies, comparative American cultures, general studies (classics, humanities, liberal arts, linguistics, religious studies, social science), Latin American studies, Russian area studies, Scandinavian area studies, 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 philosophy.

Degrees

The college of Liberal Arts offers programs of study leading to the following degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department or Area</th>
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</thead>
<tbody>
<tr>
<td>Bachelor of Arts</td>
<td>American Studies</td>
</tr>
<tr>
<td></td>
<td>Anthropology</td>
</tr>
<tr>
<td></td>
<td>Asian Studies</td>
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<tr>
<td></td>
<td>Communication</td>
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<tr>
<td></td>
<td>Comparative American Studies</td>
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<tr>
<td></td>
<td>Criminal Justice</td>
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<tr>
<td></td>
<td>English</td>
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<tr>
<td></td>
<td>Fine Arts</td>
</tr>
<tr>
<td></td>
<td>Foreign Languages and Literatures</td>
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<tr>
<td></td>
<td>General Studies</td>
</tr>
<tr>
<td></td>
<td>humanities</td>
</tr>
<tr>
<td></td>
<td>social sciences</td>
</tr>
<tr>
<td></td>
<td>History</td>
</tr>
<tr>
<td></td>
<td>Liberal Arts</td>
</tr>
<tr>
<td></td>
<td>Music</td>
</tr>
<tr>
<td></td>
<td>Philosophy</td>
</tr>
<tr>
<td></td>
<td>Political Science</td>
</tr>
<tr>
<td></td>
<td>Social Studies</td>
</tr>
<tr>
<td></td>
<td>Sociology</td>
</tr>
<tr>
<td></td>
<td>Speech and Hearing Sciences</td>
</tr>
<tr>
<td></td>
<td>Theatre Arts and Drama</td>
</tr>
<tr>
<td>Bachelor of Fine Arts</td>
<td>Fine Arts</td>
</tr>
<tr>
<td>Bachelor of Music</td>
<td>Music</td>
</tr>
</tbody>
</table>
The Intercollegiate Center for Nursing Education (ICNE) in Spokane is a college of nursing shared in common by three institutions of higher education: Eastern Washington University, Washington State University, and Whitworth College. The nature of the consortium encourages an environment supportive of individual differences in students, faculty, and institutional emphases; broadens the resources available to the college of nursing; and provides a diversity of student backgrounds and experiences which stimulate and enhance learning. Through interinstitutional agreement, and consonant with its sense of evolving societal needs, the center focuses on improving the health care of the region, the nation, and the world community by preparing nurses through instructional programs, generating knowledge through research, and providing services in response to community needs.

Instructional programs are conducted at the baccalaureate and master’s degree levels to develop responsible citizens and to provide the professional knowledge, skills, and values essential to the practice of nursing within the state and in the larger society. The undergraduate curriculum includes both liberal arts education and preparation as a generalist in the practice of nursing. The curriculum at the graduate level provides preparation for advanced and specialized practice and affords experience in conducting research. Faculty members, as an integral part of the instructional process, practice nursing and serve as models and mentors with small groups of students. The ICNE provides an environment conducive to intellectual curiosity and independent learning. Its programs of study accommodate individual differences and interests.

Undergraduate Program
ICNE’s undergraduate program is approved by the Washington State Board of Nursing and is accredited by the National League for Nursing. Approximately 350 generic and registered nurse students are enrolled in the baccalaureate nursing program at Spokane, the outreach site in Yakima, the Wenatchee site, and the branch campuses in Tri-Cities and Vancouver.

The program is open to students beginning a nursing career and registered nurses who wish to obtain a baccalaureate degree in nursing. Men and members of ethnic groups seeking a role in the health professions find that nursing provides a most rewarding career. Graduates practice in a variety of settings including hospitals, community health agencies, nursing homes, occupational health programs, home health care and community mental health centers.

The curriculum, for students initiating the study of nursing, consists of lower- and upper-division components and is four academic years in length.

Master of Nursing
The first two years of the curriculum (lower-division component) are completed on the Pullman campus or may be taken at any institution offering courses equivalent to those taught at Washington State University.

The last two years of the professional curriculum (upper-division component) are provided at the Intercollegiate Center for Nursing Education in Spokane, the outreach site in Yakima, the Wenatchee site, and the branch campuses in Tri-Cities and Vancouver.

Admission
All students planning to major in nursing must apply to the Office of Admissions at WSU and be admitted to the university. Requirements may be met at WSU or may be transfer credits from another institution of higher education. Applications to the upper-division nursing major in Spokane and Yakima are obtained from the Office of Admissions at WSU. Application must be completed by February 15 for fall admission and September 1 for spring admission.

All registered nurses planning to apply to the nursing major at WSU Tri-Cities, WSU Vancouver (which includes the Wenatchee site) must do so through the Admissions Office at the respective sites. Applications are available until February 15 for fall semester consideration. Students are encouraged to contact an adviser at their respective campus for lower-division advising.

Registered nurse applicants must be graduates 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. Admission to the upper-division nursing major is based upon evaluation of the student’s entire application. Applicants for admission to the center must present at least 60 semester hours or 90 quarter hours of acceptable credit from an accredited college or university. The credits must include those courses which are prerequisite to nursing.

Since the number of applicants to the ICNE may exceed the number that can be admitted, there is no assurance that all persons meeting the admission criteria will be selected.

Graduate Program
Established in 1983 the Master of Nursing program prepares nurses for leadership in acute care, nursing, psychiatric/mental health nursing, community health nursing, and family nurse practitioner positions. The program is accredited by the National League for Nursing. Degree requirements, which are 39 semester credit hours for all specialties (except the family nurse practitioner program which requires 45 hours) can be completed in three semesters of full-time study. However, four semesters are required for the family nurse practitioner curriculum. Individualized programs can be arranged to facilitate part-time study. Applications must be complete by March 15 for fall admission and by November 15 for spring admission. Graduate Record Examination (GRE) results are required for admission.

Continuing Education Program
The Continuing Education Program provides a variety of offerings for registered nurses throughout the Inland Northwest. In addition to workshops, conferences, seminars, and courses conducted at more than 11 sites, televised courses are aired over cable, public, and satellite television systems. Home study courses are also available. The continuing education needs and interests of nurses are assessed through a variety of means.

Degrees
The degrees offered by the Intercollegiate Center for Nursing Education are as follows:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Science in Nursing</td>
<td>Generalized practice of professional nursing</td>
</tr>
<tr>
<td>Master of Nursing</td>
<td>Acute care nursing</td>
</tr>
<tr>
<td></td>
<td>Community health nursing</td>
</tr>
<tr>
<td></td>
<td>Family nurse practitioner</td>
</tr>
<tr>
<td></td>
<td>Psychiatric/mental health nursing</td>
</tr>
</tbody>
</table>
COLLEGE OF PHARMACY

Mahmoud M. Abdel-Monem, Dean

Admission

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

The two preprofessional years of study may be taken at WSU or any accredited college or university having equivalent courses. Not less than 60 semester credit hours or 90 quarter hours should be completed during the two preprofessional years. All General Education Requirements and prepharmacy science courses listed below must be completed prior to the beginning of all classes in the professional program.

WSU Courses

<table>
<thead>
<tr>
<th>Degree Department or Area</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and Humanities and Social Sciences Electives</td>
<td>9</td>
</tr>
<tr>
<td>BC/BP 364 Introductory</td>
<td>3</td>
</tr>
<tr>
<td>Bio S 103, 104 Introductory (with lab)</td>
<td>8</td>
</tr>
<tr>
<td>Chem 105, 106 Principles (with lab)</td>
<td>8</td>
</tr>
<tr>
<td>Chem 340, 341, 342 Organic (with lab)</td>
<td>8</td>
</tr>
<tr>
<td>Engl 101 Introductory Writing</td>
<td>3</td>
</tr>
<tr>
<td>GenEd 110, 111 World Civilizations</td>
<td>6</td>
</tr>
<tr>
<td>Intercultural Studies Elective</td>
<td>3</td>
</tr>
<tr>
<td>Math 140 Math for Life Scientists</td>
<td>4</td>
</tr>
<tr>
<td>Micro 301 General (with lab)</td>
<td>4</td>
</tr>
<tr>
<td>SpCom 102 Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>Stat 412 Biometry</td>
<td>3</td>
</tr>
<tr>
<td>First Aid and CPR certification and demonstration of computer literacy</td>
<td></td>
</tr>
</tbody>
</table>

Students entering WSU as freshmen with an intent to major in pharmacy are advised to indicate this fact when enrolling. Prepharmacy students are advised and counseled by members of the pharmacy faculty.

The application period each year is from December 1 to March 1. Students who wish to make special inquiries about the College of Pharmacy should contact Pharmacy Student Services, WSU, Pullman, WA 99164-6510, (509) 335-1402.

Determination of admission to the College of Pharmacy will be based upon the student's academic record, communication skills, recommendations, professional goals statement and, if necessary, a personal interview. 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.

Degrees

The College of Pharmacy offers programs of study leading to the degree of Doctor of Pharmacy (PharD) and the Master of Science in Pharmacology and Toxicology and Doctor of Philosophy (Pharmacology and Toxicology).

COLLEGE OF SCIENCES

Leon J. Radziemski, Dean

Faculty and curricula within the College of Sciences provide a sound and challenging education for students in disciplines covering the life sciences, physical sciences, environmental science, and mathematics. Both undergraduate and graduate degree programs within the college include classroom instruction, seminars, special projects and research which together provide first-rate training to meet the demands of our international technological society.

Undergraduate students planning to pursue advanced work in graduate or professional schools are advised to plan curricula to meet admission requirements for the advanced study.

One of the major service functions of the college is to provide course work in the sciences and mathematics for students majoring in other disciplines. Many of the college’s faculty have attained national and international reputations and have received numerous honors and awards. These include state and national teaching awards, Guggenheim Fellowships, Fulbright Scholarships, national career development awards, National Institutes of Health Merit Awards, and an Eli Lilly Award. Faculty frequently serve on national review panels of granting agencies for instructional and research support and on editorial boards of international journals.

Many undergraduate majors conduct a senior research project under supervision of a faculty member. This hands-on introduction to the scientific method is facilitated by the high quality of the teaching and research laboratories, computer facilities, and other infrastructure within the college. The Electron Microscopy Center, Nuclear Magnetic Resonance Center, Shock Dynamics Laboratory, Geoanalytical Laboratory, Ownbey Herbarium, Corner Zoological Museum, Hudson Biological Reserve, and Meyer’s Point Biological Study Site are all facilities within the college. A strong technical services unit provides instrument shops, electronics construction and repair, graphics, and glassblowing. The college shares support and use of several university-wide facilities such as the Laboratories for Bioanalysis and Biotechnology, Computer Center, Environmental Research Center, and Center for the Visualization, Analysis and Design in the Molecular Sciences.

Major research areas in the college include physics of wave propagation, molecular and atomic interactions on surfaces, continuum mechanics, avian environmental physiology, regulation of cellular growth and differentiation, genetic engineering, cytogenics, photosynthesis, mechanisms of chemical reactions, biological evolution and ecology, environmental remediation, mathematical modeling of biological and physical processes, numerical analysis, reliability and fatigue studies, resource management, protein synthesis and export, repair of DNA, biochemical mechanism of muscle contraction, chemo-taxis, coevolution of plants and animals, and femto-second laser studies.

Admission

Admission requirements for the College of Sciences 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: four years of English, at least two years of one foreign language, three (and preferably four) years of mathematics, three (and preferably four) years of science, and three years of social science.

Requirements for Graduation

Graduation requirements for a bachelor’s degree include the university General Education Requirements plus additional College of Sciences requirements in arts and humanities, social sciences, and sciences. Refer to the graduation requirements on pages 25 and 26 of this catalog. Each academic department or program has additional graduation requirements, which are included in the departmental descriptions in this catalog.

Degrees

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

Degree

Bachelor of Science

Master of Arts

Master of Science

Department or Area

Biochemistry

Biology

Chemistry

Environmental Science

General Studies

biological sciences

mathematics

physical sciences

Geology

Mathematics

Microbiology

Physics

Zoology

Chemistry

Biochemistry

Biology

Botany

Chemistry

Environmental Science

Genetics and Cell Biology

Geological Engineering

Geology

Mathematics
Microbiology  
Physics  
Plant Physiology  
Statistics  
Zoology  

Master of Regional Planning  
Regional Planning  

Doctor of Arts  
Mathematics  

Doctor of Philosophy  
Botany  
Chemistry  
Genetics and Cell Biology  
Environmental and Natural Resource Sciences  
Geology  
Materials Science  
Mathematics  
Microbiology  
Physics  
Plant Physiology  
Zoology  
Zoophysiology  

Some of the graduate degree programs are jointly supported by the Colleges of Agriculture and Home Economics, of Engineering and Architecture, and of Veterinary Medicine, thus providing a broad base for graduate training.

**COLLEGE OF VETERINARY MEDICINE**

Borje K. Gustafsson, Dean

The curriculum of the College of Veterinary Medicine prepares students for positions in the many fields of veterinary medicine, e.g., private practice, US 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**

A minimum of six years is required to obtain the degree of Doctor of Veterinary Medicine. The first two years of preprofessional training can be taken at any institution having courses equivalent to those taught at Washington State University, 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 60 semester hours of acceptable credits from an accredited college or university exclusive of military training and physical education. The 60 semester hours should include: 3 or 6 hours of social science and 3 or 6 hours of arts and humanities, to total 9 hours; 6 hours communication proficiency; 3 hours intercultural studies; 6 hours world civilizations; 3 hours mathematics proficiency (General Education Requirements for Graduation); 33 hours including zoology or general biology, inorganic and organic chemistry, biochemistry, physics, mathematics, genetics; and electives. All courses except biochemistry 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. WSU does not grant a BS in pre-veterinary medicine. Students taking pre-veterinary course work may declare a major in any subject, but are encouraged to major in animal science, biology, chemistry, microbiology, wildlife, or zoology.

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

A student seeking to enter the four-year program must fill out a VMCAS (veterinary medical college application service) application. VMCAS applications can be obtained from the Office of Student Services, College of Veterinary Medicine, Pullman, WA 99164-7012 and must be completed and returned to the VMCAS office by November 1 of the year preceding the fall semester in which the applicant wishes to enroll. Records of all applicants will be forwarded by VMCAS to the Washington Oregon Idaho (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 March 15. Successful applicants who are not currently enrolled at WSU will be asked to fill out a uniform undergraduate application for admission to WSU. 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 the Western Interstate Commission for Higher Education (WICHE) 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, New Mexico, Nevada, North Dakota, 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, CO 80302

**WOI Regional 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 Caine Center (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.

**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, Master of Science in Neuroscience, and Doctor of Philosophy (Neuroscience and Veterinary Science).
WASHINGTON STATE UNIVERSITY AT SPOKANE

William H. Gray, Dean

Washington State University at Spokane is a full-service urban campus and a primary provider of graduate and research programs for Spokane. Now occupying six floors of its downtown headquarters, the university continues to expand research, public service, and academic opportunities to other locations throughout the Inland Northwest. Partnerships with the Spokane medical community have resulted in research and teaching opportunities with Eastern State Hospital, Deaconess Medical Center, Sacred Heart Medical Center, Veterans Hospital, Kootenai County Medical Center, and Shriners Hospital. WSU computer science and engineering courses are now housed at the Spokane Intercollegiate Research and Technology Institute (SIRTI) building located at the Riverpoint campus. The Cooperative Academic Library (CALS) is located near the main campus in the Peyton Building. It serves WSU students in Spokane, Eastern Washington University (EWU) students enrolled in Spokane classes and the Spokane County Medical Society.

The WSU Speech and Hearing Sciences Department and EWU's Communication Disorders Department jointly offer diagnostic and rehabilitative services for individuals of all ages with a variety of speech, language, and hearing problems, including speech and language problems resulting from brain injury or neuromuscular disability. Fitting of hearing aids, assistive and personal listening devices, auditory training, and lip-reading instruction also are provided. The clinic provides a training center for graduate students from both programs, as well as a service to the community. It is located on the sixth floor of WSU Spokane's downtown campus.

The faculties of architecture, construction management, interior design, and landscape architecture are eager to provide an urban experience for students in these programs. With the proximity of Spokane to the Pullman campus, these programs have a history of focusing on the Spokane urban environment for advanced design activity. The design disciplines will share a specially designed building at the Riverpoint Higher Education Park that is scheduled to open in 1996.

Spokane offers a unique environment and access to clinical populations for WSU graduate students and researchers. WSU Spokane's research roles are further achieved through the following facilities.

Health Research and Education Center (HREC) fosters the development of clinical and applied research in biomedical and social health arenas. The center contributes to the improvement of human health and facilitates economic development of the region by fostering innovation, technology transfer, and applied research. It serves as a link between researchers from the university, the Spokane health care community, and funding sources. The HREC activities encompass the basic health sciences as well as diverse specialized areas including: patient outcome research, clinical pharmacology, neurosciences and mental health, cardiology, oncology, organ transplantation and immunology, diabetes, and radiation biology and health physics. A special feature of the HREC is a biomedical research laboratory system in conjunction with major health care institutions in Spokane.

The Washington Institute for Mental Illness Research and Training (WIMIRT) is a collaboration among the Department of Social and Health Services, WSU Spokane, University of Washington (UW) School of Medicine, and the two state mental hospitals, aimed at improving services to the mentally ill. WSU collaborates in research and training in psychology, nursing, pharmacy, and nutrition.

Washington State Institute for Community-Oriented Policing (WSICOP), housed at WSU Spokane, is a partnership, between WSU, Washington Association of Sheriffs and Police Chiefs (WASPC), and the Washington Criminal Justice Training Commission, that helps further the mission of community policing by providing training to police officials and community members, by providing technical assistance to law enforcement agencies, and by conducting research on the implementation of, and evaluating the effects of, community-oriented policing. In addition, it provides a centralized forum for information sharing and problem solving among community-oriented policing agencies and for disseminating research findings at state and federal levels.

Two further examples of WSU Spokane's wide array of programs are:

Area Health Education Center (AHEC), jointly sponsored by WSU and UW, provides education and training programs for rural health professionals. Located at WSU Spokane, AHEC works with community health care providers and the university to address such issues as recruitment and retention of physicians, nurses, and other health care professionals in rural and underserved areas. WSU is further committed to assisting rural communities in maintaining high-quality health care through applied research, consultation, and the development of a clearinghouse under the auspices of the Office of Rural Health.

Small Business Development Center (SBDC) employs business development specialists from both WSU and the Community Colleges of Spokane, a combination that provides business clients with access to a broad range of resources, including long-term management and technical assistance and workshops covering vital areas of business operation. Offices are located at the SIRTI building.

Priorities at WSU Spokane include serving placebound students as well as full-time, traditional students; enhancing the economic development of the region; and utilizing the urban environment to provide internships and conduct research within the community. To meet these goals, courses are scheduled at convenient times for both part-time working adults and full-time students. In addition to classes taught by resident faculty, many courses delivered to WSU Spokane via the Washington Higher Education Telecommunications System (WHETS) are taught by experts on other WSU campuses.

Graduate programs and courses currently are available in these areas: computer science, criminal justice, electrical engineering, engineering management, health policy and administration, human nutrition, materials science and engineering, mechanical engineering, and speech and hearing sciences (communication disorders). Course work and internships for student teachers and for experienced educators seeking the superintendent's credential through the College of Education also are offered at WSU Spokane. The Spokane campus is the site of the final stages of undergraduate professional education for all students enrolled in pharmacy, and for many students enrolled in architecture, construction management, interior design, and landscape architecture. The Doctor of Pharmacy at WSU Spokane is the only doctoral degree offered at a branch campus in the state. Course work also is available in a variety of other disciplines.

For details, contact:
Admissions and Registration
WSU Spokane
601 West First Avenue
Spokane, Washington 99204-0399
(509) 358-7500
WASHINGTON STATE UNIVERSITY AT
TRI-CITIES

James Cochran, Dean

WSU Tri-Cities in Richland delivers upper-division undergraduate and graduate education to the citizens of the greater Tri-Cities region and the neighboring counties. Students may earn advanced degrees in biology, business administration, chemistry, chemical engineering, civil engineering, computer science, education, electrical engineering, engineering management, environmental science, materials science and engineering, and mechanical engineering. Undergraduate degrees may be earned in agriculture, business, computer science, electrical engineering, environmental science, general studies (humanities, physical sciences, and social sciences), mechanical engineering, and nursing.

The majority of courses leading to a bachelor’s degree in chemical engineering can be taken, as well as courses in mathematics, statistics, counseling psychology, educational administration and supervision, and nuclear engineering, among others. Certification programs in education are also offered, as well as a Master in Teaching program. Anticipated additions include graduate programs in communication and environmental engineering.

Research provided through WSU Tri-Cities responds to the unique needs of the region. Major efforts include the Earth and Environmental Sciences Laboratory, exploring subsurface saturation and flow; the Electronic Materials Laboratory, investigating solar cell production; and eddy current research, applying numerical modeling for non-destructive testing applications. The administrative offices for the United States Transuranium and Uranium Registries are also housed on this campus. In addition, WSU Tri-Cities provides cooperative research and internship opportunities with Department of Energy and Hanford contractors who afford exceptional opportunities for research, providing expertise, facilities and equipment not available at most universities.

The Food and Environmental Quality Laboratory has been established as part of WSU’s College of Agriculture, the USDA, the Tri-State (Washington, Oregon, Idaho) Pesticide Research Program and the federal IR-4 Program. It assists farmers, orchardists, and other pesticide users with residue analysis and risk/benefit assessment and is active in sustainable agriculture programs.

Public services also reflect the requirements of the citizens in the Columbia Basin region. WSU Radio and Television Services programming and development for KFAE-FM and KTNW-TV are facilitated through offices and studios on the Tri-Cities campus. Conferences and Institutes serves thousands of citizens each year with non-credit courses and seminars. Cooperative Extension regional offices and faculty expertise are also housed on this campus. In addition, the Yakima Valley/Tri-Cities Mathematics, Engineering, Science Achievement (MESA) program prepares youth in underrepresented groups to pursue education and careers in these fields.

For details, contact:
Admissions and Registration
WSU Tri-Cities
100 Sprout Road
Richland, WA 99352
(509) 375-9250 (effective phone number through July 9, 1995)
(509) 372-7250 (effective phone number beginning July 10, 1995)

WASHINGTON STATE UNIVERSITY AT
VANCOUVER

Harold Dengerink, Dean

WSU Vancouver offers junior-, senior- and graduate-level courses to the residents of the six-county region of southwest Washington. Through 1995, WSU Vancouver will operate from its temporary location on the Clark College campus in Vancouver. In January 1996, WSU Vancouver will open the doors to its new, state-of-the-art campus seven miles north of Vancouver.

This first phase of construction includes a classroom/laboratory building, a library, a bookstore, a physical plant and a student services building, all located on 348 acres. Facilities will include a gallery, a food court, and walking/biking paths, as well as engineering, nursing, computer and psychology laboratory space. Future facilities are expected to include additional classroom rooms and an early childhood education center. In addition, the US Geological Survey will take advantage of the campus views of Mount St. Helens and Mount Hood by locating its Cascade Volcano Observatory—one of only three such facilities in the country—on the WSU Vancouver campus.

WSU Vancouver currently offers undergraduate degrees in social science, psychology, humanities, business administration and nursing. Graduate degree programs include business administration, education, teaching, engineering management, and a certificate program in school administration. A master's degree in public affairs—with concentrations in public administration, criminal justice and policy studies—is expected to be in place by fall semester 1995.

Community partnerships through WSU Vancouver include psychology practicum projects through various mental health and social service agencies, the collaborative professional development schools for educators, and many other efforts that serve both student and citizen.

As WSU Vancouver continues to grow, so too will its offering of degree programs. Proposed undergraduate degree programs include biology, engineering, English, and environmental science. New graduate programs are proposed in the fields of nursing and early childhood education.

For details, through January 14, 1996, contact:
Admissions Officer
WSU Vancouver
1812 E. McLoughlin Blvd.
Vancouver, WA 98686
(360) 737-2189

For details, beginning January 15, 1996, contact:
Admissions Officer
WSU Vancouver
14204 NE Salmon Creek Ave.
Vancouver, WA 98686
Consult phone directory for updated phone information
Department of Aerospace Studies

Professor, Col. J. McPhie; Assistant Professors, Capt. J. Davis, Capt. C. Kidd, Capt. R. Swift.

The Department of Aerospace Studies (Air Force ROTC) offers eligible students education and training which lead to commissions as second lieutenants 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 or two-year program. The four-year student completes the General Military Course (two years), four-week 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 2-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 4-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 year in the GMC. Other 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.

Financial Aid and Scholarships. Air Force ROTC offers enrolled GMC students the opportunity to compete for three-and-one-half-, three-, two-and-one-half and two-year scholarships which pay tuition, fees, and a semester book allowance, as well as a $150 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.

A minor in aerospace studies requires at least 16 hours, half of which must be upper-division, from: Aero 101, 102, 201, 202, 311, 312, 411, 412.

Description of Courses

For explanation of symbols, see above.

General Military Course

Aero 101 The Air Force Today 2 (1-2) Air Force customs and courtesies; responsibilities and opportunities of the Air Force officer; other top-
ics related to Air Force operation and organization.

102 The Air Force Today 2 (1-2) Structure and capabilities of US aerospace forces; relations to other military services, responsibilities and opportunities of the Air Force officer.

201 US Air Power to 1960 2 (1-2) Development of air power and doctrine and concepts from the origins of manned flight through the build-up following Korean War.

202 US Air Power, 1960 Present 2 (1-2) Development of air power and doctrine from Kennedy administration to today; introduction to leadership, team building, and problem solving.

Field Training

Aero

291 Four-Week Field Training Course 2 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. (SS) S, F grading.

292 Six-Week Field Training Course 6 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. (SS) S, F grading.

Professional Officer Course

Aero

311 Air Force Leadership 4 (3-2) Professional leadership, responsibilities, and functions required of career Air Force officers; communicative skills.

312 Air Force Management 4 (3-2) Management principles and functions pertaining to command and supervision; case histories and case studies.

313 The Professional Military Officer 4 (3-2) Military officership as a profession, the role of the military force in national security policy and military law.

411 National Security Forces in Contemporary American Society 4 (3-2) Defense strategy and conflict management; formulation of US defense policy, including case studies; communicative skills.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

Program in Aging

Chair, J.D. Teachman.

The Program in Aging offers an interdisciplinary curriculum in gerontology, including courses in the social and health sciences. The program is designed to achieve the following objectives:

1. To provide a body of knowledge which individuals may use in better understanding the processes and implications of aging in their own lives and for participation in community decision making regarding the scope, structure, and nature of programs for the elderly;
2. To enhance the qualifications of students in the helping services, health sciences, communication, education, and business, who are planning careers which involve working with or providing services to older persons;
3. To prepare students for graduate and professional training in gerontology;
4. To further university and societal goals of equity for persons of all ages.

The program offers a minor in aging. The minor requires a minimum of 18 hours of credit including HD 305, FSHN/Aging 130, Psych/Aging 363, Soc 356 or S W 396, and approved aging-related courses (6 hours). To register for the Program in Aging, students need to contact the program chair, J.D. Teachman (509) 335-9540.

Description of Courses

For explanation of symbols, see page 53.

Aging

130 [B] Nutrition for Living 3 Same as FSHN 130.

305 Gerontology 3 Same as H D 305.

363 Psychology of Aging 3 Same as Psych 363.

Department of Agricultural Economics


The department offers programs leading to the degrees of Bachelor of Science in Agribusiness, Bachelor of Science in Agricultural Economics, Master of Arts in Agribusiness, Master of Arts in Agricultural Economics, and Doctor of Philosophy (Agricultural Economics).

Bachelor’s Program

The undergraduate programs are designed to provide the basic knowledge and tools necessary to secure professional positions in agriculture and agribusiness. The various curricula are structured to lead to different professional careers. Agricultural economics deals with economic issues related to food and fiber supply and demand and the natural resource base that supports agricultural production and other needs of society. Applications to public decision making and private decisions of farms, ranches and agribusinesses are considered. Agribusiness deals more specifically with the business management activities of firms which move agricultural products to final consumers and provide production inputs, such as fertilizer and money, to farms and ranches.

In agricultural economics, students learn to use economic concepts along with technical production information to solve problems of farms, ranches, and related organizations. They also obtain knowledge and skills relevant to solving broader economic and social problems facing production agriculture and society in general.

In agribusiness, students learn to use economic and business concepts and management tools to effectively function in firms and organizations that comprise the agribusiness sector. Knowledge and skills in management, marketing, and finance are developed with emphasis on the specialized requirements of the agribusiness community.

Major fields of emphasis and courses leading to degrees in agribusiness and agricultural economics include farm and ranch management, agribusiness management, agricultural marketing, resource economics, economic development, agricultural policy, and quantitative methods.

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. Students majoring in agribusiness emphasize agricultural economics courses in agribusiness, marketing and prices, finance, and other courses which provide a background for an understanding of production agriculture. Agribusiness majors complement their courses in agricultural economics with business and accounting courses.

A wide variety of courses is available to non-majors who want to take selected courses to support their programs in other departments. Students from other departments may declare a minor in agricultural economics or agribusiness.

Employment Opportunities

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

Description of Courses

For explanation of symbols, see page 53.

Agricultural Economics

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 Management Applications of Microcomputers in Agriculture and Home Economics 3 (1-6) Microcomputer systems and software
including database management, graphics, spreadsheets, and word processing.

**311 Natural Resource Economics** 3 Rec Ag Ec 201 or Econ 101. The role of economics in natural resource management and policy.

**320 [S][M] American Agriculture and Rural Life** 3 History and economic structure of American agriculture, land settlement, organizational nature of firms, technology, and patterns in rural life.

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

**340 Introduction to Farm and Ranch Management** 3 Rec Ag Ec 201 or Econ 101. Appraisal, organization, and management of related types of farms and ranches.

**350 Introduction to Agricultural Marketing** 3 Rec Ag Ec 201 or Econ 101. Problems of marketing farm products; functions and institutions surrounding market operations.

**360 Introduction to Agribusiness Management** 3 Rec Ag Ec 201 or Econ 101. Product combinations, resource allocations, personnel, finance, and related problems in the operations of agricultural enterprises.

**361 Farm and Natural Resources Appraisal** 3 Rec Ag Ec 340; Econ 101, 102. Factors affecting value of land; valuation for loans, sales, assessment, and condemnation. Field trips required. Cooperative course taught by UI (AgEc 316), open to WSU students.

**370 Agricultural Prices** 3 Rec Ag Ec 201 or Econ 101; Stat course. Factors determining levels and movements of prices in agricultural commodities.

**408 Mathematics for Economists** 3 Same as Math 408.(g)

**410 Applied Statistical Methods in Agricultural Economics** 3 Rec Math 201, 202; Stat course. Application of sampling techniques, linear regression and analysis of variance and covariance to agricultural economics research problems.(g)

**411 Applied Operations Research Techniques in Agricultural Economics** 3 Rec Math 201, 202; Stat course. Linear programming, transportation models, simulation, and inventory models.(g)

**420 International Agriculture and Economic Development** 3 Rec Ag Ec 201 or Econ 101. Nature and roles of agricultural development, trade and institutions.(g)

**425 Economic Analysis of Projects and Policies** 3 Rec 300-level course in Ag Ec or Econ. Principles and procedures for evaluating projects and policies using cost-benefit analysis and related economic approaches.

**430 Financing Agribusiness Firms** 3 Rec Accgt 230, 231; Ag Ec 201; Stat course. Financial management, decision making, and analysis in the agribusiness sectors; capital market institutions and valuation processes.(g)

**440 Advanced Farm and Ranch Management** 3 Rec Ag Ec 340. Economic principles applied to organization and operation of farms and ranches.(g)

**450 [M] Advanced Agricultural Marketing** 3 Rec Ag Ec 350 or 370; Econ 301; Stat course. Institutions, practices, policies, and problems in agricultural input and output marketing.

**451 International Marketing of Agricultural Products** 3 Rec Econ 101; 1 Bus 380. Application of economic theory and marketing techniques to the analysis of international agricultural trade.(g)

**460 [M] Advanced Agribusiness Management** 3 Rec Accgt course; Ag Ec 360; Econ 301. Alternatives in the market behavior of firms that handle, process, and trade in agricultural inputs and outputs.(g)

**480 [M] Resource Economics** 3 Rec 300-level course in Ag Ec or Econ. Economic principles applied to natural resource problems, issues, and policies.(g)

**490 [M] Agricultural Policy** 3 Rec Ag Ec 201 or Econ 101. Public policy issues related to commercial agriculture and rural areas.(g)

**495 Instructional Practicum** V 1-3 May be repeated for credit; cumulative maximum 6 hours. By interview only. Academic experience in teaching and tutoring undergraduate courses in agricultural economics. S, F grading.

**497 Agribusiness Internship** V 2-4 May be repeated for credit. By interview only. Off-campus work-study in the agribusiness industry. S, F grading.

**498 Seminar** 1 May be repeated for credit. For seniors. Agribusiness firms. S, F grading.

**499 Special Problems** V 1-4 May be repeated for credit. S, F grading.

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

**503 Agricultural Demand and Supply Systems** 3 Rec Econ 501. Microeconomic duality theory applied to agricultural firms, consumers, and agricultural markets.

**510 Statistics for Economists** 4 Rec Ag Ec 408. Statistical theory underlying econometric techniques utilized in quantitative analysis of agricultural economic problems.

**511 Linear and Nonlinear Programming in Agricultural Economics** 3 Rec Ag Ec 408, 411. Mathematical programming applications of duality, parametric programming, inverse matrix methods, transportation problems, game theory, quadratic, integer, separable, and dynamic programming.

**512 Advanced Agricultural Econometrics** 3 Rec Ag Ec 510. Model construction and estimation for analysis of agricultural supply and demand problems.

**513 Advanced Econometric Application** 3 Rec graduate-level econometrics course. Theory and computer implementation of advanced econometric techniques.

**520 Regional Economics** 3 Rec Econ 301, 401, Math 201. The construction of multisector economic models and the use of regional policy analysis.

**521 Advanced Topics in Agricultural Economics** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Current topics in agricultural development, marketing, farm management, and agricultural policy.

**522 Topics in Agricultural Economics** V 1-4 Current topics in agricultural economics.

**540 Agricultural Production Economics** 3 Rec intermediate microeconomic theory; calculus. Theoretical economic concepts applied to analysis of agricultural problems; production intensity, factor and production combinations, uncertainty and technological change.

**541 Agricultural Decision Analysis** 3 Rec Ag Ec 540 or Econ 501. Alternative theories and methodologies for dealing with risk and dynamics in economic and resource management decisions. (a/y)

**550 Topics in Agricultural Marketing** 3 Rec graduate microeconomic theory. Application of economic theory to topics in agricultural marketing and price analysis.

**551 Modeling Agricultural Commodity Markets** 3 Theoretical and applied issues in constructing models of agricultural commodity markets for empirical analysis. (a/y)

**560 Agribusiness Management and Marketing** 3 Rec Ag Ec 460. Management and marketing problem situations in agribusiness; alternative policies, strategies, and decisions.

**580 Advanced Resource Economics** 3 Rec Econ 501. Economic analysis of the allocation and use of environmental and natural resources.

**581 Advanced Topics in Resource Economics** 3 Rec Ag Ec 580. Theoretical underpinnings of advanced topics in resource economics. (a/y)

**590 Public Policy and Agriculture** 3 Agriculture’s role in the public economic policy. (a/y)

**600 Special Projects or Independent Study** Variable credit. S, F grading.

**700 Master’s Research, Thesis, and/or Examination** Variable credit. S, F grading.

**702 Master’s Special Problems, Directed Study, and/or Examination** Variable credit. S, F grading.

**800 Doctoral Research, Dissertation, and/or Examination** Variable credit. S, F grading.

### General Department Requirements

The following schedules set forth the general requirements for the two Bachelor of Science degrees: Bachelor of Science in Agricultural Economics and Bachelor of Science in Agribusiness. Under the agricultural economics degree there are two options: management and technical. General Education Requirements are met in the departmental requirements listed for all curricula. 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.

**BACHELOR OF SCIENCE IN AGRICULTURAL ECONOMICS**

**Management Option**

This option permits in-depth study into management and decision-making tools, while retaining the flexibility to permit an integrated complement of courses to fulfill an individual student’s needs. It provides good farm and ranch management preparation. Students may take agribusiness courses under this option but are encouraged to pursue a Bachelor of Science in Agribusiness if they seek specialized training in that area.

**Requirements**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Description</th>
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</table>
The Bachelor of Science in Agribusiness degree has been developed for the student who wants to specialize in agribusiness management. Emphasis is placed on the principles of management, marketing, and finance as they apply to the agribusiness sector. The program requires in-depth inquiry into the various management, marketing, and financial decision-making tools. Enough flexibility exists to permit an integrated complement of courses.

**Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Acctg 230, 231</td>
<td>6</td>
</tr>
<tr>
<td>Acctg or Cpt S 300-level Elective</td>
<td>3</td>
</tr>
<tr>
<td>Ag Ec 410, 411, or Cpt S or Stat Elective</td>
<td>2 or 3</td>
</tr>
<tr>
<td>Ag Electives, excluding Ag Ec</td>
<td>12</td>
</tr>
<tr>
<td>Arts and Humanities [H] and Social Sciences [S] Electives (3 hours at 200 level or above)</td>
<td>9</td>
</tr>
<tr>
<td>Bio S and Ph S Electives (including 1 hour credit for lab)*</td>
<td>10</td>
</tr>
<tr>
<td>Communication Skill Elective</td>
<td>3</td>
</tr>
<tr>
<td>Dec S 215, Stat 212, or 412 (Credit may be received for only one of these.)</td>
<td>3 or 4</td>
</tr>
<tr>
<td>Econ 102, 103, 301; 320 or 340</td>
<td>12</td>
</tr>
<tr>
<td>Engl 101, 402 [W] (GER)</td>
<td>6</td>
</tr>
<tr>
<td>GenEd 110, 111 [A] (GER)</td>
<td>6</td>
</tr>
<tr>
<td>Intercultural Studies Elective [I] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>Math 201, 202</td>
<td>6</td>
</tr>
<tr>
<td>Mgt 301, Psych 306, or 307</td>
<td>3</td>
</tr>
<tr>
<td>SpCom 102, 235, 302, or 324</td>
<td>3</td>
</tr>
<tr>
<td>6 hours from Ag Ec 340, 350, 360; 3 hours from Ag Ec 440, 450, 460 that follow the 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>

*At least 3 hours must be in the biological and physical science fields. **Must meet the Mathematics Proficiency [N] (GER).**

### Technical Option

This option is designed for the student who wants to obtain a broad background, with emphasis on the application of economics to agriculture. Of the three curricula, this offers the greatest flexibility and, as a result, a wide variety of programs of study can be developed to meet the specific interest of the student.

**Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acctg 230</td>
<td>3</td>
</tr>
<tr>
<td>Ag Electives, excluding Ag Ec (9 hours must be in one department)</td>
<td>18</td>
</tr>
<tr>
<td>Ag Ec 335 or B Law 210</td>
<td>3</td>
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<tr>
<td>Ag Ec 340, 350, 370</td>
<td>9</td>
</tr>
<tr>
<td>Ag Ec 400-level Electives</td>
<td>6</td>
</tr>
<tr>
<td>Ag Ec Electives</td>
<td>6</td>
</tr>
<tr>
<td>Arts and Humanities [H], Intercultural Studies [I] and Social Sciences [S] Electives (GER) (including 6 hours at 200 level or above)</td>
<td>9</td>
</tr>
<tr>
<td>Bio S and Ph S Electives (including 1 hour for lab credit)*</td>
<td>10</td>
</tr>
<tr>
<td>Communication Skill Elective</td>
<td>3</td>
</tr>
<tr>
<td>Dec S or Stat Elective</td>
<td>3</td>
</tr>
<tr>
<td>Econ 102, 103, 301; 320 or 340</td>
<td>12</td>
</tr>
<tr>
<td>Engl 101, 402 [W] (GER)</td>
<td>6</td>
</tr>
<tr>
<td>GenEd 110, 111 [A] (GER)</td>
<td>6</td>
</tr>
<tr>
<td>Math 107, 140, 171, 201, 202 or 220**</td>
<td>2-4</td>
</tr>
<tr>
<td>SpCom 102, 235, 302, or 324</td>
<td>3</td>
</tr>
</tbody>
</table>

**Students must meet the 10 hours General Education Requirements with at least 3 hours in the Bio S and Ph S fields. **Must meet the Mathematics Proficiency [N] (GER).**

### BACHELOR OF SCIENCE IN AGRIBUSINESS

The Bachelor of Science in Agribusiness degree has been developed for the student who wants to...

**Program in American Studies**


The Program in American Studies offers courses of study leading to the degrees of Bachelor of Arts in American Studies, Master of Arts in American Studies, and Doctor of Philosophy (American Studies). American Studies explores the many ways we examine, define, and know ourselves as Americans. The major emphasizes an interdisciplinary approach combining the best insights of such fields as American history, literature, ethnic and women studies, communication, political science, sociology, art, and architecture. Such an approach provides students with a richer portrait of American culture than they may get from isolated disciplines and gives them a sense of the range of humanistic knowledge. The aim is the integrative study of American society, political institutions, literature, and art. The contribution of minority groups to American pluralism and the expressions of mass and popular culture are emphasized. The program promotes understanding of why, in the words of Henry James, it is a complex fate to be an American.

**Description of Courses**

For explanation of symbols, see page 53.

### American Studies

**Am St**

216 [H] Main Currents in American Culture 3 Same as Engl 216.

496 [Topics in American Studies] 3 May be repeated for credit; cumulative maximum 9 hours. Same as Engl 496. Credit not granted for both Am St 496 and 596.(SS)

500 Seminar in American Culture 1 May be repeated for credit; cumulative maximum 12 hours. Current research in American studies culture. S,F grading.

501 Readings in American Studies I 3 May be repeated for credit; cumulative maximum 6 hours. Readings in key texts in American culture, begins to 1865.

502 Readings in American Studies II 3 May be repeated for credit; cumulative maximum 6 hours. Readings in key texts in American culture, 1865 to present.

513 Seminar in American Studies 3 May be repeated for credit. Same as Engl 513.

590 Special Topics in American Culture 3 May be repeated for credit; cumulative maximum 9...
Department of Animal Sciences

596 Topics in American Studies 3 May be repeated for credit; cumulative maximum 9 hours. Same as Engl 596. Credit not granted for both Am St 496 and 596. (SS)

Degree Requirements

The program consists of a core curriculum of 30 hours (with some options available within the core) plus an additional 9-hour area of concentration which permits students to investigate particular aspects of American culture. Courses in the core and areas of concentration may also be used to satisfy General Education Requirements, where applicable.

Core Requirements, in suggested order

Hours

Hist 110, 111 American History 6
Am St/Engl/Hist 216 American Culture 3
Engl 380; 381 or 382 American Lit 6
American history (upper-division) 3
American literature (upper-division) 3
Engl 470 American Culture Series 3

Two courses (6 hours) taken in two different departments, from:

CAC 401 Seminar in Ethnic Diversity
FA 304 Modern Art—20th Century
Mus 362 History of Jazz
Pol S 300, 317, 427, 434, 455
Soc 331, 342, 351
W St 481 Theoretical Issues in Women’s Studies

Areas of Concentration

Prescribed courses have been established in the following departments to satisfy the 9-hour requirement for an area of concentration:

1. Comparative American Cultures
2. History
3. Literature
4. Political Science
5. Sociology

Also, it is the intention of the American studies faculty to encourage students, with the approval of their advisers, to investigate areas not officially approved in the foregoing list. By designing their own programs and taking courses that will aid in their research, students can investigate the effects of agriculture, engineering, environmental science, science, the graphic arts, theatre, or mass communications, to name only several possibilities, on American culture.

Minor in American Studies

A minor in American studies requires 18 hours which shall include:

Hours

Three courses from Engl 380, 381; Hist 110, 111 9
Am St/Engl/Hist 216 American Culture 3
Upper-division American literature 3
Upper-division American history 3

Preparation for Graduate Study

American Studies majors considering graduate work in this field should include college-level courses in at least one modern European foreign language in their undergraduate program. An area of concentration in American literature, American history, or comparative American cultures is strongly recommended, as are advanced writing courses.

Students pursuing BA degrees in English, history, and other humanities and social science areas may also apply to the graduate program in American Studies at WSU; a guide to the MA and PhD program is available through the office of the Director of American Studies.

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 participates in the Joint Program for Animal Sciences and Veterinary Medicine, leading to Bachelor of Science in Animal Sciences and Doctor of Veterinary Medicine degrees. The department also participates in the graduate Program in Nutrition which offers a Doctor of Philosophy degree and in Genetics and Cell Biology which offers Master of Science and Doctor of Philosophy degrees.

Bachelor’s Program

Animal sciences students learn the biological and economic principles and practices associated with agricultural animal production, and companion and laboratory animal care. This prepares graduates for a wide variety of career opportunities. These opportunities include animal production and food processing (meats, dairy products, etc.); the service industries (including feed manufacturing and sales, pharmaceuticals, artificial insemination, agricultural equipment and financial institutions, etc.); and government agencies. Continued education leading toward graduate or professional degrees is available for students from the animal sciences program. Employers seek out graduates in animal sciences because of their practical and technical knowledge of animal care and production. Students in animal sciences take a wide variety of agricultural and non-agricultural courses, receiving in-depth training in the biology of farm and companion animals. The curriculum is designed to provide students with the scientific, practical, and people skills to make them productive members of the food production, animal care and related industries. Prior to their junior year, students select an option to coincide with their interests. These options have required courses and electives which allow program specialization.

The Industry Option emphasizes the scientific practices of farm and companion animals and other areas of agriculture. This option is recommended for students preparing to work in agricultural animal production or companion animal care, or agribusiness. The Production Management Option emphasizes the business aspects of animal agriculture and companion animal management. This option requires fewer basic science courses while emphasizing economics and practical experience. Employment opportunities are found in general management of agricultural animal enterprises and the financial industry related to agriculture.

The Pre-veterinary Medicine/Science Option places more emphasis on basic science courses. This option is recommended for students planning to apply to the professional program leading to the Doctor of Veterinary Medicine, graduate school, or to study further and work in more technical or specialized areas of the industry, such as extension service, teaching, technical consulting or laboratory work.

Many opportunities outside the classroom are available for students to further their educational experiences. Animal sciences students are encouraged to participate as part-time employees in the livestock production centers or in research and teaching programs within the department. Many opportunities are available to students for on-the-job training in professional internships with different segments of the agricultural, companion animal or research sectors. Active student clubs within the Department of Animal Sciences and the College of Agriculture and Home Economics and the university community provide students with both professional and social contacts with faculty and other students. Several departmental and college scholarships are available based on ability, financial need and interest area.

Animal sciences courses are attractive to students in many other majors and from other backgrounds. Animal sciences courses broaden a student’s knowledge of applied biology, agriculture and the environment, and society in general. Many students find a minor in animal sciences complements and adds depth to other majors.

Description of Courses

For explanation of symbols, see page 53.

Animal Sciences

A S

101 Introductory Animal Science 3 (2-3) Types and breeds of livestock, terminology, methods, management systems, techniques of animal and poultry production and consumer impact. Cooperative course taught jointly by WSU and UI (AVS 109).

166 Horse Management Laboratory 1 (0-3) Introductory laboratory designed to familiarize students with approved management practices for horse enterprises. S, F grading. Cooperative course taught by WSU, open to UI students (AVS 166).

172 Dairy Cattle Management Laboratory 1 (0-3) Management practices associated with a dairy enterprise. S, F grading. Cooperative course taught by UI (AVS 172), open to WSU students.

174 Beef Cow Calf Management Laboratory 1 (0-3) Management practices associated with a beef cow calf enterprise for students without experience. S, F grading. Cooperative course taught
### Department of Animal Sciences

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>176</td>
<td>Sheep Management Laboratory 1 (0-3) Management</td>
<td>S, F grading. Cooperative course taught by UI</td>
<td>Management practices associated with a farm flock sheep enterprise. Not open to A S majors.</td>
</tr>
<tr>
<td>178</td>
<td>Swine Management Laboratory 1 (0-3) Management</td>
<td>grading. Cooperative course taught by UI to WSU students.</td>
<td>Management practices associated with a swine enterprise. Field trip and special clothing required.</td>
</tr>
<tr>
<td>180</td>
<td>Animal Sciences Orientation 1 Animal sciences</td>
<td>as a profession; career opportunities, curriculum, advisement, internships,</td>
<td>as a profession; career opportunities, curriculum, advisement, internships,</td>
</tr>
<tr>
<td>205</td>
<td>Nutrition of Pet Animals 2 Prereq biology</td>
<td>course, chemistry course. Nutritional principles governing optimum growth,</td>
<td>course, chemistry course. Nutritional principles governing optimum growth,</td>
</tr>
<tr>
<td>213</td>
<td>Applied Animal Nutrition 3 Prereq one semester</td>
<td>courses; not open to A S majors. Characteristics of nutrients, nutritional</td>
<td>courses; not open to A S majors. Characteristics of nutrients, nutritional</td>
</tr>
<tr>
<td>272</td>
<td>Dairy Cattle Traits 2 (1-3) Evaluating form and</td>
<td>function in dairy cattle; measurement of production and evaluation of type.</td>
<td>function in dairy cattle; measurement of production and evaluation of type.</td>
</tr>
<tr>
<td>285</td>
<td>(485) Rights and Welfare of Animals 3 Prereq Bio</td>
<td>102 or 103. Ethical considerations and welfare of animals used as companions,</td>
<td>102 or 103. Ethical considerations and welfare of animals used as companions,</td>
</tr>
<tr>
<td>313</td>
<td>Feeds and Feeding 8 (3-3) Prereq Bio 102 or 104</td>
<td>Utilization, practices, requirements, nutritive characteristics, and</td>
<td>Utilization, practices, requirements, nutritive characteristics, and</td>
</tr>
<tr>
<td>330</td>
<td>Genetics of Farm Animals 3 (2-3) Prereq GenCB</td>
<td>Calculations of rations for animals. Field trip required. Credit not granted</td>
<td>Calculations of rations for animals. Field trip required. Credit not granted</td>
</tr>
<tr>
<td>335</td>
<td>Reproduction of Farm Animals 3 Prereq Bio</td>
<td>104; Chem 102 or 106. Anatomy and physiology of reproductive organs; hormones</td>
<td>104; Chem 102 or 106. Anatomy and physiology of reproductive organs; hormones</td>
</tr>
<tr>
<td>360</td>
<td>Meat Science 3 (2-3) Prereq Bio 104.</td>
<td>involving hormones, artificial insemination, semen processing, pregnancy.</td>
<td>involving hormones, artificial insemination, semen processing, pregnancy.</td>
</tr>
</tbody>
</table>

### Prerequisites

- Prereq Bio S 104: Utilization, practices, requirements, nutritive characteristics, and calculations of rations for animals. Field trip required. Credit not granted for both A S 213 and 313. Cooperative course taught jointly by WSU and UI (AVS 205).
- Prereq A S 260 or 272: Principles and practices of livestock and meat selection and evaluation. Off-campus and weekend participation required.
- Prereq A S 213: Anatomy, physiology, and metabolism in ruminant animals.
- Prereq A S 398 and 399: 12 hours. Directed internship in livestock production and related fields conducted at WSU centers on or off campus. S. Fanding.
- Prereq A S 428 and 528: Principles of breeding, feeding, and management; commercial and purebred enterprises; management of beef cattle on ranges, pastures and in the feedlot. Field trip required. Cooperative course taught jointly by WSU and UI (AnSc 474).
- Prereq A S 504, 588: Cooperative course taught by WSU, open to UI students (AVS 478).
- Prereq A S 507: Cooperative course taught by WSU, open to UI students (AVS 478).
- Prereq A S 474: Cooperative course taught by WSU, open to UI students (AVS 478).
- Prereq A S 475: Cooperative course taught jointly by WSU and UI (AVS 306).
- Prereq A S 488 and 588: Cooperative course taught by WSU, open to UI students (AVS 478).
- Prereq A S 504, 588: Cooperative course taught by WSU, open to UI students (AVS 478).
- Prereq A S 474: Cooperative course taught by WSU, open to UI students (AVS 478).
- Prereq A S 475: Cooperative course taught jointly by WSU and UI (AVS 306).
- Prereq A S 504, 588: Cooperative course taught by WSU, open to UI students (AVS 478).
- Prereq A S 507: Cooperative course taught by WSU, open to UI students (AVS 478).
rate of passage, feed intake regulation, measures of digestibility, starch, fat and nonstarch polysaccharide, and digestion and utilization of nutrients. Cooperative course taught by WSU, open to UI students (AVS 510). (a/y)

513 Mineral and Vitamin Metabolism 4 Prereq A S 404 or 410; BC/ BP 364. Absorption, excretion, metabolism, dietary requirements and interactions of minerals and vitamins in animals and humans. (a/y)

528 Topics in Animal Breeding 2 May be repeated for credit; cumulative maximum 4 hours. Graduate-level counterpart of A S 428; additional requirements. Credit not granted for both A S 428 and 528.

540 Seminar in Animal Physiology 1 May be repeated for credit. Current developments in animal physiology. Cooperative course taught jointly by WSU and UI (AVS 520).

550 Advanced Reproduction 4 (3-3) Prereq A S 350. Physiology of sexual maturation; gametogenesis; sexual cycle; fertilization; embryonic development; physiological, chemical and immunological characterization of hormones of reproduction. (a/y) Cooperative course taught by WSU, open to UI students (AVS 526).

551 Endocrine Physiology 3 Graduate-level counterpart of A S 451; additional requirements. Credit not granted fro both A S 451 and 551. Cooperative course taught jointly by WSU and UI (AVS 551).

556 Embryo Transfer in Domestic Animals 2 Prereq A S 366. Embryo transfer in domestic animals including techniques, equipment, and state-of-the-art biotechnology.

557 Laboratory in Embryo Transfer 1 (0-3) Prereq c// in A S 556. Laboratory principles and practices in embryo transfer.

560 Domestic Animal Growth 2 Prereq A S 404, 410, or 440; BC/ BP 364 or 563. Advanced topics in principles of growth and regulation in domestic animals. Cooperative course taught jointly by WSU and UI (AVS 550).

573 Advanced Dairy Management 2 (1-3) Graduate-level counterpart of A S 473; additional requirements. Credit not granted for both A S 473 and 573. (a/y)

588 Perspectives in Biotechnology 3 Graduate-level counterpart of A S 488; additional requirements. Credit not granted for both A S 488 and 588.

598 Advanced Topics in Animal Sciences 1 or 2 May be repeated for credit. Recent research in various disciplines of animal sciences. Cooperative course taught by WSU, open to UI students (AVS 596).

600 Special Projects or Independent Study Variable credit. S. F. grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S. F. grading.

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

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. One of the following options must be chosen and completed.

**Industry Option**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A S 101, 180, 313, 314, 330, 350, 351, 380, 440</td>
<td>22</td>
</tr>
<tr>
<td>A S 260, 272, or 360</td>
<td>2 or 3</td>
</tr>
</tbody>
</table>

**Acctg** 230  
**A g Ec** 201 or Econ 103 [S]  
**A g Ec** 210 or Cpt S 405  
**A g Ec** 335 or B Law 210  
**A g Ec** 340  
**A gHE** 205 or SpCom 102  
**Arts and Humanities** [H], Intercultural Studies [I], Social Sciences [S], World Civilizations [A] Electives (GER) 15  
**Bio** S 103  
**Chem** 101, 102  
**CropS** 101, 302, 303, or N ATR S 351  
**Engl** 101, 201  
**Math** 107 or 201  
**Soils** 201  
**Stat** 212 or 412 3 or 4  
Two of: A S 166, 172, 174, 176 2  
Two of: A S 466, 468, 472, 474, 476, 478, 485 6  
V MS 261 3  
Approved Electives 21 or 22  
**Production Management Option** Hours  
A S 101, 180, 313, 350, 351, 378, 380 18  
A S 166 or 178 1  
A S 172, 174, or 176 1  
A S 260 or 272 2 or 3  
Two of: A S 466, 468, 472, 474, 476, 485, or 485 6  
Acctg 230 3  
Ag Ec 201, 210, 340, 430 12  
A gHE 205 or SpCom 102 3  
**Arts and Humanities** [H], Intercultural Studies [I], Social Sciences [S], World Civilizations [A] Electives (GER) 15  
**Bio** S 103 4  
**Chem** 101, 102 8  
**Crops** 302, 303, or N ATR S 351 3  
**Engl** 101, 201 6  
**Math** 107 or 201 3  
**Soils** 201 3  
Stat 212 or 412 3 or 4  
V MS 261 3  
Approved Electives 25 or 26  
**Pre-veterinary Medicine/Science Option** Hours  
A S 101, 180, 313, 314, 330, 350, 351, 360, 380, 440, 441 26  
A S 404 or 410 3  
A gHE 205 or SpCom 102 3  
**Arts and Humanities** [H], Intercultural Studies [I], Social Sciences [S], World Civilizations [A] Electives (GER) 18  
BC/ BP 364 3  
**Bio** S 103, 104 8  
Chem 105, 106 8  
Chem 240 or 340; 341, 342 4-8  
Engl 101, 402 6  
GenCB 301 4  
BC/ BP 364 3  
Math 171 or 202 7  
Phys 101 4  
Stat 412 3  
V An 308 3  
One of: A S 466, 468, 472, 474, 476, or 478 3  
Approved Electives 14-18

**JOINT PROGRAM IN ANIMAL SCIENCES AND VETERINARY MEDICINE**

In order to meet the increasing demand for food-animal veterinarians, the Department of Animal Sciences and the College of Veterinary Medicine have created a combined program designed to train selected, highly qualified students to earn both a Bachelor of Science in Animal Sciences and a Doctor of Veterinary Medicine degree within a seven-year program. Students will take a three-year animal science program, completing all General Education Requirements, the animal sciences core and pre-veterinary medicine requirements. This program includes mathematics, chemistry, including organic and biochemistry, general biology, physics, and the core of animal sciences courses, including an introduction to farm animals, then further education in animal feeds and nutrition, breeding and genetics, reproduction and the economics of animal production management. Students will then enter the College of Veterinary Medicine and complete the requirements for total hours and upper-division hours before earning the BS in Animal Sciences. Students will continue the curriculum, leading to the DVM degree after a total of seven years of college work.

Students will enter the university under normal procedures and must be advised in the Department of Animal Sciences. Qualified students will be invited to apply for the program. A high schholastic achievement and the promise of the same and demonstrated experience and interest in working with farm animals will be the primary criteria for initial invitation. Students will be identified and invited to apply for the AS-DVM program in the second semester of the first year. Students will then declare animal sciences as a major in the first semester of the sophomore year and apply to the joint program in that year. The procedures for acceptance into the DVM program will be the same as those for other applicants. Successful participants will complete the three-year animal sciences program and begin the veterinary medicine curriculum in their fourth year of study. A 3.0 or higher grade point average for the first year and a 3.3 gpa upon completion of the third year will be required for the program. If the student is not accepted or withdraws from the AS-DVM program, the student could earn the BS in Animal Sciences and/or apply to the College of Veterinary Medicine under normal procedures.

Schedule of Studies

**First Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A S 101</td>
<td>3</td>
</tr>
<tr>
<td>A S 166, 172, 174, or 180</td>
<td>1</td>
</tr>
<tr>
<td><strong>Bio</strong> S 103 or GER</td>
<td>3 or 4</td>
</tr>
<tr>
<td>Chem 105 [P] (GER)</td>
<td>4</td>
</tr>
<tr>
<td><strong>Engl</strong> 101 [W] (GER) or GER</td>
<td>3</td>
</tr>
<tr>
<td>Math 107, 171, or GER</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A S 166, 176, or 178</td>
<td>1</td>
</tr>
<tr>
<td>A gHE 205</td>
<td>3</td>
</tr>
<tr>
<td><strong>Arts and Humanities</strong> [H] or Intercultural Studies [I] GER</td>
<td>3</td>
</tr>
<tr>
<td><strong>Bio</strong> S 103 or 104 [B] (GER)</td>
<td>4</td>
</tr>
<tr>
<td>Chem 106 [P] (GER)</td>
<td>4</td>
</tr>
<tr>
<td>GER</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A g Ec 201 [S] (GER)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Bio</strong> S 104, GenCB 301, or GER</td>
<td>3 or 4</td>
</tr>
<tr>
<td>Chem 240</td>
<td>4</td>
</tr>
<tr>
<td>GenEd 110 [A] (GER)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A S 330</td>
<td>3</td>
</tr>
<tr>
<td>A S 350, 351</td>
<td>4</td>
</tr>
</tbody>
</table>
The curriculum includes courses in the four major subfields of anthropology: archaeology, cultural/social anthropology, linguistic anthropology, and physical anthropology. These courses will familiarize students with current issues in human evolution, linguistics, the prehistoric development of culture, and the role of culture in the contemporary global system. All majors are required to gain a background in all four of these major subfields and may specialize in archaeology, cultural anthropology, or physical anthropology. The program in archaeology emphasizes the prehistory of western North America as well as ecological archaeology, past environments, quantitative methods, modeling and simulations, and lithic analysis, and includes courses taught by faculty with specialties in geoarchaeology, palynology, and zooarchaeology. The department also conducts summer archaeological field schools in the Pacific Northwest and Southwest and has professional-level experiences for archaeology students through the Center for Northwest Anthropology. The program in cultural anthropology emphasizes issues in international development, psychological anthropology, cultural ecology, medical anthropology, gender, and small-scale cultures.

Departmental offices and laboratories are located in College Hall, near the center of campus. Physical facilities include special laboratories for physical anthropology, palynology, geoarchaeology, and zooarchaeology, as well as research laboratories for faculty and advanced students. The department also maintains a museum with collections of material culture, as well as study collections of archaeological artifacts and physical anthropology specimens.

The department offers courses of study leading to the degrees of Bachelor of Arts in Anthropology, Master of Arts in Anthropology, and Doctor of Philosophy (Anthropology). Positions open to anthropologists include those in teaching, research, museum work, state and federal agencies, and private consulting firms. In addition, anthropology provides a strong foundation for a liberal arts education.

### Description of Courses

For explanation of symbols, see page 53.

#### Anthropology

**A nth**


130 [I] Great Discoveries in Archaeology 3 Impact of great archaeological discoveries and the work of archaeologists on our sense of the past.

198 [S] Anthropology Honors 3

201 [G] Art and Society 3 Art as an expression of social and cultural systems in non-Western societies.

203 [K] Peoples of the World 3 Principles of cultural anthropology through study of various ethnic groups from different parts of the world.

230 Introduction to Archaeology 3 Development of a dynamic picture of past human behavior from archaeological evidence.

231 [K] America Before Columbus 3 Prereq Anth 101 or GenEd 110. Cultures and environments of North/Middle America from the arrival of the earliest hunter-gatherers to the complex Mayan and Aztec civilizations. Cooperative course taught jointly by WSU and UI (Anth 329).

256 Introduction to Syntax and Semantics 3

Same as Engl 256.

260 Introduction to Physical Anthropology 3 Evidence for human evolution; processes of racial diversification; techniques of physical anthropology.

300 Field Methods V 2-8 Prereq permission by application. Practice in methods of archaeological, ethnological, or linguistic field research. (SS)

301 Psychological Anthropology 3 Prereq Anth 101, 203, or Psych 105. Basic theories in cultural psychology; cultural psychology from diverse societies internationally.

303 Gods, Spirits, Witchcraft and Possession 3 Non-Western religions; religion as a cultural system.

304 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.

306 Cultures and Peoples of the Middle East 3 Contemporary Arab cultures in a historical perspective within the framework of Western-Middle Eastern relations.

307 [K] Contemporary Cultures and Peoples of Africa 3 Introduction to family, social, political, economic and religious institutions of African cultures in context of African social issues.

309 [K] Cultural Ecology 3 Major findings of ecological anthropology relating to problems of population, resources, and environment in small-scale cultures.

316 [K] Gender and Culture 3 Cross-cultural examination of the status and roles of women and men, the institution of marriage, and symbols of gender valuation.

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

327 Contemporary Native Peoples of the Americas 3 Contemporary cultures of Native American communities in South America, Meso America, and North America.

330 [S] Origins of Culture and Civilization 3 Prereq 3 hours Anth. Prehistoric roots of modern culture from the beginnings of humankind to the rise of the first great civilizations.

333 Archaeology of Washington 3 Prereq Anth 230, 231, or 370. Prehistory of Washington state; for majors and nonmajors.


337 Agriculture and Civilization 3 Evolutionary and historical background to the development of plant and animal domestication and the relationship between agriculture and modern civilization.

350 [S] Speech, Thought and Culture 3 The role of language in social situations and as a reflection of cultural differences.

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

370 Past Environments and Culture 3 People and their environments from the Ice Age to
modern time; archaeological, ecological, and biological data.

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

402 Cross-cultural Gender and Kinship 3

403 [M] Cross-Cultural Human Development 3
Prereq Anth 101, 203 or H D 240. How culture patterns infant, child and adolescent development.

405 [M] Medical Anthropology 3
Prereq Anth 101 or 203. Relationships among disease, curing, culture and environment; non-Western medical systems; political economy of health care.

418 Human Issues in International Development 3
Interdisciplinary analysis of complex interaction between tradition and modernity in Third World societies.

1Open only to students in the Honors Program.

419 Cultural Components of International Business 3
Introduction to the cultural aspects of business.

428 Topics in Ethnography 3
May be repeated for credit; cumulative maximum 9 hours. Prereq 3 hours Anth. Culture history, ethnography, theoretical, and contemporary problems of selected culture areas. Credit not granted for both Anth 428 and 528. Cooperative course taught jointly by WSU and UI (Anthr 422).

430 [M] Introduction to Archaeological Method and Theory 3
Prereq Anth 230; 231 or 330. Archaeological theory in anthropological perspective; current trends in method and theory in American archaeology. Credit not granted for both Anth 430 and 530.

435 Cultural Resource Management 3
Role of archaeology in historic preservation and resource conservation; legal and institutional frameworks; research in a management context. Cooperative course taught by WSU, open to UI students (Anthr 435).(g)

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

446 Prehistory of the Desert West 3
Prereq Anth 230 or 231. Changing desert environments and human adaptations; perspectives for understanding desert prehistory; ancient lifeways of the Desert West. Field trip required. Credit not granted for both Anth 446 and 546.

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. Cooperative course taught by WSU, open to UI students (Anthr 450).

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

463 Human Races 3

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

468 [M] Sex, Evolution and Human Nature 3
Prereq Anth 203 or 260. Human sexuality, male-female relations, cooperation, violence and parent-child relations examined cross-culturally and in nonhuman primates utilizing evolutionary and biocultural perspectives.

490 [M] Integrative Themes in Anthropology 3

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

500 Field School V 2 (0-6) to 8 (0-24) Prereq permission by application. Training in gathering and analyzing field data. (SS)

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

502 Cross-cultural Gender and Kinship 3
Graduate-level counterpart of Anth 402; additional requirements. Credit not granted for both Anth 402 and 502.

504 Tribal Peoples and Development 3
Global and historic perspectives on the complex issues surrounding the problem of tribal peoples and development.

506 Research Design and Methods 2
Research project design, retrieval and analysis of anthropological data, funding sources, and preparation of research proposals; technical presentation of data.

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

510 Fundamentals of Cultural Anthropology 3
Overview of basic concepts and theory in cultural anthropology based on in-depth analysis of selected theoretical and ethnographic materials.

513 Lithic Technological Organization 4
3 (3-3) Methods and theory of lithic technology.

519 International Development and Human Resources 3
History of and recent changes in international development emphasizing anthropological perspectives.

528 Topics in Ethnography 3
Graduate-level counterpart of Anth 282; additional requirements. Credit not granted for both Anth 428 and 528. Cooperative course taught jointly by WSU and UI (Anthr 522).

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.

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

537 Quantitative Methods in Anthropology 4
3 (3-3) May be repeated for credit; cumulative maximum 8 hours. Prereq undergraduate Stat course. Sampling, data analysis, inferential statistics, microcomputer and mainframe use applied to anthropological problems with emphasis on archaeology.

539 Prehistory of the Upland Southwest 3
Prehistory of upland portions of American Southwest; emphasis on Anasazi and Mogollon traditions and relationships to historic Pueblos.

540 Prehistory of Northwest Coast 3
Prehistoric cultures, chronologies, and interrelationships on the northwest coast of North America.

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
Excavation and analysis of historical archaeological sites; archaeological implications. Cooperative course taught by UI (Anthr 545), open to WSU students.

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

547 Models in Anthropology 3
Models and model-building as an anthropological approach to present and past cultures.

550 Descriptive Linguistics 3
Graduate-level counterpart of Anth 450; additional requirements. Credit not granted for both Anth 450 and 550. Cooperative course taught by WSU, open to UI students (Anthr 550).

554 Anthropological Field Methods Seminar 3
Prereq Anth 450/550. Elicitation, recording techniques and analysis of sociocultural and linguistic field data.

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

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

561 Current Trends in Physical Anthropology 3
May be repeated for credit. Prereq Anth 465. Intensive review of major current trends in physical anthropology.

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

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

566 Human Osteology 3
Prereq Anth 260. Graduate-level counterpart of Anth 466; additional requirements. Credit not granted for both Anth 466 and 566.

570 Sediments in Geoarchaeology 4
3 (3-3) Sediment-forming processes, sedimentological techniques, reconstruction of quaternary environments, and sedimentology of site-forming processes.

573 Identification of Faunal Remains 4
2 (2-6) The relevance of faunal remains in archaeological context; excavating, preserving, and identifying bones commonly encountered in archaeo-
The anthropology major must achieve a grade of C- or higher in Anth 201, 301, 303, 309, 316.

**Description of Courses**

For explanation of symbols, see page 53.

**APPAREL, MERCHANDISING, AND TEXTILES**

A student majoring in apparel, merchandising, and textiles can choose between a general option, a business option, and a cooperative experience option. Credit not granted for both AMT 418 and 518. Cooperative course taught jointly by WSU and UI (FCS 424).

318 Apparel Merchandising I 3 Prereq Cpt S 105. Overview of apparel retailing, merchandise planning and buying, application of planning and buying principles, preparation for professional experience. Cooperative course taught jointly by WSU and UI (HEc 429).

320 (410) History of Western Dress 3 Historical survey of western dress from prehistory to late 1800s.

412 Product Design 3 (1-6) Prereq AMT 314. Apparel pattern and product line development. Cooperative course taught jointly by WSU and UI (FCS 424).

413 International Trade in Textiles and Apparel 3 Prereq Mktg 360. Economic/social conditions influencing apparel trade and consumption; comparison of production, distribution, and consumption of apparel in the global economy.

417 [M] Social and Psychological Aspects of Dress 3 Prereq 6 hours social science. Role of dress in human interaction; personal/social attributes of dress; research/theory applied to dress and human behavior. Credit not granted for both AMT 417 and 517. Cooperative course taught by WSU, open to UI students (HEc 417).

418 [M] Apparel Merchandising II 3 Issues and trends in contemporary merchandising; visual display and promotion. Credit not granted for both AMT 418 and 518.

419 Apparel, Merchandising, and Textiles Field Trip I May be repeated for credit; cumulative maximum 2 hours. Prereq junior in AMT. Selected issues in apparel production and distribution in connection with organized field trip.

420 (411) History of Contemporary Dress 3 Overview of fashion design and social history from mid-1800s to present.

428 International Experience in Apparel/Textiles Field 3 May be repeated for credit; cumulative maximum 6 hours. Prereq junior standing. Cultural experience integrated with the field of apparel/textiles in centers of apparel production throughout the world. Credit not granted for both AMT 428 and 528.

490 Cooperative Education Experience V 1-10 Prereq c/. Full-semester experience with business, industry, or government unit.

491 Cooperative Education Experience Seminar 2 Prereq AMT 490 or c/. Integrated seminar focusing on issues related to cooperative education experiences.

492 Sketching and Graphic Communication for Apparel and Interior Design 3 (1-4) Free-hand sketching and computer graphic techniques in fashion illustration; portfolio presentation and development.

495 Instructional Practicum V 1–4 May be repeated for credit; cumulative maximum 4 hours. By interview only.

498 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours. Current issues, trends, and merchandising strategies in apparel and textiles.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

517 Social Psychological Aspects of Dress 3 Graduate-level counterpart of AMT 417; additional requirements. Credit not granted for
both AMT 417 and 517.

518 Apparel Merchandising II 3 Graduate-level counterpart of AMT 418; additional requirements. Credit not granted for both AMT 418 and 517.

519 Research Seminar 2 or 3 Literature review; preparation and review of reports.

528 International Experience in Apparel/Tex-

tiles Field Graduate-level counterpart of
 AMT 428; additional requirements. Credit not
 granted for both AMT 428 and 528.

596 Advanced Instructional Practicum 3 Prereq Univ 590 or c/l; graduate standing. Information and direction for graduate stu-
tent teaching assistants seeking professional development in classroom teaching. S, F grading.

598 Topics in Apparel and Textiles V 1-3 May be repeated for credit; cumulative maximum 8 hours. Current topics in apparel and textile theory and research.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examina-
tion Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study and/or Examination Variable credit. S, F grading.

Schedule of Studies

APPAREL, MERCHANDISING, AND TEXTILES—GENERAL OPTION

At least 40 of the total hours required for the bachelor’s degree in this program must be in upper-
division courses. Courses required for the completion of an option cannot be taken on a pass-fail basis.

The general option is for students who plan for careers by combining course work in apparel, mer-
chandising, and textiles with other disciplines. The program of study is flexible and gives opportunity to pursue a minor in fields such as anthropology, business, fine arts, history, language, psychology, and theatre. Graduates from this option find positions in the apparel and textiles industry.

Freshman Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMT 108 Intro to AMT</td>
<td>2</td>
</tr>
<tr>
<td>Anth 101 or Soc 101 [S] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>Engl 101 [W] Intro Wrng (GER)</td>
<td>3</td>
</tr>
<tr>
<td>GenEd 110 or 111 [A] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>Math Proficiency [N] (GER)</td>
<td>3</td>
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Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>GenEd 110 or 111 [A] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>Chem 101 [P] or 150 (GER)</td>
<td>4</td>
</tr>
<tr>
<td>ID 101 Basic Env Design</td>
<td>3</td>
</tr>
<tr>
<td>Psych 105 [S] Intro Psych (GER)</td>
<td>3</td>
</tr>
<tr>
<td>SpCom 102 [C] Public Speaking (GER)</td>
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Sophomore Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>AMT 215 Textile Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>AMT 216 Consumer Issues</td>
<td>3</td>
</tr>
<tr>
<td>Econ 102 [S] Fundamental Macro (GER)</td>
<td>3</td>
</tr>
<tr>
<td>F A 201 or 202 [H] (GER)</td>
<td>3</td>
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<tr>
<td>FSHN 130 Nutr for Living</td>
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Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acctg 230 Prin of Acctg</td>
<td>3</td>
</tr>
<tr>
<td>AMT 217 Cultural Div/Appr</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities [H] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>Econ 101</td>
<td>3</td>
</tr>
<tr>
<td>Science Elective [B] [P] [Z] (GER)</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>AMT 314 Apparel Product Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AMT 410 History of West Dress</td>
<td>3</td>
</tr>
<tr>
<td>Cpt S 150 Comp Software/Bus</td>
<td>4</td>
</tr>
<tr>
<td>Intercultural Studies Elective [I] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>Mkig 467 Consumer Behavior</td>
<td>3</td>
</tr>
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Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>AMT 315 Apparel Prod Dev I</td>
<td>3</td>
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<tr>
<td>AMT 318 Apparel Merch I</td>
<td>3</td>
</tr>
<tr>
<td>AMT 413 Intl Trade Apparel/Textiles</td>
<td>3</td>
</tr>
<tr>
<td>AMT Supportive Elective</td>
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<tr>
<td>Mkig 470 Retail Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
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</tbody>
</table>

AMT Electives: AMT 311, 412, 419, 428, 490, 491, 492, 495, 498, 499. Cooperative program at University of Idaho: AMT 313. A maximum of 4 credits graded pass-fail or S, F may be used to satisfy AMT electives.

APPAREL, MERCHANDISING, AND TEXTILES—BUSINESS OPTION

At least 40 of the total hours required for the bachelor’s degree in this program must be in upper-
division courses. Courses required for the completion of an option cannot be taken on a pass-fail basis.

The business option is for students who plan careers in retail or the apparel and textiles industry. The option combines subject matter from apparel and textiles with courses in business accounting, business law, business administration, management, and administrative systems. It is structured so that only one additional business elective is needed to complete a minor in business. Students secure management positions in retail or the apparel and textiles manufacturing industry.

Freshman Year

First Semester

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<td>AMT 108 Intro to AMT</td>
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<td>Math Proficiency [N] (GER)</td>
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Second Semester

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<tr>
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<td>Electives</td>
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AMT Electives: AMT 311, 412, 419, 428, 490, 491, 492, 495, 498, 499. Cooperative program at University of Idaho: AMT 313. A maximum of 4 credits graded pass-fail or S, F may be used to satisfy AMT electives.

APPAREL, MERCHANDISING, AND TEXTILES—COOPERATIVE EXPERIENCE OPTION

At least 40 of the total ours required for the bachelor’s degree in this program must be in upper-
division courses. Courses required for the completion of an option cannot be taken on a pass-fail basis.

The cooperative experience option is available for students who wish to experience manufacturing/ product development or retail first-hand. Students attend WSU Vancouver for the final semester of their senior year and participate in an intense se-
and Textiles

For a minor in apparel, merchandising, and textiles, the student must complete 18 credits in AMID including AMT 215, 217, 318 or 418; I D 101. Contact the department office in White Hall, Room 202, for assignment of adviser to assist in selection of additional courses.

INTERIOR DESIGN

The interior design program offers a balanced program in interior design with exposure to art, architecture, and humanities. The fourth year is taught at WSU Spokane and students participate in an interdisciplinary design studio experience. This is an integrated studio with participation from interior design, architecture, and landscape architecture.

Students wishing to certify into the interior design curriculum must:
1. Complete a minimum of 45 semester hours, including four courses from Arch 101, 102, I D 101, 102, 201, 203, or equivalents.
2. Submit a statement of professional goals.
3. Submit a portfolio of class work from the courses listed above.

Certification will be granted the most qualified students based on minimum requirements, and demonstrated abilities. Students should contact the department for additional information.

Description of Courses

For explanation of symbols, see page 53.

Interior Design

I D

101 Basic Environmental Design I 3 (2-2) Sensory awareness as a design determinant; introduction to basic design elements in problem identification and solving processes.

102 Basic Environmental Design II 3 (2-2) Prereq I D 101. Application of basic design elements to the exploration of space and form.

201 Perception and Communication I 3 (0-6) Prereq Arch 101; I D 101, 102, or c//. Theoretical concepts relating to design objects and elements explored through various design and communication media.

202 [H] The Built Environment 3 Same as Arch 202.

203 Perception and Communication II 3 (0-6) Prereq Arch 103; I D 201. Developing perceptual awareness and use of media to convey sensory data and meaning.

211 History of Design I 3 History of design forms, interiors and furnishings from prehistoric to the Industrial Revolution.

215 Materials and Components of Interior Design 3 (2-3) Characteristics and properties of interior materials, flammability testing and rating, liabilities and regulations. Field trips required.

311 [M] History of Design II 3 History of design forms, interiors and furnishings from the industrial revolution through the 20th century.

321 Fundamentals of Planning and Design I 4 (1-9) Prereq I D 203. Design investigations of personal space of specified size and complexity for people of varying social, economic, and cultural backgrounds.

322 Interior Building Systems 1 Prereq I D 203. Introduction to basic building systems and components which impact interior space design.

325 Lighting for Interiors 3 (2-3) Analysis, planning, production, and visual applications of interior lighting; electric lighting sources.

333 Fundamentals of Planning and Design II 4 (1-9) Prereq I D 321. Design of interior environments for the needs of the private and public sector.

392 [M] Professional Procedures 3 Business practices and procedures as related to interior design; contract documentation and specification writing.

396 Beginning CAD for Interior Design CAD 3 (0-6) Prereq I D 321 or c//. Design problem solving using the computer as a tool.

412 Interior Design Theory 2 Prereq I D 333. Theory, principles, and determinants of interior design applied to current practice.

425 Advanced Planning and Design I 5 (0-10) Prereq I D 333. Design solutions and presentation drawings for residential/commercial projects based on program needs.(g)

426 Advanced Planning and Design II 5 (0-10) Prereq I D 425. Design problem-solving, programming and presentation drawings for residential/commercial projects based on program needs.(g)

428 International Design and Industry Experience 3 Prereq I D 425. By invitation only. Study abroad working with design and industry representatives in Europe. Credit not granted for both I D 428 and 528.

490 Cooperative Education Internship V 2-12 May be repeated for credit; cumulative maximum 12 hours. By interview only. Off-campus cooperative education internship with business, industry, or government unit.(g)

495 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq senior standing. By interview only.

498 Special Topics in Interior Design V 1-3 May be repeated for credit; cumulative maximum 6 hours.

499 Special Problems V 1-4 May be repeated for credit; cumulative maximum 4 hours. S, F grading.

597 Advanced Design Theory 3 (1-6) Prereq I D 425. Environmental and product design theory and development.

598 Topics in Interior Design V 1-3 May be repeated for credit; cumulative maximum 6 hours.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

Schedule of Studies

INTERIOR DESIGN

The interior design program offers a balanced program in interior design with exposure to art, architecture, and humanities. The fourth year is taught at WSU Spokane, and students participate in an interdisciplinary design studio experience. This is an integrated studio with participation from interior design, architecture, and landscape architecture.
Freshman Year

First Semester
- Arch 101 Graphic Com I 3
- Engl 101 [W] Intro Wrtg (GER) 3
- GenEd 110 or 111 [A] (GER) 3
- I D 101 Basic Env Design I 3
- Math Proficiency [N] (GER) 3
- Supportive Electives 3

Preparation for Graduate Study

Normally the applicant for graduate study should have an undergraduate major in 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.

School of Architecture


The School of Architecture offers courses of study leading to three baccalaureate degrees. These are Bachelor of Architecture, Bachelor of Science in Construction Management, and Bachelor of Science in Architectural Studies.

The School of Architecture also offers a postprofessional course of study leading to a Master of Science in Architecture which emphasizes design related to the environment, technology and culture. Architects are educated to perform professionally in a wide range of design and construction-related areas and assume important roles in the creation of a better built environment. They may work as independent practitioners, for large corporate firms or for governmental organizations. Architects are required to possess a high level of intuitive, analytical, and technical skills combined with a deep understanding of human values and needs.

The architecture curriculum is planned so that foreign study and other off-campus programs can be incorporated in the fourth and fifth years. Options include a semester in London or Copenhagen and a full year in Spokane studying interdisciplinary issues with construction management, interior design and landscape architecture students.

The construction manager is expected to understand a wide variety of structures that make up the built environment. This awareness includes properties of materials and construction systems and how they are utilized to produce buildings. The student in the program is encouraged to develop an inquisitive and inventive mind to deal with new construction methods and management techniques. It is also important that the graduate in construction management be knowledgeable in the field of business. Courses offered in a variety of departments are required to assure this breadth of understanding. Construction management students spend their final year of study in Spokane at the WSU branch campus.

The school 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 linkages with their professional counterparts. The Bachelor of Architecture degree program is accredited by the National Architectural Accrediting Board. The Bachelor of Science in Construction Management degree program is accredited by the American Council for Construction Education.

Sophomore Year

First Semester
- Arch 211 Arch History I (GER) 3
- I D 201 Percep and Com I 3
- I D 215 Mat Comp of I D 3

Second Semester
- Arch 221 [H] Arch History II (GER) 3
- I D 202 Built Environ 3
- I D 203 Percep and Com II** 3
- I D 211 History Dsn I 3
- SpCom 102 [C] Public Speaking (GER) 3

Junior Year

First Semester
- Arch 330 Mat & Const I 3
- FSHN 130 Nutr Living 3
- I D 311 History Dsn II 3
- I D 325 Lighting for Interiors 3

Second Semester
- Anh, Psych, or Soc Elective (GER) 3
- I D 333 Fund Plan/Design II 4
- I D 396 Beg CAD/ID 3
- Intercultural Studies [I] (GER) 3
- Science Elective [Z] (GER) 3

Senior Year

First Semester
- Arch 434 Acoustics 1
- Arch 472 Const Comm/Codes 2
- I D 425 Adv Plan Dsn I 5
- I D 490 or Supportive Elective 3

Second Semester
- I D 392 Pro Procedures 3
- I D 426 Adv Plan Dsn II 5
- I D 428 or Supportive Electives 3
- Supportive Electives 3

Supportive Electives:
- Arch 424, 425, 426, 456; F A 111, 312, 313, 320, 322, 332, 380; L A 264; Psych 220, 307 363, 384. Recommended Electives: AMT 410, 411, Arch 323, 324, 423, 446; H D 353; F A 302, 303, 304, 340, 350, 360, 381, 382, 385; Hort 231; Psych 220; transfer interior design hours as approved by the department.

Sophomore Year

First Semester
- Arch 220 Arch History I (GER) 3
- I D 201 Percep and Com I 3
- I D 215 Mat Comp of I D 3

Second Semester
- Arch 221 [H] Arch History II (GER) 3
- I D 202 Built Environ 3
- I D 203 Percep and Com II** 3
- I D 211 History Dsn I 3
- SpCom 102 [C] Public Speaking (GER) 3

Junior Year

First Semester
- Arch 330 Mat & Const I 3
- FSHN 130 Nutr Living 3
- I D 311 History Dsn II 3
- I D 325 Lighting for Interiors 3

Second Semester
- Anh, Psych, or Soc Elective (GER) 3
- I D 333 Fund Plan/Design II 4
- I D 396 Beg CAD/ID 3
- Intercultural Studies [I] (GER) 3
- Science Elective [Z] (GER) 3

Senior Year

First Semester
- Arch 434 Acoustics 1
- Arch 472 Const Comm/Codes 2
- I D 425 Adv Plan Dsn I 5
- I D 490 or Supportive Elective 3

Second Semester
- I D 392 Pro Procedures 3
- I D 426 Adv Plan Dsn II 5
- I D 428 or Supportive Electives 3
- Supportive Electives 3

Supportive Electives:
- Arch 424, 425, 426, 456; F A 111, 312, 313, 320, 322, 332, 380; L A 264; Psych 220, 307 363, 384. Recommended Electives: AMT 410, 411, Arch 323, 324, 423, 446; H D 353; F A 302, 303, 304, 340, 350, 360, 381, 382, 385; Hort 231; Psych 220; transfer interior design hours as approved by the department.

Sophomore Year

First Semester
- Arch 220 Arch History I (GER) 3
- I D 201 Percep and Com I 3
- I D 215 Mat Comp of I D 3

Second Semester
- Arch 221 [H] Arch History II (GER) 3
- I D 202 Built Environ 3
- I D 203 Percep and Com II** 3
- I D 211 History Dsn I 3
- SpCom 102 [C] Public Speaking (GER) 3

Junior Year

First Semester
- Arch 330 Mat & Const I 3
- FSHN 130 Nutr Living 3
- I D 311 History Dsn II 3
- I D 325 Lighting for Interiors 3

Second Semester
- Anh, Psych, or Soc Elective (GER) 3
- I D 333 Fund Plan/Design II 4
- I D 396 Beg CAD/ID 3
- Intercultural Studies [I] (GER) 3
- Science Elective [Z] (GER) 3

Senior Year

First Semester
- Arch 434 Acoustics 1
- Arch 472 Const Comm/Codes 2
- I D 425 Adv Plan Dsn I 5
- I D 490 or Supportive Elective 3

Second Semester
- I D 392 Pro Procedures 3
- I D 426 Adv Plan Dsn II 5
- I D 428 or Supportive Electives 3
- Supportive Electives 3

Supportive Electives:
- Arch 424, 425, 426, 456; F A 111, 312, 313, 320, 322, 332, 380; L A 264; Psych 220, 307 363, 384. Recommended Electives: AMT 410, 411, Arch 323, 324, 423, 446; H D 353; F A 302, 303, 304, 340, 350, 360, 381, 382, 385; Hort 231; Psych 220; transfer interior design hours as approved by the department.

*Equivalency required for transfer students.
**Portfolio review takes place after completion of this course.
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>Architectural Theory I</td>
<td>2 Architectural criticism and evaluation as viewed from contemporary and historical precedents.</td>
<td></td>
</tr>
<tr>
<td>Architectural Theory II</td>
<td>2 Continuation and expansion of Arch 425 including applications to design concepts and methodologies.</td>
<td></td>
</tr>
<tr>
<td>Site and Landscape Design</td>
<td>3 (1-4) Prereq Arch 203. Exploration of issues and development of skills relative to site and landscape design.</td>
<td></td>
</tr>
<tr>
<td>Environmental Control of Buildings I</td>
<td>3 (2-2) Mechanical systems for buildings; building heating, ventilating, and air conditioning systems; heat flow concepts.</td>
<td></td>
</tr>
<tr>
<td>Environmental Control of Buildings II</td>
<td>3 (2-2) Prereq Arch 432. Water supply, drainage, electrical and lighting systems for buildings.</td>
<td></td>
</tr>
<tr>
<td>Acoustics</td>
<td>1 Prereq major in Arch or Cst M; Sound theory, control, acoustics, and reinforcement systems as applied to architectural problems.</td>
<td></td>
</tr>
<tr>
<td>Architectural Design</td>
<td>2 (1-2) or 1 (1-4) Prereq Arch 403, 423. Design theory and methods of energy and resource conservation in architecture through the use of daylight modeling and computers.</td>
<td></td>
</tr>
<tr>
<td>Housing Design</td>
<td>3 Prereq Arch 432. Engineering and aesthetics of lighting design for buildings; case studies, field trip, studio design exercises.</td>
<td></td>
</tr>
<tr>
<td>Theory of Urban Design and Development</td>
<td>3 Prereq major in Arch, Cst M, business or public administration. History, principles and theories of the physical design and development of cities.</td>
<td></td>
</tr>
<tr>
<td>Architectural Animation</td>
<td>3 (1-4) Prereq certified Arch major, Cpt S 150 or 205. Introduction to computer animation production, building simulation and related CAD modeling techniques.</td>
<td></td>
</tr>
<tr>
<td>Computer-aided Design</td>
<td>2 (1-2) Prereq basic computer course. Science and art of architectural-computer-aided design for design discipline students.</td>
<td></td>
</tr>
<tr>
<td>Field Sketching/Journal Keeping</td>
<td>3 (2-2) Prereq junior standing. Field-sketching/journal-keeping strategies to facilitate investigation and comprehension of the built environment.</td>
<td></td>
</tr>
<tr>
<td>Architectural Structures III</td>
<td>3 Prereq Arch 352. Wind and seismic loads on architectural structures; high-rise structure systems; reinforced masonry systems, earth-retaining structures and foundation systems.</td>
<td></td>
</tr>
<tr>
<td>Architectural Structures IV</td>
<td>3 Prereq Arch 352. Deflection theory; analysis of statically indeterminate architectural structure systems; case studies in preliminary architectural engineering for buildings.</td>
<td></td>
</tr>
<tr>
<td>Construction Communications/Codes</td>
<td>2 Prereq major in Arch. Codes; specifications, preconstruction management, documentation.</td>
<td></td>
</tr>
<tr>
<td>Professional Practice</td>
<td>2 Prereq Arch 472. Architect licensing process; techniques for and rationale of marketing architectural services; office organization and business methods applied to architecture.</td>
<td></td>
</tr>
<tr>
<td>Architecture Internship</td>
<td>V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq major in Arch or Cst M. Placement in an approved industrial, professional, or governmental situation for specialized or general experience.</td>
<td></td>
</tr>
<tr>
<td>Seminar in Architectural Design</td>
<td>V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq major in Arch. Advanced study in architectural design. Cooperative course taught by WSU, open to UI students (Arch 490).</td>
<td></td>
</tr>
<tr>
<td>Seminar in Architectural Communications</td>
<td>V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq major in Arch. Advanced study in graphic communication.</td>
<td></td>
</tr>
<tr>
<td>Seminar in Architectural History</td>
<td>V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq Arch 342. Advanced study in urban and regional planning.</td>
<td></td>
</tr>
<tr>
<td>Seminar in Construction Management</td>
<td>V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq major in Arch or Cst M. Advanced study in environmental control of buildings.</td>
<td></td>
</tr>
<tr>
<td>Seminar in Urban and Regional Planning</td>
<td>V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq Arch 342. Advanced study in urban and regional planning.</td>
<td></td>
</tr>
<tr>
<td>Seminar in Professional Practice</td>
<td>V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq major in Arch. Advanced study in architectural practice management.</td>
<td></td>
</tr>
<tr>
<td>Seminar in Computer Applications</td>
<td>V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq Arch 301, 351 or c/c. Advanced study in architectural structures systems.</td>
<td></td>
</tr>
<tr>
<td>Seminar in Architectural Structures</td>
<td>V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq Arch 301, 351 or c/c. Advanced study in architectural structures systems.</td>
<td></td>
</tr>
<tr>
<td>Special Problems</td>
<td>V 1-4 May be repeated for credit. S, F grading.</td>
<td></td>
</tr>
<tr>
<td>Research Methods</td>
<td>2 Research methods in architecture and design disciplines; theory and methodology of research including historical survey, experimental systems and design process.</td>
<td></td>
</tr>
<tr>
<td>Directed Topics in Architecture</td>
<td>V 1-3 May be repeated for credit; cumulative maximum 6 hours. Topics related to areas of emphasis in the program and student specialization.</td>
<td></td>
</tr>
<tr>
<td>History and Theory of Design Issues in Architecture</td>
<td>3 Advanced study of history and theory of architecture relating to environmental and/or historical contexts.</td>
<td></td>
</tr>
<tr>
<td>Computer Animation</td>
<td>3 Prereq Arch 444. May be repeated for credit; cumulative maximum 9 hours. Advanced computer animation techniques; advanced specialization in building/ design simulation, management, visualization, and computer-aided design.</td>
<td></td>
</tr>
</tbody>
</table>
| Advanced Architectural Studio/Laboratory                                   |                                                      | 66
6 (0-12) In-depth study of design problems relating to cultural, environmental, technological and other issues as related to the student’s area of emphasis.

580 Architecture Internship V1-16 May be repeated for credit. Prereq graduate student in Arch. Placement in an approved industrial, professional, or governmental situation for specialized or general experience.

600 Special Projects or Independent Study Variable credit. S, F grading.


Description of Courses

For explanation of symbols, see page 53.

Construction Management

Cst M

201 Introduction to Construction 2 (1-3) Prereq major in Cst M. Construction industry overview; reading plans and specifications; analysis of the Business Roundtable’s Construction Industry Cost Effectiveness project.

442 [M] Theory of Urban Design and Development 3 Same as Arch 442.


452 Construction Practice Management 3 Business/management practices for a construction firm; building construction project management.(g)

453 Construction Communications/Law/Compilers 3 (2-3) Communication and law overview; analysis and interpretation of contract documents and the uniform building code.

455 Construction Scheduling 3 (2-3) Precedence and arrow networking techniques for construction; fundamentals of scheduling computations, time-cost adjustments, resource leveling; computer scheduling software overview.(g)

456 Methods and Procedures of Construction I 4 Prereq Arch 461, Cst M 470. Methods and procedures for site work, foundation construction, concrete construction; equipment, labor, and safety requirements.

457 Methods and Procedures of Construction II 4 Methods and procedures for masonry construction, steel construction, wood and timber construction, high-rise construction; equipment, labor, and safety requirements.

470 Estimating I 3 (2-3) Prereq Arch 331, Cst M 201. Cost estimating related to building general construction work; methods and techniques applicable to quantity survey, pricing detailed estimates, and bid preparation.(g)

471 Estimating II 3 (3-1) Computerized construction cost estimating and cost management; personal computer software applications spreadsheet, file management, database, and custom-type programs.

495 Seminar in Construction Management V 1-4 May be repeated for credit; cumulative maximum 4 hours. Advanced study in construction practice management.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

General Requirements

1. Due to limitations of space and faculty, enrollment in certain second-year courses and certification as a major in architecture or construction management can be granted to only the most qualified students. Prospective applicants for these courses and certification are responsible for familiarizing themselves with all requirements and procedures of the School of Architecture.

2. 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 Transfer Guide and contact the School of Architecture for information.

3. Transfer students and former WSU students returning must submit an application for admission to the university, a supplemental application to the program, and current academic records to the School of Architecture. The dates listed in this bulletin.

4. Students transferring from another institution into the second year must submit adequate visual evidence for the school to evaluate their potential for success in second-year design courses. Students transferring into the third year must submit a portfolio. Contact the School of Architecture for portfolio requirements.

5. A student may not normally enroll in 300- or 400-level Arch courses or any Cst M courses without being certified as a major in architecture or construction management.

6. A student may not take courses required by the school on a pass, fail basis.

Schedule of Studies

BACHELOR OF ARCHITECTURE

The five-year Bachelor of Architecture program is structured into (1) Pre-Architecture consisting of a beginning year of basic education, (2) the Professional Program consisting of three years of basic professional education, and (3) a terminal year of concentrated study and focus.

Pre-Architecture

Students who enter WSU and have an interest in architecture should obtain an adviser in the School of Architecture through the Student Advising and Learning Center.

First Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch 101 Graphic Communication</td>
<td>3</td>
</tr>
<tr>
<td>Engl 101 Introductory Writing [W] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>GenEd 110 World Civilization I[A] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>GER or F A or Cpt S Elective</td>
<td>6-8</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch 103 Visual Design</td>
<td>3</td>
</tr>
<tr>
<td>Arch 202 The Built Environment GER or F A or Cpt S Elective</td>
<td>6-8</td>
</tr>
<tr>
<td>Math 171 or 206 [N] (GER) or Phys 101 or 201 [P] (GER)</td>
<td>3 or 4</td>
</tr>
</tbody>
</table>

*Before graduation with the five-year professional Bachelor of Architecture degree, a student must complete at least 6 credit hours of fine arts and computer science electives with at least 2 credit hours in each. However, this is not a requirement for screening at the end of either the first or second years.

*Students who are not adequately prepared for Math 171 or 206 should take Math 107 and/or 108 as needed during the fall semester of their first year. Students intending to develop a math/engineering strength should take Math 171.

Third-Year Admissions and Certification

Years three, four and five constitute the certified professional program in architecture. A maximum of 45 students are admitted into the third year each fall and are certified in architecture. To be considered, a student must submit an application to the School of Architecture during the previous spring semester and have completed 54+ semester credit hours, including all the first- and second-year architectural program requirements. Students not currently enrolled in architectural design courses at WSU must also submit a portfolio. Selection is based on the g.p.a. in the required 54+ semester credit hours. The courses which must be included are all the first-year courses listed.
above plus Arch 201, 203, 207, 209, 220, 330, 331, physics, math and a physical science GER. The re-
mainer of the credits will be made up of GER courses, fine arts and computer electives required for 
graduation. The screening is done on two occasions: at
the end of the WSU spring semester and midsum-
mer after spring semester or spring quarter grades are
received for transfer students. Most of the 45 stu-
dents will be selected at the end of the spring semi-
ster, but some positions will be held open until mid-
summer for transfers and students deferred from the 
first screening.

Application/Portfolio/Notification Deadlines:
April 1 All second-year and third-year applica-
tions due.
May 1 Visual evidence of drawing and
graphic design skills due from second-
year applicants and portfolios due from third-
year applicants who did not complete Arch 101, 103, 201, 203 at 
WSU.
June 15 First screening: Applicants must be
classified as accepted, deferred to
second screening, or denied. They will 
be notified by mail only, about July 1.
July 15 Second screening: Applicants will be
classified as accepted or denied. They will 
be notified by mail only, about 
August 1.

NOTE: 
Students offered positions in the second-year im-
 pacted courses or third-year program must promptly 
notify the school of their acceptance of the position
or the next alternate will be offered the position.

Students that are admitted must be registered for the 
fall semester and attend the first day of classes or 
they will lose their position and the next alternate
will be offered that position.

Third Year (Second Professional Year) 

First Semester 
Hours
Arch 301 Architectural Design III 5 
Arch 307 Environmental Design Theory 2 
Arch 324 Renaissance to 19th Cen Architecture 2 
Arch 351 Architectural Structures I 3 
Arch 353 Architectural Structures Lab I 1 
GER or F A or Cpt S’ Elective 3 

Second Semester 
Arch 303 Architectural Design IV 5 
Arch 309 Architectural Systems Theory 2 
Arch 352 Architectural Structures II 3 
Arch 354 Architectural Structures Lab II 1 
Arch 423 20th Century Architecture 2 
Arch 432 Environmental Controls of Bldgs I 3

Fourth Year (Third Professional Year) 

First Semester 
Arch 401 Architectural Design V 5 
Arch 407 Architectural Theory I 2 
Arch 433 Environmental Controls of Bldgs II 3 
Arch 434 Acoustics 1 
Arch 461 Architectural Structures III 3

Second Semester 
Arch 403 Architectural Design VI 5 
Arch 409 Urban Design Theory 2 
Architectural Emphasis Electives 4 
GER or F A or Cpt S’ Elective 3

Fifth Year (Fourth Professional Year) 

First Semester 
Arch 411 Architectural Design VII 6 
Arch 415 Programming/Decision Theory 3 
Arch 472 Construction Communication/Codes 2 
Architectural Emphasis Electives 3 

Second Semester 
Arch 413 Design Thesis 6 
Arch 473 Architectural Business 2 
Architectural Emphasis Elective 3 
Electives 3

Other Requirements: 
Incomplete in Arch 101, 103, 201, 203, 207, 
209, 301, 303, 307, 309, 401, 403, 407, 409, 411
will have to be completed a week before the begin-
ning of the next semester classes. Failure to
complete the work and have the grade changed to a
passing grade will prevent the student from advanc-
ing into the next course in the sequence.

\*At least 3 hours of Physical Science Electives from
the school’s approved list are required for admis-
sion into the third year.

\*At least 11 hours of Architectural Emphasis Elec-
tives from the school’s approved list are required
for graduation.

BACHELOR OF SCIENCE IN
ARCHITECTURAL STUDIES

The Bachelor of Science in Architectural Studies is
a program primarily for those who want to termi-
nate their studies at the end of four years.
If, after being admitted into the school and spend-
ing at least one semester in the professional program,
students find that their interests lie in a different but
related area or specialty, they may choose to move
into the Architectural Studies Program. It can be used
to help prepare a student to work in related fields
such as technology, management, or community or
regional development. It may be used as a founda-
tion for graduate work in these areas.
It must be clearly understood that this program does
not necessarily prepare a student for admission into
the fifth year of the professional program nor prepare
graduates for the Architect’s License Examination.

All students desiring to obtain the architectural
studies degree must certify as majors in that pro-
gram for at least two semesters prior to graduation.
At the time of certification, a specific schedule of
studies leading to the degree will be developed by the
student in consultation with the adviser.

Program Requirements:
1. Completion of the pre-architecture requirements
and admission into the professional program.
2. a. Arch 301, 303, 307, 309 and completion of
at least 25 additional upper-division credit
hours in or supporting an area of emphasis.
Specific schedule of studies must be ap-
proved by the school, or
b. Completion of all required courses in the
third and fourth years of the professional
architectural program.

BACHELOR OF SCIENCE IN
CONSTRUCTION MANAGEMENT

Construction management is a five-year program struc-
tured into two years of preconstruction management,
Course and G.P.A. Requirements for Screening:
Because the School of Architecture receives more applications from qualified students than can be accommodated, screening for entry into the third year is based on the applicant fulfilling the minimum requirements listed and the applicant’s overall g.p.a.

To be considered for admission, an applicant must:
1. Qualify for admission into Washington State University.
2. Complete the Construction Management Program Course Requirements for Certification as listed herein.
3. Earn a grade of C or better in Acctg 230, 231, Arch 101, B Law 210, Cpt S 105, 153, Econ 101, 102, Geol 101, Math 171, 201, Phys 101 or 201.
4. Complete and submit, by May 1, an application to the Construction Management Program.

Construction Management Program Course Requirements for Certification¹:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Law</td>
<td>3</td>
</tr>
<tr>
<td>Cpt S (computer software in business)</td>
<td>4</td>
</tr>
<tr>
<td>Econ (introduction to micro and economics)</td>
<td>6</td>
</tr>
<tr>
<td>Engl 101 [W] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>GenEd 110 and 111 [A] (GER)</td>
<td>6</td>
</tr>
<tr>
<td>Geology (introduction with laboratory)</td>
<td>4</td>
</tr>
<tr>
<td>Intercultural Studies Elective [I] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>Math (equivalent to college-level calculus)</td>
<td></td>
</tr>
<tr>
<td>Math (equivalent to college-level finite)</td>
<td>3</td>
</tr>
<tr>
<td>Phys (one semester with laboratory)</td>
<td>4</td>
</tr>
</tbody>
</table>

¹A student anticipating a transfer to WSU should become familiar with the content of the courses listed herein to be sure that courses taken at another institution are equivalent.

²Must be selected from the list under the General Education Requirements for Graduation section of this catalog. Requirements for certification to construction management listed above do not include all of the General Education Requirements for Graduation.

Applications Requirements and Deadlines:
Applications are due May 1 for admission and certification into the program at the beginning of the fall semester. Grade records for transfer students for the semester or quarter must be available to the Construction Management Coordinator before July 1.

Construction Management

Third Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch 330 Materials and Construction I</td>
<td>2</td>
</tr>
<tr>
<td>Arch 351 Arch Structures I</td>
<td>3</td>
</tr>
<tr>
<td>C E 201 Surveying for Engr</td>
<td>3</td>
</tr>
<tr>
<td>Approved Electives*</td>
<td>6</td>
</tr>
<tr>
<td>Approved Emphasis Elective**</td>
<td>3</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch 331 Materials and Construction II</td>
<td>2</td>
</tr>
<tr>
<td>Arch 352 Arch Structures II</td>
<td>3</td>
</tr>
<tr>
<td>Arch 432 Environmental Controls I</td>
<td>3</td>
</tr>
<tr>
<td>Cst M 201 Intro to Construction</td>
<td>2</td>
</tr>
<tr>
<td>Approved Elective*</td>
<td>3</td>
</tr>
<tr>
<td>Approved Emphasis Elective**</td>
<td>3</td>
</tr>
</tbody>
</table>

Fourth Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch 332 Materials and Construction III</td>
<td>3</td>
</tr>
<tr>
<td>Arch 433 Environmental Controls II</td>
<td>3</td>
</tr>
<tr>
<td>Arch 461 Arch Structures III</td>
<td>3</td>
</tr>
<tr>
<td>Cst M 470 Estimating I</td>
<td>3</td>
</tr>
<tr>
<td>Approved Elective*</td>
<td>3</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch 462 Arch Structures IV</td>
<td>3</td>
</tr>
<tr>
<td>Cst M 456 Method and Process I</td>
<td>4</td>
</tr>
<tr>
<td>Engl 201, 301, or 402</td>
<td></td>
</tr>
<tr>
<td>Approved Elective*</td>
<td>3</td>
</tr>
<tr>
<td>Approved Emphasis Elective**</td>
<td>3</td>
</tr>
</tbody>
</table>

³Approved Electives (five to be selected):
B Law 410, 411, 450; Dec S 215, 340; Econ 301, 350, 450; Ins 320; Mgt 301; Psych 306.

³Approved Emphasis Electives (all to be selected): Cst M 442. Fin 325, R.E. 305.

Fifth Year (WSU Spokane)

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cst M 451 C. M. The Process</td>
<td>3</td>
</tr>
<tr>
<td>Cst M 452 Construction Practice Management</td>
<td>3</td>
</tr>
<tr>
<td>Cst M 453 Construction Scheduling</td>
<td>3</td>
</tr>
<tr>
<td>Cst M 457 Method and Process II</td>
<td>4</td>
</tr>
<tr>
<td>Approved Elective***</td>
<td>3</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cst M 453 Construction Comm/Law/Codes</td>
<td>3</td>
</tr>
<tr>
<td>Cst M 471 Estimating II</td>
<td>3</td>
</tr>
<tr>
<td>Cst M 495 Construction Mgt Seminar</td>
<td>3 or 6</td>
</tr>
<tr>
<td>Cst M 499 Special Problems</td>
<td>3 or 6</td>
</tr>
</tbody>
</table>

***Approved Electives (3 hours to be selected):
Arch 434, 451, 480, 497.

for explanation of symbols, see page 53.

Asia

270 [G] Introduction to South Asian Culture 3 Same as Hist 270.
272 [I] Introduction to Middle Eastern History 3 Same as Hist 272.
275 [K] Introduction to East Asian Culture 3 Same as Hist 275.
306 Cultures and Peoples of the Middle East 3 Same as Anth 306.
314 [G] [M] Philosophy and Religion of India 3 Same as Phil 314.
315 [G] [M] Philosophy and Religion of China and Japan 3 Same as Phil 315.
370 [G] Civilization of Classical India 3 Same as Hist 370.
373 [G] Chinese Civilization 3 Same as Hist 373.
435 Politics of Developing Nations 3 Same as Pol S 435.
436 Politics in Japan 3 Same as Pol S 436.
470 (390) [I] [M] Britain and India, India and America 3 Same as Hist 470.
472 The Twentieth Century Middle East 3 Same as Hist 472.
476 Revolutionary China, 1800 to Present 3 Same as Hist 476.
477 Modern Japanese History 3 Same as Hist 477.
499 Special Problems V 1-4 May be repeated for credit. S, F grading.

Degree Requirements

MAJOR:
A minimum of 40 hours (46 hours for comprehensive option) of courses on Asia and in related fields including 16 hours of an appropriate language.

China
Asia 270, 272, 275, 315, 373, 374, 476, Asia Elective.

Japan
Asia 270, 272, 275, 315, 374, 436, 477, Asia Elective.

South Asia
Asia 270, 272, 273, 275, 314, 370, 470, Asia Elective.
Middle East
Comprehensive
Asia 270, 272, 273, 275, 370, 373, 436, 470, 472, 476.
Relevant upper-division courses not mentioned above may be counted toward a major or minor if approved by the Director of the Asia Program.
MINOR:
A minor in Asian Studies requires 23 hours, including 8 hours of an appropriate language.
China
Asia 275, 315, 373, 374, 476.
Japan
Asia 275, 315, 374, 436, 477.
South Asia
Asia 270, 273, 314, 370, 470.
Middle East
All courses are crosslisted in the Asia Program.

Program in Astronomy

Professor and Program Director, J. H. Lutz; Assistant Professor, L. Likkel.
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. Opportunities are available for students to collaborate with astronomy faculty to do research projects with the 3.5 m Apache Point Telescope which can be operated remotely from the WSU Pullman campus.
A minor in astronomy requires 16 hours as follows: a minimum of 10 hours upper-division astronomy courses which must include Astr 345 and at least 1 hour of Astr 499; 6 hours from Cpt S 330; Hist 381; Math 360, 440, 441, 443, 444, 448; Phys 320, 341, 342, 443, 450.

Description of Courses

For explanation of symbols, see page 53.

Astronomy

Astr 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.

Astronomy 3 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.

Aspects of the Night Sky 1 Star names, magnitude scales, constellation identification and mythologies, astronomical coordinates, solar, lunar and planetary motions, practical astronomy.

Astronomy and Astrophysics 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Math 172. Advanced topics in modern astronomy and astrophysics. Cooperative course taught jointly by WSU and UI (Phys 485). (g)

Special Problems V 1-4 May be repeated for credit. S, F grading.

Topics in Modern Astrophysics 3 May be repeated for credit; cumulative maximum 9 hours. Prereq Math 315. Problems of current astrophysical interest in the areas of stellar atmospheres, stellar interiors, gaseous nebulae, the interstellar medium and galaxies.

Special Projects in Independent Study Variable credit. S, F grading.

Department of Biochemistry and Biophysics


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 department provides 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, predentistry, and preveterinary science.

Members of the department are all active in research and have interests in: function and mechanism of contractile proteins, nuclear magnetic resonance studies of membranes and proteins, DNA repair mechanisms and chromatin structure, the structure and function of membrane components, control of eucaryotic gene expression, evolution of macromolecules, the biosynthesis and metabolism of waxes, inositol, monoterpenes, and other plant components, the structure and function of plant protease inhibitors, microbial metabolism with laboratories each semester. In addition, the minor requires BC/BP 346 plus 7 additional hours of biochemistry/biophysics, 2 hours of which must include laboratory courses. BC/BP 463 plus 464 may be used to satisfy the requirement for 10 hours of biochemistry/biophysics.

The graduate program in Biochemistry and Biophysics includes faculty from chemistry, the Institute of Biological Chemistry, and genetics and cell biology. The department and graduate program offer courses of study leading to the degrees of Bachelor of Science in Biochemistry, Master of Science in Biochemistry, and Doctor of Philosophy. Along with the graduate faculty of genetics and cell biology and microbiology, the department administers a minor in molecular biology, listed separately in this catalog.

Description of Courses

For explanation of symbols, see page 53.

Biochemistry/Biophysics

BC/BP 364 Introductory Biochemistry 4 Prereq Chem 106; Chem 240 or 340. Modern biochemistry for undergraduates in the biological sciences. Cooperative course taught by WSU, open to UI students (Biochem 481-482).

Introductory Biochemistry Laboratory 1 (0-3) Prereq BC/BP 364 or c//. Basic biochemical techniques.

Introduction to Molecular Biology Computer Techniques 3 (1-6) Prereq BC/BP 364, GenCB 301. Computer analysis of protein and nucleic acid sequences, molecular visualization and modeling, sequence and structure databases.

[M] Undergraduate Seminar 1 Prereq junior standing. Opportunities in biochemistry, biophysics and molecular biology.

General Biochemistry 3 Prereq Chem 220, 222, 342; junior standing. Protein structure and function; enzyme catalysis; nucleic acid structure and function; biochemical methodology; molecular biology.

General Biochemistry 3 Prereq BC/BP 463. Metabolism of carbohydrates, proteins, fats, bioenergetics; photosynthesis; control of metabolic processes.

Principles of Biophysical Chemistry 3 Prereq Chem 331. Transport processes; elementary quantum theory; chemical bonding; principles and applications of spectroscopy of macromolecules; statistical mechanics.

Biophysical Chemistry Laboratory 2 (0-6) Prereq BC/BP 472 or c//. Laboratory experiments illustrating physical chemical principles with particular application to life sciences.

Special Problems V 1-4 May be repeated for credit. S, F grading.

Molecular Genetics 3 Same as GenCB 560.
Cooperative course taught by WSU, open to UI students (Bioch 487).

561 Biological Signaling in Plants, Animals and Microorganisms 2 Prereq BC/BP 563. New research on intra and extra cellular biochemical signaling, including communication in plants and hormone action in animals. (a/y)

563 General Biochemistry 3 Prereq Chem 220, 222, 342. Structure and function of proteins and nucleic acids; fundamental principles of enzymology; chemical aspects of molecular biology. Cooperative course taught by WSU, open to UI students (Biochem 541/VS 563).

564 General Biochemistry 3 Prereq BC/BP 563. Carbohydrate, amino acid and lipid metabolism and its control; biochemistry of vitamins; bioenergetics; photosynthesis; nitrogen fixation. Cooperative course taught by WSU, open to UI students (Biochem 542/VS 564).

565 Molecular Biology I 3 Prereq BC/BP 563. Survey of recombinant DNA methods; DNA sequencing; site-directed mutagenesis; and methods for analyzing gene structure and function; transposable elements.

566 Molecular Biology II 3 Same as GenCB 566.

567 Proteins and Enzymes 3 Prereq BC/BP 563. Enzyme mechanisms; protein structure and function; protein evolution. (a/y)

568 Advanced Topics in Biochemistry V 1-3 May be repeated for credit. Prereq BC/BP 563 or c/l. Recent research in selected areas of biochemistry.

570 Biomembranes 2 or 3 Prereq BC/BP 564. Structure and function of biological membranes; composition, transport, receptors, and sensory phenomena. (a/y)

572 Organic Chemistry and Biochemistry for Teachers II 2 For preselected teachers. Continuation of Chem 571.

573 Physical Biochemistry 3 Prereq BC/BP 472 or one year physical chem. Techniques for the study of biological structure and function; spectroscopy, magnetic resonance, diffusion, and sedimentation, electron microscopy, diffusion and fractionation and scattering. (a/y)

576 Molecular Biology Techniques I (0-3) Prereq BC/BP 564 or c/l. Modern laboratory techniques in the sequencing of nucleic acids.

577 Molecular Biology Techniques II (0-3) Prereq BC/BP 564 or c/l. Modern laboratory techniques in the use of plasmids as cloning vehicles.

578 Molecular Biology Computer Techniques 4 (2-6) Prereq BC/BP 564 or 563; GenCB 301. Computer analysis of protein and nucleic acid sequences, molecular visualization and modeling, protein folding. Cooperative course taught by WSU, open to UI students (MMBB 578).

587 Advanced Topics in Plant Biochemistry 2 Prereq BC/BP 564; basic botany. Biochemistry unique to plants; new research advances. (a/y)

591 Biochemistry Seminar 1 or 2 May be repeated for credit; cumulative maximum 10 hours. Required of all graduate students in biochemistry.

592 Advanced Topics in Cell Biology V 1-3 May be repeated for credit; cumulative maximum 7 hours. Same as GenCB 592.

593 Research Proposal 2 May be repeated for credit; cumulative maximum 4 hours. Written and oral presentation of an area of biochemistry.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

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

Bio S 103 Introductory
Chm 105 Principles 4
Engl 101 [W] Intro Writing (GER) 3
GenEd 110 or 111 [A] (GER) 3
Math 171 Calculus 2 4

Second Semester

Bio S 104 Introductory
Chm 106 Principles 3
GenEd 110 or 111 [A] (GER) 3
Math 172 Calculus I 4

Sophomore Year

First Semester

Arts and Humanities [H], Intercultural Studies [I], or Social Sciences [S] Elective (GER)* 6
Chm 220 Quant Analy 2
Chem 222 Quant Analy Lab 2
Chem 340 Organic 3
Chem 341 Organic Lab 2

Second Semester

BC/BP 364 Intro Biochem
Chem 324 Organic 3
Chem 343 Organic Lab 2
Engl 201 Expos Wrtng 4
Phys 201 Class Phys 4

Junior Year

First Semester

BC/BP 398 Seminar 1
Chem 331 Phys Chem 3
Foreign Language Elective 4
GenCB 301 General 4
Phys 202 Class Phys 4

Second Semester

Arts and Humanities [H], Intercultural Studies [I], or Social Sciences [S] Elective (GER) 3
BC/BP 472 Phys Biochem 3
BC/BP 482 BP Chem Lab 2
Bio S 5 Elective 3 or 4
Foreign Language Elective 4

Senior Year

First Semester

Arts and Humanities [H], Intercultural Studies [I], or Social Sciences [S] Electives (GER) 6
BC/BP 463 Gen Biochem 3
BC/BP 499 Sp Problems 3
Approved Science Elective 4

Second Semester

Arts and Humanities [H], Intercultural Studies [I], or Social Sciences Electives (GER) 6
BC/BP 464 3
Approved Electives 6

*Students who score well on the Physical Sciences and Mathematics Advisory Examination are encouraged to take Chem 115, 116, and 117 in place of 105, 106, and 107.

*Students who fail to be admitted into calculus should take Math 107 and Math 108 in place of Math 171. Math 220 is also recommended and should be fit in if possible.

*Currently, 21 credits are required in these subjects. At least 6 of these 21 must be in Arts and Humanities, at least 3 in Intercultural Studies, and at least 6 in Social Sciences. These classes [along with English (footnote 4)] may be taken in any order.

*Engl 402 may be substituted for Engl 201 if the student is a junior or senior.


*German, French or Russian is recommended, but no language is required. Cpt S 150 is especially recommended for students who decline to take college-level foreign language courses.

*Chm 332, 333, 334 may substitute for BC/BP 472, 482 with permission of adviser. Students may opt to take BC/BP 563, 564 in place of BC/BP 463, 464. Other 400- or 500-level lab courses (e.g., BC/BP 576, 577) may be substituted for BC/BP 499 with permission of adviser.

*300- or higher-level science or mathematics course not otherwise required in the curriculum if approved by the adviser.

Department of Biological Systems Engineering


BIOL O GICAL SYSTEMS ENGINEERING

Biological systems engineers design technological solutions to problems in systems that involve plants, animals, micro-organisms and biological materials. They produce creative and effective solutions to problems facing the environment, our food supply, and all types of living organisms. Using their technical knowledge and the engineering design process, they are able to design systems that improve the well-being of people, plants, animals and other living organisms and create new products through efficient, yet ecologically sound, use of our natural resources.

The biological systems engineering curriculum prepares graduates who are uniquely qualified to...
Department of Biological Systems Engineering

apply engineering methods to biologically based systems. The schedule of studies provides students an early introduction to biological systems engineering, including design, and continues to expand that understanding and design experience through-out the four years of study. Students gain computer experience from the first semester and build capabili-ties for biological system analysis in each subsequent year. The BSysE 110, 210, 310, 410, 411 sequence provides a central core in design that is coupled to the engineering, biological, chemical and physical sciences, communications, societal awareness, professionalism and ethics. This cur-riculum is unique in that it yields a professional engineering baccalaureate degree that can also sat-isfy pre-veterinary, pre-medical and pre-dentistry requirements.

Students are offered flexibility in selection of an area of emphasis within biological systems engi-neering. Areas of emphasis currently available are (1) water, soil and environmental resource engi-neering; and (2) food engineering. Other emphasis areas may be defined to fit a student’s interest (e.g., bio-material processing, animal environmental sys-tems, wood products development). Advanced engineering design electives build on the back-ground in biological systems engineering design and related technical biological science electives to provide depth in the selected area of emphasis.

This new professional curriculum, leading to the Bachelor of Science degree in Biological Systems Engineering, is in the process of gaining accreditation from the Accreditation Board for Engineering and Technology. Enrollment in the upper-division curricu-lum is restricted to certified majors. Requirements for certification are available from the department.

The Department of Biological Systems Engi-neering also participates in the College of Engineering and Architecture’s programs leading to the degrees of Master of Science in Engineering and Doctor of Philosophy (Engineering Science).

Description of Courses

For explanation of symbols, see page 53.

Biological Systems Engineering

BSysE

110 Engineering Living Systems 2 (1-3) Engineering design of living systems; social factors influ-encting design; computer-based engineering tools.

210 Biological Systems Analysis and Design 3 (2-3) Prereq Bio S 103, Chem S 105; Cpt S 153 or 203. Application of computer-assisted tools for the engi-neering analysis and design of biological systems.

310 Biological Dynamics for System Design 3 (2-3) Prereq BSysE 210. Understanding and applica-tion of dynamic computer simulation models for the analysis and design of biological systems. Cooperative course taught jointly by WSU and UI (AgE 351).

351 Hydrology 3 Precipitation and runoff events; principles of climatology, evaporation, infiltr-a- tion, and snowmelt. Cooperative course taught jointly by WSU and UI (AgE 351).

352 Introduction to Soil and Water Engineering 3 (2-3) Prereq BSysE 351, C E 315, Soils 201. Fundamentals of soil and water engineering; agricultural hydrology and hydraulics, erosion control, and water quality. Cooperative course taught jointly by WSU and UI (AgE 352).

362 Agricultural Power and Machinery 4 (3-3) Prereq M E 301 or Ch E 301. Performance, operation, and testing of agricultural power units and machinery; functional requirements, materials, forces and safety. Cooperative course taught jointly by WSU and UI (AgE 372).

380 Electric Power and Controls 3 (2-3) Prereq E E 304. Design and on-farm use of electric equip-ment and systems; design of electronic control systems for agricultural applications. Cooperative course taught jointly by WSU and UI (AgE 462).

386 [M] Engineering Properties of Biological Materials 3 (2-3) Prereq BSysE 310 or c/l; C E 213; 315 or Ch E 332. Composition of bio-logical materials, mechanical and thermal properties, chemical and biological changes. Cooperative course taught by WSU, open to UI students (AgE 386).

410 [M] Senior Project Design I 3 Prereq senior in Engr, BSysE 310. Technical, professional, ethical, social, economic issues in engineering design; initial engineering design process steps for a two-semester team design project.

411 Senior Project Design II 3 (1-6) Prereq BSysE 410 in previous semester. Comprehensive and initial design of BSysE 410. Detailed design of a biological engineer-ing-related process, machine, structure, or system.

441 Process Control 3 Same as Ch E 441. Cooper-ative course taught by WSU, open to UI stu-dents (AgE 421).

452 Eco-environmental Engineering Design 3 (2-3) Prereq BSysE 310 or c/l; 351; Soils 414, 415 or c/l; design engineering to monitor, evaluate, and minimize non-point pollution from agricultu-re, environmentally acceptable disposal of wastes; bioremediation. Cooperative courses taught by WSU, open to UI students (BSysE 452).

453 Irrigation and Drainage System Design 3 (2-3) Prereq BSysE 452. Design of furrow, trickle, and sprinkle irrigation systems; conver-vancy systems; drainage and water table control systems. Cooperative course taught jointly by WSU and UI (AgE 456).

457 Design for Watershed Management 3 (2-3) Prereq BSysE 452. Modeling water movement and mass transport; design for balance between animal, plant, soil, water, and air resources in watershed. Cooperative course taught jointly by WSU and UI (AgE 457).

461 Agricultural Processing and Environment 3 Prereq BSysE 210, C E 315, M E 301 or c/l; Ma-tериалs handling and processing, psychrometrics, heat and mass transfer, pumps and fans, refriger-a-tion, agricultural environments, waste manage-ment. Cooperative course taught jointly by WSU and UI (AgE 461).

462 Systems in Integrated Crop Management 3 (2-3) Same as Entom 462.

474 Fluid Power and Control Systems 3 (2-3) Cir-cuit components; circuit design and testing; agri-cultural applications. Credit not granted for both BSysE 474 and 574. Cooperative course taught by UI (AgE 474), open to WSU students.

482 Food Process Engineering Design 3 Prereq BSysE 386 or Ch E 330. Design of food processing systems; design and simulation of ster-ilization and pasteurization processes in foods. Cooperative course taught by WSU, open to UI students (AgE 482).

486 Food Rheology 3 (2-3) Prereq BSysE 386. Principles and applications on the rheology of foods, including fundamental and empirical equations; viscelasticity; normal forces, time dependency and instrumentation. Credit not granted for both BSysE 485 and 586. Cooperative course taught by WSU, open to UI stu-dents (AgE 486).

487 Food Plant Design 3 Prereq BSysE 482. Preliminary design of food processing plants, in-cluding engineering principles, equipment selec-tion, economic analysis, and regulatory aspects. Cooperative course taught by WSU, open to UI students (AgE 487).

488 Food Powders 3 Engineering principles applied to handling and processing of food pow-ders, including particle size distribution, mor-phology, physical properties, agglomeration, attrition, segregation. Credit not granted for both BSysE 388 and 588. Cooperative course taught by WSU, open to UI students (AgE 488).

495 Internship in Biological Systems Engineer-ing V 1-3 May be repeated for credit; cumula-tive maximum 6 hours. Prereq sophomore standing. Prior approval of supervisor and ad-viser required. Work experience related to aca-demic learning. S, F grading.

496 Conservation Engineering 3 (2-3) Prereq BSysE 352. Predicting occurrence and dispo-sition of water on agricultural watersheds; hy-drologic modeling; erosion processes; control structures and methods; construction practices. Credit not granted for both BSysE 496 and 596. (a/y) Cooperative course taught by WSU, open to UI students (AgE 496).

498 Cooperative Education Internship V 2-12 May be repeated for credit; cumulative maxi-mum 12 hours. Off-campus cooperative edu-ca-tion internship with business, industry, or government unit coordinated through the Pro-fessional Experience Program. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

541 Instrumentation and Measurements 3 (2-3) Prereq Math 172; Phys 102 or 202. Instrumenta-tion systems and measurement concepts, electronic signal-conditioning components and circuitry, digital electronics and microproces-sor basics. Cooperative course taught jointly by WSU and UI (AgE 541).

550 Advanced Hydrology 3 Principles of the hydrologic cycle in mountainous areas, in-cluding precipitation, snowmelt and systems simulation. Cooperative course taught by UI (AgE 551), open to WSU students.

551 Advanced Biological Systems Engineer-ing Topics V 1-4 May be repeated for credit; cumulative maximum 6 hours. Di-rected group study of selected advanced topics in biological systems engineering. Cooperative course taught by WSU, open to UI students (AgE 561).

552 Advanced Biological Systems Engineering Topics V 1-4 May be repeated for credit. Di-
rected group study of selected advanced topics in biological systems engineering. Cooperative course taught by WSU, open to UI students (AgE 561).

558 Fluid Mechanics of Porous Materials 3 Statics and dynamics of multi-flow systems in porous materials, properties of porous materials; steady and unsteady flow. Cooperative course taught by UI (AgE 558), open to WSU students.

562 Systems in Integrated Crop Management 3 (2-3) Same as Entom 562.

574 Fluid Power and Control Systems 3 (2-3) Graduate-level counterpart of BSysE 474; additional requirements. Credit not granted for both BSysE 474 and 574. Cooperative course taught by UI (AgE 574), open to WSU students.

582 Food Process Engineering Design 3 Graduate-level counterpart of BSysE 482; additional requirements. Credit not granted for both BSysE 482 and 582. Cooperative course taught by WSU, open to UI students (AgE 582).

583 Food Separation Processes Design 3 Graduate-level counterpart of BSysE 483; additional requirements. Credit not granted for both BSysE 483 and 583.

586 Food Rheology 3 (2-3) Graduate-level counterpart of BSysE 486; additional requirements. Credit not granted for both BSysE 486 and 586. Cooperative course taught by WSU, open to UI students (AgE 586).

587 Food Process Engineering Design 3 Graduate-level counterpart of BSysE 487; additional requirements. Credit not granted for both BSysE 487 and 587. Cooperative course taught by WSU, open to UI students (FST 587).

588 Food Powders 3 Graduate-level counterpart of BSysE 488; additional requirements. Credit not granted for both BSysE 488 and 588. Cooperative course taught by WSU, open to UI students (AgE 588).

589 Food Quality Instrumentation 3 (2-3) Instrumentation used in food quality assessment; classification of assessment techniques by product properties and evaluation methods. Cooperative course taught by WSU, open to UI students (AgE 589).

590 Advanced Theory of Irrigation Water Requirement 3 Energy balance and consumptive use of water; influence on farm and project irrigation system design criteria, management, and efficiencies. (a/y) Cooperative course taught by WSU, open to UI students (AgE 552).

592 Advanced Theory and Design of Irrigation Systems 3 (2-3) Prerequisite BSysE 491 or 591. Design and development of irrigation water application systems. (a/y) Cooperative course taught by WSU, open to UI students (AgE 553).

593 Drainage Engineering 3 (2-3) Prerequisite BSysE 352 or 453. Engineering principles applied to surface and sub-surface drainage problems; investigation, design, materials, and construction of drainage systems. (a/y) Cooperative course taught by WSU, open to UI students (AgE 553).

596 Conservation Engineering 3 (2-3) Graduate-level counterpart of BSysE 496; additional requirements. Credit not granted for both BSysE 496 and 596. (a/y) Cooperative course taught by WSU, open to UI students (AgE 596).

598 Graduate Seminar I May be repeated for credit. Required of all graduate students in biological systems engineering. S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study and/or Examination Variable credit. S, F grading.

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

Schedule of Studies

The Bachelor of Science degree in Biological Systems Engineering requires a minimum of 128 semester hours. At least 45 of the total hours required for the bachelor’s degree in this program must be upper-division courses.

**Freshman Year**

**First Semester**

BSysE 110 Engr Liv Sys 2
Chem 105 Chem I 3
Engl 101 [W] Intro Writing (GER) 3
GenEd 110 World Civ I (GER)^1 3
Math 171 Calculus I 4

**Second Semester**

Bio S 103 Biology 4
Chem 106 Chem II 4
Cpt S 203 Cpt Prog/Engrs 2
GenEd 111 World Civ II (GER)^1 3
Math 172 Calculus II 4

**Sophomore Year**

**First Semester**

BSysE 210 BSys Analy/Desn 3
C E 213 Statics/Mech of Mtrls 4
Math 273 Calculus III 2
Phys 201 Physics for Sci/Engrs I 4
Tier II: Econ 101 or 102 3

**Second Semester**

Bio S 104 Biology II 4
C E 214 Intro Dynamics 2
Chem 240 or 340 Organic 4 or 5
Math 315 Diff Equations 3
Tier II: Arts and Humanities [H] Elective^1 3

**Junior Year**

**First Semester**

BC/BP 364 or Soils 421 3
BSysE 351 or Ch E 332 3
C E 315 or Ch E 310 3
Phys 202 Phys Sci/Engrs II 4
Tech Bio S Elective^2 3 or 4

**Second Semester**

BSysE 310 Biol Dyn Sys Desn 3
BSysE 386 Engr Prop Biol Mat 3
Ch E 301 or M E 301 3
E E 304 Intro Elec Circuits 2
Engr Design Elective F 3

**Senior Year**

**First Semester**

BSysE 410 Sr Project Design I 3
BSysE 441 Proc Cntl/Instrm 3
Engl 402 Tech/Pro Writing 3
Engr Design Elective II^3 3
Tech Bio S Elective 3 or 4

**Second Semester**

BSysE 411 Sr Project Design II 3
C E 463 Engr Admin 3
Engr Design Elective III^3 3
Tier II: Intercultural Studies [I] Elective^1 3
Tier III: Capstone [H], [S] Elective^1 3

^1Humanities and Social Sciences electives must be selected to achieve breadth and depth in an area of study. A minimum of three of these courses, including a Tier II course, must be selected from an approved area of coherence.

^2Technical Biological Science electives must be selected from departmentally approved list or be approved by department chair.

^3Engineering Design Electives must be selected from departmentally approved list or be approved by department chair. Engineering Design Electives must contain 6 credits of engineering design so as to complete a total of 16 design credits.

Transfers

Students who plan to transfer to Biological Systems 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 TECHNOLOGY AND MANAGEMENT

The Department of Biological Systems Engineering prepares students in agricultural technology and management 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. This prepares students to own, operate, and manage their own enterprises or provide services for private or governmental entities.

A wide variety of agricultural technology and management courses is available to nonmajors 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.

A curriculum leading to the Bachelor of Science degree in Agricultural Technology and Management is recognized by the American Society of Agricultural Engineers. The department also offers a minor in Agricultural Technology and Management.
Description of Courses

For explanation of symbols, see page 53.

Agricultural Technology and Management

AgTM 107 Beginning Welding 2 (1-2) Principles of operation, use, and care of equipment. Cooperative course taught by UI (ASM 107), open to WSU students.

110 Introduction to Agricultural Technology and Management 1 For freshmen. Basic skills for analyzing, solving, and presenting problems in modern agriculture.

201 Metal Fabrication 3 (1-6) Theory, applications, and practices of welding, machining, and associated skills in fabricating with metals. Credit not granted for both AgTM 201 and 207.

202 Agricultural Shop Practices 2 (1-3) Operation, use, and care of shop tools and equipment. Cooperative course taught by UI (ASM 202), open to WSU students.

203 Agricultural Structures 3 (2-3) Principles and practices in farm building construction; foundations, frames, materials, tools and plans; experience with tools and materials. Cooperative course taught by WSU, open to UI students (ASM 203).

210 Small Engines 2 (1-3) Repair, adjustment, protective maintenance, operation, and safety of small gasoline engines. Cooperative course taught by UI (ASM 210), open to WSU students.

305 Agricultural Machinery 3 (2-3) Principles, materials of construction, care, capacity of tillage, planting, spraying, harvesting, and materials handling machinery. Cooperative course taught jointly by WSU and UI (ASM 305).

306 Agricultural Structures and Environmental Systems 3 (2-3) Planning farm buildings, construction materials, beam and column design, insulation and ventilation for environmental control. Cooperative course taught by UI (ASM 306), open to WSU students.

312 Engines and Tractors 3 (2-3) Principles of engine operation, fuels, combustion, efficiency, power transmission, energy conversion, power measurement, tractor safety and costs. Credit not granted for both AgTM 312 and 409. Cooperative course taught by WSU, open to UI students (ASM 312).

315 Irrigation Systems and Water Management 3 (2-3) Prereq Math 101; Soils 201. Principles of irrigation and drainage, water measurement, irrigation methods and practices, selection of irrigation system components. Cooperative course taught jointly by WSU and UI (ASM 315).

331 Electrical Power Systems for Agriculture 3 (2-3) Basic electricity, wiring, and electrical applications in agricultural production. Cooperative course taught jointly by WSU and UI (ASM 331).

346 Turf Irrigation Systems 2 (1-3) Soil-water-plant-atmosphere relations; pumps and pumping; layout, construction and operation of irrigation systems for turf and landscape plantings. Cooperative course taught by WSU, open to UI students (ASM 346).

402 Methods, Materials, and Machines for Teaching Ag Mechanics 3 (1-6) Prereq AgTM 201, 203; 9 hours in 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.

409 Agricultural Tractors and Power Units 4 (3-3) Selection, operation, adjustment, service, and testing; fuels and combustion; fuel lubrication, cooling, and electrical systems; tractor power trains, hitching, traction, and safety. Credit not granted for both AgTM 312 and 409. Cooperative course taught by UI (ASM 409), open to WSU students.

413 Human and Machinery Risk Management 3 Analysis, interpretation, and management of health and safety issues in agriculture; use of health and safety materials and industry codes. Cooperative course taught by WSU, open to UI students (ASM 413).

416 Mobile Hydraulics 3 (2-3) Prereq Fluid power principles applied to the operation, selection, and maintenance of agricultural machinery. Cooperative course taught by WSU, open to UI students (ASM 416).g)

426 Energy Concepts in Agricultural Structures 3 (2-3) Prereq AgTM 203. Basic concepts of psychrometrics, temperature-moisture relationships, heat transfer, and energy management in agricultural structures. Credit not granted for both AgTM 426 and 526.

433 [M] Agricultural Processing 3 Same as FSHN 433.

434 Agricultural Processing Laboratory 1 (0-3) Same as FSHN 434.

435 Instrumentation for Data Acquisition in Agriculture 3 (2-3) Prereq AgTM 331 or c/l. Agricultural applications of instrumentation and measurement principles; the use of microcomputers for data acquisition, data analysis, and control applications. Credit not granted for both AgTM 435 and 535. Cooperative course taught by WSU, open to UI students (ASM 435).

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

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

495 Internship in Agricultural Technology and Management V 2-3 May be repeated for credit; cumulative maximum 6 hours. Prereq sophomore standing. Prior approval of supervisor and adviser required. Work experience related to academic learning. S, F grading.

498 Cooperative Education Internship V 2-12 May be repeated for credit; cumulative maximum 12 hours. Off-campus cooperative education internship with business, industry, or government unit coordinated through the Professional Experience Program. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

526 Energy Concepts in Agricultural Structures 3 (2-3) Graduate-level counterpart of AgTM 426; additional requirements. Credit not granted for both AgTM 426 and 526.

535 Instrumentation for Data Acquisition in Ag-
**Students must complete one of the following sequences: AgEc 340/440, Ag Ec 360/460, Ag Ec 350 (or 370)/450 or two 300-level business courses chosen from the required list for business minors.**

**Upper-division Ag or Business Electives.**

**Upper-division.**

## AGRICULTURE

The Department of Biological Systems Engineering offers a flexible course of studies that allows students to prepare themselves for a broad range of careers in agriculture while earning a Bachelor of Science in Agriculture degree. Students can choose from three majors: General Agriculture, Agricultural Education and Agricultural Communications. In each major, emphasis is placed on gaining a solid background in the agricultural sciences while studying specific subjects that prepare graduates for their chosen fields.

### General Agriculture

General agriculture is designed for students who wish to prepare for careers requiring broad training in agriculture. A maximum number of electives is permitted to enable the student to emphasize one or two fields, or otherwise to tailor the curriculum to fit particular needs.

### General Education Requirements

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<tr>
<th>Course</th>
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<td>AgEc 201</td>
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<td>AgHE 205</td>
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<td>Bio S 103</td>
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<td>Bio S 104</td>
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<td>Chem 101</td>
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<td>Engl 201</td>
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<td>GenEd 110 and 111</td>
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<tr>
<td>Math 205 (recommended)</td>
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<td>Math Proficiency</td>
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<tr>
<td>Psych 105 (recommended as Social Science [S] elective)</td>
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</table>

### Agricultural Requirements 46 hours (15 hours must be completed in one department and 9 in another)

- A S 101
- A G Ec 340, 350, 360
- AgTM 312, 315, 416, 426
- CropS 302, 303, 305
- Entom 340
- Hort Elective
- PIP 429 or IPM 201
- Soils 201
- Stat 310, 412
- Agriculture Electives

### 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, 413, 421, and 451 are recommended.

### Agricultural Education

The agricultural education major prepares students to teach high school agriculture. A minimum of 46 hours in agricultural sciences is required for graduation.

This course of study leads to the degree of Bachelor of Science in Agriculture. The program includes minimum requirements for initial teacher certification.

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 Communication Proficiency, 3 hours in Arts and Humanities, 6 hours in Social Sciences, 3 hours in Mathematics, 8 hours in Biological Sciences, 8 hours in Physical Sciences, 41 hours in professional education. The program requires a minimum of 134 semester hours for graduation.

### General Education Requirements (47 hours)

- Arts and Humanities
- Communication
- English
- HD 205
- Intercultural Studies
- Mathematics Proficiency
- Math 140 or Stat 212
- Science
  - Bio S 103
  - Bio S 104
  - Chem 101
  - Chem 102
- Social Sciences
  - Ag Ec 201
  - GenEd 110 and 111
- Psych 105
- Agriculture Core Requirements (31 hours)
  - (46 total credits in agriculture are required. See below.)
  - A/S 101
  - Ag Ec 210
  - Ag Ec 340 or 350
  - AgTM 401
  - CropS 101 or 201
  - CropS 305 or upper-division elective
  - Hort 201
  - Hort 234
  - Soils 201

### Students must take all core agriculture courses plus 15 additional credits in agriculture from the College of Agriculture and Home Economics. Students must also meet the College of Education certification requirements for general certification for entry into the program.

### Professional Education (41 hours)

- Ag Ed 342
- Ag Ed 345/346
- Ag Ed 407
- Ag Ed 440
- Ag Ed 442
- Ag Ed 471
- Ed Psy 301
- Ed Psy 402
- T & L 300
- T & L 303
- T & L 317/318
- T & L 328
- T & L 404
- T & L 415
- T & L 450
- T & L 499

(Students must make that decision known to their advisor prior to registering for elective courses. Specialized programs patterned for individual career aspirations may be developed in conjunction with the head of the School of Communication or a designated representative.)

### Agricultural Communications

A major in agricultural communications is offered in cooperation with the School of Communication.

The student declaring this major must complete the requirements of the general agriculture curriculum and earn a minimum of 30 hours in the School of Communications, including any communications courses used to satisfy general agriculture requirements. Those electing this major must make that decision known as early as possible in their academic career.

Agricultural communications majors should complete the following:

- Print Media: Com 225, 253, 490; Jour 305; P R 312, 313, 413; and 9 elective hours in the School of Communications.
- Broadcast Media: Com 165, 225, 255, 355, 365, 490; P R 312, 313, 413; and 9 elective hours in the School of Communications.

Recommended electives: The student should consult with a School of Communication advisor before registering for elective courses. Specialized programs patterned for individual career aspirations may be developed in conjunction with the head of the School of Communication or a designated representative.

### Description of Courses

For explanation of symbols, see page 53.

### Agricultural Education

342 Methods of Teaching Agriculture and Home Economics 3 Prereq Ed/S 303 or c/f. Curriculum development agriculture and home economics.

### Industrial Safety and Hygiene 1 Safety and industrial hygiene principles; federal and state regulations. Required for vocational certification.

407 Directed Teaching, Agriculture and Home Economics V 4-10 Prereq AgEd 342, 442, or AgHe 434. Supervised teaching is public schools for agricultural education or home economics education majors. S, F grading.

440 Principles of Vocational Education 2 or 3 Prereq 9 hours in Educ. Local, state, and national vocational technical educational legislation, policies, programs, and organizations.

### Program Planning in Agricultural Education 2 Prereq Ag Ed 342. Organization and management of a total vocational agricultural program.

470 Directed Work Experience V 1-3 May be repeated for credit; cumulative maximum 6 hours. Job analysis and description; weekly work experience reports and analysis coordinated with problems related to the student’s employment in an approved occupation.

477 Agricultural Science in K-12 Classrooms 1 Developing selected agricultural and science curricula for K-12; special methods, materials and exercises. (SS)

### Internship in Agricultural Education V 2-12 May be repeated for credit; cumulative maximum 12 hours. By interview only. Off-campus professional experience. S, F grading.

### Special Problems V 1-4 May be repeated for credit. S, F grading.

508 (CVE 508) Foundations of Continuing and Vocational Education 3 Historical, philosophical, social, political and economic factors
that influence education in continuing, vocational, adult and youth environments.

511 (CVE 511) Seminar 1 or 2 May be repeated for credit.

597 (CVE 597) Cooperative Education Programs 3 Program principles and design; teacher coordination procedures and responsibilities; classroom and on-the-job instruction; public relations; teacher administrative responsibilities.

598 (CVE 598) Internship V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 12 hours. Supervised experience in continuing, extension, and/or vocational educational environments.

600 Special Projects or Independent Study Variable credit. S, F grading.

Program in Biology

Associate Professor and Program Chair, J. L. Rominger; Professors, J. L. Hindman; R. N. Mack, L. P. Mallavia, W. R. Rayburn, K. D. Spence, G. L. Young; Associate Professors, R. J. Adkins, R. A. Black, J. W. Crane, K. V. Kardong, S. B. Moffett, M. E. Murphy, P. S. Soltis; Assistant Professor, L. D. Hufford; Instructors, J. C. Horne, A. Rominger.

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 Education Requirements and may be prerequisite for courses in botany, microbiology, 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. Five options are available for the Bachelor of Science degree: biology education, botany, general biology, genetics and cell biology, and prephysical therapy. A minor in biology is offered.

Description of Courses

For explanation of symbols, see page 53.

Biological Science

Bio S

101 [B] Direction in Biological Sciences 3 Understanding biology as a science and its effect on issues within society. Credit not granted for more than one of Bio S 101, 102, 103.

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 Bio S 102 and 101, 103 or 105.

103 [B] Introductory Biology 4 (3-3) Prereq one semester Chem or c/l. 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 Bio S 103 and 101, 102, or 105.

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); two semesters Chem or c/l. Continuation of Bio S 103. Biology of organisms; plants, animals, bacteria, ecology, and evolution.

105 [B] Biological Science Laboratory 1 (0-3) Prereq college-level nonlaboratory general biology course. Elements of structure and function of organisms. For non-majors in the biological sciences. Credit not granted for more than one of Bio S 102, 103, 105.

201 [B] Contemporary Biology 1 Prereq Bio S 101, 102, 103, Bot 120, or Micro 101. Biological information that provides a framework for understanding life processes; impact of biological information on human affairs.

210 Genetics and Society 3 Same as GenCB 210.

298 [B] Biological Science Honors 4 (3-3)

372 General Ecology 4 (3-3) Prereq Bio S 104, two semesters Chem. Relationship of organisms with physical and biotic components of their environment; at the population, community, and ecosystem level.

430 Methods of Teaching Science 3 (2-3) Prereq T & L 303; 12 hours science. Methods, philosophy, and structure of science; application in teaching middle and secondary school science courses.


465 Field Stream Ecology 2 Prereq general ecology. Ecological roles of immature insects in different size streams; pattern changes along the stream continuum; other ecological characteristics.


491 Physical Therapy Clinical Experience V 1-4 May be repeated for credit; cumulative maximum 20 hours. Prereq Psych 105; Zool 313; major in biology. Junior standing. By interview only. Work experience under supervision of a qualified professional in treatment of human physical disabilities. S, F grading.

495 Internship in Biology V 2-4 May be repeated for credit; cumulative maximum 8 hours. Prereq major in Bio S. By interview only. Experience in work related to specific career interests. S, F grading.

498 [M] Senior Thesis 3 Prereq senior standing, 4 research hours. Experimental/literature research leading to written thesis and oral examination.

530 Statistical Ecology 2 Prereq introductory statistics course. Collection and interpretation of ecological data according to biometrical procedures.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study and/or Examination Variable credit. S, F grading.

Open only to students in the Honors Program.

Schedule of Studies

At least 40 of the total hours required for the bachelor’s degree must be in upper-division courses. All majors are required to take the following courses: Bio S 103, 104; Chem 105, 106, 240; Math 140 or 171; Phys 101, 102. Two upper-division courses in the biological sciences with [M] designation are needed to satisfy the writing in the major university graduation requirement.

In addition to the above requirements, students select one of the following options:

- General Biology Option: BC/BP 364, Bio S 372, GenCB 301, 450, Zool 405, and additional hours in biological science courses to total 40 hours.
- Biology Education Option: BC/BP 364, Bio S 372, GenCB 301, 450, Zool 405, and additional hours in biological science courses to total 35 hours; plus Chem 220, 222, Also EdPsy 301, 402, ElSe 300, 303, 317 or 318, 328, 404, 415, and 450 or 451.
- Botany Option: BC/BP 364, Bio S 372, Bot 320, 332, 405, 450, 488, 460 or 462; and a minimum of 2 hours of 499, GenCB 301, Math 140 or 171, Stat 412.

Genetics and Cell Biology Option: BC/BP 364, GenCB 301, 402 or 452; 450, 499; Math 140 or 171; two courses from A S 330, CropS 445, GenCB 430, 462, 502, 511, 540; Zool 405; two courses from Bot 320, 411, Micro 301, 428; Zool 320, 352, 353, and additional hours in biological and physical science courses to total 67 hours.

Prephysical Therapy Option: Bio S 491, GenCB 301, Micro 101 or 301; PEP 362, 463, Psych 105, 333, 361, Soc 101, Zool 251, 315, and additional hours in biological science courses to total 40 hours.

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 chair.

Preparation for Graduate Study

Students with undergraduate majors in such fields as microbiology, biology, botany, zoology, and plant or animal sciences in the College of Agriculture and Home Economics may be prepared for graduate study in biology. Graduate Record Examination scores from the general aptitude and advanced biology sections are required.

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, microbiology, forestry, horticulture,
pharmacy, plant pathology, range management, and wildlife management; (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 should 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, anatomy, developmental biology, ecology, molecular systematics, population biology, and ultrastructure.

The department offers courses of study leading to the degrees of Master of Science and Doctor of Philosophy (Botany).

### Description of Courses

For explanation of symbols, see page 53.

#### Botany

**Bot 120 [B] Introduction to Botany** 4 (3-3) A survey of the plant kingdom; structure and function of vascular plants.

**Bot 320 Introductory Plant Physiology** 4 (3-3) Prereq Bio S 104 or Bot 120; org chem or c/f. Water relations, mineral nutrition, photosynthesis, respiration, and growth of plants.

**Bot 325 Plant Biotechnology** 3 Prereq Bot 20 Bot, GenCB 301. Introduction to the genetic engineering of plants. (a/y)

**Bot 332 Systematic Botany** 4 (2-6) Prereq Bio S 102, 104 or c/f, or Bot 120. Identification and classification of vascular plants represented in local flora.

**Bot 405 Principles of Organic Evolution** 3 Same as Zool 405. (g)

**Bot 406 Microtechnique** 4 (2-6) By interview only. Modern methods for preparation of biological specimens for microscopy; paraffin and resin embedding, microtomy, anatomical, cytological and histochemical techniques. Credit not granted for both Bot 406 and 506. (a/y)

**Bot 410 Plant Anatomy** 4 (2-6) Prereq Bot 120. Developmental anatomy and morphology of vascular plants; economic forms. Credit not granted for both Bot 410 and 510. (a/y)

**Bot 417 Stress Physiology of Plants** 3 Rec Bot 320. Temperature, light, salinity, water effects on physiological processes; mechanistic understanding of stress. Credit not granted for both Bot 417 and 517. (a/y)

**Bot 429 General Plant Pathology** 3 Same as PL P 429. (g)

**Bot 430 Principles of Plant Systematics** 3 Prereq Bot 332. Systematics of vascular plants; description, evolution, classification, nomenclature and current theory. Credit not granted for both Bot 430 and 530. (a/y)

**Bot 441 Agrostology** 3 Prereq Bot 332. Classification, distribution, and structures of grasses with emphasis at the genetic level. Field trips required. Cooperative course taught by UI (Bot 441), open to WSU students.

**Bot 448 Evolutionary Ecology of Populations** 3 Same as Zool 448. Credit not granted for both Bot 448 and 548.

**Bot 450 Introduction to Cell Biology** 3 Same as GenCB 450. (g)

**Bot 460 Ecophysiology** 3 Prereq Bio S 372; Bot 320. 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. (a/y)


**Bot 499 Special Problems** 1-4 May be repeated for credit. S, F grading.

**Bot 500 Seminar** 1 May be repeated for credit. Prereq 20 hours Bot. S, F grading.

**Bot 504 Experimental Methods in Plant Physiology** 3 (2-3) Rec Bot 320. Advanced techniques and instrumental methods applicable to research in plant physiology. (a/y)

**Bot 506 Microtechnique** 4 (2-6) Graduate-level counterpart of Bot 410; additional requirements. Credit not granted for both Bot 406 and 506. (a/y)

**Bot 510 Plant Anatomy** 4 (2-6) Graduate-level counterpart of Bot 410; additional requirements. Credit not granted for both Bot 410 and 510. (a/y)

**Bot 511 Plant Cell Biology** 3 Function of the plant cell with emphasis on research; topics include membrane biology, protein targeting, and molecular signaling. (a/y)

**Bot 512 Molecular Mechanisms of Plant Development** 3 Prereq Bot 320. Physiology of growth; metabolism during development and reproduction. (a/y)

**Bot 513 Plant Metabolism** 3 Prereq BC/BP 364, Bot 320. Metabolic processes unique to plants, including the primary incorporation of nitrogen, sulfur, carbon dioxide and phosphate into biomolecules.

**Bot 515 Seminar in Plant Physiology** 1 May be repeated for credit. Same as CropS 515.

**Bot 516 Water Relations and Intercellular Transport** 3 Prereq Bot 320. Movement of water and solutes in plants, from the cellular level to the whole-plant level.

**Bot 517 Stress Physiology of Plants** 3 Graduate-level counterpart of Bot 417; additional requirements. Credit not granted for both Bot 417 and 517. (a/y)

**Bot 518 Photosynthesis, Photorepiration, and Plant Productivity** 3 Rec BC/BP 364 or Bot 320. Photosynthesis, photorepiration and the interrelationship of those biochemical, physiological, and environmental factors which determine plant productivity. (a/y)

**Bot 525 Experimental Plant Ecology** 3 (1-6) Same as NATRS 525.

**Bot 530 Principles of Plant Systematics** 3 Graduate-level counterpart of Bot 430; additional requirements. Credit not granted for both Bot 430 and 530. (a/y)

**Bot 533 Modern Methods in Systematics** 4 (2-6) Rec Bot 430 or Zool 511. Selecting, gathering, and analyzing morphological, cytological, chemical data for taxonomic and evolutionary studies. (a/y)

**Bot 535 Angiosperm Families of the World** 3 (2-3) Prereq Bot 332 or 430. Description, classification, and geographic distribution of families of flowering plants of the world. (a/y)

**Bot 548 Evolutionary Ecology** 3 Same as Zool 548. Credit not granted for both Bot 448 and 548.

**Bot 560 Ecophysiology** 3 Graduate-level counterpart of Bot 460; additional requirements. Credit not granted for both Bot 460 and 560.

**Bot 562 Community Ecology** 3 Graduate-level counterpart of Bot 462; additional requirements. Credit not granted for both Bot 462 and 562.

**Bot 563 Field Ecology** 2 (0-6) Graduate-level counterpart of Bot 463; additional requirements. Credit not granted for both Bot 463 and 563.

**Bot 590 Advanced Topics in Botany** 1-4 May be repeated for credit. Recent research in plant science.

**Bot 600 Special Projects or Independent Study** Variable credit. S, F grading.

**Bot 700 Master’s Research, Thesis, and/or Examination** Variable credit. S, F grading.

**Bot 702 Master’s Special Problems, Directed Study, and/or Examination** Variable credit. S, F grading.

**Bot 800 Doctoral Research, Dissertation, and/or Examination** Variable credit. S, F grading.

**Electron Microscopy**

**E Mic 406 Microtechnique** 4 (2-6) Same as Bot 406. Credit not granted for both E Mic 406 and 506. (a/y)

**E Mic 506 Microtechnique** 4 (2-6) Same as Bot 506. Credit not granted for both E Mic 406 and 506. (a/y)

**E Mic 507 Electron Microscopy Laboratory** 4 (2-6) Prereq one year biology; one year org chem; one year phys; by interview only. Techniques of transmission electron microscopy, especially those applicable to biological materials; theory and practice for electron optics and specimen preparation. (a/y)

**E Mic 586 Special Projects in Electron Microscopy** 2 (0-6) or 3 (0-9) May be repeated for credit. By interview only. Practical training in one or more areas of electron microscopy; TEM, SEM, ultramicrotomy, specimen processing, darkroom procedures and light microscopy.

**E Mic 587 Special Topics in Electron Microscopy** 1 May be repeated for credit; cumulative maximum 4 hours. S, F grading.

### Preparation for Graduate Study

Before undertaking graduate study, a student should have completed substantially the equivalent of the schedule of studies shown under the 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 AND BUSINESS LAW

Professor and Department Chair, G. Johnson; Professors, R. August, R. Elfin, A. Frakes; Associate Professors, R. Greenburg, T. Nunamaker, D. Sandelers, R. Toolson, B. Wong-on-Wing; Assistant Professors, J. Cote, S. Gill, C. Latham, M. Linville, L. Rees.

DEPARTMENT OF MANAGEMENT AND SYSTEMS

Professor and Department Chair, D. Randall; Professors, D. Baker, J. Cullen, C. Morgan, M. Wang; Associate Professors, S. Fotopoulos, Y. Huo, R. Reed; Assistant Professors, S. Ahn, F. Caranikas, B. Chen, W. Chen, I. Fox, J. Goodstein, B. Han, D. Lemak, V. Miskin, T. Tripp, C. Tyran.

DEPARTMENT OF MARKETING

Professor and Department Chair, J. McCullough; Professors, R. Markin, D. Stem; Associate Professors, J. Cote, D. Muehling, P. Tansuhaj, U. Umesh; Assistant Professors, J. Gegan-Paxton, J. Glese, P. Henderson, J. Johnson, N. Medina, S. Nowlis, J. Rose, E. Spangenberg.

The study of business administration involves the understanding and application of knowledge developed in fields of accounting, information systems, finance and banking, human resources/personnel, management, marketing, decision sciences, and real estate. 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 at the Pullman campus offer courses of study leading to the degrees of Bachelor of Arts in Business Administration, Master of Accounting, Master of Business Administration, and Doctor of Philosophy. The Bachelor of Arts in Business Administration and Master of Business Administration degrees are also offered through the branch campuses at Tri-Cities and Vancouver.

The College of Business and Economics, in cooperation with the Division of Humanities and Social Sciences, offers a joint Bachelor of Liberal Arts and a Master of Business Administration (4 & 1) Program. Students selected for this program complete a BA in liberal arts with a business core and receive guaranteed admission into the MBA Program in Business Administration, allowing them to finish the MBA in one year. Admission to the program is highly selective. For further information, students should contact the Associate Dean of Business and Economics.

Description of Courses

For explanation of symbols, see page 53.

Special Notice: Enrollment in 4 0 0 - 1 e v e l business courses is open only to juniors and seniors officially certified into degree programs that require these business courses.

Accounting

Acctg

230 Introduction to Financial Accounting 3 Introduction to corporate financial reporting via the preparation and interpretation of financial statements.

231 Introduction to Managerial Accounting 3 Prereq Acctg 230. Introduction to managerial accounting; generation and use of accounting data for planning and controlling business operations.

330 Intermediate Accounting I 3 Prereq Acctg 230; Rec Cpt S 105. Theory underlying the determination of income; analysis of financial statements.


338 Cost Accounting 3 Prereq Acctg 231; Dec S 215; Math 107 or 201; 202; Rec Cpt S 105. Management uses of cost information; cost systems and system design; cost analysis.

430 Advanced Accounting 3 Prereq Acctg 331. Partnership equities and extended forms of corporate ownerships and entities.

431 Accounting Theory 3 Prereq Acctg 331. Accounting theory and contemporary issues.

433 [M] Accounting Systems 3 Prereq Acctg 330, 338; Mgt 350. Accounting systems design; internal control and computerization.

434 Accounting for Public Organizations 3 Prereq Acctg 331. Conceptual and procedural accounting issues involving public sector organizations.

435 Advanced Tax Accounting 3 Prereq Acctg 335. Corporate, partnership, estate, trust, and fiduciary taxation.

436 International Accounting and Taxation 3 Prereq Acctg 231. Comparative accounting systems, foreign currency transactions, transfer pricing, taxation of foreign source income.

439 [M] Auditing 3 Prereq Acctg 331, 433; Mgt 350. Nature of auditing, generally accepted auditing standards, and audit procedures as related to auditing of financial statements by independent accountants.

498 Accounting Internship V 2-15 May be repeated for credit; cumulative maximum 15 hours. Cooperative educational internship with a business, government or non-profit organization. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

530 Accounting Theory 3 Recent developments with respect to the determination of income and the valuation of assets.

531 Tax Planning for Managers 3 Prereq Acctg 230 and 231; or 334. Fundamentals of tax planning for business decisions; nontechnical and primarily for MBA graduate students.

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 3 Fundamentals of financial and managerial accounting; primarily for graduate students who wish to meet the MBA core requirements in accounting.

535 Taxation of Partners and Partnerships 3 Prereq Acctg 335. Federal income tax impact on partners and partnerships of forming, operating, and liquidating partnerships.

536 Taxation of Corporations and Stockholders 3 Prereq Acctg 335. Federal income tax impact on corporations and their stockholders from forming, operating, and liquidating corporations.

537 Tax Research and Estate Planning 3 Legal tax research methodology; federal estate and gift taxation and retirement planning.

538 Seminar in Cost/Managerial Accounting 3 Cost concepts, cost and managerial accounting systems; current issues and research in cost and management accounting.

539 Seminar in Public Accounting and Auditing 3 Prereq Acctg 439. Public accounting and auditing to present; current issues including statistical sampling and computers.

596 Doctoral Topics 3 May be repeated for credit; cumulative maximum 15 hours. Advanced topics in accounting.

600 Special Projects or Independent Study Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Business Law

720 Law and the Legal Environment of Business 3 Fundamentals of business law; the legal system, legal reasoning and the law of contracts, torts, and agency.

78
410 Law and Government Regulation of Business
3 Prereq B Law 210. Legal aspects of government regulation of business; administrative law, antitrust law, and labor law.(g)

411 Law of Business Organizations 3 Prereq B Law 210. Law of partnerships, corporations, securities regulation, secured transactions and bankruptcy; needed by CPA candidates.(g)

414 [M] Law of Real Estate 3 Prereq B Law 210. Legal principles and precedents as they apply to the real estate environment.

415 [M] Law of International Trade 3 Prereq B Law 210. Legal organization of the international community; international aspects of trade and development, economic cooperation, and technical, social, and cultural cooperation.(g)

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

510 Law for the Business Manager 3 Contract, tort, constitutional and administrative law; impact of government regulation on business.

Decision Sciences

Dec S

215 Statistics 4 (3-3) Prereq Math 107 or 201. Data presentation, probability, distributions, hypothesis testing, estimation, time series, and simple linear regression as applied to business.

340 Operations Management 3 Prereq Dec S 215. The management of operations in business organizations; planning and control of workflow; resource allocation, and utilization.

344 Principles of Optimization 3 Same as Math 364.

342 [M] Statistical Methods for Management 3 Prereq Dec S 215. Analysis of variance, regression models, and nonparametric statistics as applied to business.(g)

417 Introduction to Simulation 3 Prereq Cpt S 150 or 203, Dec S 215. Model formulation, simulation, simulation languages, and analysis of results with selected application.(g)

418 [M] Statistical Methods for Management 3 Prereq Dec S 215. Total quality management as used in industries; philosophy of Deming and others, control charts, process capability analysis, team tools.(g)

440 [M] Advanced Operations Management 3 Prereq Dec S 340. Advanced concepts of production and operations management; development of analytical skills in identifying and solving production and operations management problems.(g)

498 Quantitative Methods Internship V 2-15 May be repeated for credit; cumulative maximum 15 hours. Cooperative educational internship with a business, government or non-profit organization. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

515 Quantitative Methods I 3 Prereq Dec S 215. Multiple regression models, analysis of variance, examination of residuals, transformation of data and model building procedures.

516 Time Series 3 Prereq Dec S 515 or Stat 443. ARIMA models; identification, estimation, diagnostics, and forecasting; seasonal adjustments, outlier detection, intervention analysis and transfer function modeling.

517 Quality Improvement for Management 3 Philosophy and evolution of quality control, control charts, process capability analysis, applications.

518 Techniques of Sampling 3 Prereq Dec S 515. Sample surveys for business use; theory and application with emphasis on appropriate sample types and the estimation of their parameters.

519 Applied Multivariate Analysis 3 Prereq Dec S 515 or Stat 443. Principal components, factor analysis, discriminant function, cluster analysis, multivariate normal distribution, Hotelling’s T2 and MANOVA.

540 Quantitative Methods II 3 Prereq Dec S 340. Decision analysis, linear optimization models, nonlinear models, network analysis including PERT, and dynamics programming as applied to business.


581 Operations Management 3 Prereq Dec S 340. Analytical approach to solving problems in production and operations management.

586 Applied Multiple Time Series Analysis 3 Prereq Dec S 516. Approaches to modeling and analysis of multiple time series.

596 Doctoral Topics V 1-4 May be repeated for credit; cumulative maximum 15 hours. Advanced topics in decision sciences.

600 Special Projects or Independent Study Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Finance

Fin

323 Personal Finance 3 For nonbusiness majors. Consumer credit, financial institutions, investments, mutual funds, insurance, social security, home ownership, taxes, estate planning.

325 Finance 3 Prereq Accct 231 or c/f; Dec S 215 or c/f; Econ 101 or 201. Financial decision making, financial strategies, investment in current and fixed assets, financial instruments, and capital markets.

421 Financial Institutions and Markets 3 Prereq Fin 325. Level and term structure of interest rates; characteristics of financial institutions and markets; financial futures.(g)

422 Commerical Bank Management 3 Prereq Fin 325. Problems facing bank managers and solution techniques; asset and liability management; loan pricing; banking structure; bank regulation.(g)


427 [M] Investments and Security Analysis 3 Prereq Fin 325. Investment objectives, security markets, market efficiency, and principles of security valuation.(g)

428 Portfolio Theory and Management 3 Prereq Fin 427. Principles of portfolio theory and the implications for managing portfolios.(g)

518 International Finance 3 Same as I Bus 581.

596 Doctoral Topics 4 May be repeated for credit; cumulative maximum 16 hours. Advanced topics in finance.

600 Special Projects or Independent Study Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Insurance

Ins

320 Risk and Insurance 3 Prereq B Law 210; Econ 102 or 201. Types of risk and methods of protection; life, health, property, and liability insurance; principles of risk management.

321 Life Insurance and Financial Planning 3 Prereq Ins 320. Management of the life, health, and disability insurance risks facing the individual, business, and society; financial planning.

322 Property and Liability Insurance 3 Prereq Ins 320. Management of property and liability risks facing individuals and businesses; study of bonds; marine, workers compensation and unemployment insurance.

420 [M] Pure Risk Management 3 Prereq Ins 320. Management of business risk insurance, analysis of risk, methods of handling risk-assumption, combination, transfer, loss control and avoidance.(g)

498 Insurance Internship V 2-15 May be repeated for credit; cumulative maximum 15 hours. Cooperative educational internship with a business, government or non-profit organization. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

520 Employee Benefits Risk Management 3 Social and group insurance and retirement plans in the context of employee benefits risk and insurance management.

600 Special Projects or Independent Study Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study,
and/or Examination Variable credit. S, F grading.

International Business

1 Bus

380 [M] International Business 3 International political economy; business relationships between nations; corporations and economic institutions.

415 Law of International Trade 3 Same as B Law 415. (g)

436 International Accounting and Taxation 3 Same as Accctg 436.

453 Comparative International Management 3 Same as Mgt 453. (g)

470 International Trade and Finance 3 Same as Econ 470. (g)

471 (370) The Economics of Regional Integration 3 Same as Econ 471.

481 International Finance 3 Prereq Fin 325; 1 Bus 380. Financial problems of multinational businesses; international financial environment, long-term capital commitment to an international venture, financial techniques for firm operation. (g)

482 [M] International Marketing 3 Prereq 1 Bus 380, Mktg 360. Opportunities, characteristics, trends in foreign markets; alternative methods; strategies; organizational planning, control; problems of adapting American marketing concepts and methods. (g)

492 Small Business Policy 3 Same as Mgt 492.

496 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours.

498 International Business Internship V 2-15 May be repeated for credit; cumulative maximum 15 hours. Cooperative educational internships with a business, government or nonprofit organization. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

580 International Business Management 3 Decision making in the international environment; political, cultural, and economic risk management.

581 International Finance 3 Prereq Fin 502, 1 Bus 380 or 580. Principles of international finance; financial management of multinational corporations; international investments.

582 International Marketing Management 3 Prereq Mktg 505. Principles of international marketing, marketing decision making in international environments, problems of adapting marketing programs to international markets.

Management

Mgt

101 Introduction to Business 3 Introduction to the practice of business with explanations of business environments, strategy, organization, functional areas, terminology, processes, tasks and ethics.

301 Principles of Management and Organization 3 Principles of management and administration aimed at improving effectiveness of all types of organizations.

315 Women in Management 3 Same as WS St 315.


371 Applications Program Development 3 Advanced program design principles; relating files, screen formatters, report writers, and designing to reduce future maintenance requirements.


401 [M] Organizational Behavior 3 Prereq Mgt 301. Organizational behavior, motivation, leadership, communications, decision-making, group dynamics. (g)

448 Introduction to Management Information Systems 3 Prereq Mgt 301, 350. Information problems, management of the information resource, uses of computer-based systems to improve management decision-making. (g)

450 Personnel and Human Resources Management 3 Prereq Dec S 215; Mgt 301. Policy and practice in human resource utilization, selecting, training, motivating, evaluating, and compensating employees; labor relations; EEO legislation. (g)

453 Comparative International Management 3 Comparison of management systems of selected countries. (g)

455 Staffing 3 Prereq Mgt 450 or c//. The acquisition, selection, placement, and career management of employees; maximum human resource utilization. (g)

456 [M] Compensation Administration 3 Prereq Mgt 450 or c/. Theoretical, research, and applied issues related to the compensation of employees. (g)

472 [M] Systems Analysis and Design 3 Prereq Cpt S 370; Mgt 371, 372. The application of systems analysis and design to the development of information systems; systems development life cycle. (g)

474 Knowledge-based Systems in Business 3 Prereq Mgt 371. Logic programming, rule-based systems, knowledge acquisition, and KBS development and management; extensive project work.

483 [M] Macro Organization Behavior 3 Prereq Mgt 301. Design and management of organization structures and processes and the effective linking of subsystems with their environment. (g)

485 Seminar in Negotiations 3 Bargaining skills across a broad range of business settings; experiential work. Credit not granted for both Mgt 485 and 585.

491 Business Strategy and Policy 3 Overall management of the firm; top-level decision making and planning. To be taken during last two semesters of student's program.

506 Doctoral Topics 3 May be repeated for credit; cumulative maximum 15 hours. Advanced topics in management.

509 Business Strategy and Policy 3 Overall management of the firm; top-level decision making and planning. To be taken during last two semesters of student’s program.

509 Business Strategy and Policy 3 Overall management of the firm; top-level decision making and planning. To be taken during last two semesters of student’s program.

510 Management of Organizations 3 Leading, organizing, decision making, planning, controlling, conflict management, and behavior in work organizations.

570 Computers and Systems for Managers 3 Data base concepts, management information systems, design of application programs, and computer concepts.

580 Information Systems Management 3 Prereq Mgt 507. Data processing organization; operations, application development, computer selection, management of computer personnel and systems.

582 Personnel and Human Resource Management 3 Prereq Mgt 501. Human resources and personnel administration; selection, training, compensation, performance appraisal, labor relations, health and safety, EEO legislation.

583 Organization Design 3 Development and design of contemporary systems of organization and management.

584 Organizational Behavior 3 Theory and models of organizational behavior; individual, interpersonal, and group dynamics; influence, motivation; communication; change; organization climate.

585 Graduate Seminar in Negotiations 3 Bargaining skills across a broad range of business settings; experiential work. Credit not granted for both Mgt 485 and 585.

591 Business Strategy and Policy 3 Overall management of the firm; top-level decision making and planning. To be taken during last two semesters of student’s program.

596 Doctoral Topics 3 May be repeated for credit; cumulative maximum 15 hours. Advanced topics in management.

600 Special Projects or Independent Study Variable credit. S, F grading.

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

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

Marketing

Mktg

327 Services/Nonprofit Marketing 3 Marketing applications in the service sector. Cooperative course taught by UI (Bus 327), open to WSU students.

360 Marketing 3 Functions, methods, and middlemen used in marketing the principal types of goods; price policies, cost of marketing; government regulation.

368 Marketing Research 3 Prereq Dec S 215; Mktg 360. Survey and experimental methods as they relate to marketing research.

460 [M] Marketing Management 3 Prereq Mktg 360: 6 hours Mktg. Analysis of marketing policy; approaches to solution of marketing problems. (g)


467 Consumer Behavior 3 Prereq Mktg 360. The investigation of social-psychological phenomena affecting consumer decision processes;
learning theory and communication.

468 Public Policy and Marketing 3 Prereq Mktg 360. Productivity and efficiency in marketing; government regulation of marketing structure and of marketing policies and practices; consumer protection and welfare.

470 Retail Management 3 Prereq Mktg 360. Retailing system; organization, merchandising models, pricing, promotion, location, and control procedures; management decision processes.

477 Promotion Management 3 Prereq Mktg 360. Text and case approach to integrating promotion into the marketing plan; methods, organization, communications, media selection, and campaigns.

478 Sales Management 3 Prereq Mktg 360. The role of selling in the marketing mix; problems in planning, organizing, evaluating and controlling the sales force.

489 Entrepreneurial Management 3 Same as Mgt 489.

496 Special Topics VI-3 May be repeated for credit; cumulative maximum 6 hours.

497 Marketing Yourself I Career opportunity assessment, position research, resume, application letter, interviewing skills, motivation, attitudes for success, solicitation and assessment of others.

498 Marketing Internship V 2-15 May be repeated for credit; cumulative maximum 15 hours. Cooperative educational internship with a business, government or nonprofit organization. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

505 Survey of Marketing 3 Marketing management; relevance of marketing to company profitability and consumer satisfaction; decision regarding price, product, promotion, and distribution.

506 Marketing Management and Administrative Policy 3 Marketing management and administrative policies as they relate to concepts, strategies, and decision making.

507 Research Methodology 3 Prereq Dec S 215. Types of data needed and available, collection and analysis of data as they relate to decisional research.

508 Seminar in Marketing Behavior/Economic Aspects 3 May be repeated for credit; cumulative maximum 9 hours. Marketing structure and behavior from economic and behavioral perspectives; social evaluation and behavioral implications of marketing strategy.

509 Consumer Behavior Theory 3 Prereq Mktg 505. Theory in consumer and buyer behavior; conceptual and empirical research role of purchase and consumption behavior on society and marketing.

516 Doctoral Topics 3 May be repeated for credit; cumulative maximum 15 hours. Advanced topics in marketing.

520 Special Projects or Independent Study Variable credit. S, F grading.

522 Advanced Topics in Real Estate 3 Basic forces that motivate and affect investors in their use and possession of real estate.

523 Special Projects or Independent Study Variable credit. S, F grading.

Certification Requirements
Certification application guidelines are campus specific, and students must meet the requirements of the campus they plan to attend. As a general rule, a student must have earned at least 30 semester hours of credit on graded course work, including 6 hours of business core courses, and meet current standards of (1) 2.5 cumulative g.p.a. and (2) 2.0 business g.p.a. based on at least 6 hours of business core courses.

General Program Requirements
General course requirements, core courses, and fields of specialization are presented below. Requirements may vary depending upon the field of specialization selected. For a more detailed enumeration of degree requirements (with changes approved since publication of the latest catalog), see current Requirements for BA Majors, available in the College of Business and Economics.

General courses include General Education Requirements (GERs) and departmental requirements. Three-fourths (21 hours) of the GERs should be completed by the end of the sophomore year. In addition, all students must complete the core courses and a field specialization, selected during the junior year. The student’s senior year (last 30 hours) must be taken in residence on a WSU campus. Students should note that prior departmental approval is required for correspondence course work.

Students in the College of Business and Economics must demonstrate performance at a level expected of seniors in their major by presenting WSU graded course work to satisfy at least 75% of the 300-400-level courses required by the major program. The chair of the department and the dean of the college must approve in writing any portion of the 300-400-level credit which is to be satisfied by transfer, correspondence, independent study, or other credit which does not carry WSU grade points. Additional transfer, correspondence, and independent study credit (within university limits on these credits) may count toward the 120 hours required for the degree and/or satisfy requirements other than major courses.

Schedule of Studies

Freshman Year

First Semester

Cpt S 105 (required) 4
Econ 101 [S] Microeconomics (GER) 3
Engl 101 [W] Intro Wrtg (GER) 4
GenEd 110 or 111 [A] (GER) 3
Sciences Elective [B], [P], [Z] (GER) 3

Second Semester

Communication Proficiency [C] [W] (GER) 3
Econ 102 [S] Macroeconomics (GER) 3
GenEd 110 or 111 [A] (GER) 3
Lab Science Elective [B], [P], [Z] (GER) 4
Math 107 or 201 3

Sophomore Year

First Semester

Acctg 230 3
B Law 210 3
Math 202 [N] Math Anal (GER) 3
General Elective 3
Science Elective [B], [P], [Z] (GER) 3

Second Semester

Acctg 231 3
Arts and Humanities Elective [H] (GER) 3
Dec S 215 4
General Elective 4

Junior Year

First Semester

Fin 325 3
Intercultural Studies Elective [I] (GER) 3
Mgt 301 3
Mgt 350 2
Mktg 360 3
Complete Writing Portfolio

Second Semester

Dec S 340 3
Econ 300- or 400-level Elective 3
General Elective 3
Option Requirements 6

Senior Year

First Semester

General Elective 6
Option Requirements 12

Second Semester

Mgt 491 or 492 3
General Elective 6
Option Requirements 6

Fields of Specialization

Accounting

The objective of the baccalaureate program with a concentration in accounting is to provide basic conceptual accounting and business knowledge as a foundation for accounting career development. This would provide preparation
Departments of Business

for careers in public accounting, corporation accounting, and for accounting positions in government service.

Junior and senior years: Acctg 330, 331, 335, 338, 433, 434, and 439; B Law 410 or 411 (recommended for CPA); Econ 301; one of: Acctg 430, 431, 435, Econ 320, 340, Fin 425, 426, 427.

Decision Sciences

Preparation for careers in business and government research.

Junior and senior years: Dec S 344, 412; Econ 300-400 level elective; two of: Dec S 418, 440, Mgt 372; two of Bus 300-400-level elective, Mgt 371, 472, 474, Mgt 300-400-level elective.

Economics

Preparation for executive careers in large corporations where a broad understanding of the economy is crucial in decision making; in financial institutions, government agencies, public utilities and transportation companies, with labor unions and law firms; for careers in economic or market research and analysis. The economics field of specialization is also excellent preparation for graduate training in business, economics or law.

Junior and senior years: Econ 301 or 302, 320, 321 or 411; one of Econ 340, 350, 360, 364; two of Econ 401, 402, 408, 410, 411, 416, 420, 430, 450, 460, 464, 470, 472, 481, 499; two of Acctg 338, B Law 410, 415, Dec S 344, 412, 417, Fin 425, 426, I Bus 380, Mgt 450, 456, Mktg 368, 467, 468.

Finance

Preparation for careers in financial department of business, commercial and investment banks, governmental financial agencies, and other financial institutions.

Junior and senior years: Acctg 330, Econ 301, Fin 421, 425, 427; one of Acctg 331, 338; one of Fin 422, 428, 481; two 300-400-level courses in Acctg, Dec S, Econ, Fin, I Bus, Ins, or R E.

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: two Bus Electives (300-400-level), three Bus Electives (400-level), Bus or Econ Elective (300-400-level).

Human Resources/Personnel

Preparation for careers in personnel and industrial relations and the personnel aspects of government service and business.

Junior and senior years: Econ 350, Mgt 401, 450, 455, 456; three of Dec S 412, Econ 450, 451, Mgt 448, Psych 412, 400-level business elective.

Information Systems

Preparation in computer programming and for careers in analysis and design of information systems in organizations where computers are an integral management tool.

Junior and senior years: Cpt S 150, 241, 370; Mgt 371, 372, 448, 472; one from Dec S 344, 417, Mgt 474; additional two courses from Acctg 330, 338, 433; Cpt S 250, 350; Dec S 344, 412, 416, 417, 440; Mgt 401, 450, 474.

International Business

Preparation for careers with multinational corporations, governmental and intergovernmental agencies at home and abroad.

Junior and senior years: I Bus 380, and five of I Bus 415, 436, 453, 470, 481, 482, 496. Additional course work from a study abroad or residence curriculum must be fulfilled.

Law and Public Policy

Preparation for careers in consulates, embassies and the State Department, in criminal justice administration, court administration, public utility administration, labor union administration, and government agency administration; also private business dealing with the foregoing.


Management

Students may emphasize preparation for one of three careers in this option: (1) careers as production executives in manufacturing and enterprises and for other administrative positions in business and government for which production training is useful and desirable; (2) careers for which an understanding of international business is desirable; and (3) careers in management which require an understanding of people in organizations as well as the production function.

Junior and senior years: Mgt 401, 483; three of Dec S 344, 412, 440, Mgt 448, 450, 453, 489; two of: Bus or Econ 300-400-level elective, Anth or Psych or Soc 300-400-level elective, or two Mgt 400-level electives.

Marketing

Preparation for careers in marketing management, manufacturers’ and wholesalers’ sales, retailing, and marketing research.

Junior and senior years: Mktg 368, 460, 467, four of (three of which must be in I Bus or Mktg): Acctg 338, I Bus 380, 482, Econ 364, 460, 470, Mktg 461, 462, 468, 470, 477, 478, 496, and two elective courses as specified by the department.

Real Estate

Preparation for careers in real estate administration, appraisal, brokerage, finance, management, marketing, production, selling, and title insurance.

Junior and senior years: B Law 414, Cst M 442, Fin 425, R E 305, 405, 407; two of Arch 330, Mktg 478, R E 406, or any upper-division course in Acctg, B Law, Econ, Fin, I Bus, or Ins.

Risk Management and Insurance

Preparation for careers in insurance agency, actuarial administration, claims, business risk management, investment, and underwriting.

Junior and senior years: Ins 320, 321, 322, 420, Fin 425; three 300-400-level courses from the areas of Acctg, B Law, Econ, Fin, Mktg, or R E.

Minor in Business Administration

The minor in business requires at least 16 hours, 8 of which must be upper-division, with an average business g.p.a. of at least 2.0 and a distribution as indicated below:

Not more than three from Acctg 230, 231, B Law 210, Dec S 215, Econ 101, 102; not less than three from Dec S 340, Fin 325, I Bus 380, Ins 320, Mgt 301, 350, 372, Mktg 360, R E 305.

Courses for the minor may not be taken pass-fail.

A total of 6 hours transfer work may be counted toward the minor requirements for courses at the 100- or 200-level only. All other course work must be taken in residence at WSU. Deviations from the stated requirements must be approved by the associate dean of the College of Business and Economics.

Second Bachelor’s Degree

Students who have received a bachelor’s degree in another area may obtain a Bachelor of Arts degree in Business Administration by presenting total credits of at least 150 hours and by fulfilling the following departmental requirements: Acctg 230, 231; B Law 210; Dec S 215, 340; Econ 101, 102; 300-400-level electives; Fin 325, Math 107 or 201, 202; Mgt 301, 350, 491 or 492; Mktg 360; three Bus 400-level electives; two Bus 300- or 400-level electives; one Bus or Econ 300- or 400-level elective.

The second degree can usually be completed in less than two years, depending on the number of business requirements which may have been completed as electives for the first undergraduate degree.

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 taken at community colleges which are numbered at the 300-level or above at WSU will not be accepted toward meeting major requirements.

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. The curriculum in chemical engineering in the College of Engineering is accredited by the Accreditation Board for Engineering and Technology (ABET).

The total number of majors in the department is
restricted at the junior level.

The department offers courses of study leading to the degrees of Bachelor of Science in Chemical Engineering, Master of Science in Chemical Engineering, and Doctor of Philosophy.

Description of Courses

For explanation of symbols, see page 53.

Chemical Engineering

**Ch E**

201 Chemical Process Principles and Calculations 3 Prereq Chem 106; Math 172. Fundamental concepts of chemical engineering; problem-solving techniques and applications in stoichiometry, material and energy balances, and phase equilibria.

211 Process Simulation 3 Prereq Chem 106; Cpt S 151 or 203; Math 172; c// in Math 315. Computer solutions to problems in chemical engineering processing.

298 Technical Seminar 1 May be repeated for credit; cumulative maximum 2 hours. S, F grading.

301 Chemical Engineering Thermodynamics 3 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; phase equilibria; reaction equilibria.

310 Introduction to Transport Processes 3 Prereq Ch E 201 or c//; Math 315; major in Ch E. Fundamentals of the phenomena governing the transport of momentum, energy, and mass.

332 Fluid Mechanics and Heat Transfer 3 Prereq Ch E 201 or c//; Ch E 310 or c//; Ch E major. Design calculations, operations, and evaluation of equipment used in fluid flow, heat transfer, and evaporation.

334 Chemical Engineering Separations 3 Prereq Ch E 332. Design and evaluation of equipment used in distillation, extraction, absorption, and adsorption.

398 Technical Seminar 1 May be repeated for credit; cumulative maximum 2 hours. S, F grading.

418 Materials Processing 3 Prereq Chem 105, 106; Ch E major. Processing of polymeric and ceramic materials; corrosion prevention and materials selection.(g)

421 Kinetics and Reactor Design 3 Prereq Chem 331; Math 315; major in Ch E. Chemical reaction kinetics applied to the design of reactors, non-ideal flow, mixing, catalysis.(g)

432 [M] Chemical Engineering Lab I 3 (1-6) Prereq Ch E 310, 332; Ch E 334 or c//; Ch E 421 or c//. Statistical design and analysis of experiments; safety; experiments in heat and mass transfer; separations, other unit operations, kinetics, control; report writing.

433 [M] Chemical Engineering Lab II 2 (0-6) Prereq Ch E 432. Laboratory experiments in heat and mass transfer; separations, other unit operations, kinetics, control; design calculations and report writing.(g)

435 Modern Separation Processes 3 Prereq Ch E 301, 310, 332; Ch E major. Design and operation of separation processes important to emerging technologies; bioseparations, supercritical extraction.(g)

441 Process Control 3 Prereq BSysE 310 or Ch E 211. Measuring instruments, automatic control, process and instrument characteristics and theory applied to industrial control problems.(g)

450 Chemical Process Analysis and Design I 3 Prereq Ch E 301, 334; 421 or c//. Chemical engineering design; computer tools; safety and environmental constraints; cost and equipment optimization.

451 [M] Process Design, Development, and Evaluation 3 Prereq Ch E 301, 334, 421. Development, design, and economic evaluation of chemical and related processes as practiced in industry.(g)

461 Introduction to Nuclear Engineering 3 Same as M E 461.

465 Integrated Envirochemical Engineering 3 Prereq Ch E 334. Application of chemical engineering principles in assessment and remediation of industrial problems in air pollution, water pollution, and solid and hazardous waste.(g)

476 Nuclear Fuel Cycle Economics 3 Prereq Ch E 301 or M E 461. Basics of management of fuel for nuclear power plants; economics of power production; optimization strategies.(g)

470 Hazardous Waste Management 3 Prereq Math 360, senior in engineering. Principles and practices of management of hazardous and solid wastes. Cooperative course taught jointly by WSU and UI (ChE 470).(g)

471 Air Pollution Control 3 or 4 Prereq M E 303. Analysis and design of physical and chemical methods of air pollution control; particulate and gas emission control methods, standards for sources. Cooperative course taught jointly by WSU and UI (ChE 475).(g)

475 Introduction to Biochemical Engineering 3 Prereq Ch E 310, 332. Application of chemical engineering principles to the processing of biological and biochemical materials.

476 Biomedical Engineering Principles 3 Prereq Ch E 301, 310. The application of chemical engineering principles to biological processes in the human body. (a/y)

481 Special Topics in Chemical Engineering V 1-3 May be repeated for credit. Interfacial phenomena, high temperature materials processing, integrated circuit manufacturing, in situ destruction of hazardous waste.(g)

485 Interfacial Phenomena 3 Prereq Ch E 301, 310. Chemical and physical nature of the interface including the molecular basis for interfacial forces and resulting macroscopic phenomena.(g)

487 Food Process Engineering Design 3 Same as BSysE 482.

495 Chemical Engineering Internship 2 May be repeated for credit; cumulative maximum 4 hours. Students work full time in engineering assignments in approved industries with prior approval of adviser and industrial supervisor. S,F grading.

496 Cooperative Education Internship V 2-4 May be repeated for credit; cumulative maximum 4 hours. Off-campus Cooperative Education Internship with business, industry, or government unit. S,F grading.

498 Technical Seminar 1 May be repeated for credit; cumulative maximum 2 hours. For juniors and seniors in Ch E S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

510 Transport Processes 3 Transport of mass, energy, and momentum; unsteady and steady states as applied to chemical processing; macroscopic and microscopic analyses. Cooperative course taught jointly by WSU and UI (ChE 515).

515 Convective Heat Transfer 3 Same as M E 515.

523 Basic Concepts in Catalysis 3 (2-3) Preparation and characterization of supported heterogeneous catalysts, mechanistic interpretation of surface reactions and chemisorption, deactivation, and kinetics from lab experiments. Cooperative course taught by WSU, open to UI students (ChE 523).

525 Polymer Reactor Engineering 3 Prereq Ch E 421. Reaction engineering applied to polymerization reactions; effects on polymerization rate, molecular weight, and copolymer composition. Cooperative course taught by WSU, open to UI students (ChE 524).

526 Microscopic Thermodynamics 3 Same as M E 526.

527 Advanced Chemical Engineering Thermodynamics 3 Same as M E 527.

529 Chemical Engineering Kinetics 3 Interpretation of kinetic data and design of nonideal chemical reactors; fundamentals of heterogeneous catalysis, catalyst preparation, characterization, and theory. Cooperative course taught jointly by WSU and UI (ChE 529).

541 Chemical Engineering Analysis 3 Mathematical analysis of chemical engineering operations and processes; mathematical modeling and computer application.

542 Mass Transfer Operations 3 Diffusional and equilibrium operations. Cooperative course taught jointly by WSU and UI (ChE 542).

544 Discrete Digital Control 3 (2-3) Prereq Ch E 441. Design and implementation of digital control algorithms; Z-transforms; state space methods. Cooperative course taught by WSU, open to UI students (ChE 551).

551 Process Optimization 3 Fundamentals associated with the optimization of chemical process plants.

560 Biochemical Engineering 3 Chemical engineering applied to biological systems; fermentation processes, biochemical reactor design, downstream processing, transport phenomena in biological systems, biochemical technology. Cooperative course taught jointly by WSU and UI (ChE 560).

571 Advanced Plant Design 2 or 3 Design of process plants for optimum cost and economic return; scale-up of pilot plants. Cooperative course taught by the UI (ChE 571), open to WSU students.

581 Advanced Topics in Chemical Engineering V 1-3 May be repeated for credit; cumulative maximum 9 hours. Filtration, reaction engineering, two-phase flow, non-Newtonian fluids, interfacial phenomena, fluidization, novel separations, biomedical engineering.

598 Research Seminar 1 May be repeated for credit. Seminar presentations on current topics in chemical engineering research. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Schedule of Studies

Department of Chemical Engineering
The Bachelor of Science degree in Chemical Engineering requires a total of 138 semester hours. At least 68 of the total hours required for this degree must be in upper-division courses.

Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 105 Principles</td>
<td>4</td>
</tr>
<tr>
<td>Engl 101 [W] Intro Wrtg (GER)</td>
<td>3</td>
</tr>
<tr>
<td>GenEd 110 [A] (GER))</td>
<td>3</td>
</tr>
<tr>
<td>Math 171 Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>Tier 2 Elective ([I]) (GER))</td>
<td>3</td>
</tr>
</tbody>
</table>

Second Semester

| Chem 106 Principles | 4 |
| Cpt S 203 Cpt Prog Eng | 2 |
| GenEd 111 [A] (GER)) | 3 |
| Math 172 Calculus II | 4 |
| Phys 201 Class Phy | 4 |

Sophomore Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch E 201 Ch Proc Prin</td>
<td>3</td>
</tr>
<tr>
<td>Ch E 298 Tech Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Chem 340 Organic</td>
<td>3</td>
</tr>
<tr>
<td>Chem 341 Org Chem Lab</td>
<td>2</td>
</tr>
<tr>
<td>Engl 402 Pro Tech Wrtg</td>
<td>3</td>
</tr>
<tr>
<td>Math 273 Calculus III</td>
<td>3</td>
</tr>
<tr>
<td>Phys 202 Class Phy</td>
<td>4</td>
</tr>
</tbody>
</table>

Second Semester

| BC/EP 364 or Chem 342 | 3 |
| Ch E 211 Proc Sim | 3 |
| Ch E 298 Tech Seminar | 1 |
| E 304 Circuits | 2 |
| Econ 101 102 | 2 |
| Math 315 Diff Equations | 3 |
| Tier 2 Elective [G] [H] (GER) | 3 |

Junior Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch E 310 Transport</td>
<td>3</td>
</tr>
<tr>
<td>Ch E 332 Fl Mech and Ht Trans</td>
<td>3</td>
</tr>
<tr>
<td>Ch E 398 Tech Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Chem 331 Phys Chem</td>
<td>3</td>
</tr>
<tr>
<td>E 305 Microprocessors</td>
<td>2</td>
</tr>
<tr>
<td>Math Elective</td>
<td>3</td>
</tr>
<tr>
<td>Tier 3 Elective [I] [S] (GER))</td>
<td>3</td>
</tr>
</tbody>
</table>

Second Semester

| Ch E 301 Ch E Thermo | 3 |
| Ch E 334 Separations | 3 |
| Ch E 398 Tech Seminar | 1 |
| Chem 333 Phys Chem Lab | 1 |
| Chem 336 Phys Chem | 2 |
| Chem Elective | 2 |
| Engr Elective | 3 |
| Tech Elective | 3 |

Senior Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch E 421 Kinetics</td>
<td>3</td>
</tr>
<tr>
<td>Ch E 432 Ch E Lab</td>
<td>3</td>
</tr>
<tr>
<td>Ch E 441 Control</td>
<td>3</td>
</tr>
<tr>
<td>Ch E 450 Design I</td>
<td>3</td>
</tr>
<tr>
<td>Ch E 498 Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Ch E Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

Second Semester

| Ch E 433 Ch E Lab | 2 |
| Ch E 451 Design II | 3 |
| Ch E 498 Seminar | 1 |

Bio S Elective | 4 |
Ch E Electives | 6 |

1 A total of 18 credits is required with 15 credits in a single area of coherence.
2 The following courses satisfy the math electives: Math 360, 375, 415, 430, 440, 441, 443, 448.
3 Courses satisfying the chemistry elective are Chem 414, 415, 416, 417, 418, 425.
4 Any course from an engineering department other than chemical engineering is acceptable with the exception of the following courses: BSYSE 110, 154, 354, 451; C E 101, 174, 301, 302, 304, 305, 341, 342, 415, 462, 463, 464, 470, 471, 480; E E 101, 300; M E 101, 102, 210, 212, 301; MSE 110, 220, 322, 331, 414, 450.
5 Chemical engineering courses may be used to satisfy this requirement (but cannot be counted as a chemical engineering elective as well) so long as at least one course from an engineering department other than chemical engineering is taken as a technical elective.
6 Must be approved by your adviser prior to your enrollment in the class. This course need not be taken from another engineering department if one of your engineering electives was taken from an engineering department other than chemical engineering.
7 The following courses may be used to satisfy the biological science elective: Bio S 103, 104, Micro 101, 201, Zool 251.

Certification

Specific requirements for certification in Chemical Engineering can be obtained from the departmental office although eligibility usually occurs at the end of the sophomore year. Criteria for certification include overall g.p.a., grades earned in mathematics and physical science courses, and performance in the Ch E 201 course. A certified student earning a g.p.a. of less than 2.0 for two consecutive semesters is subject to decertification.

Transfer Students

Students who are transferring to Chemical Engineering at Washington State University from other institutions should coordinate their programs with the department chair 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 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 ABET normally will satisfy this requirement.

Special programs are also available for students with bachelor’s degrees in chemistry or other areas of science who wish to obtain the Master of Science degree in Chemical Engineering.

Department of Chemistry


Chemistry is the fundamental science of that matter, 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 in 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 an excellent facilities and special equipment for study and research at both the undergraduate and graduate level. There are active research programs in both traditional and emerging areas of chemistry. Students in chemistry at WSU are encouraged to take advantage of its excellent facilities and faculty by beginning research projects as early as possible. Research expands experience beyond the classroom into the realm of new knowledge. Typical areas for research are: Analytical chemistry, which focuses on the identification and measurement of chemical species wherever they are found. It involves the development and application of new methods of detection and measurement, the application of analytical methods in biological environments, and the use of nuclear and radio-chemical techniques in a wide range of applications.

Environmental chemistry, which applies knowledge of chemical interactions to the study of the environment, is fundamental to any efforts to protect and improve environmental integrity. It involves the analysis of any materials found in the environment, whether as the result of human activity or as the result of natural processes. It focuses on the identification and measurement of chemical materials in rocks and minerals, in natural waters, and in the atmosphere.

Inorganic chemistry, which has as its center the study of the vast majority of the known elements. It includes investigations into the mechanisms of electron transfer in complex materials. It is closely related to bioinorganic chemistry which includes the study of metal containing proteins by advanced nuclear resonance techniques and investigations of the way in which bleach acts as a disinfectant.
Materials chemistry, which brings the knowledge and understanding of chemistry to the study of the structure and properties of materials. It involves the study of chemical reactions occurring at surfaces by both experimental and theoretical means. It includes important phenomena such as energy transfer in light absorbing and emitting materials and it extends to the synthesis of new and improved materials.

Organic chemistry, which deals with the many compounds of carbon. It includes the study of compounds which include metals such as boron, iron, copper and lithium, and it has application to the synthesis of biologically important compounds such as unusual nucleic acids.

Physical chemistry, which applies the methods and theories of physics to the study of chemical materials. It involves theoretical studies of chemical bonding using advanced computer methods and the investigation of the structures of solids and surfaces by a variety of instrumental methods including light absorption and emission, X-ray techniques, and surface characterization.

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 Chemistry, with options in materials chemistry and environmental chemistry, Master of Science in Chemistry, Master of Arts in Chemistry, and Doctor of Philosophy (Chemistry).

The Department of Chemistry offers a program leading to both a 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 undergraduates. 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 beginning undergraduate work will begin the study of chemistry with Chem 101, 105 or 115, depending on preparation. In order to take most courses in chemistry above the 100-level, the student must complete one of the following sequences: Chem 101, 105 and 106; 101, 102, and 106; 105 and 106; 115 and 116.

The Department of Chemistry provides major parts of the course work leading to degrees in the Department of Biochemistry and Biophysics and the Program in Materials Science. Students whose interests span chemistry and biology or chemistry and physics should see the section on the appropriate program in this catalog.

Minor in Chemistry

Completion of a minor in chemistry requires at least 17 hours from 200-level and above chemistry courses. Three hours from BC/BP 364, 366, 563, or 564 and up to 2 hours of Chem 499 may be used to satisfy this requirement.

CREDIT LIMITATIONS

Credit in only one of the chemistry courses in each of the following groups will be given:

(a) Chem 105, 115
(b) Chem 106, 116
(c) Chem 240, 340

LAB CHARGES

A charge for expendable laboratory supplies is made in each laboratory course.

Description of Courses

For explanation of symbols, see page 53.

General and Inorganic Chemistry

Chem

101 [P] Introduction to Chemistry 4 (3-3) Prereq Math placement beyond Math 101 or c/l in 101. Basic chemical concepts; atomic theory, periodicity, reaction stoichiometry, gases, solutions, acids, bases, pH, equilibrium, kinetics, energy, applications to life sciences. Cooperative course taught by WSU, open to UI students (Chem 101).


105 [P] Principles of Chemistry I 4 (3-3) Prereq one year high school chemistry or Chem 101; Math 107 or c/l. Stoichiometry, structure, gases, liquids, solids, solutions, thermodynamics, kinetics, equilibrium, volumetric, and gravimetric analysis. Cooperative course taught by WSU, open to UI students (Chem 111).

106 [P] Principles of Chemistry II 4 (3-3) Prereq Chem 105 or 115; Math 107 or higher placement. Acid-base, ionic, molecular, solubility, oxidation/reduction equilibria; kinetics, electrochemistry; systematic chemistry of the elements; coordination compounds. Cooperative course taught by WSU, open to UI students (Chem 114).

115 Chemical Principles Honors I 4 (3-3) Prereq one year high school chemistry; Math 107 or c/l. Topics as for Chem 105, enriched by special lectures and demonstrations. For students with adequate background in science and mathematics.


150 [Q] Molecules and Science 3 (2-3) Chemical basis and molecular structure of everyday materials; polymers, medicines, etc.

350 Development and Influence of Chemical Thought 4 (3-3) Prereq junior standing. Historical development of chemical information, concepts, progresses, technologies; their pervasive influence in modern society economics, environment, industry, government.

401 Modern Inorganic Chemistry 3 Prereq Chem 332 or c/l. Properties of substances; periodic systems; oxidation-reduction and acid-base characteristics interpreted on the basis of atomic and molecular structure.(g)

405 Chemical Kinetics 2 Prereq Chem 331. Chemical kinetics; application to inorganic, organic, and biochemical systems. (a/y)(g)

410 [M] Advanced Synthesis and Characterization 3 (1-6) Synthesis and characterization of organic and inorganic compounds and solid-state materials; modern synthetic technology, characterization methods, and laboratory techniques.(g)

480 Solid State Chemistry 3 Prereq Chem 332. Properties, bonding and synthesis of solid state materials; crystalline and amorphous solids and coatings. (g)


503 Advanced Topics in Inorganic Chemistry V 1-3 May be repeated for credit. Rec Chem 501. Recent significant developments. Cooperative course taught by WSU, open to UI students (Chem 503).

507 Topics in Coordination Chemistry 3 Rec Chem 501. Principles, complex ions and coordination compounds; theory of acids and bases; bonding theory, nonaqueous solvent; familiar elements; periodicity. Cooperative course taught by UI (Chem 565), open to WSU students.

508 Topics in Inorganic Chemistry V 1-9 Rec Chem 501. Coordination compounds; halogens; less familiar elements; cathrate, interstitial, nonstoichiometric compounds; chemical bonding; inorganic reaction mechanisms. Cooperative course taught by UI (Chem 565), open to WSU students.

512 Bioinorganic 2 Rec. Chem 220 or 425. Methods for the measurement of biological compounds. (a/y)


Analytical, Environmental, and Radiochemistry

Chem

220 Quantitative Analysis 2 Prereq Chem 106, or Chem 116; Rec c/l in Chem 222. Cooperative course taught by WSU, open to UI students (Chem 253).

222 Quantitative Analysis Laboratory 2 (0-6) Prereq Chem 220 or c/l. Cooperative course taught by WSU, open to UI students (Chem 253).

415 Trace Element Analysis 2 Rec Chem 425. Techniques for the analysis of inorganic materials at trace levels. Credit not granted for both Chem 415 and 515.

421 Radiochemistry and Radiotracers 2 Prereq Chem 331. Credit not granted for both Chem 421 and 522. (a/y)

422 Radiochemistry Laboratory 1 (0-3) Prereq Chem 222, 331; Phys 202. Credit not granted for both Chem 422 and 522. (a/y)

424 Activation Analysis 2 (1-3) Prereq Chem 331
solutions of electrolytes and non-electrolytes.

332 Physical Chemistry 3 Prereq Chem 331. Elementary quantum theory; molecular structure and spectra; bond theory; reaction rates; photochemistry and radiation chemistry; energy states and statistical thermodynamics.

333 Physical Chemistry Laboratory 1 (0-3) Prereq Chem 331 or c//. Experiments selected to meet the individual needs of students in BC/BP, Bio S, C E, Chem, or MSE.


336 Classical Physical Chemistry 2 Prereq Chem 331. Concepts and applications of classical physical chemistry; transport and kinetic properties; electrochemistry; colloids; polymers and macromolecules.


461 Atomic and Molecular Physics 3 Prereq Chem 332, Math 273. Basic concepts of atomic structure and spectroscopy; quantum mechanics of atomic phenomena. Credit not granted for both Chem 461 and 561.

480 Solid State Chemistry 3 Prereq Chem 332. Properties, bonding and synthesis of solid state material; crystalline and amorphous solids and coatings.

509 Chemical Group Theory 3 Rec Chem 332. Mathematical definitions of groups and representations, applications to chemical structure and spectra, ligand field theory, chemical reactions and selection rules. (a/y)

531 Advanced Physical Chemistry 3 Rec Chem 332. Physical chemistry; quantum mechanics, thermodynamics, chemical bonding, and electrochemistry.

532 Advanced Physical Chemistry 3 Rec Chem 332. Methods of quantum chemistry, atomic and molecular structure and spectra, chemical bonding, statistical mechanics, and kinetic theory, chemical kinetics.

534 Chemical Statistical Mechanics 3 Rec Chem 531, 532. Statistical theory of thermodynamic variables and chemical equilibrium; calculation of equilibrium properties from spectral data; fluctuations about equilibrium; quantum statistics. (a/y)


536 Quantum Chemistry 3 Rec Chem 332 or 531. Quantum mechanics applied to chemical systems: states of atoms and molecules, transitions and spectra.

537 Advanced Topics in Physical Chemistry V 1-3 May be repeated for credit. Rec Chem 536. Advanced theory and practice of chemical physics; quantum mechanics; many electron theory; molecular applications of quantum electrodynamics; magnetism; photophysical

564 Atomic and Molecular Phenomena 3 Rec Chem 461, 509. Phenomena which yield information on structures, energy levels, and interactions of molecules in solid, liquid, and gaseous phases. (a/y)

Organic Chemistry

Chem 240 Elementary Organic Chemistry 4 (3-3) Prereq Chem 102, or 106, or 116. Cooperative course taught by WSU, open to UI students (Chem 275 and 276).


341 Organic Chemistry Laboratory 2 (0-6) Prereq Chem 340.

342 Organic Chemistry 3 Prereq Chem 340; Rec Chem 341 or c//. Continuation of Chem 340.

343 Organic Chemistry Laboratory 2 (0-6) Prereq Chem 342 or c//.

540 Organic Reaction Mechanisms 3 Rec Chem 331, 342. The major classes of organic reaction mechanisms and their significance; kinetics and introductory theory.


544 Advanced Topics in Organic Chemistry V 1-3 May be repeated for credit. Rec Chem 544. Current research in organic chemistry. Cooperative course taught by WSU, open to UI students (Chem 544).

546 Spectroscopic Identification of Organic Compounds V 1-3 May be repeated for credit; cumulative maximum 3 hours. Rec Chem 342. Structural interpretation of IR and NMR, vibrational and mass spectra of organic compounds; audio-tutorial.

Chemistry for Teachers

Chem 411 General Chemistry from an Advanced Point of View 3 Prereq one year chemistry. Quantitative aspects of chemistry; first law of thermodynamics, solution theory, equilibrium, kinetics; electrochemistry and redox reactions; inquiry and problem solving.

413 Lab Preparations, Methods and Management 2 (0-6) Prereq one year Chem. Synthesis, analysis, and reactivity; reactions and methods appropriate for high school; microscale chemistry; time-saving techniques, inventory control, safety and disposal. (g)

419 Physical Foundations of General Chemistry 1 Prereq Chem 411 or one year general chemistry; for preselected teachers. Physical basis of general and biophysical chemistry. (g)

456 (416) Lecture Demonstrations and Their Uses 1 (0-3) Prereq Chem 411, 413; for preselected teachers. Developments, methods and utilization of lecture demonstrations for secondary chemistry teachers. (g)

505 Molecular Basis of Modern Materials and Devices 2 Prereq Chem 411; for preselected teachers. Atomic and molecular structure; the
solid state; materials science; transition metals and coordination complexes.

**506 Industrial Practicum** 5 Prereq Chem 519; for preselected teachers. Industrial practicum for secondary chemistry teachers who are candidates for the MA degree in chemistry.

**519 Analytical Methods and Instrumentation** 3 (1-6) For preselected teachers. Analytical methods and instruments, their fundamental basis and applications to educational and industrial practice.


**585 Survey of Biophysical Chemistry** 3 Prereq BC/BP 572, Chem 419; for preselected teachers. Connection between structure and properties of biomolecules and methods of investigation.

Problems, Seminar, Research, and Thesis

**Chem**

**191 Independent Study in Modern Chemistry** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq Chem 101, 105, 115, or c/f. Independent study in the theory and practice of modern chemistry; written report required. S, F grading.

**398 Undergraduate Seminar** 1 Rec BC/BP or Chem major. S, F grading.

**491 Cooperative Education Internship** V 2-5 May be repeated for credit; cumulative maximum 16 hours. Off-campus internship with business, industry, or government unit coordinated through the Professional Experience Program. S, F grading.

**495 Directed Research** V 1-3 Prereq Chem 334 or c/f. May be repeated for credit. Introduction to research and advanced laboratory methods; practice in written and oral scientific communication.

**499 Special Problems** V 1-4 May be repeated for credit. S, F grading.

**555 Special Topics** V 1-4 May be repeated for credit. Workshop in teaching methods in chemistry.

**590 Introduction to Research Topics** 1 Presentation and description of research areas and projects of current interest to faculty.

**591 Seminar in Inorganic Chemistry** 1 May be repeated for credit. Presentation and discussion of topics in inorganic chemistry taken from research in progress or current literature.

**592 Seminar in Analytical Chemistry** 1 May be repeated for credit; cumulative maximum 6 hours. Presentation and discussion of topics in analytical chemistry taken from research in progress or current literature.

**593 Seminar in Physical Chemistry** 1 May be repeated for credit; cumulative maximum 6 hours. Presentation and discussion of topics in physical chemistry taken from research in progress or current literature.

**594 Seminar in Organic Chemistry** May be repeated for credit; cumulative maximum 6 hours. Presentation and discussion of topics in organic chemistry taken from research in progress or current literature.

**600 Special Projects or Independent Study** Variable credit. S, F grading.

**700 Master’s Research, Thesis, and/or Examination** Variable credit. S, F grading.

**702 Master’s Special Problems, Directed Study, and/or Examination** Variable credit. S, F grading.

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### 800 Doctoral Research, Dissertation, and/or Examination

Variable credit. S, F grading.

#### Biochemistry

For course descriptions and schedule of studies in biochemistry, see Department of Biochemistry and Biophysics.

#### 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 undertaking this curriculum after the beginning of the freshman year should consult with the department undergraduate coordinator to arrange a schedule which will permit completion of required courses in proper sequence. This curriculum leads to a degree for which students will be certified to the American Chemical Society.

**Freshman Year**

**First Semester**

- **First Semester Hours**
  - Chem 105 or 115 Principles1 4
  - Engl 101 Intro Wrng 3
  - GenEd 110 [A] World Civ (GER) 3
  - Math 171 Calculus I 4
  - Elective 1

**Second Semester**

- Bio S 102 or 103 4
- Chem 106 or 116 Principles1 3
- GenEd 111 [A] World Civ (GER) 3
- Math 172 Calculus II 4

**Sophomore Year**

**First Semester**

- Chem 340 Organic 3
- Chem 341 Organic Lab 2
- Math 273 Calculus III 4
- Phys 201 Classical Physics 4
  - Elective 2

**Second Semester**

- Arts and Humanities [H], Intercultural Studies [I], or Social Science [S] Elective (GER) 3
- Chem 342 Organic 3
- Cpt S 203 Cpt Prog Eng 2
- Math 220 Linear Alg 2
- Phys 202 Classical Physics 4
  - Elective 1

**Junior Year**

**First Semester**

- Arts and Humanities [H], Intercultural Studies [I], or Social Science [S] Elective (GER) 3
- Chem 220 Quant Analysis 3
- Chem 222 Quant Analysis Lab 2
- Chem 331 Physical Chemistry 3
- Chem 333 Physical Lab 1
- Chem 398 Seminar 1
  - Elective 3

**Second Semester**

- Arts and Humanities [H], Intercultural Studies [I], or Social Science [S] Elective (GER) 6
- Chem 332 Physical Chemistry 3
- Chem 334 Physical Lab 1
- Chem 495 Intro Research 2
- Engl 301 or 402 [W] (GER) 3

**Senior Year**

**First Semester**

- Arts and Humanities [H], Intercultural Studies [I], or Social Science [S] Elective (GER) 3
- Chem 425 Instrumental Analysis 2
- Chem 426 Instrumental Lab 2
- Chem 495 Intro Research 2
  - Electives 7

**Second Semester**

- Chem 401 Inorganic Chem 3
- Chem 410 Adv Synthesis-Char [M] 3
- Chem 495 Intro Research 2
  - Electives2 7

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1 Highly qualified students are encouraged to take Chem 115, 116, in place of Chem 105, 106. Students who have taken Chem 101 must take Chem 105, 106, or 102, 106.

2 Electives must include 3 hours of advanced chemistry courses based on physical (Chem 332) or organic (Chem 340) chemistry. One Math or Phys course requiring calculus may be substituted for this course. Students should consult the associate chair regarding selection of specific courses which satisfy this requirement.

#### Specialized Options

**Environmental Specialization**

Students wishing to be certified to the American Chemical Society with a specialization in environmental chemistry should take Chem 481 and 482 as electives and should take 3 hours of biology or geology beyond that specified above.

#### Schedule of Studies

**ENVIRONMENTAL CHEMISTRY OPTION**

Students completing this curriculum will not be certified to the American Chemical Society.

**Freshman Year**

**First Semester**

- Bio S 103 Intro Biology I 3
- Chem 105 or 115 Principles 4
- Engl 101 Intro Writing 3
- Math 107 PreCalculus Algebra 4
- Elective 1

**Second Semester**

- Arts and Humanities [H], Intercultural Studies [I], or Social Science [S] Elective (GER) 3
- Bio S 104 Intro Biology II 4
- Chem 106 or 116 Principles 4
- GenEd 110 [A] World Civ (GER) 3

**Sophomore Year**

**First Semester**

- Chem 240 Elementary Organic1 4
- ES/RP 101 Environment and Human Life 4
- Math 140 Calculus for Life Sciences 4
- Phys 101 General Physics I2 4

**Second Semester**

- Chem 220 Quant Analysis 2
- Chem 222 Quant Analysis Lab 2
- GenEd 111 [A] World Civ (GER) 3
- NATRS 303 Renewable Resources 3

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87
Math 220 Linear Algebra 2
Ch E 201 Chemical Process Principles 3
First Semester
Arts and Humanities [H], Intercultural Studies [I], or Social Science [S] Elective (GER) 3
Chem 331 Physical Chemistry 3
Chem 398 Seminar 1
Science Electives 6 8
Second Semester
Arts and Humanities [H], Intercultural Studies [I], or Social Science [S] Elective (GER) 3
Chem 481 Environmental Chemistry I 3
ES/RE 335 Environmental Policy 3
Science Electives 6 8
Senior Year
Arts and Humanities [H], Intercultural Studies [I], or Social Science [S] Elective (GER) 3
Chem 401 Inorganic Chemistry 3
Chem 415 Trace Element Analysis 2
Chem 416 Trace Organic Analysis 2
Chem 489 Environmental Project 3
Science Electives 6 8
Schedule of Studies
MATERIALS CHEMISTRY OPTION
Students pursuing this curriculum will not be certified to the American Chemical Society.
Freshman Year
First Semester  Hours  Electives 6  Second Semester
Chem 105 or 115 Principles 4  Arts and Humanities [H], Intercultural Studies [I], or Social Science [S] Elective (GER) 3
Engl 101 Intro Writing 3  Chem 240 Organic 4
GenEd 110 [A] World Civ (GER) 3  Phys 202 Classical Physics 4
Math 171 Calculus I 4  Elective 3
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, organic, 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, French or Russian.
It is desirable that students interested in inorganic, analytical, organic, or physical chemistry present advanced courses in chemistry, computer science, mathematics, or physics; advanced biological science courses are important preparation for students who propose to undertake graduate study in the field of biochemistry.
Description of Courses


For explanation of symbols, see page 53.

Civil Engineering

C E

120 Innovation in Design 2 Same as M E 120.
174 Introduction to Meteorology and the Atmospheric Environment 3 Introduction to meteorology, the atmospheric processes; weather, air pollution, and environmental topics.
201 Surveying for Engineers 3 (2-3) Prereq M E 103; Math 171. Basic principles for using instruments and equipment in conducting engineering surveys; analyses of errors in measurements.
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. Cooperative course taught jointly by WSU and UI (ME 210).
212 Dynamics 3 Prereq C E 211. Kinematics and kinetics of particles and rigid bodies; introduction to mechanical vibration. Cooperative course taught jointly by WSU and UI (ME 220).
213 Statics and Mechanics of Materials 4 Prereq Math 172; Phys 201. Introduction to statics and mechanics of materials.
214 Introductory Dynamics 2 Prereq C E 211 or 213. Kinematics and kinetics of particles and rigid bodies.
215 Mechanics of Materials 3 Prereq C E 211. Concepts of stress, strain, and their relationships; axial loads, torsion and bending; combined stress; properties of materials; columns, repeated loadings. Cooperative course taught jointly by WSU and UI (ME 340).
317 [M] Geotechnical Engineering 1 4 (3-3) Prereq C E 215, 315 or c/c. Structure, index properties, and classification of soils; compaction; effective stress; seepage; consolidation and shear strength.
322 Transportation Engineering 3 Prereq C E 201, c/l in Stat 360. Transportation engineering; demand and performance functions; geometric design; capacity and control of transport modes.
330 Mechanics of Structures 3 Prereq C E 215; CptS 203; Math 220. Analysis of statically determinate and indeterminate structures; deflections; influence lines and moving loads; introduction to matrix analysis.
341 Introduction to Environmental Engineering 3 Prereq Bio S 103 or Micro 101; Chem 105. Impact of pollutants on the environment; pollution sources and sinks; engineering aspects of air and water quality; introduction to pollution control.
351 Hydraulic Engineering 3 Prereq C E 315. Application of fluid mechanics to hydraulic structures, pipelines and hydro machinery; introduction to hydrology.
400 Highway Materials Engineering 3 (2-3) Prereq senior standing. Basic properties and mix designs of aggregates, asphalt, concrete and recycled materials; quality assurance, quality control. (g)
403 Environmental Geology 3 Same as Geol 403. (g)
405 Geophysics 4 (3-3) Same as Geol 405.
410 Experimental Methods in Geotechnical Engineering 3 (1-6) Prereq C E 317. Experimental methods of evaluating geotechnical engineering properties including shear strength, stress-strain behavior, time-dependent behavior, and permeability. Credit not granted for both C E 410 and 510.
414 Structural Design Laboratory 3 (1-6) Prereq C E 431, 433 or c/c. Senior design lab on the integration of previous course work into the execution of design.
415 Environmental Measurements 3 (1-6) Prereq C E 341. Theory and laboratory measurement techniques used in analyzing environmental quality parameters. Credit not granted for both C E 415 and 515.
416 Hydraulic Engineering Laboratory 3 (1-6) Prereq C E 315. Experiments related to fluid flow principles and their application to hydraulic engineering. (g)
425 Soil and Site Improvement 3 Prereq C E 317. Consolidation theory and methods; deep densification of soils; advanced consolidation theory; preloading, vertical drains, chemical stabilization, grouting. Credit not granted for both C E 425 and 525. Cooperative course taught by WSU, open to UI students (CE 567).
430 Analysis of Indeterminate Structures 3 Prereq C E 330. Matrix-stiffness method applied to trusses, frames, and grids; elastic-plastic and stability analysis of frames; approximate methods; computer applications. Credit not granted for both C E 430 and 530.
431 Structural Steel Design 3 Prereq C E 330. Design of steel structures by working stress design and plastic design; use of AISC Building Specification. (g)
433 [M] Reinforced Concrete Design 4 (3-3) Prereq C E 330. Behavior, analysis, and design of reinforced concrete structures; flexure; shear; bond; serviceability requirements; design of beams, columns, and slabs. (g)
433 Presstressed Concrete Design 3 Prereq C E 433. Behavior, analysis, and design of pretensioned and post-tensioned prestressed concrete structures; flexure, shear, bond, anchorage zone design; prestress losses. Credit not granted for both C E 434 and 534. Cooperative course taught by WSU, open to UI students (CE 433). (g)
435 Foundations 3 Prereq C E 317. Site investigation; bearing capacity; settlement and design of shallow foundations, piles and piers; design of retaining walls. Cooperative course taught by WSU, open to UI students (CE 461). (g)
436 Design of Timber Structures 3 Prereq C E 330 or c/c. Engineering properties of wood products; analysis and design; connection details; durability and moisture effects; lumber, plywood, glulam, poles, adhesives. Cooperative course taught by WSU, open to UI students (CE 443). (g)
442 Water and Wastewater Treatment Design 3 Prereq C E 341; major in Engr or Env S. Water and wastewater treatment processes and design.
446 Hazardous Waste Engineering 3 Prereq C E 341, hydrology course. Hazardous waste properties, chemical and health effects; introduction to risk assessment; design of soil and groundwater remediation systems. Cooperative course taught by WSU; open to UI students (CE 445). (g)
450 Hydraulic Engineering Design 3 Prereq C E 351. Hydraulic design and planning of facilities associated with gravity controlled and pressurized flow. Cooperative course taught jointly by WSU and UI (CE 422). (g)
451 Open Channel Flow 3 Prereq C E 315. Steady, non-uniform flow; controls and transitions in fixed-bed channels. Credit not granted for both C E 451 and 551. (g)
460 Advanced Hydrology 3 Prereq C E 351. Components of the hydrologic cycle; conceptual models; watershed characteristics; probability/statistics in data analysis; hydrographs; computer models; and design applications. Credit not granted for both C E 460 and 560.
462 Engineering Law and Contracts 2 Development of law, courts, and ethics; law on contracts, agencies, sales, property, and patterns; specifications; preparation of contract documents. Cooperative course taught by UI (CE 484), open to WSU students. (g)
463 Engineering Administration 3 Engineering economy; annual cost, present worth, rate of return, and benefit-cost ratio in engineering decision making; basic contract law. Cooperative course taught jointly by WSU and UI (CE 486). (g)
464 Construction Management 3 Job scheduling, job planning, project control, records and policies, and construction equipment. (g)
465 Integrated Civil Engineering Design 3 (1-6) Prereq C E 322, 463. Civil engineering applications to planning and design problems, synthesis, and selection of materials. Design projects. Cooperative course taught jointly by UI and WSU (CE 471 and 571).
473 Pavement Design 2 (2-3) Prereq C E 215, 317; c/l in CE 322, Econ 101 or 102; Stat 360. Systems approach to managing pavements; evaluation, design, alternative design selection and characterization of pavement materials. Cooperative course taught jointly by WSU and UI (CE 475).
474 Intermediate Transportation Engineering 3 Prereq C E 322. Fundamentals of geometric design and traffic engineering for urban and rural highways. Cooperative course taught by UI (CE 474), open to WSU students. (g)
475 Groundwater Hydrology 3 (2-3) Same as Geol 475. (g)
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. S, F grading.
499 Special Problems V 1-4 May be repeated for credit, S, F grading.
501 Advanced Topics in Transportation Engineering 2 V 1-4 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. Cooperative course taught jointly by WSU and UI (CE 571).
502 Advanced Topics in Construction Engineering V 2-4 May be repeated for credit; cumulative maximum 9 hours. Prereq C E 464; Math
Design and Construction of Water Wells 3
Analysis of geologic and engineering factors important in design, construction, and maintenance of water wells. Cooperative course taught by UI (Hydro 575), open to WSU students.

Seepage and Earth Dams 3 Principles of earth-dam design, failures, considerations in construction; principles governing flow of water through soils. Cooperative course taught by UI (Geo 535), open to WSU students.

Air Pollution Control Engineering 3 Prereq senior in Engr or Ph D. Measurement and control of air pollution; engineering design calculations; equipment and process. Cooperative course taught jointly by WSU and UI (Chem 575).

Experimental Methods in Geotechnical Engineering 3 (1-6) Graduate-level counterpart of CE 410; additional requirements. Credit not granted for both CE 410 and 510.

Advanced Topics in Geotechnical Engineering V 2-4 May be repeated for credit; cumulative maximum 9 hours. Prereq CE 317. Soil dynamics, theoretical soil mechanics, numerical methods in soil mechanics, and geohydrology, engineering geology, cold regions geoengeering, advanced laboratory testing. Cooperative course taught jointly by WSU and UI (CE 569).

Dynamics of Structures 3 Behavior of structures under impact, impulse, and seismic loads. Cooperative course taught jointly by WSU and UI (CE 543).

Advanced Mechanics of Materials 3 Elastic stress-strain relations, shear center, unsymmetric bending, curved beams, elastic stability, elastically supported beams, energy methods, thin plates, shells. Cooperative course taught jointly by WSU and UI (CE 510/ME 539).

Environmental Measurements 3 (1-6) Graduate-level counterpart of CE 415; additional requirements. Credit not granted for both CE 415 and 515.

Unsteady Closed-Conduit Flow 3 Prereq CE 351. Derivation of governing equations; finite difference methods; methods of characteristics; boundary conditions; computational procedures; transients caused by centrifugal pumps.

Unsteady Open-Channel Flow 3 Prereq CE 451. Derivation of governing equations; explicit and implicit finite difference methods; computational procedures; stability and convergence.

Soil and Site Improvement 3 Graduate-level counterpart of CE 425; additional requirements. Credit not granted for both CE 425 and 525. Cooperative course taught by WSU, open to UI students (CE 567).

Engineering Geology and Geotechnics 3 Graduate-level counterpart of CE 426; additional requirements. Credit not granted for both CE 426 and 526.

Advanced Soil Mechanics 3 Prereq CE 317. Effective stresses and lateral earth pressures; interrelationships of applied stresses, permeability, strain and shear strength of soils. Cooperative course taught by UI (CE 561), open to WSU students.

Advanced Foundation Engineering 3 Prereq CE 477. Group theory, bearing capacity, and settlements of foundations, pile group behavior, theory of subgrade reaction, materials foundations, laterally loaded piles. Cooperative course taught by UI (CE 562), open to WSU students.

Soil Dynamics 3 Vibration theory; analysis of machine vibrations; wave propagation through soils; dynamic loading of soils; liquefaction. Cooperative course taught by UI (CE 565), open to WSU students.

Analysis of Indeterminate Structures 3 Graduate-level counterpart of CE 430; additional requirements. Credit not granted for both CE 430 and 530.

Structural Reliability 3 Probabilistic structural analysis and design; probabilistic characterization of material properties and load combinations (dead, live, earthquake, wind); LRFD structural design. Cooperative course taught jointly by WSU and UI (CE 445/545).

Finite Elements 3 Theory of finite elements; applications to general engineering systems considered as assemblages of discrete elements. Cooperative course taught jointly by WSU and UI (CE 546).

Advanced Reinforced Concrete Design 3 Prereq CE 433. Composite design; slab design; limit state design; footings; retaining walls; deep beams; brackets and corbels; torsion; seismic design; shear walls. Cooperative course taught by WSU, open to UI students (CE 442).

Nondestructive Testing of Wood-based Materials 3 Principles of nondestructive testing applied to wood-based materials. Cooperative course taught by WSU, open to UI students (ForPr 535).

Advanced Topics in Structural Engineering 3 May be repeated for credit; cumulative maximum 6 hours. Prereq CE 343 and 534. Cooperative course taught by WSU, open to UI students (CE 442).

Earthquake Engineering 3 Prereq CE 512. Ground motion characterization, elastic and inelastic structural dynamic response, code procedures, lateral force-resisting systems, detailing for inelastic response.

Instrumental Analysis of Environmental Contaminants 3 (1-6) Prereq CE 415. Theory and methods of analysis of water and wastewater suspensions for contaminants using electrometric, spectrophotometric, and chromatographic techniques. (a/ y). Cooperative course taught by WSU, open to UI students (CE 530).

Environmental Engineering Unit Operations 3 Prereq CE 442; Math 315. Theory and design of physical and chemical unit operations of water and wastewater treatment systems. Cooperative course taught jointly by WSU and UI (CE 531).

Environmental Engineering Unit Processes 3 Prereq CE 541. Biochemical energetics and kinetics; biological waste treatment processes; nutrient removal; advanced wastewater treatment design. Cooperative course taught jointly by WSU and UI (CE 532).

Advanced Topics in Environmental Engineering 3 Credit not granted for both CE 471 and 571.

Wastewater Treatment System Design 3 (2-5) Prereq CE 542 or c/. Application of unit operations and processes to design of integrated treatment systems; critical review of designs. Cooperative course taught jointly by WSU and UI (CE 536).

Industrial Waste Problems 3 Prereq CE 542 or c/. Evaluation and feasible solutions of industrial waste problems. (a/ y) Cooperative course taught by WSU, open to UI students (CE 539A).

Hazardous Waste Treatment 4 Prereq CE 446. Principles of operation and application of processes in design of technologies used in hazardous waste treatment and remediation.

Principles of Environmental Engineering 3 Prereq CE 315, 341; Math 315. Principles of chemistry, microbiology, thermodynamics, material and energy balances, and transport phenomena, for environmental engineers.

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.

Intermediate Fluid Mechanics 3 Prereq CE 315. Basic flow equations; Navier-Stokes equations; similitude, potential flow, boundary layers, turbulence, and diffusion; uniform and non-uniform conduit flow; drag and lift. Cooperative course taught by WSU, open to UI students (CE 525).

Open Channel Flow 3 Graduate-level counterpart of CE 451; additional requirements. Credit not granted for both CE 451 and 551.

Advanced Topics in Hydraulic Engineering V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq CE 315. Cavitation, air entrainment, hydraulic machinery, similitude, mixing in rivers and estuaries, hydraulic design. Cooperative course taught by WSU, open to UI students (CE 527).

Numerical Modeling in Fluid Mechanics 3 Prereq CE 315. Fundamental concepts in development of numerical models for fluid flow with applications to steady and unsteady flows. (a/ y).

Advanced Hydrology 3 Graduate-level counterpart of CE 460; additional requirements. Credit not granted for both CE 460 and 560.

Water Resources Systems 3 Concepts in water development; coordination of development of other natural resources; systems approach and optimization techniques. Cooperative course taught by UI (CE 523), open to WSU students.

Water Resources Planning 3 Prereq CE 351. Design and feasibility studies in water supply, power, flood problems, navigation, irrigation, recreation. Cooperative course taught by UI (CE 524), open to WSU students.

Field Methods in Hydrogeology 2 (1-3) Same as Geol 569.

Meteorology 3 Graduate-level counterpart of CE 471; additional requirements. Credit not granted for both CE 471 and 571.

Air Pollution Abatement and Administration 2 Air quality management, criteria, and stan-
All students completing the schedule of studies below earn a Bachelor of Science degree in Civil Engineering. At least 50 of the total hours required for this degree must be in upper-division courses. None of the courses listed below may be taken on a pass, fail basis.

### Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 105 Principles</td>
<td>4</td>
</tr>
<tr>
<td>Engl 101 [W] Intro Wrtg (GER)</td>
<td>3</td>
</tr>
<tr>
<td>GenEd 110 [A] World Civ (GER)</td>
<td>3</td>
</tr>
<tr>
<td>M E 103 Engr Graphics</td>
<td>3</td>
</tr>
<tr>
<td>Math 171 Calculus I</td>
<td>4</td>
</tr>
</tbody>
</table>

#### First Semester

- C E 201 Surveying for Engr | 3
- C E 211 Statics | 3
- Econ 101 or 102 [S] (GER) | 3
- Math 220 Linear Alg | 2
- Math 273 Calculus III | 2
- Chem 240 or Phys 201 | 4

#### Second Semester

- Bio S 103 or Micro 101 | 4
- C E 212 Dynamics | 3
- C E 215 Mech of Materials | 3
- Chem 240 or Phys 202 | 4
- M E 320 Materials Lab | 1
- Math 315 Diff Eq | 3

### Sophomore Year

<table>
<thead>
<tr>
<th>First Semester</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 Geotech Engr</td>
<td>4</td>
</tr>
<tr>
<td>C E 330 Mech of Structures</td>
<td>3</td>
</tr>
<tr>
<td>C E 341 Intro to Env Engr</td>
<td>3</td>
</tr>
<tr>
<td>Engl 402 [W] Tech/Pro Wrt (GER)</td>
<td>3</td>
</tr>
</tbody>
</table>

#### First Semester

- C E 322 Transportation Engr | 3
- C E 351 Hydraulic Engr | 3
- C E 433 Reinforced Concrete Des | 4
- Math 360 Prob/Statistics | 3

#### Senior Year

- C E 463 Engr Administration | 3
- C E Electives | 9
- E E 304 or M E 301 | 2 or 3

#### Second Semester

- C E 465 Integrated C E Des | 3
- C E 480 Ethics and Profess | 1
- C E Elective | 3
- Tier II Arts and Humanities [H] or Social Science [S] (GER) | 3

- C E 408 Air Pollution Control | 3
- C E 442 Water/Waste | 3
- C E 465 Integrated C E Des | 3
- C E 480 Ethics and Profess | 1
- C E Elective | 3
- Tier III Arts and Humanities [H] or Social Science [S] (GER) | 3

Course strongly recommended for the environmental engineering emphasis study.

### Certification

Certification into the department is the formal acceptance of the student by the department to pursue a professional academic program in that department. Students who will be completing at least 45 semester hours of course work at the end of the semester including C E 211, Math 171, 172, and Phys 201 or equivalents are eligible to apply for certification into the Department of Civil and Environmental Engineering. The number of students certified into the Department of Civil and Environmental Engineering depends upon the available resources and facilities. The best qualified students, based on cumulative g.p.a. and grades in the prerequisite courses listed above, will be certified into the department until the carrying capacity is reached. Preference will be given to applications received before April 15 for the fall semester and November 15 for the spring semester.

### 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. Inquiries concerning specific questions are welcome. A strong preparation in mathematics and physics is necessary prior to transfer to minimize the time required to complete the degree requirements. The requirements for direct entry into the Department of Civil and Environmental Engineering upon transfer are the same as listed above for certification. Applications from transfer students...
will be handled by the Admissions Office.

Preparation for Graduate Study
As preparation for academic work toward an advanced degree in civil engineering or environmental engineering, a student should have completed substantially the equivalent of the above schedule of studies.

Edward R. Murrow School of Communication


Communication is a vital force in society. New practices and techniques in communication require that instruction and research explain these phenomena and prepare students to take their place in this field.

The curricula of the Edward R. Murrow School of Communication lead to the degrees of Bachelor of Arts in Communication and Master of Arts in Communication. The school also participates in the university’s interdisciplinary Ph.D. program.

Students may major in advertising, broadcasting, journalism, public relations, broadcast management, or speech communication. Students may also fashion a general communication curriculum. The undergraduate program reflects a blending of professional, liberal arts, and theory and research courses.

Students in newspaper journalism and speech communication may prepare for teacher certification through the Department of Elementary and Secondary Education. The School also cooperates with the College of Agriculture and Home Economics in support of the agricultural communications option.

Supplementing the classrooms and laboratories of the Murrow School are the professional internship program, campus radio and television facilities, and student publications, including a daily newspaper.

Description of Courses.

For explanation of symbols, see page 53.

Intersequence Courses


245 Language and Human Behavior 3 Prereq sophomore standing. Theories of language as it influences human behavior in meaning, problem solving and construction of social reality.

253 Photocommunications 3 (2-3)

270 Introduction to Mass Communication Theory 3 Prereq sophomore standing. Theories of mass communication and how it influences behavior.

295 Media Writing 3 (2-3) Prereq Com 101, 245, 270; satisfactory completion of communication writing skills test; typing proficiency. Writing for the media; journalistic and persuasive writing. (The typing proficiency may be waived on an individual basis for otherwise qualified disabled students.)

315 Topics in Canadian Studies 1 Same as Hist 315.

321 [I] Intercultural Communication 3 Culture and communication.

340 Ethics in Mass Media 3 Application of basic concepts of ethics to media performance in news, advertising and entertainment.

403 Media and the Canadian Experience 3 History, structure, function of Canadian media; multiculturalism, media imperialism, news production, management censorship, freedom of information. Cooperative course taught by U1 (Com 440), open to WSU students.

409 (490) Quantitative Research 3 Prereq Math 103, 171, or 222. Measurement, questionnaire construction, sampling, data collection techniques, analysis and hypothesis testing in communication research.

410 History of Mass Communications 3 For seniors and graduate students. Credit not granted for both Com 410 and 510.

415 Law of Mass Communications 3 Prereq senior standing. Credit not granted for both Com 415 and 515.

420 New Communication Technologies 3 Prereq senior standing. New communication technologies, their impact on communication processes, access, regulation, and communication in organization/professional contexts. Credit not granted for both Com 420 and 520.

440 Media Ethics 3 Prereq senior standing. Foundations and frameworks of media ethics; current studies in assessing media performance. Credit not granted for both Com 440 and 540.

450 Mass Media and the First Amendment 3 Prereq senior standing. Theoretical and philosophical bases of press, individual and government interaction concerning First Amendment. Credit not granted for both Com 450 and 550.

453 Color Photography 3 (2-3) Prereq Com 253.(g)

460 Mass Media Criticism 3 Prereq senior standing. Theoretical and philosophical basis for critical analysis of mass communication. Credit not granted for both Com 460 and 560.

470 Mass Communications Theories and Theory Construction 3 Prereq senior standing. Theories of mass communication and the process of theory construction.

481 Media Management 3 For seniors and graduate students.

495 Communication Professional Internship V 2 (0-6) to 12 (0-36) May be repeated for credit; cumulative maximum 12 hours. By interview only. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

501 Theory Building in Communications 3 Relationship of research to theory development; evaluation of current theory and research; planning and executing research within specified theoretical frameworks.

504 Instructional Practicum 1 May be repeated for credit; cumulative maximum 4 hours. S, F grading.

509 Quantitative Research 3 Introduction to quantitative research in communication; hypothesis development, testing; basic statistics, interpretation; field surveys, laboratory and field experiments, content analysis.

510 History of Mass Communications 3 Graduate-level counterpart of Com 410; additional requirements. Credit not granted for both Com 410 and 510.

515 Law of Mass Communications 3 Graduate-level counterpart of Com 415; additional requirements. Credit not granted for both Com 415 and 515 requirements. Credit not granted for both Com 420 and 520.

524 Criticism of Public Address 3 Graduate-level counterpart of SpCom 424; additional requirements. Credit not granted for both SpCom 424 and Com 524.

525 Rhetorical Theory 3 Major theories from classical to contemporary; analysis of symbolic action in public, political discourse.

520 New Communication Technologies 3 Graduate-level counterpart of Com 420; additional requirements. Credit not granted for both Com 420 and 520.

535 Seminar in Training and Consolation 3 May be repeated for credit; cumulative maximum 6 hours. Instructional aspects of training and consultation in organizational communication; team-building, presentational skills, conflict resolution, assessment leadership, group dynamics.

540 Media Ethics 3 Graduate-level counterpart of Com 440; additional requirements. Credit not granted for both Com 440 and 540.

550 Mass Media and the First Amendment 3 Graduate-level counterpart of Com 450; additional requirements. Credit not granted for both Com 450 and 550.

560 Mass Media Criticism 3 Graduate-level counterpart of Com 460; additional requirements. Credit not granted for both Com 460 and 560.

570 Communication Theory 3 Relevant theories and research from mass and interpersonal communication.

580 Topics in Communication 3 May be repeated for credit; cumulative maximum 6 hours. Contemporary, specialized, or technical topics in communication.

585 Interpersonal and Small Group Communication 3 Theory and research in interpersonal and small group communication.

591 Qualitative Research Methods 3 Historical, textual, and legal methodologies for theory-based evaluative and discourse studies in communication.
Edward R. Murrow School of Communication

599 Seminar in Communication 3 May be repeated for credit; cumulative maximum 6 hours. Special topics in rhetoric, communication, and public address.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Advertising

Adver


382 Media Planning 3 Prereq Adver 380. Media planning theories, strategies, and practices.

475 Seminar in Advertising 3 May be repeated for credit; cumulative maximum 9 hours. Prereq Com 409; for seniors and graduate students.(g)

480 Advertising Agency Operation and Campaigns 3 Prereq Adver 381, 382, Mktg 360. Principles and functions of advertising management: campaign planning, execution, presentation, and evaluation. Credit not granted for both Adver 480 and 580.

483 Advertising Research 3 Prereq Adver 380, 381, 382, Com 409, Mktg 360. Professional research practices in advertising.

495 Advertising Professional Internship V 2 (0-6) to 12 (0-36) May be repeated for credit; cumulative maximum 12 hours. By interview only. Prereq Adver 381 or 382; Mktg 360. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

500 Advertising Agency Operation and Campaigns 3 (2-3) Graduate-level counterpart of Adver 480; additional requirements. Credit not granted for both Adver 480 and 580.

Broadcasting

Bdcst

150 Introduction to Broadcast Equipment 1 (2-3) By interview only. Orientation to broadcast equipment; audio, studio television, and field television, as applied to various functions.

350 Introduction to Telecommunication V 3 (2-3) Prereq Com 295. Fundamentals of the history, structure, economy, and operations of broadcasting and cable.

355 Broadcast Writing and Production 3 (1-6) Prereq Bdcst 150,350.

360 Writing for Television 3 (2-3) Prereq Bdcst 350. Theory and practice of writing scripts: analysis of dramatic, comedic, commercial, documentary scripts; writing scripts for each genre.


455 Advanced TV Production 3 (1-6) Prereq Bdcst 355. May be repeated for credit; cumulative maximum 6 hours. Field production; editing; advanced studio production.(g)

465 [M] Broadcast News Writing, Reporting, and Editing 3 (2-3) May be repeated for credit; cumulative maximum 6 hours. Prereq Bdcst 365. Writing, reporting, and editing broadcast news; development and production of documentaries. Credit not granted for both Bdcst 465 and 565.

466 Advanced Reporting and Documentary 3 (2-3) Prereq Bdcst 465. Advanced writing and reporting for radio or television; feature-length reporting on news and public affairs topics; documentaries. Credit not granted for both Bdcst 466 and 566.

475 [M] Seminar in Broadcasting 3 May be repeated for credit; cumulative maximum 9 hours. By interview only. For seniors and graduate students.(g)

481 Broadcast Management 3 Prereq senior standing. Credit not granted for both Bdcst 481 and 581.

495 Broadcasting Professional Internship V 2 (0-6) to 12 (0-36) May be repeated for credit; cumulative maximum 12 hours. Prereq Bdcst 365, 485, or 465. By interview only. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

565 Broadcast News Writing, Reporting, and Editing 3 (2-3) Graduate-level counterpart of Bdcst 465; additional requirements. Credit not granted for both Bdcst 465 and 565.

566 Advanced Reporting and Documentary 3 (2-3) Graduate-level counterpart of Bdcst 466; additional requirements. Credit not granted for both Bdcst 466 and 566.

581 Broadcast Management 3 Graduate-level counterpart of Bdcst 481; additional requirements. Credit not granted for both Bdcst 481 and 581.

Journalism

Jour

305 [M] Reporting 3 Prereq Com 295.

306 News Gathering and Dissemination 3 Prereq Com 295; certified Com major. Research and reporting of news and features, for public relations specialists.

330 News Editing 3 (2-3) Prereq Jour 305 or by interview. Basic copy editing and design skills for print media.

417 [M] Specialized Writing 3 Prereq Jour 305. Reporting techniques and issues related to specialized media fields.


431 Advanced Editing 3 (2-3) Prereq Adver 381, Jour 330, or P R 313. Advanced copy editing and design techniques; emphasis on visual communication.

475 Seminar in Journalism 3 May be repeated for credit; cumulative maximum 9 hours. For seniors and graduate students.(g)

481 Newspaper Management 3 Senior standing. Credit not granted for both Jour 481 and 581.

495 Journalism Professional Internship V 2 (0-6) to 12 (0-36) May be repeated for credit; cumulative maximum 12 hours. By interview only. Prereq Jour 330, 425. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

525 Reporting of Public Affairs 3 Graduate-level counterpart of Jour 425; additional requirements. Credit not granted for both Jour 425 and 525.

581 Newspaper Management 3 Graduate-level counterpart of Jour 481; additional requirements. Credit not granted for both Jour 481 and 581.

Public Relations

PR

312 Principles of Public Relations 3 Prereq Com 295. Principles, theories, methods and objectives of public relations; public relations problems and practices.

313 [M] Public Relations Techniques and Media Usage 3 (2-3) Prereq Com 295, Jour 305; P R 312. Practical applications of public relations theory and techniques with emphasis on writing and media use.

412 Public Relations Management and Campaign Design 3 Prereq Com 409, P R 312. Jour 306 or P R 313. Application of public relations principles, management, persuasion theory and research methods to public relations issues. Credit not granted for both P R 412 and 512.

475 Seminar in Public Relations 3 May be repeated for credit; cumulative maximum 9 hours. By interview only. For seniors and graduate students.

495 Public Relations Professional Internship V 2 (0-6) to 12 (0-36) May be repeated for credit; cumulative maximum 12 hours. Prereq Jour 306, P R 313; P R 312; by interview only. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

512 Public Relations Management and Campaign Design 3 Graduate-level counterpart of P R 412; additional requirements. Credit not granted for both P R 412 and 512.

Speech Communication

SpCom


185 Principles of Interpersonal Communication 3 Theory and practice of interpersonal communication; understanding and applying intrapersonal information in interpersonal settings.

235 [C] Principles of Group Communication 3 Theoretical and practical aspects of communication in groups; classroom exercises and films demonstrate principles and develop skills.

251 Oral Interpretation of Literature 3 Analyzing and oral reading of prose, poetry, and drama; sharing literature with an audience.

302 [C] Advanced Public Speaking 3 Advanced principles of public speaking and their practical implementation for effective communication.

324 [C] [M] Argumentation 3 Theory, analysis and application of written and oral arguments in everyday use.

334 Deliberative Decision-Making 3 Debate; researching the topic, case construction, analysis, and practice debating.

335 (435) Organizational Communication 3 Prereq SpCom 235 or P R 312. Communication theory and organizational functions; communication influences on organizational behavior, managerial effectiveness, corporate culture, organizational power and politics.

351 Advanced Interpretation 3 Voice and dictation, interpretation of copy for broadcast.

385 Advanced Principles of Interpersonal Communication 3 Prereq SpCom 185. Theoretical literature relevant to analyzing relationships; students use this information to analyze a relationship.

401 Persuasion 3 Theories of persuasion and social action; study of strategies and techniques for the persuasive use of language and other symbols.

424 [M] Criticism of Public Address 3 Critical analysis of public messages; applications of traditional
contemporary approaches to textual analysis, from classical to postmodern theory. Credit not granted for both SpCom 424 and Com 524 (g).

435 Advanced Organizational Communication 3
Prereq SpCom 335. Advanced concepts, models and methods for in-depth analysis of contemporary communicative organizations (g).

451 Readers Theatre for the Classroom 3
Principles of literature selection, scriptwriting and staging of readers theatre for classroom. Credit not granted for both SpCom 451 and 551.

475 Seminar in Speech Communication 3
By interview only. May be repeated for credit; cumulative maximum 9 hours. For seniors and graduate students.

485 Applied Interpersonal Communication 3
Prereq SpCom 185 or 385. How a person relates to others; cognitive and affective parts of the process (g).

488 Structure of Conversation 3
Symbol systems and their interrelation in sequential organization in everyday communication (g).

495 Speech Communication Professional Internship V 2 (0-6) to 12 (0-36) May be repeated for credit; cumulative maximum 12 hours. By interview only. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

551 Readers Theatre for the Classroom 3
Same as SpCom 451. Credit not granted for both SpCom 451 and 551.

Certification Requirements
To certify a major in communication, a student must have earned at least 45 semester hours and normally no more than 90 hours and meet the following minimum requirements: (1) 2.7 cumulative g.p.a. in WSU communication courses; (2) 2.5 overall cumulative g.p.a.; (3) C grade or better in Com 101, 245, 270, 295, SpCom 102. Students transferring into the department with 55 or more hours are urged to complete communication certification requirements within two semesters.

Satisfactory completion of a writing skills test is required for enrollment into Com 295.

General School Requirements
Each student will complete the requirements of one of the following sequences and accumulate a minor of 18 hours (9 upper-division) in a second department. At least 75 of the 120 hours required for the Bachelor of Arts degree in Communication 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 school.

SEQUENCE REQUIREMENTS
All sequences require a minimum of 39 semester hours in communication.

Students will take one course in each of the following three categories:
Communication Literacy: Com 410, 440, 450, 460, SpCom 324, 385, 401, 425.
Seminars: Any seminar numbered 475 in communication.

A preprofessional core of 12 hours is required in one of the sequences:

Advertising
Adver 380, 381, 382, 480.

Broadcast News

Broadcast Production
Bdscst 350, 355, 455, Com 415.

Broadcast Management
Adver 380; Bdscst 350, 355 or 365; 455 or 465; 481, 495, Com 409, 415, 440 (both 415 and 440 satisfy communication literacy requirement). Minor must be in business: Acctg 230; B Law or Dec S 215; Econ 102, 203; 320, 340, or Fin 325; Mgt 301, Mktg 360. (NOTE: This program requires 42-45 hours in communication, thus will require more than 120 hours for graduation.)

Journalism
Com 415, Jour 305, 330, 425.

Public Relations
Jour 305, P R 312, 313, 412.

Speech Communication
SpCom 185 or 235; one of SpCom 251, 302, 351; 324 or 401, plus one upper-division SpCom course.

General Communication
A course of study meeting graduation requirements will be designed by the student and adviser.

Students have three options to meet the enrichment/internship requirements:
6 hours of internship credit; 3 hours of internship credit and 3 of communication literacy or development courses; or 3 hours of communication literacy and 3 of development courses.

SCHOOL MINORS
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 courses: Advertising: Adver 380, 381, 382; Com 295. Broadcasting: Bdscst 350, 475, Com 295, 415. Journalism: Com 295, 410, 415, Jour 305, 330, 425. Public Relations: Com 295, Jour 305; P R 312, 313, 412. Speech Communication: 18 hours of approved SpCom courses.

Agricultural Communications
This is a major in the Department of Biological Systems Engineering in cooperation with the School of Communication. The student declaring this major must complete the requirements of the general agricultural curriculum and accumulate a minimum of 30 hours in the School of Communication, including any communication courses used to satisfy general agricultural requirements. Those electing this major should make that decision known as early as possible in their academic careers. Agricultural communications majors should complete the following: Broadcast Media: Bdscst 350, 355, 365; Com 295, 409; P R 312, 313, 412; and 6 elective hours in the School of Communication. Print Media: Com 253, 295, 409; Jour 305; P R 312, 313, 412; and 9 elective hours in the School of Communication. The student should consult with a School of Communication adviser before registering for elective courses. Specialized programs patterned for the individual career aspirations may be developed in conjunction with the head of the School of Communication or a designated representative.

Department of Comparative American Cultures


The Department of Comparative American Cultures is comprised of interdisciplinary programs in Asian American studies, African American studies, Chicano studies, and Native American studies. The department offers a major in comparative American cultures with the option of concentrating study in one of the component programs, as well as a minor. African American studies takes an interdisciplinary approach to the historical, social and political behavior, as well as the economic experience of Afro-Americans and people of African descent throughout the world. The program teaches the history of Afro-Americans and Africans with respect to the similarities, distinctions and interaction between peoples of European and of African descent in America. Through a commitment to the functions of teaching, research, and community service, the program serves to prepare the student for career opportunities in the social and behavioral sciences as well as in the arts and humanities.

Asian American studies offers an interdisciplinary study designed to provide a broad, systematic understanding of Asian Americans in relation to the traditional culture of their forebears and the culture they experience now. It serves to provide an understanding of the humanistic, historical, social, economic, psychological, and political forces which have shaped Asian American cultural heritage. It will also review the issues confronting contemporary Asian American communities and explore the development of resource materials for further in-depth research and study of the Asian American experience.

Chicano studies provides a broad interdisciplinary study designed to present unique qualities of the Chicano cultural experience, bringing the student a meaningful, working knowledge through its courses in the social sciences and the humanities. The program equips 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.

Native American studies is an interdisciplinary program, focusing on the cultural interpretation of the experiences of the American Indian through courses in the humanities and the arts, and the behavioral and social sciences. While the individual courses are equally divided between the historical and the contemporary, the theoretical and the practical, they are intended to prepare the students to knowledgeably and constructively live in a pluralistic society in which the land was illegally appropriated from the first Americans.

An African Studies minor is also offered in the department.
Description of Courses

For explanation of symbols, see page 53.

Comparative American Cultures

CAC
101 [I] Introduction to Comparative American Cultures 3 Comparative history of Asian Americans, African Americans, Chicanos, and Native Americans in the United States.

111 [I] Introduction to Asian/Pacific American Studies 3 Introduction to major historical, social, political, and cultural experiences which are currently the concern of many Asian American communities.

131 [I] Introduction to Black Studies 3 Historical, cultural, sociological, and political experiences of Black people in America and Africa.

151 [G] Introduction to Chicanos Studies 3 Chicano culture and peoples (Americans of Mexican descent); historical backgrounds and contemporary conditions.

171 [G] Introduction to Native American Studies 3 Introduction to Native American studies; introductory course to contemporary native America.

201 Humanities Topics 3 Selected humanities topics, major figures, genres, and critical issues in ethnic America.

203 Social Sciences Topics 3 Selected social science topics, major figures, genres, and critical issues in ethnic America.

211 [K] Introduction to Asian American History 3 Introduction to major historical, social, political and cultural experiences which are currently the concern of many Asian American communities.

212 [K] Peoples of the World 3 Same as Anth 203.

217 [K] Introduction to East Asian Culture 3 Same as Hist 275.

227 [I] Introduction to African Studies 3 African continent; history, politics, art, and their effects today.

235 [I] African American History 3 History of African Americans from colonial times to the present.

255 Chicano Ethnohistory 1521-1910 3 The development of La Raza from 1521 to 1910; major historical and cultural aspects of the La Raza peoples.


276 (376) [K] America Before Columbus 3 Same as Anth 231.

300 [S] [M] Intersections of Race, Class and Gender 3 Same as W St 300.

301 Historical and Contemporary Issues 3 Critical theories relating to racial-ethnic cultures, political thought, demography, prejudice and diversity.

313 [G] Asian Pacific/American Literatures 3 Asian American fiction, drama, poetry, and other arts, 1900 to present; impact of Asian/Pacific American culture and experience upon these works.

314 [M] Asian Pacific American/Literatures 3 May be repeated for credit; cumulative maximum 6 hours. Trends, themes, major writers.

331 [G] Introduction to African American Literature 3 Introduction to major issues and major works in the African American literary tradition.

332 [M] Topics in African American Literature 3 May be repeated for credit; cumulative maximum 6 hours. Same as Engl 322.

335 [S] Civil Rights Movement in America 3 Historical development and analysis of the Civil Rights Movement in the United States from 1900 to present.

339 [I] Black Politics 3 Same as Pol S 324.

351 Spanish for Spanish Speakers I 3 Same as Span 324.

352 Spanish for Spanish Speakers II 3 Prereq Span 324; fluency in Spanish. Readings of Mexican, Latin American and Peninsular writers; muraism and modern art; composition, grammar: subjective and imperative moods, style.

353 [G] [M] Introduction to Chicano/Chicana Literature 3 Chicano/Chicana literature, narrative (novel and autobiography), poetry, short story, drama; development of writing skills.

354 Vanguard Poetics in Chicano/Latino Writers 3 Concepts and techniques of Chicano/Latino vanguard poetry.

356 Bilingual Bicultural Education 3 Philosophical, legal, cultural, linguistic, and curricular aspects of bilingual education.

359 Chicano/Latino Politics 3 Character, role, and goals of Chicano/Latino politics; contemporary Chicano/Latino issues.

373 [G] [M] Native American Literature 3 Native American literature, by and about the original inhabitants, image and counter-image, with emphasis on the 20th century.

375 North American Indian History, Prehistory to Present 3 Same as Hist 308.

377 [K] Native Peoples of North America 3 Same as Anth 320.

378 Contemporary Native Peoples of the Americas 3 Same as Anth 327.

385 Topics in Canadian Studies 1 Same as Hist 315.

400 Comparative American Agriculture and Culture 3 Non-European foundations of American agriculture and farm cultures.

401 Seminar in Ethnic Diversity 3 Race, class, and gender in America studies through African American, American Indian, Asian American, and Chicano readings.

415 United States 1941 to Present 3 Same as Hist 419.

416 Modern Japanese History 3 Same as Hist 477.

419 Political and Social History of the Pacific Northwest 3 Same as Hist 422.

439 [K] [M] African Politics 3 Historical, economic, and social factors that shape contemporary African political systems and problems of nation-building.

456 Bilingual Methods and Materials Across Content Areas 3 Same as E/L/S 411.

459 Latin American Governments 3 Same as Pol S 413.

475 Indians of the Northwest 3 History of Native Americans of the Coast and Plateau; historic relationship with Europeans and Anglo-Americans.

495 Special Topics in Comparative American Cultures 3 May be repeated for credit; cumulative maximum 6 hours. Prereq course in CAC. Cross-cultural studies on Asian/Pacific Americans, Blacks, Chicanos, and Native Americans.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

Program in Criminal Justice

Students majoring in comparative American cultures are expected to fulfill all of the university’s requirements for graduation, as well as 39 hours of CAC courses, distributed into 15 hours in the CAC core sequence, 15 hours in one ethnic area of concentration, and 9 hours outside that area. At least half of the 39 hours must be above the 200 level.

Students minoring in comparative American cultures are expected to fulfill all of the university’s requirements for graduation, as well as 18 hours of CAC courses, with 9 hours in the CAC core sequence, and 9 hours outside that sequence. At least half of the 18 hours must be above the 200 level.

African Studies Minor

The African Studies minor provides a broad interdisciplinary program designed to present the unity and diversity of African peoples, economies, and cultures. Students minoring in African studies are expected to fulfill all of the university’s requirements for graduation, as well as 18 hours of CAC courses, with 9 hours in the CAC Studies Minor core sequence. At least half of the 18 hours must be above the 200 level.

Core courses (9 hours): Anth 307, CAC 227, 439. Electives (9 hours): Three of the following: CAC 131, 235, 331, Pol S 460.

African Languages: Students may take up to 6 hours of an African language to fulfill elective requirements by making special arrangements with Independent Study Program.

Independent Study: CAC 499

Comparative American Cultures Core Sequence

CAC 101 Introduction to Comparative American Cultures

CAC 201 Humanities Topics

CAC 203 Social Science Topics

CAC 301 History and Contemporary Issues

CAC 401 Seminar in Ethnic Diversity

The Program in Criminal Justice, located in the Department of Political Science, offers substantive studies in criminal justice in conjunction with a liberal arts education. It prepares students for a broad range of careers (law enforcement, correction, juvenile justice, private security) or the pursuit of graduate study, develops leadership qualities, and promotes the ideal of professional achievement in public service.

The program focuses on the multi-disciplinary study of crime and its control, including the components, processes, and programs of the criminal justice system. The curriculum emphasizes the analysis and theories of...
Program in Criminal Justice

crime and deviance, criminal law, law and social control, and research on and evaluation of criminal justice systems, administration, and management.

The student is required to complete collateral courses on the larger social, economic, and political environments in which crime and the criminal justice system operate. Taught by a multi-disciplinary faculty, these courses cover such areas as public administration, policy analysis, and research methods. The courses of study lead to the degrees of Bachelor of Arts in Criminal Justice and Master of Arts in Criminal Justice.

Description of Courses

For explanation of symbols, see page 53.

Criminal Justice

Crm J

101 Introduction to the Administration of Criminal Justice 3 Agencies and processes in the administration of criminal justice. Cooperative course taught by WSU, open to UI students (CJ 101).

150 Organizational Environment of Criminal Justice 3 Prereq Crm J 101. Impact of organizational structures and dynamics on processes of decision making and the performance of criminal justice agencies. Cooperative course taught jointly by WSU and UI (CJ 150).

320 Criminal Law 3 Substantive criminal law: principles, functions, and limits; basic crime categories, state and national legal research materials. Cooperative course taught jointly by WSU and UI (CJ 325).


400 [M] Issues in the Administration of Criminal Justice 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Crm J 101. Selected topics in criminal justice. Cooperative course taught by WSU, open to UI students (CJ 401).

405 [M] Comparative Criminal Justice Systems 3 Prereq Crm J 101 Comparative study of criminal justice systems in selected foreign countries. Credit not granted for both Crm J 405 and 505. Cooperative course taught by WSU, open to UI students (CJ 405).

420 [M] Law of Evidence and Criminal Procedure 3 Prereq Crm J 320 Principal court decisions concerning standards of conduct and rights in the criminal process; evidentiary principles and privileges. Cooperative course taught by WSU, open to UI students (CJ 420/WLFW 465)(g)


490 Criminal Justice Internship V 2-12 May be repeated for credit; cumulative maximum 12 hours. Prereq Crm J 101. By interview only. Off-campus professional internship in selected criminal justice agencies. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

505 Comparative Criminal Justice Systems 3 Graduate-level counterpart of Crm J 405; additional requirements. Credit not granted for both Crm J 405 and 505. Cooperative course taught by WSU, open to UI students (CJ 505).

530 Criminal Justice: Process and Institutions 3 Processes of criminal justice in the context of the social, political, and economic environments. Cooperative course taught by WSU, open to UI students (CJ 530).

540 Seminar in Criminal Justice Research Evaluation 3 Interrelationship of ideology, data, policy development, and policy implementation in public policy analysis. Cooperative course taught by WSU, open to UI students (CJ 540).

550 Planned Change in Criminal Justice 3 Analysis of change efforts aimed at individuals, organizations, and communities to reduce crime and improve the criminal justice system. Cooperative course taught by WSU, open to UI students (CJ 550).

570 The Police and Society 3 Community and selected social institutional factors as related to their influence on police systems. Cooperative course taught by WSU, open to UI students (CJ 570).


591 Seminar in the Administration of Criminal Justice 3 May be repeated for credit; cumulative maximum 6 hours. Current issues, problems, and critical concerns within the field of administration of criminal justice. Cooperative course taught by WSU, open to UI students (CJ 591).

592 Topics in Criminal Justice 3 May be repeated for credit; cumulative maximum 6 hours. Selected issues and topics in criminal justice. 600 Special Projects or Independent Study Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Minor in Criminal Justice

The minor in criminal justice requires 18 credits of course work in criminal justice, including Crm J 101, 320, 330. Half of the courses must be taken at the upper-division level. Students wishing to declare a minor in criminal justice should contact the Criminal Justice Program for details.

Schedule of Studies

Students who major in criminal justice must complete the 12 credit criminal justice core (Crm J 101, 150, 320, 330) plus an additional 12 credits of electives (with 9 of the 12 in Crm J courses); of these 24 hours no more than 3 can be taken in Crm J 490. In addition, the student must complete several collateral courses as outlined below. At least 40 of the total hours required for the bachelor’s degree in this program must be in upper-division courses.

All criminal justice majors are required to complete a statistics course.

Required Courses

Crm J 101, 150, 320, 330

Elective Courses

12 credits required, at least 9 hours in Crm J courses: Crm J 365, 370, 400 [M] (may be taken twice), 405 [M], 420 [M], 425, 490, 499; Soc 360, 362, 480.

Collateral Requirements

15 hours required from the following: 3 hours from Pol S 316, 416, or Soc 424; 3 hours from Mgt 301 or Pol S 340; Soc 320, 361, 461 6 hours from the following: Pol S 300, 402, 404, or Soc 364 3 or 4 hours from a statistics course: Psych 311, Soc 321, or approved statistics course.

Students Must Also Satisfy University Writing Requirement

1. Two Writing in the Major courses, taken from Crm J 400, 405, 420 and other [M] courses.

2. University Writing Portfolio

Students should review the GERs and College of Liberal Arts requirements in this catalog to insure timely completion of their course of study.

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 program will do well to elect courses similar to those required in the above schedule of studies.

Department of Crop and Soil Sciences


The department offers study programs leading to the degrees of Bachelor of Science in Crop Science, Bachelor of Science in Soil Science, Master of Science in Crop Science, Master of Science in Soil Science, Doctor of Philosophy (Crop Science), and Doctor of Philosophy (Soil Science). Students can select from several options of study to fit their career objectives and needs.

Students are encouraged to participate as part-time employees in research programs and seek professional internships for applied learning experiences. Departmental and college scholarships are available based on ability, need, and interest. Students gain professional and social contacts with the faculty and other students through the student club activities.

CROP SCIENCE

Crop scientists and agronomists are involved in improving food, feed and fiber production. They study metabolic and developmental processes of crop plants and seeds, develop improved crop varieties through plant breeding and biotechnology, design sustainable crop production and management systems which conserve natural resources while enhancing crop yields, and investigate the impact of cropping systems on agricultural and nonagricultural ecosystems. Turf management opportunities include golf course management, recreational facilities, and lawn care. Graduates qualify for careers in agribusiness, corporate and technical farm management, professional consulting, research, sales, plant biotechnology, and service positions. Positions are available in government and commercial agencies such as USDA’s Agricultural Research Service, Natural Resources, Department of Ecology, and the Soil Conservation Service. Opportunities also exist in international development.

For explanation of symbols, see page 53.

Crop Science

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

201 Growth and Development of World Crop Plants 4 (2-6) Prereq CropS 101 or c//. Ontogeny of temperate and tropical crop plants; basics of crop evolution, distribution, anatomy, morphology, and physiology.

301 Turfgrass Culture 3 (2-3) Prereq one semester of Bio S, Bot, or Hort. Principles of establishment and management of turf for lawns, parks, and golf courses. Field trip required. Cooperative course taught by WSU, open to UI students (CropS 301).

302 Forage Crops 3 (2-3) Prereq Bio S 104 or Bot 120. Adaptation, production, and utilization of forage crops. Field trip required.

303 Sustainable Grain Cropping Systems 3 Prereq Bio S 104 or Bot 120; CropS 201. Global role of grain crops; adaptation, utilization and sustainable production of cereals, grain legumes, and oilseed crops. Field trip required.

305 Principles of Weed Science 3 (2-3) Prereq Bio S 104, Bot 120, CropS 101, 201, Hort 101, or 201; Chem 240. Weed science; weed identification, biology and control; herbicides and factors influencing their use.

350 Irrigated Crop Nutrition 3 Prereq Chem 105, 106; CropS 101 or Hort 201; organic chemistry. Soils 201. The role of nutrients in crop growth; mineral nutrient deficiencies, assessing crop nutrient needs.

504 Advanced Plant Breeding 4 Prereq CropS 445. Genetic, cytogenic, and statistical theore-ies and principles underlying modern methods. (a/y) Cooperative course taught by WSU, open to UI students (CropS 505).

505 Improvement of Crop Quality 3 Prereq BC/BP 364, Bot 201, CropS 445. Principles and methods of crop quality improvement by crop management, plant breeding and integrated approaches. (a/y) Cooperative course taught by WSU, open to UI students (CropS 505).

508 Advanced Crop Physiology 3 Prereq BC/BP 364. Physiological responses of crops to light, water and temperature; physiology of seed germination and root and shoot development. (a/y) Cooperative course taught by WSU, open to UI students (CropS 508).

509 Advanced Crop Physiology I 3 Prereq Bot 320, GenCB 301. Physiology and genetics of plant hormones, carbon and nitrogen assimilation and partitioning, and seed development. (a/y) Cooperative course taught by WSU, open to UI students (P1Sc 509).

1 Seminar 1 May be repeated for credit. Literature review; preparation and presentation of reports in crop science.

102 Topics in Crop Science 1 or 2 May be repeated for credit. Concepts of plant breeding, seed physiology, and technology; crop physiology and management.

153 Biology of Weeds 3 Graduate-level counterpart of CropS 413; additional requirements. Credit not granted for both CropS 413 and 513.

520 Plant Cytogenetic Techniques 3 (1-6) Prereq GenCB 301. Plant genes and chromosomes. (a/y) Cooperative course taught by UI (P1Sc 520), open to WSU students.

527 Experimental Methods in Weed Science 2 (1-3) Prereq Bot 320. Hands-on exposure to methods and instrumentation commonly used...
in weed science research; emphasis on labora-
tory techniques with herbicides. (a/y) Cooper-
tive course taught by WSU, open to UI stu-
dents (PlSc 527).

533 Plant Tissue, Cell and Organ Culture 3 (1-6) Same as Hort 533.

539 Herbicide Fate and Mode of Action 4 Prereq
CropS 305, BC/BP 364, Bot 320. Fate of her-
bicides in plants, soil, and water; physiological and
biochemical mode of herbicide action; mechanisms of herbicide resistance. (a/y) Co-
operative course taught jointly by WSU and UI
(PlSc 539).

545 Toxicology of Pesticides 3 Same as Entom 545.

546 Plant Breeding 3 Prereq GenCB 301. Prin-
ciples and practices of genetic plant improve-
ment. (a/y) Cooperative course taught by UI
(PlSc 546), open to WSU students.

569 Seed Physiology and Seedling Establishment
2 (1-3) Prereq Bot 320. Environmental factors and
physiological seed characteristics that influ-
ence seedling establishment; priming and
other preconditioning treatments for enhanced
establishment. Cooperative course taught by UI
(PlSc 569), open to WSU students.

600 Special Projects or Independent Study Variable
credit. S, F grading.

700 Master’s Research, Thesis, and/or Examina-
tion Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study,
and/or Examination Variable credit. S, F grading.

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

Crop Science Degree Requirements
At least 40 credit hours must be in upper-division
courses. Core and option requirements cannot be
taken pass, fail. Students must consult advisers.

CORE REQUIREMENTS
The core courses are common to all crop science
majors and include General Education Require-
ments and supporting courses.

Hours
Ag Ec 210 3
Arts and Humanities Electives [H] (GER) 3-6
Bio S 103; 104, or Bot 120 8
Bot 320 4
Chem 105, 106 (or 101, 102), 240 12
Communication Proficiency Electives [C] (GER) (Engl 101 [W], AgHE 205 or SHS course [C]) 6
CropS 101, 201, 305, 411, 412, 445; 498
or 499 18
Entom 340 or 343 3
GenCB 301 4
GenEd 110 and 111 [A] (GER) 6
Intercultural Studies Electives [J] (GER) 3-6
Math 140 or 171 4
Mathematics Proficiency [N] (GER) 1
Phys 429 3
Social Science Electives [S] (GER) (Ag Ec 201 or Econ course) 3-6
Soils 201 3
Stat 212 or 412 3 or 4

STUDY OPTIONS
All crop science majors must select one of the study
options listed below in addition to completing the

core courses above.

Crop science elective courses include: CropS 301,
302, 303, 360, 410, 469 and 498. A maximum of 3
credits of 498 can be used to satisfy a crop science
elective. U H 450 may substitute for CropS 499.

Emphasis is on basic principles of plant science
technology, business, industry, science, and end-
product marketing. Various options offer specialized,
professional, applied, and scientific training for a
variety of career opportunities as well as thorough
preparation for graduate school.

Cropping Systems Management and Business Op-
tion. For students who wish to engage in farming,
corporate farm management, production specialist
positions, consulting, international careers, and
agribusiness.

Acctg, Mgt or Mtkt Elective 3
AgEc 340 3
AgTM 315 3
CropS 302 or 303; CropS Elective 6
CropS 410 3
Soils 301, 441, 442 8

Crop Protection Option. For students who wish to
emphasize pest control and environmental quality in
cropping systems.

AgTM 315 3
Bio S 372 or Soils 431 3 or 4
Entom 462, 480, IPM 452, or 462 2 or 3
Micro 301 4
Soils 301, 441, 442 8
Two from: CropS 302, 303, 360, 410 6

Turf Management Option. For students who wish to spe-
lize in golf course supervision, grounds maintenance,
and similar recreation positions involving turfgrass man-
agement techniques and personnel relations.

Acctg or Mgt elective 3
AgTM 210 or 312 2 or 3
AgTM 315, CropS 410, Hort 232 or 331 3
AgTM 346
CropS 301, 302
Entom 462, 480, or IPM 462 3
Hort 231 or L A 264 3
Soils 301, 441, 442 8

Soils Option. For students who wish to specialize in
soil resource management, plant/soil relationships,
and landscape conservation.

AgTM 315 3
CropS Electives 6
ES/RP 174 3
Geol 101 or 102 4
Soils 301, 442; 421 or 441 8
Soils Electives 5 or 6

Science/Biotechnology Option. This option prepares
students for advanced studies as scientists in such
areas as crop physiology, plant breeding, biotechnol-
yogy and environmental quality. Students may qualify
for research or teaching careers with universities,
colleges, governmental agencies, or industry.

Hours
BC/BP 364, 366 4
Bot 332 or Soils 414 2-4
Chem 220 and 222 4
CropS Electives 6
FHSN 462 or Micro 464 3 or 4
Micro 301 4
Phys 101, 102 8

Minor in Crop Science
A minor in crop science may be obtained by students
from other departments. See crop science adviser.

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

Preparation for Graduate Study
Preparation for graduate study requires the se-
lection of courses that will benefit later work
ward a Master of Science or a Doctor of Phi-
losophy degree. Normally, preparation for an
advanced degree in crop science includes
course work outlined under one of the above
options with a strong emphasis in plant sci-
cences, chemistry, computer science, mathemat-
ics, and statistics.

Description of Courses

For explanation of symbols, see page 53.

Soil Science

201 Soil Science: An Introduction 3 Prereq Chem
102. Chemical, physical, and biological proper-
ties of soils; fundamentals of soil formation,
soil-water-plant relations, soil ecology, and
soil fertility.

301 [M] Land Use and Soil Management 3 Prereq Soils 201. Soil and water conservation
and management; land classification and re-
clamation; soils and environmental quality; sus-
tainable agroecosystems.

360 [I] World Agricultural Systems 3 Same as CropS 360

374 Remote Sensing and Airphoto Interpretation
3 (2-3) Physical basis of remote sensing, funda-
mentals of aerial photography and image analy-
sis applied to agriculture, forestry, wildland
management problems.

412 Seminar 1 Same as CropS 412.

413 Introduction to Soil Physics 3 (2-3) Prereq
Math 107; Soils 201. Characterization of soil
properties including water content and po-
tential, and hydraulic conductivity; model-
ing water, solute transport, erosion, contamina-
tion of groundwater. (g)

414 Introduction to Environmental Biophysics 2
Prereq Math 107. Physical environment of liv-
ing organisms (temperature, humidity, radia-
tion, wind); heat and mass exchange and bal-
ance in plant and animal systems. Cooperative
course taught by WSU, open to UI students
(Bot 532). (g)

415 Environmental Biophysics Laboratory 1
(0-3) Prereq Soils 414 or coursework. Experimental
methods and procedures in environmental
measurements; temperature, wind, radiation,
and humidity measurements in biological en-
vironments. Cooperative course taught by
WSU, open to UI students (Bot 436). (g)

421 Soil Chemistry 3 Prereq Chem 105; 106; Soils
201. Contaminant and nutrient chemistry in
soil; solid and aqueous phase constituents; ion
Advanced Soil Biochemistry and Microbiology 3 Prereq Soils 201. Basic aspects and significance of soil flora as related to soil ecology, plant growth, and environmental problems.

Soil Microbial Ecology Laboratory 1 (0-3) Prereq Soils 431. Basic soil microbiological techniques; isolation of specific groups; pesticide mineralization; diversity measurements; isolation and characterization of pesticide-degrading organisms.

Soil Fertility 3 Prereq Soils 201. Nutrient management impacts on crop productivity, soil and water quality; mineral requirements; soil testing; plant analysis; inorganic and organic fertilizers.

Soil Analysis for Environmental and Crop Management 3 (2-3) Prereq Soils 421, 441, or c/l. Analysis and amendment of soils for plant growth and toxicology.


Systems in Integrated Crop Management 3 (2-3) Same as Entom 462.

Remote Sensing Applied to Terrain Evaluation 3 (2-3) Prereq physical geology. Remote sensing and photointerpretation methods applied to terrain landforms, soils, land use, vegetation. Cooperative course taught by WSU, open to UI students (For 415).g

Special Problems V 1-4 May be repeated for credit. S, F grading.

Seminar 1 May be repeated for credit. Presentation of research information.

Advanced Topics in Soils 1 or 2 May be repeated for credit; cumulative maximum 4 hours. Interpretation, presentation, and discussion of current research on soils, uses, and management.

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.

Research Presentation Techniques 1 Preparation of visual aids and oral presentation of research findings. S, F grading.

Teaching Practicum 1 May be repeated for credit; cumulative maximum 4 hours. Supervised experience in classroom teaching; classroom preparation for lectures, discussions, laboratories; preparation and grading of exams. S, F grading.

Models for Vadose Zone Transport 2 Prereq Soils 413. Numerical methods and computer models for water, heat, vapor, and solute transport in soils; measuring spatial and temporal variability. (a/y) Cooperative course taught by WSU, open to UI students (Soils 513).

Chemistry of Soil Constituents 3 Prereq Soils 421. Thermodynamics of soil solutions; structure, chemistry of clay minerals, soil organic matter; inorganic, organic solute sorption; ion exchange; mineral solubility. (a/y) Cooperative course taught by WSU, open to UI students (Soils 512).

Advanced Soil Biochemistry and Microbiology 3 Prereq Soils 421, 431. Biochemical and microbiological processes in soil-water environments; nutrient cycling; pesticide behavior; agricultural waste disposal; nitrogen fixation; advanced techniques. Cooperative course taught by WSU, open to UI students (Soils 531).

Soil Biochemistry 3 (2-3) Prereq BC/BP 364; Micro 201; Soils 421. Enzyme activity; microbial activity/biomass; rhizosphere; carbon, nitrogen, phosphorus, sulfur, and micronutrient cycles. (a/y) Cooperative course taught by UI (Soils 537), open to WSU students.

Soil-Plant Relationships in Mineral Nutrition 3 Prereq Bot 320; Soils 421 or 441. Plant responses to soil chemical conditions; rhizosphere reactions; nutrient assimilation and fertilizer efficiency; soil-plant nutrient models. (a/y) Cooperative course taught by WSU, open to UI students (Soils 541).

Soil Fertility Management 3 Prereq Soils 441. Philosophy of fertilizer recommendations based on soil and plant tissue testing; principles of fertilizer manufacture, placement and use. (a/y) Cooperative course taught by UI (Soils 547), open to WSU students.

Advanced Pedology 3 Prereq Soils 451. Origin and development of soil; geological and biochemical weathering processes; dynamics of organic matter; soil development cycles. (a/y) Cooperative course taught by WSU, open to UI students (Soils 551).

Advanced Soil Genesis and Classification 3 (2-3) Prereq Soils 451. Genesis, classification and interpretation of soils, including field investigation emphasizing existing interrelationships. (a/y) Cooperative course taught by UI (Soils 557), open to WSU students.

Systems in Integrated Crop Management 3 (2-3) Graduate-level counterpart of Soils 462; additional requirements. Credit not granted for both Soils 462 and 562.

Advanced Remote Sensing 3 (1-4) Prereq basic remote sensing. Digital image processing theory and the techniques applied to satellite and other remote sensing systems.

Seminar in Remote Sensing 1 Presentation of research results and ideas on subjects relating to remote sensing.

Special Projects or Independent Study Variable credit. S, F grading.

Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Doctoral Research, Dissertation, and/or Examination Variable credit. S, F grading.

Soil Science Degree Requirements

A Bachelor of Science degree in Soil Science requires completion of the core requirements plus courses in one of the two areas of specialization: i.e., environmental soil science, soil management, or sustainable agriculture. Each area is designed to meet the specific needs of the individual. At least 40 of the total hours required for the bachelor’s degree in this program must be in upper-division courses. The flexibility of this major makes possible a wide variety of career opportunities as well as thorough preparation for graduate school. Examples of vocational opportunities include soil management positions with agribusiness, commercial farms, and land appraisal firms, soil conservation positions with the state and federal government, and technical positions with universities. In addition, many soil scientists go into some area of public service and international agriculture.

Core Requirements

The courses listed below are required of all soil science majors and include fundamental courses in soil science and supporting courses in science and mathematics. General Education Requirements are listed elsewhere in this catalog.

Soils Courses

Soils 201 3
Soils 301 3
Soils 412 1
Soils 413 3
Soils 421 3
Soils 431 3
Soils 441 3
Soils 451 3

Physical Sciences

Chem 105, 106 8
Geol 102 4
Phys 101 or 201 4

Biological Sciences

Bio S 103 4
Bio S 104 or Bot 120 4

Mathematics/Computer Science

Ag Ec 201 3
Ag Ec 210 or Cpt S 405 3
Math 140 or 171 4
Stat 212 or 412 3 or 4

Areas of Specialization

All soil science majors must select and complete an area of specialization under one of the following three options:

Soil Management. This option deals mainly with factors of the soil-plant environment important to crop production. Beyond the core requirements, students should complete the following:

Hours
Ag Ec 340 3
AgTM 315 3
Bot 320 4
CropS 302 or Hort 320 3
CropS 407 or 409 3
Plant Protection (two of: CropS 309, Entom 340, Pl P 429) 6
Soils 374 or 474 3
Soils 442 3

Environmental Soil Science. This option emphasizes the basic principles of soils as they relate to the quality of the environment. Beyond the core requirements, students should complete the following:

Hours
Bio S 372 4
Chem 240 4
ES/RP 311 3
ES/RP 400-level course 3
ES/RP 444 3
ES/RP 486 3
Soils 414, 415 3
Soils 432 or 442 1 or 3

Sustainable Agriculture. This option integrates concepts of biodiversity, cropping systems, farm man-
agreement, soil quality, and agroecology. Beyond the core requirements, students should complete the following:

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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Ag Ec 340</td>
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<tr>
<td>Bio S 372</td>
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<td>4</td>
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<tr>
<td>CropS 305 or 413</td>
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<td>CropS 360</td>
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<td>GenPM 210</td>
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<td>IPM 462</td>
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<td>Soils 442</td>
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<td>3</td>
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<tr>
<td>Soils 499 (compositing)</td>
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</tbody>
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Minors in Soil Science

A minor in soil science may be obtained by students from other departments. Sixteen semester hours in soils is required, at least 8 of which must be in upper-division courses.

Preparation for Graduate Study

Preparation for graduate study requires 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 soil science includes course work outlined under one of the above options plus completion of Math 171, Phys 102 or 202, and, if not specified in the option, Chem 240.

Department of Economics


The curriculum in economics addresses the disturbing problem that most of the American public’s knowledge of basic economic forces is sadly deficient. Knowledge of economics is generally regarded as a prerequisite for many career 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 in study of economics allow sufficient time for electing courses outside the department while meeting all departmental requirements and General Education Requirements.

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

Description of Courses

For explanation of symbols, see page 53.

Economics

101 [S] Fundamentals of Microeconomics 3
Theory and policy of human responses to scarcity; how this affects business competition, international trade, industrial organization, investment, income distribution.

102 [S] Fundamentals of Macroeconomics 3
Theory and policy related to unemployment, inflation, foreign trade, government spending, taxation, and banking.

198 [S] Economics Honors 3
Introduction to economic theory and policy issues.1

201 Economics of Social Issues 4
Political economy of U.S.; macroeconomic theory, unemployment and inflation, corporate power, distribution of wealth, pollution. May be substituted for Econ 101 or 102.

255 Economics of Sports in America 3
Prereq Econ 101. Economic aspects of American sports; fan demand; advertising; team output decisions; league/conference organization; government and sports.

301 Theory of the Firm and Market Policy 3
Prereq Econ 101. Price determination and market behavior under different market structures and the problems posed for public policy.

311 Introductory Econometrics 3
Prereq Econ 101, 102. Methods of empirical analysis in the context of economic analysis and forecasting problems.

320 Money and Banking 3
Prereq Econ 102. Analysis of banking institutions and monetary policy in the US, with comparison to abroad.

340 [M] Public Finance and Taxation 3
Prereq Econ 101, 102. Theory and practice of the public sector; taxes, expenditures, and administration at local, state, and federal levels.

345 Public Policy Analysis 3
Prereq Econ 101, 102. Economic impact of public policy on business; health care, environment, airline deregulation, trade and growth.

350 Labor Economics and Problems 3
Prereq Econ 101. Functioning of labor markets; introduction to collective bargaining and labor law.

360 Regulation in American Society 3
Prereq Econ 101. Economic and political analysis of the origins, development, and application of government regulation.

364 Transport Economics 3
Prereq Econ 301. Characteristics of transportation systems; market structure; public policy of transport logistics.

368 Regional/Urban Economics 3
Prereq Econ 101, 102. Analysis of regional integration and economic reforms in Western Europe, North America, East Asia, and Russia.

401 Intermediate Macroeconomic Analysis 3
Prereq Econ 320; Rec Math 171 or 202. Income, employment, and inflation theory with policy implications.(g)

402 History of Economic Thought 3
Prereq Econ 102. Development of economic thought; special focus on selected schools, including Greeks, scholars, mercantilists, physiocrats, classical, and neo-classical. Cooperative course taught by UI (Econ 405), open to WSU students.(g)

408 Mathematics for Economists 3
Same as Math 408.(g)

410 Elements of Mathematical Economics 3
Prereq Econ 301; Math 273. Introduction to mathematical optimization in economic theory.(g)

411 [M] Introduction to Econometrics 3
Prereq Econ 215, Econ 311, or Stat 443; Econ 101. Econometric methods in relation to the substantive achievements of empirical econometrics.(g)

416 Comparative Economic Systems 3
Prereq Econ 102. Key institutions, policies, and economic performance of different capitalist and socialist systems; transition of Soviet-type socialist economies, Eastern Europe; capitalism as a global system.(g)

418 Global Capitalism Today: Perspectives and Issues 3
Prereq GenEd 111; Econ 101 or 102. Logic and consequences of capitalism as global system; multinational corporations; underdevelopment and overdevelopment; external debt, population, and environmental crisis.

420 Monetary Theory and Policy 3
Prereq Econ 320. Current issues in monetary economics with a special emphasis on policy.(g)

430 [M] American Economic History 3
Prereq Econ 101 or 102; Rec Econ 301. Development and changes in the American economy from the colonial period to the present.(g)

450 Collective Bargaining 3
Collective bargaining from an economic perspective: union-management negotiations in the U.S. private sector.(g)

455 The Economics of Health Care 3
Prereq Econ 101. The economics of allocating, financing and delivering medical care services.(g)

460 Concentration of Corporate Power and Antitrust Policy 3
Prereq Econ 101. Extent, causes, and effects of economic power held by US corporations; antitrust laws and other legislation and regulating business practices.(g)

464 Freight Transportation Economics 3
Prereq Econ 301, 311. Analysis of market structure, conduct, and performance of the intercity freight transportation industry. (a/y)(g)

470 International Trade and Finance 3
Prereq Econ 102. Analysis of international trade flows; commercial policy; multinational firms, foreign exchange markets; open economy macroeconomics; international monetary systems.(g)

471 (370) Economics of Regional Integration 3
Prereq Econ 102. Economic and politics of regional integration and economic reforms in Western Europe, North America, East Asia, and Russia.

472 Economic Development and Underdevelopment 3
Prereq Econ 102; Rec Econ 301. Development theories, policies, and performance of Third World economies; population, land reform, foreign trade, aid, investment, debt, dependency.(g)

475 Regional/Urban Economics 3
Prereq Econ 101, 102. Location of economic activity, transportation problems, resource and product distribution methods, urban structure and growth, and related policy issues. Cooperative course taught by UI (Econ 430), open to WSU students.

481 Economics of Environmental Issues 3
Prereq Econ 101; Rec Econ 301. Environmental interactions; efficient allocation of environmental resources; market failure and environmental degradation; economic analysis of environmental policies.(g)

490 Economics Capstone 3
Prereq Econ major. Integration of economic theory and field
503 Advanced Microeconomic Theory V 2-12 May be repeated for credit; cumulative maximum 12 hours. Off-campus cooperative education internship with business, industry, or government unit coordinated through the Professional Experience Program. S, F grading.

497 Economics Internship V 2-12 May be repeated for credit; cumulative maximum 12 hours. Professional off-campus internships arranged or coordinated by departmental faculty according to student’s field of specialization. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

500 Macroeconomic Analysis 3 Prereq Econ 401; 408 or one year calculus or c/l in Econ 408. General equilibrium theories of aggregate output and the price level; consumption, investment and money demand functions; monetary and fiscal policy; business cycles, and rational expectations.

501 Microeconomic Theory 3 Prereq Econ 301; 408, one year calculus, or c/l in Econ 408. Static optimization; theory of the consumer and the firm; perfect competition and resource allocation.

502 Advanced Macroeconomic Theory 3 Prereq Econ 500. Mathematical macro general equilibrium and disequilibrium.


504 History of Economic Thought 3 Evolution of economic theory and thought in historical context; classical and neo-classical contributors, precursors, and critics.

506 Microeconomics for Decision Making 4 Prereq Math 201, 202. For MBA and other master’s-level students with limited training in microeconomics. The use of economic theory and quantitative analysis for business decisions and policy analysis.

510 Mathematical Models of Economics 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Econ 503. Exposition of the mathematical structure of economic theories.

511 Econometrics 3 Prereq Ag Ec 510, Stat 443 or 548. Econometric models; review of linear model; introduction to large sample theory; simultaneous equations modeling.

512 Advanced Econometrics 3 Prereq Econ 511. Advanced topics in econometrics.

530 Economic History 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Econ 411 or 511; Rec Econ 501. Changes in the American economy; introduction to the new economic history.

540 Advanced Public Finance 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Econ 503. Positive effects of government policy, optimal tax theory; public goods; social choice theory; cost-benefit analysis.

552 Labor Theory 3 May be repeated for credit; cumulative maximum 6 hours. 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. Prereq Econ 460. Industrial organization, market conduct, and performance; appraisal of antitrust legislation.

570 International Factor Movement 3 Prereq Econ 470, 501. 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 Prereq Econ 470, 500. Balance-of-payments; adjustment to payments imbalance; the foreign exchange market; open economy macroeconomic models and macroeconomic policy coordination; international monetary institutions.

572 Theoretical and Institutional Aspects of Economic Development 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Econ 500. Selected topics in the political economy of developing nations.

590 Special Topics in Economics 3 May be repeated for credit; cumulative maximum 6 hours. Prereq graduate standing.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Certification Requirements

Students who have completed at least 30 semester credits, including at least 6 credits of economics core courses, and meet the university’s minimum g.p.a. requirement of 2.0 are eligible to apply for certification with the Department of Economics.

Schedule of Studies

During the freshman and sophomore years the economics major should normally begin economics courses and complete a major portion of the General Education Requirements. In the junior and senior year the economics major may choose from a variety of courses to prepare for employment or post-graduate education. Majors must complete courses in the following areas:

- **Core:** Econ 101 (or 198), 102 (or 198), 301, 401.
- **Fields:** 15 hours of 300-400-level Econ courses, at least 6 hours of which must be at the 400 level.

**Mathematics:** One of: Math 140, 171, 202, 206, or 222.

**Econometrics:** Econ 311 or 411.

Students majoring in economics and satisfying the above 30-hour requirement may elect, in consultation with their major adviser, either to self-design an additional 12-hour area of specialization or to choose from one of the 12-hour options below.

**Options in Economics:**
- *Economics of Financial Markets.* Econ 320, 420, Fin 325, one of Econ 411, 499; two of Fin 421, 422, 425, 426, 427.
- *Economics of Public Policy.* Econ 340, 499; two of Econ 320, 345, 350, 360, 411, 420, 450, 455, 460, 481.

**Preparation for Graduate Study.** 12 hours of 300-400-level courses.

Students in the College of Business and Economics must demonstrate performance at a level expected of seniors in their major by presenting WSU graded course work to satisfy at least 75% of the 300-400-level courses required by the major program. The chair of the department and the dean of the college must approve in writing any portion of 300-400-level credits which is to be satisfied by transfer, correspondence, independent study, or other credit which does not carry WSU grade points. Additional transfer, correspondence, and independent study credit (within university limits on these credits) may count toward the 120 hours required for the degree and/or satisfy requirements other than major 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. Consult the department for an acceptable program of study.

**Bachelor of Arts in Business, Economics Option**

A degree in business with an option in economics is also available. Students in this program take business core courses in accounting, business law, decision sciences, finance, management, and marketing along with 24 hours of economics courses. 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.

**Preparation for Graduate Study**

Better economics programs expect calculus through vector calculus (Math 171, 172, 273), linear algebra (Math 220), and econometrics (Econ 311 or 411). Students planning on graduate study in economics are urged to select an appropriate program of study, including a self-designed additional 12 hours, in consultation with a member of the faculty of the Department of Economics. 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:** Acctg 230; B Law 210; Pol S 300; and, depending on legal interests, elective Econ courses from the following: Econ 340, 364, 450, 451, 460, 468, 470, 481, 482; B Law 410, 411 suggested.
- **Business School:** Acctg 230; Cpt S 105. Additional courses in business are not required for admission to most graduate schools of busi-
ness. It might be useful, however, to take a second course in accounting, Acctg 231, and to take introductory courses in the major areas of business: B Law 210, Fin 325, Mgt 301, Dec S 340, Mktg 360.

Economics: Math 171 and 220 are recommended to satisfy the major’s math requirements. Calculus through Math 273 and Econ 408 may also be useful.


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.

Department of Educational Leadership and Counseling Psychology

Professor and Department Chair, W. H. Gmelch; Professors, S. Adams, A. F. Barbasz, R. J. Harder, D. C. Orlich, D. A. Warner; Associate Professors, M. Barbasz, G. Bettas, A. T. Church, S. M. Durrant, B. W. McNeill, D. B. Reed, R. D. Sagor, J. T. Shoemaker, J. R. Washburn; Assistant Professors, J. S. Burns, G. C. Furman, M. E. Henry, D. M. P. a t t e r e l l , M. S. Trevisan.

The department offers courses of study leading to undergraduate minors in leadership studies and sport management and graduate degrees of Master of Education, Master of Arts in Education, Doctor of Education, and Doctor of Philosophy. Programs of study for the doctoral degree must have a common core of required courses plus a major emphasis in one area of specialization. A minor in a second area of specialization is required for the EdD. The following areas of specialization are approved: administration, higher education, and curriculum and instruction. Each area of specialization requires a specific cluster of courses. The doctoral program may include courses from a department other than the Department of Educational Leadership and Counseling Psychology or a cluster of supportive courses. Additional information is available from the Department of Educational Leadership and Counseling Psychology.

Doctoral students will be considered for candidacy after they successfully complete the majority of their course work and pass a written comprehensive examination.

A thesis is required in each of the doctoral programs. There is a requirement of teaching or related experience for the Doctor of Education. A student pursuing a program leading to the Doctor of Philosophy degree is required to fulfill a research competency requirement, since the pursuit of research is emphasized in the program of study for the PhD.

The Master’s Degree in the Master of Education degree program requires at least 35 semester hours of approved graduate credit. Although a thesis is not required, candidates for the degree are required to write a six-hour comprehensive examination.

The Master of Arts in Education degree program (minimum of 30 semester hours) is recommended for students who plan to continue work toward the doctoral level. A thesis is required for the degree, and the program and thesis topic are designed to advance the career goals and professional aspirations of the candidate.

Admission to Graduate Study
(Counseling and Educational Psychology)

Individuals applying for admission to do graduate study must make application to the Graduate School and submit the following materials to the Department of Educational Leadership and Counseling Psychology: Chair: letter of application describing professional objectives; completed departmental application form; Graduate Record Examination scores (aptitude); official college transcripts; and three letters of recommendation from individuals qualified to comment on the applicant’s academic and professional abilities.

The Doctor of Philosophy in Education, with a specialization in counseling psychology, is designed for individuals who intend to become licensed counseling psychologists. The doctoral specialization in counseling psychology is designed for full-time study and is accredited by the American Psychological Association. For persons interested in the PhD specialization in counseling psychology, the department considers applications for admission only once a year. These applicants must submit their materials to the chair of the department by February 1 for admission the following fall semester. Applicants to all graduate programs must submit test results by April 15. Those students selected may begin study in the fall.

Applications for admission to a graduate program are reviewed by faculty on an individual basis, and notification of the faculty’s action is provided in writing by the chair of the department.

Certification
(Educational Administration)

A certification program for the initial and continuing certificates for superintendents, principals, and program administrators is offered in the Department of Educational Leadership and Counseling Psychology. Candidates for administration certification must comply with the following requirements:

1. All candidates for advanced degree or certification must be formally admitted to the university as specified in the current Graduate Study Bulletin. Admission will be considered after transcripts have been received from the institution which granted the baccalaureate degree as well as from institutions which have granted postgraduate credit.

2. All candidates not holding a master’s degree in an appropriate area of specialization must be admitted to the university and the master’s degree program in the respective department.

3. All candidates for certification must submit the following: application to the Graduate School; application for certification; three reference forms.

4. Admission to the certification program is granted only after the WSU Professional Education Advisory Board (PEAB) reviews the completed application process.

ESA Counselor Certification

The Department of Educational Leadership and Counseling Psychology at Washington State University is involved with southeastern Washington school districts in a Professional Education Advising Board in Counselor Education. The EdM and MA specializations in counseling constitute a consortium-directed program approved by the State Board of Education. Completion of this program qualifies a person for initial certification as a school counselor in the state of Washington. Post-master’s degree course work is also available leading to continued counselor certification.

Undergraduate Minors

The Department of Educational Leadership and Counseling Psychology offers undergraduate minors in Leadership Studies and Sport Management.

Leadership Studies. The minor in leadership studies requires 18 semester hours, 13 of which must be from upper-division courses. The minimum g.p.a. in the minor courses must be at least a 2.5. A total of 3 hours of transfer work may be counted toward the minor requirements for courses below the 300 level. All other course work must be taken in residence at WSU. Students must earn credits from courses in the core curriculum and the supporting interdisciplinary curriculum approved for the minor. Courses taken to fulfill the supporting curriculum requirements may also be used to fulfill requirements for the student’s academic major. Deviations from the stated requirements must be approved by the Dean of the College of Education or the dean’s designee.

Sport Management. The minor in sport management requires 18 semester hours of course work and
practical experience. The minor is designed for students with an interest in sport organizations or sport-related business. Sport management is an appropriate area for students with a variety of career interests, including business, communication, criminal justice, law, and social sciences.

Students interested in declaring a minor in leadership studies of sport management should contact the Department of Educational Leadership and Counseling Psychology.

Record of Distinction

The Department of Educational Leadership and Counseling Psychology sponsors and hosts a number of state and national programs including the A. A. Cleveland Conference, Northwest Superintendents’ Leadership Institute, High School Equivalency Program and the Center for the Study of the Department Chair. Superintendent certification course work is also offered throughout the state at branch campuses in Spokane, Tri-Cities, Vancouver, and internationally in the Far East, as well as on the Pullman campus. Counseling certification is offered at the Tri-Cities branch campus.

The College of Education has excellent facilities for graduate study and research. Modern facilities in Cleveland Hall include a comprehensive George B. Brain Education Library, microcomputer center and research studies in the Restricted Environmental Stimulation Therapy (REST) Laboratory. Extensive use also is made of the university Computing Service Center and the university Instructional Media Services.

Description of Courses

For explanation of symbols, see page 53.

Counseling Psychology

CoPsy

474 Introduction to Counseling Techniques 2 Prereq 9 hours Educ or Psych; junior standing. Practical directive and nondirective counseling techniques for school counselors and classroom teachers. Not open to PhD students in CoPsy.(g)

478 Career Services and Programs for Persons with Disabilities 3 Career development concepts, services, and programs for persons with disabilities with emphasis on interagency collaboration with public schools. Credit not granted for both CoPsy 478 and 578.

490 Instructional Practicum V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 8 hours. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

511 Theories, Research, and Techniques in Counseling Psychology I 3 or 4 Philosophical assumptions, theory of personality, counseling process, techniques and relevant research in the major theories of counseling and personality.

512 Theories, Research, and Techniques in Counseling Psychology II 3 or 4 Prereq CoPsy 511. Advanced counseling theory; interpretations of theories and principles of counseling psychology.

513 Career Development 3 or 4 Theories, concepts, methods and findings in career development; vocational assessment and prediction, career counseling intervention outcomes.

515 Ethics and Professional Problems in Counseling Psychology 3 Professional problems; ethical, legal, and training issues, practices, and new issues.

518 Theoretical Foundations of Group Counseling 3 Prereq CoPsy 512 or c//. History, philosophy and theoretical foundations; the group counselor, members, and issues in group counseling.

522 Introduction to Family Counseling 3 Counseling in the family context; intervention strategies, theoretical models, and professional ethics and issues.

523 Topics in Counseling Psychology V 1-4 May be repeated for credit; cumulative maximum 8 hours. Recent research, developments, issues, and/or applications in selected areas of counseling psychology.

525 Counseling Diverse Populations Prereq CoPsy 512. Research and theories regarding the influence of culture, gender, and lifestyle on counseling processes; application of appropriate assessment/treatment strategies.

527 Individual Appraisal I 3 or 4 Prereq EdPsy 508, 509. Theoretical background and practical skills needed to administer, score, and interpret individual intelligence and structured personality tests; integration of nonetest data.

528 Individual Appraisal II 3 Prereq CoPsy 527. Theoretical and empirical bases, psychometric properties, administration, scoring, and interpretation of major projective techniques; emphasis on Rorschach and TAT.


533 Master’s Practicum in Agency Counseling V 3 (2-3) to 6 (4-6) May be repeated for credit; cumulative maximum 6 hours. Prereq CoPsy 512, 513, 515, 527; supervised experience in the application of counseling theory and techniques in an agency setting. S, F grading.

534 Study Skills and Content Area Instruction 2 or 3 Same as Ed/Se 534. (SS)

535 Master’s Practicum in School Counseling V 3 (2-3) to 6 (4-6) May be repeated for credit; cumulative maximum 6 hours. Prereq CoPsy 512, 513, 515, 519 or c//; 527 or c//. Supervised experience in the application of guidance and counseling theory and techniques in a school setting. S, F grading.

537 Professional Development in Counseling Psychology 3 NBCC requirements; growth and development, social and cultural foundations, the helping relationship, group dynamics, career, appraisal and research.

541 Clinical and Experimental Hypnosis Seminar 4 Prereq PhD student in counseling, educational experimental, or clinical psychology. Clinical and experimental hypnosis, emphasizing applied research and clinical methods.

542 Cross-cultural Research in Counseling and Assessment 4 Cross-cultural research methods, concepts, and findings in counseling and assessment.


553 Doctoral Practicum in Counseling Psychology III V 2 (1-3) to 4 (2-6) May be repeated for credit; cumulative maximum 12 hours. Prereq CoPsy 552. Supervised experiences in the application of counseling psychology theory and techniques. S, F grading.

561 Continuing Counseling ESA Certification V 3-6 May be repeated for credit; cumulative maximum 6 hours. Prereq Initial Counselor Certification; equivalent of 180 full days of school counselor experience. Peer review requirements for continuing level ESA Counselor Certification.

578 Career Services and Programs for Persons with Disabilities 3 Graduate-level counterpart of CoPsy 478; additional requirements. Credit not granted for both CoPsy 478 and 578.

580 Seminar in Research in Counseling Psychology 4 By interview only. Recent developments in counseling psychology research and design applied to PhD dissertation proposals. S, F grading.

597 Counseling Psychology Internship V 2-4 May be repeated for credit; cumulative maximum 8 hours. Supervised internship experience, individual and group counseling, evaluation, assessment, supervision, and teaching. S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Educational Administration

Ed Ad

389 Undergraduate Leadership Development 3 Basic leadership through skills, styles and conflict management, critical thinking, problem solving, organizational behavior, and leadership issues.

440 Principles of Service and Leadership 3 Prereq Ed Ad 389. Individual and group opportunities to apply leadership skills, theory, and principles to a proposed service learning project.

497 Peer Leadership V 1-4 development of leadership and interpersonal skills for specific peer leadership and paraprofessional positions. S, F grading.

498 Undergraduate Leadership Practicum V 1-4 Prereq Ed Ad 389 or c//. Weekly seminar; development of and reporting on significant project associated with a leadership position held by the student. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

501 Philosophy of Education 3 Development of American educational philosophy.

506 Social Context of Education 2 The interpretation of social context issues including historical, legal and cultural factors as these influence policies and practice in education.

507 Social Foundations of Education 3 Educa-
tional adaptations to the economic and social trends and forces.

510 Improvement of Instruction 3 Rec teaching experience. Analysis and evaluation of instructional models with emphasis on information processing; implications for changing teaching style.

511 Models of Teaching 2 Theoretical models and strategies of teaching in classrooms; relationships between specific models and curriculum priorities.

514 Basic Principles of Curriculum Design 2 or 3 Rec teaching experience. The application of theoretical concepts and approaches in the planning and design of curricula.

515 Curriculum Implementation 3 Rec teaching experience. The application of theoretical concepts and approaches in the planning and design of curricula.

516 Supervision 2 or 3 Rec 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 Rec T & L 445 or 446. Research and theory of communication related to instructional resources and current educational technology; problems of planning and administering programs.

520 Seminar in Curriculum and Instruction 2 or 3 Rec teaching经验. Contemporary issues, analyses and developments of educational programs.

521 Topics in Education V 1-4 May be repeated for credit; cumulative maximum 6 hours. Recent research, developments, issues, and/or applications in selected areas of education.

522 Topics in Science Collaboration 2 (1-3) Rec secondary education with expertise in science, technology and/or math. Work for experienced secondary teachers with Battelle scientists on problems and preparation of curriculum materials appropriate for high schools.

525 Special Topics May be repeated for credit; cumulative maximum 3 hours. Topical issues in education responding to shifting demands and skills needed by parents, teachers, school administrators and community leaders.

531 Special Topics 1 May be repeated for credit; cumulative maximum 3 hours. Topical issues in education responding to shifting demands and skills needed by parents, teachers, school administrators and community leaders.

532 Special Topics 1 May be repeated for credit; cumulative maximum 3 hours. Topical issues in education responding to shifting demands and skills needed by parents, teachers, school administrators and community leaders.

533 Special Topics 1 May be repeated for credit; cumulative maximum 3 hours. Topical issues in education responding to shifting demands and skills needed by parents, teachers, school administrators and community leaders.

534 Special Topics 1 May be repeated for credit; cumulative maximum 3 hours. Topical issues in education responding to shifting demands and skills needed by parents, teachers, school administrators and community leaders.

535 Special Topics 1 May be repeated for credit; cumulative maximum 3 hours. Topical issues in education responding to shifting demands and skills needed by parents, teachers, school administrators and community leaders.

536 Introduction to Qualitative Research in Education 3 Introduction to the theory and methods of qualitative research; field relations, data collections, data analysis, hypothesis development, and theory generation.

537 Advanced Qualitative Research in Education 3 Prereq Ed Ad 536. Advanced theory and methods of qualitative research; theoretical foundations, data collection and analysis, and reporting.

538 Special Topics in Qualitative Research in Education V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq Ed Ad 536.

540 Student Personnel Services in Higher Education 2 or 3 Philosophy, structure, functions, and organization of student personnel services.

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 Ed Ad 570 or 572. Concepts, principles, issues, and procedures in undergraduate and community college education.

572 The American College and University 3 History, philosophy, objectives, and issues of colleges and universities as social institutions.

573 Issues in Higher Education 3 Selected contemporary issues in higher education.

574 Seminar in Higher Education 2 May be repeated for credit; cumulative maximum 6 hours.

575 (PEP) Administration Concepts for Physical Education, Sport and Athletics 3 Administration focusing on democratic human behavior in organizations with specific attention to the leader, the setting, and the process.

576 (PEP) Promotions and Management of Sport Programs 3 Physical education, promotion, assessment and fiscal management of sport programs.

577 (PEP) The Law in Physical Education, Sport, and Athletics 3 Legal aspects of coaching, teaching, and administering sport, physical education, and athletic programs.

578 Higher Education and the Law 3 Legal aspects of higher education with special reference to administrators, faculty, and students in universities, colleges, and community colleges.

579 Administration of Higher Education 3 Organization, administration and leadership of universities, colleges, and community colleges.

580 School Organization and Administration 3 Rec teaching experience. Readings and discussions on the theories and practices of school organization and administration. Cooperative course taught jointly by WSU and UI (Educ 536).

582 Policy Formation in Education 3 Rec Ed Ad 580. Political and organizational policy formation processes in educational organizations.

583 Community Relations in Education 3 Social, political, and economic relationships between education and the community; methods of public polling and campaign strategy techniques.

584 Personnel Relationships in Public Schools 3 Human relations in education; problems involved and practical solutions considered.

585 Financial Management in Education 3 Economic principles and theory general concepts; financial planning, budget development, investment analysis, bonding, cost effectiveness; current trends in educational finance. Cooperative course taught jointly by WSU and UI (Educ 535).

586 Management of Facility Planning 3 Principles and procedures in the development of educational specifications, conducting needs assessment, forecasting; selecting an architect.

587 Seminar in School Administration V 1-6 May be repeated for credit; cumulative maximum 6 hours. Interdisciplinary seminars; related studies; discussions in several areas by specialists.

588 The Law and Education 3 Fundamental legal principles within which public education functions; applicable school codes of Washington and other states; review important court cases.

590 Internship 3 or 6 May be repeated for credit; cumulative maximum 12 hours. By interview only. Internship in professional positions. S, F grading.

594 Educational Internship V 2-9 May be repeated for credit; cumulative maximum 9 hours.

595 Preparing Grant Proposals 3 Identification of funding sources; analysis, evaluation, and production of grant proposals.

599 Superintendent Institute 1 May be repeated for credit; cumulative maximum 4 hours. By interview only. Current concepts and practices in the superintendent; policy, planning, and implementation techniques. S, F grading. (SS)

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Educational Psychology

EdPsy 301 Educational Psychology 3 Prereq Educ major; Psych 105, T & L 300. Theories and principles of psychology applied to teaching; human development, learning, motivation, and social/emotional adjustment of students.

322 Topics in Student Personnel Work 2 or 3 Educational psychology, theories of human behavior, and ethical and considerations related to student personnel work.

401 Classroom Assessment, Elementary 2 Prereq T & L 305 or 320. Principles and practice of high-quality classroom assessment in the elementary schools.


490 Instructional Practicum V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 8 hours. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

502 Theoretical Foundations of Learning and Instruction 3 Historical and contemporary theories of learning and instruction; application of theory in counseling and teaching settings.
School of Electrical Engineering and Computer Science

503 Advanced Educational Psychology 2 Theories of learning and development as applied to education.

504 Classroom-focused Research Methods 2 Methods, design, implementation, and application of results in classroom context.

505 Research Methods I 3 Research methods; literature review; design, implementation, and interpretation of results.

508 Educational Statistics 4 Descriptive statistics: central tendency, variability, correlations, and regressions; introduction of tests of significance; reporting and interpreting educational research data. Cooperative course taught jointly by WSU and UI (EdAd 507).

509 Educational Measurements 2 or 3 Theory and use of standardized educational measurement devices; intelligence, aptitude, and achievement tests.

515 Professional Problems in Student Affairs 3 Prereq graduate student in CoPsy or EdPsy. The organization, programs, and professional issues related to selected student affairs programs and units.

516 Student Development, Theory, Research and Application 3 Prereq graduate student in CoPsy or EdPsy. Student development theory, related research and the application of theory to practice in student affairs work.

519 Practicum in College Instruction 1 (0-3) May be repeated for credit; cumulative maximum 4 hours. By interview only. Supervised experience in college teaching. S, F grading.

521 Topics in Educational Psychology V 1-4 May be repeated for credit; cumulative maximum 6 hours. Recent research, developments, issues, and/or applications in selected areas of educational psychology.

535 Master’s Practicum in Student Affairs 3 (0-9) Prereq graduate student in CoPsy or EdPsy. Selected supervised experiences in professional student affairs settings which provide for the investigation/applied component of theory/methods gained through formal course work.


567 Program Evaluation 3 Prereq EdPsy 509. Strategies and techniques for evaluation of educational programs.

568 Research Methods II 3 Prereq EdPsy 505, 565. Integration and application of research skills in writing proposals, dissertations, papers for publication; interpreting, critiquing, and synthesizing research studies.

569 Seminar in Quantitative Techniques in Education 2 or 3 May be repeated for credit; cumulative maximum 6 hours. Prereq EdPsy 563. Application of parametric and nonparametric statistics, data processing using computer packages in educational research.

597 Educational Psychology Internship V 2-4 May be repeated for credit; cumulative maximum 8 hours. Supervised internship experience in educational psychology, measurement, and evaluation. S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Sport Management

276 Introduction of Sport Management 3 Not open to first-semester freshmen. Nature of sport management; scope of sport related business; related literature.

290 Sport Programs 3 (2-3) Philosophies and program content of public/private sport programs; laboratory experiences in school, college, and community sport programs.

367 Sport in American Society 3 Examination of the role of sport in contemporary American society as well as the relationship between sport and other social institutions.

368 Foundations of Sport Governance 3 Prereq EdPsy 508. Examination of sport governance and the sport manager’s role in decision making.

394 Practicum in Sport Management V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. By interview only. Supervised practicum. S, F grading.

399 Professional Work Experience V 1 (0-3) to 6 (0-18) Prereq sophomore standing, by interview only. Paid or volunteer, off-campus work experience with a sport organization.

477 Sport Law 3 Legal aspects of coaching, teaching, and administering sport programs.

488 Current Trends in Sport Management 2 Prereq SpMgt 276; 368 or c//. Current trends and issues; professional development, internship, and employment procedures.

489 Theory and Application 3 Prereq SpMgt 367. Investigative examination of sport management and the sport manager’s role in decision making.

519 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 6 hours. S, F grading.

519 Internship V 10-12 Prereq SpMgt 489; major or minor with 15 hours completed in sport management course work. By interview only. Supervised practicum in agency or business. S, F grading.

520 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours. Special topics in exercise and sports studies.

529 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours. Special topics in exercise and sports studies.

539 Special Problems V 1-4 May be repeated for credit. S, F grading.

Sport Management Minor

SpMgt 276, 290, 367, 368; 487 or 489; 3 credits from SpMgt 394, 496, 497, 498.


The School of Electrical Engineering and Computer Science offers courses of study leading to the degrees of Bachelor of Science in Electrical Engineering (BSEE) or Computer Science (BSCS), Master of Science in Electrical Engineering (MSEE) or Computer Science (MSCS), and Doctor of Philosophy. Three undergraduate schedules of study are presented: electrical engineering, computer engineering, and computer science. The first two lead to a BSEE and the third leads to a BSCE. The curricula leading to the BSEE is accredited by the Accreditation Commission of the Accreditation Board of Engineering and Technology (ABET).

Electrical Engineering

The curricula in electrical and computer engineering are designed to give the student fundamental knowledge in the areas of general interest to all electrical engineers. The courses of study are therefore oriented toward the basic theory and concepts which prepare students for entry into any of the multitude of activities open to members of the profession, including research, design, development, operations, management, teaching, sales, and consulting. Laboratory experience is emphasized to provide familiarity with electrical, electronic, and computing equipment and with experimental techniques. Modern laboratories are available for electrical circuits, electronics, power systems, electromagnetics, measurements, and digital signal processing and computers. Students are expected to use main-frame computers, mini-computers, workstations, personal computers, and microprocessor development tools to aid in their studies.

The curricula are designed so that the equivalent of the first three to four semesters may be transferred from the community colleges with minimal difficulty. The additional basic material common to all branches of electrical engineering is concentrated in the junior year, and maximum flexibility is permitted in the senior year, allowing the student to
develop a breadth of interest or select an area of specialty. Special programs may be designed for students planning to continue on to advanced study in law, medicine, or business administration, and for those who wish to pursue undergraduate study in more than one field.

Computer Science

The computer continues to have a dramatic effect on many aspects of contemporary society, and the demand for people who are trained to use computers and software systems will increase for the foreseeable future. Computer science is a discipline that provides a scientific foundation for a variety of practical skills, including computer system design, software system design, information processing, programming, and the use of specialized computer applications. An important specialty for this school and for computer scientists in general is software engineering, which deals with the issues of designing, constructing, testing, debugging, documenting, and maintaining large, complex, and/or mission-critical software systems such as banking information systems, embedded operating systems for medical instruments, and large scientific applications.

The curriculum in computer science prepares students for a variety of careers that involve the extensive use of computers. All graduates will have a solid technical background in mathematics and the pure and engineering sciences. Courses in the discipline include structured programming, systems programming, data structures, software engineering, computer architecture, operating systems concepts, programming language concepts, and theoretical computer science. An option area course sequence allows students to specialize in areas such as software engineering, computer graphics, scientific computing, or artificial intelligence.

Certification

Students may apply for certification into any of the three programs of study after completion of 30 semester hours to include Bio S 102 or Chem 105; Cpt S 150, 203, or 251; Math 171, 172, Phys 201, 202. Applications for certification are accepted prior to November 15 and to March 15 for certification effective the following spring and fall, respectively. Eligible students will be ranked in accordance with several criteria including WSU and UI (EE 404). Cooperative course taught jointly as M E 420.

Description of courses

For explanation of symbols, see page 53.

Electrical Engineering

EE

110 Introduction to Electrical Engineering 2
Introduction to basic electrical engineering concepts; the electrical engineering profession.

120 Innovation in Design 2 Same as M E 120.

214 Design of Logic Circuits 3 (2-3) Prereq Math 172 or c/l. Functional approach to design of electronic logic circuits; exposure to elementary circuit concepts and design with integrated systems.

261 Electrical Circuits I 3 Prereq Math 315 or c/l; Phys 202; or c/l in E E 262. Application of fundamental concepts of electrical science in linear circuit analysis; mathematical models of electrical components and circuits.

262 Electrical Circuits Laboratory 1 (0-3) Prereq E E 261 or c/l. Electrical instruments; laboratory applications of electrical laws; transient and steady-state responses of electrical circuits.

304 Introduction to Electrical Circuits 2 Prereq Math 172, Physics 202. Basic DC and AC circuits.

305 Introduction to Microprocessors 2 Prereq Cpt S 150, 203, or 251. Digital components, circuits, and number representation; microprocessor organization, instruction sets, and system design.

311 Electronics 3 Prereq E E 214, 261 with grade of C; major or minor in E E. Fundamental device characteristics including diodes, MOSFETs and bipolar transistors; small- and large- signal characteristics and design of linear circuits.

312 Electronic Devices and Circuits Laboratory 1 (1-6) Prereq c/l in E E 311. Experiments in electrical circuits, measurements and electronics; principles of measurements and measuring instruments.

313 Microprocessor Systems 3 (2-3) Prereq Cpt S 150 or 251, E E 214. Microprocessor system architecture, instruction sets, and interfacing; assembly language programming.

321 Electrical Circuits II 3 Prereq E E 261 with grade of C; major or minor in E E. Graphs, loop and cut-set analysis, state space analysis, Laplace transforms, network functions, frequency response, two-ports, energy and passivity.

322 Electrical Engineering Laboratory I 1 (0-3) Prereq c/l in E E 321. Experiments in electrical circuits, measurements, and electronics, principles of measurements and measuring instruments.

331 Electromagnetic Fields and Waves 3 Prereq Math 315; Phys 202; major or minor in E E. Fundamentals of electric fields, magnetic fields, and electromagnetic waves.

341 Communication Systems 3 Prereq E E 321. Analog communication, amplitude and frequency modulation, Fourier transform, filtering, receiver performance; sampling theorem, DFT.

351 Distributed Parameter Systems 3 Prereq E E 331. Transmission lines, plane waves, waveguides, antennas, fiber optics.

352 E E Laboratory I 3 (1-6) Prereq Cpt S 150, 203, or 251; E E 311, 321, or c/l; major in E E. Experiments in electrical circuits, measurements and electronics; principles of measurements and measuring instruments.

361 Electrical Power Systems 3 Prereq E E 321, 331. Power system hardware; transformers, and electromechanical machinery; introduction to power system operation.

362 [M] Power System Laboratory I 2 (0-6) Prereq c/l in E E 361, c/l in E E 341, c/l in Engl 402 or 403. Experiments in simulation, modeling, transformers, rotating machines, and transmission lines.

380 Preparation for Professional Practice 1 Prereq c/l in Cpt S or E E. Resume writing, investigation of job and internship opportunities; curriculum integration; professional ethics; continuity of design experience.

S, F grading.

414 Fundamentals of Digital Systems 3 Prereq E E 214; major or minor in Cpt E, Cpt S or E E. Design and analysis of synchronous sequential machines; module and bit-slice devices; alternative architectures; system-level design; asynchronous sequential machines.

416 [M] Electrical Engineering Design 3 (1-6) Prereq senior in E E. Electrical engineering design of several specific open-ended projects including design specifications, codes, costs, EIS; written and oral presentations and reports.

418 Numerical Solutions to EM Problems 3 (1-6) Prereq E E 351; knowledge of FORTRAN or extensive programming experience. Basic numerical solutions to EM problems including moment method; finite element method; numerical integration; matrix operations; and finite difference methods.

420 Capstone Engineering Design 3 (1-4) Same as M E 420.

424 Digital System Architecture 4 (3-3) Prereq E E 314, 414. Modern developments in digital system design, parallel structures, pipelining, input/output, high speed circuits, laboratory experience in digital system design; emphasis on CPU architecture.

431 UHF and Microwave Circuits 3 or 4 (3-3) Prereq E E 351. Lines and waveguides in passive and active circuits; microstrip filter and amplifier design.

434 VLSI Systems I 3 (2-3) Prereq E E 314; 414 or c/l; 466 or c/l. System, circuits, and physical level design of very large scale integrated circuits using CAD software; project specification, documentation, and reporting.

441 Digital Control Systems 3 Prereq E E 341, 489. Linear difference equation, Z-transform, discretization, A/D and D/A conversion, sampled data system analysis, frequency domain design, state space design, quantization effects.

442 Robotics 3 Prereq E E 489 or M E 481 or c/l. Robots, kinematics, inverse kinematics, Jacobians, dynamics, sensors, actuators, position control, force control, hybrid control, trajectory generation.

444 [M] VLSI Systems II 1 (0-3) Prereq E E 434. Laboratory experience with digital integrated circuit test design; functional and parametric testing of fabricated student projects.


455 Introduction to Computer Networks 3 Same as Cpt S 455.

464 Digital Signal Processing 3 Prereq E E 341. Discrete and fast Fourier transforms; Z-transform; sampling; discrete convolution; digital filter design; effects of quantization.


466 Pulse and Digital Circuits 3 (2-3) Prereq E E 311, 314. Electronic theory and practice used in design of digital computers and other high-speed digital systems.

472 Power Systems Laboratory II 2 (0-6) Prereq...
475 **Electrical Measurements and Transducers 3**
(1-6) Prereq E E 352. Principles of electrical measurements and techniques with individual transducer design, development and test problems; formal report. (g)

476 **Analog Integrated Circuits 3**
Prereq E E 311; 351 or c/f; 489 or c/f; c/f; in 477 for capstone design credit. Analysis and design of analog integrated circuits in CMOS and BiCMOS technologies; current mirrors, gain stages, operational amplifiers, frequency response, and compensation. (g)

477 **[M] Analog Integrated Circuits Laboratory 2**
Prereq c/f in E E 476. Laboratory applications of E E 476 including the computer-aided design of analog integrated circuits; emphasis on design documentation and reporting. (g)

480 **Electrical Engineering Design Precepts 1**
Prereq senior in E E. Electrical engineering design and its extensive aspects as well as formative social and ethical relationships. S, F grading (g).

483 **Topics in Electrical and Computer Engineering V 1-3**
May be repeated for credit; cumulative maximum 3 hours. Current topics in electrical engineering and computer engineering.

486 **Power Electronics 3**
Prereq E E 311, 321. High power semiconductor devices; analysis and design of linear and switching power supplies; high frequency magnetics, controller design. Cooperative course taught jointly by WSU and UI (EE 525). (g)

489 **Introduction to Control Systems 3**
Prereq C E 214, E E 321. State variable models, system response, stability analysis, root locus analysis and design; frequency-response and state-space analysis and design. (g)

491 **Performance of Power Systems 3**
Prereq E E 361, 362. Static and dynamic behavior of power systems, powerflow, and economic considerations. (g)

493 **Protection of Power Systems I 3**
Prereq E E 361. Analysis and equipment fundamentals of power system protection; symmetrical components, fault calculations; fuses; and relays including burden calculations. (g)

494 **Protective Relay Labs 2**
(0-6) Prereq E E 493 or c/f. Experiments and measurements of protective relay equipment under test, simulated fault and fault conditions.

495 **Internship in Electrical Industry II V 2-4**
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 on engineering assignments in approved industries. S, F grading. (g)

496 **Introduction to Semiconductor Device Theory 3**
Prereq E E 311 or MSE 302. Equilibrium statistics of electrons and holes; carrier dynamics; p-n junctions, metal-semiconductor junctions, BJTs, MOSFETs, LEDs. (g)

499 **Special Problems V 1-4**
May be repeated for credit. S, F grading. (g)

501 **Linear System Theory 3**
Prereq E E 489. Dynamics and stability: the state variable approach; observability, controllability, stability, and sensitivity of differential and nondifferential systems. Cooperative course taught jointly by WSU and UI (EE 572).

502 **Linear Multivariable Control 3**
Prereq E E 501. Optimal linear feedback control, optimal stochastic observers, LQG/LTR design methodology, modern Wiener-Hopf design, robust controllers. Cooperative course taught jointly by WSU and UI (EE 574). (g)

504 **Modern Optics 3**
Prereq E E 341, 351, Stat 443. Diffraction theory, Fourier transforming and imaging properties of lenses, spatial filtering, holography, temporal and spatial coherence, imaging through random media. (a/y)

505 **Nonlinear System Theory 3**

507 **Random Processes in Engineering 3**
Prereq Stat 443. Functions of random variables; random sequences; stochastic processes; mean-square stochastic calculus; ergodicity; spectral density; linear transformations, filtering, dynamic systems. Cooperative course taught jointly by WSU and UI (EE 570).

509 **Adaptive Control 3**

510 **Solid State Direct Energy Conversion 3**
Prereq E E 496. Analysis of homojunction and heterojunction solar cells. Analysis of energy alternatives; energy future. (a/y)

511 **Protection of Power Systems II 3**
Prereq E E 491 or c/f. Protection of electrical equipment as related to electric power systems with emphasis on digital algorithms. Cooperative course taught jointly by WSU and UI (EE 526).

512 **Active Network Synthesis 3**
Prereq E E 341. Devices and classical network synthesis, two-port network theory, filters, active filters.

516 **Remote Sensing Theory 3**
Prereq E E 518. Radiative transfer theory; rough surface scattering; scattering in random media; scattering by random discrete scatterers; the T-matrix method; inverse scattering.

518 **Advanced Electromagnetic Theory I 3**
Prereq E E 351. Electromagnetic waves, electromagnetic theorems and concepts, solutions to the wave equation in rectangular, cylindrical and spherical coordinates. Course taught by WSU, open to UI students (EE 530).

519 **Advanced Electromagnetic Theory II 3**
Prereq E E 518. Exact solutions to canonical electromagnetic diffraction problems, high and low frequency limits, foundations of numerical solutions to electromagnetic scattering problems. Cooperative course taught by WSU, open to UI (EE 531).

520 **Plasma Engineering 3**
Prereq E E 351 or Phys 342. Electromagnetics, kinetic theory, and fluid mechanics of plasmas in space, arcs, plasma processing, coronas, and fusion reactors. (a/y)

521 **Analysis of Power Systems 3**
Prereq E E 491. Concepts and practices of modern power engineering, including steady-state and dynamic analysis, protection and control design.

522 **High Voltage Engineering 3**
Prereq E E 331. High voltage-high power phenomena; design and measurements associated with electrical transmission, current interruption, insulation, transformation, lightning, and corona.

524 **Advanced Digital System Architecture 3**
Prereq E E 424. Parallel and distributed processors; multiprocessors; interaction topologies; language directed architecture; special purpose architecture.

527 **Antenna Theory and Design 3**
Prereq E E 351. Antenna fundamentals, analytical techniques, characteristics and design procedures for selected types of wire, broadband, and aperture antennas. (a/y) Cooperative course taught jointly by WSU and UI (EE 533).

530 **Multirate Signal Processing 3**
Prereq E E 341, 464. Fundamentals of sampling rate conversion, exact reconstruction filter banks, and multidimensional multirate system.

531 **Energy Management and Planning 3**
Available energy resources; energy issues, economic analysis of energy alternatives; energy future.

534 **High Performance Computing 3**
Prereq E E 414. Development, current state and future of high speed computing; application of existing commercial supercomputers to engineering problems. Cooperative course taught by UI (EE 504), open to WSU students.

541 **Digital Control Systems II 3**
Prereq E E 441. State space approach, SISO, optimal control, State estimators, stochastic systems, State estimation in the presence of noise.

543 **Signal Theory 3**
Prereq E E 341. Theory of signals; signal spaces; basis sets; signal representations; projection theorem; Fourier transforms; optimum signal design.

544 **Neural Computation 3**
Same as Cpt S 544.

545 **Data Compression 3**
Prereq E E 507, 543. Source coding with a fidelity criterion; quantization theory; predictive, transform and subband coding; noiseless source codes.

547 **Data Communications Systems 3**
Prereq E E 341, 507. Digital communications; multi-attribute design; switching theory; probability of error performance; cutoff rate; Viterbi algorithm; trellis coded modulation.

554 **Asynchronous Digital Systems 3**
Prereq E E 414. Analysis and design of high speed asynchronous state machines, timing defect analysis, modular elements, arbiters, programmable sequencers, system level design. Cooperative course taught jointly by WSU and UI (EE 540).

555 **Computer Communication Networks 3**
Prereq E E 443. Packet switching networks; multi-access and local-area networks; delay models in data networks; routing and flow control.

562 **Fault Tolerant Computer Systems 3**
Same as Cpt S 562.

564 **Advanced Signal Processing 3**
Prereq Stat 443. Signal processing and communication theory aspects of frequency domain analysis of continuous and discrete random signals.

574 **Optoelectronics 3**
Prereq E E 504. Methods of modulating, generating, and detecting light; display techniques; display devices; fiber optics.

581 **Advanced Topics in Power Systems 2 or 3**
May be repeated for credit; cumulative maximum 6 hours. Prereq E E 521. Power system operations including AGC, economic dispatch and security; power system stability; new and intelligent systems applications. Cooperative course taught jointly by WSU and UI (EE 504).
582 Advanced Topics V 1-3 May be repeated for credit.
584 Parallel Processing: Systems and Applications 3 Same as Cpt S 584.
586 VLSI Systems Design 3 Prereq E E 444. VLSI models, layout algorithms, design methodologies, simulation and layout tools, algorithm design for VLSI implementation.
595 Directed Study in Electrical Engineering V 1-3 May be repeated for credit. Current topics in electrical engineering.
596 Advanced Analog Integrated Circuits 3 Prereq E E 476. 477. MOS and BiCMOS technologies; MOS and BiCMOS operational amplifiers; A/D, D/A converters; switched-capacitor filters; continuous-time filters.
597 Semiconductor Device Modeling 3 Electrontransport in semiconductors; scattering processes; Monte-Carlo technique, numerical techniques for solving Poisson and continuity equations for device modeling. (a/y)
598 High Speed Semiconductor Devices 3 Prereq E E 496. Transit-time effects, negative resistance devices; ballistic transport in high electric fields; GUNN-effect devices; resonant-tunneling devices; ballistic transport in high electric fields; MOS and BiCMOS operational amplifiers; A/D, D/A converters; switched-capacitor filters; continuous-time filters.
600 Special Projects or Independent Study Variable credit. S, F grading.
700 Master's Research, Thesis, and/or Examination Variable credit. S, F grading.
702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.
800 Doctoral Research, Dissertation, and/or Examination Variable credit. S, F grading.

Computer Science
Cpt S
105 Computer Applications in Business 4 Elementary computer literacy and hands-on introduction to DOS and computer applications commonly used in business practice (word processors, spreadsheets and databases).
106 Intermediate Computing Fundamentals 3 Prereq Cpt S 105 or by interview. Intermediate computer literacy and operation; application software, system software, installation and configuration; hardware, installation; technology required for graphics intensive applications.
110 Computer Science Overview 3 Prereq Math 107 or c/. Central concepts of computer science; algorithms, computability, complexity, artificial intelligence in the context of current computational devices and software.
150 Program Design and Development 4 (3-3) Prereq Math 107. Formulation of problems and top-down design of programs in a modern structured language for their solution on a digital computer.
153 BASIC Programming 2 Comprehensive programming practice using BASIC.
203 Computer Programming for Engineers 2 Prereq Math 171 or c/. Use of FORTRAN in solving problems related to engineering applications; WSU Scientific Subroutine Library.
205 Introduction to Computing for Architecture 3 Prereq certification in Arch or Cst M. Computer literacy for architecture students; application software, system software and hardware emphasizing the technology required for VLSI implementation.
241 COBOL Programming 2 Prereq Math 107 or c/. Comprehensive programming practice using COBOL.
250 Data Structures 4 (3-3) Prereq Cpt S 150. Advanced programming techniques: object-oriented programming, data structures and program design principles.
251 C Programming Language 2 Prereq Math 171 or c/. Comprehensive programming practice using C.
306 Programming for Engineers I 3 Prereq Math 220, 273, 315. Problem-solving methods, software development principles structured programming with engineering applications.
307 Programming for Engineers II 3 Prereq Cpt S 306. Continuation of Cpt S 306; advanced programming topics and data structures with engineering applications.
317 Automata and Formal Languages 3 Prereq Math 216. Finite automata, regular sets, pushdown automata, context-free language, Turing machines and the halting problem.
330 Numerical Computing 4 Prereq Math 172, 220. Programming in FORTRAN; design and analysis of numerical algorithms and implementation in FORTRAN; use of library software in solving numerical problems.
350 Software Design 3 Prereq Cpt S 250, Math 216. Software design techniques; data-flow oriented design, object-oriented and data-oriented design; testing and maintenance of software.
355 Programming Language Design 3 Prereq Cpt S 350; Math 216. Design concepts of high-level programming languages; survey of existing languages, experience using some languages; formal specification of syntax and semantics.
360 [M] Systems Programming 4 (3-3) Prereq Cpt S 250; E E 314. Implementation of systems programs, concepts of computer operating systems; laboratory experience in using operating system facilities.
370 Systems Analysis and Design 3 Prereq Cpt S 150 or 241. Analysis and design of computer-based systems typically found in a business environment; related programming projects.
380 Preparation for Professional Practice 1 Same as E E 380.
405 The Use of Computer Systems 3 Prereq junior standing. For nonmajors. Computer system concepts, and software packages for advanced students in other disciplines; hands-on use. No previous computer experience required. (g)
422 [M] Software Engineering Principles 3 Prereq Cpt S 350. Introduction to large-scale software development; requirement analysis, estimation, design, verification techniques. (g)
423 Software Engineering Laboratory 3 (1-6) Prereq Cpt S 422. Laboratory/group design project for large-scale software development, requirements analysis, estimation, design, verification techniques. (g)
425 Network Security 3 Prereq Cpt S 360. Practical topics in network security; policy and mechanism; intrusion, detection, prevention, response, cryptography. Cooperative course taught by UI (CS 425), open to WSU students. (g)
430 Numerical Analysis 3 Same as Math 448. (g)
431 Numerical Linear Algebra 3 Same as Math 449. (g)
440 Introduction to Artificial Intelligence 3 Prereq Cpt S 355. Basic issues of knowledge representation and automated problem solving; introduction to the theory and application of expert systems technology. (g)
441 Knowledge-based System Design 3 Prereq Cpt S 440. Hands-on experience with state-of-the-art, knowledge-based design techniques. (g)
442 Computer Graphics 3 Prereq Cpt S 350; Math 220. Raster operations; transformations and viewing; geometric modeling; visibility and shading; color. (g)
443 Computer-Human Interaction 3 Prereq Cpt S 350. Topics in computer-human interaction; screen-based paradigms and Fitt's law; audio and haptic interfaces, virtual reality. (g)
445 Digital Image Processing 3 Prereq Cpt S 250 or 251; Math 220, 273. Digitization, coding enhancement, restoration, reconstruction, segmentation, and description of digital images. Cooperative course taught by WSU, open to UI students (CS 404). (g)
446 Animation Programming 3 (1-4) Prereq Cpt S or E E major; Cpt S 250. Introduction to computational animation production, animation programming techniques, simulation, and dynamic visualization. (g)
450 Design and Analysis of Algorithms 3 Prereq Cpt S 317, 350. Analysis of data structures and algorithms; computational complexity and design of efficient data-handling procedures. (g)
451 Introduction to Database Systems 3 Prereq Cpt S 350. Math 216. Introduction to database concepts, data models, database languages, database design, implementation issues. (g)
452 Compiler Design 3 Prereq Cpt S 317, 355. Design of lexical analyzers, syntactic analyzers, intermediate code generators, code optimizers and object code generators. (g)
453 Graph Theory 3 Same as Math 453. (g)
455 Introduction to Computer Networks 3 Prereq Cpt S 350. Concepts and implementation of computer networks; architectures, protocols, layers, internetworking and addressing case studies.
460 Operating Systems and Computer Architecture 3 Prereq Cpt S 360; Stat 443; Cpt S major. Operating systems, computer architectures, and their interrelationships in micro, mini, and large computer systems. (g)
461 Embedded Systems 3 Prereq Cpt S 360. The design and development of real-time and dedicated software systems with an introduction to sensors and actuators. Cooperative course taught by WSU, open to UI students (CS 404). (g)
465 Microcomputer Systems and Programming 3 (2-3) Prereq Cpt S 360; E E 214; Cpt S major. Microcomputer systems architectures; microcomputer software; laboratory practice in programming microcomputers. (g)
483 Topics in Computer Science V 1-4 May be repeated for credit. Prereq Cpt S 350. Current topics in computer science or software engineering. (g)
490 Work Study Internship V 1-9 May be repeated for credit; cumulative maximum 9 hours. Prereq Cpt S 150, 153, or 241; 250, E E 314; Cpt S major. By interview only. Experience in programming and systems analysis in a working environment under supervision of industrial or governmental professionals and faculty. S, F grading.
Consulting in Computer Programming 1 May be repeated for credit; cumulative maximum 2 hours. Prereq Cpt S 150, 153 or 241; 250; E E 314; Cpt S major. Consulting for students in Cpt S 105, 150, 153, 241, 250, and E E 314. S, F grading.

Special Problems V I-M May be repeated for credit by interview only. S, F grading.

Proseminar 1 Faculty research interests, departmental computer systems, computer science research, report preparation. S, F grading.

Theory of Computing 3 Prereq Cpt S 450. Discrete structures, automata, formal languages, recursive functions, algorithms, and computability.

Programming Language Theory 3 Prereq Cpt S 516 or Math 421. Syntax; operational and denotational semantics.

Veriﬁcation 3 Prereq Cpt S 422, 516. Proofs of programs; logics of programs; formal speciﬁcation techniques.

Computational Linear Algebra 3 Same as Math 544.

Advanced Numerical Analysis 3 Same as Math 545.

Numerical Analysis of Elliptic PDEs Same as Math 546.

Modeling and Simulation of Ecological Systems 3 Cooperative course taught by WSU, open to UI students (For 536).

Artiﬁcial Intelligence 3 Prereq Cpt S 440. Intelligent computer programs; simulation of cognitive processes.

Advanced Graphics 3 Prereq Cpt S 442. Solid modeling, visual realism, light and color models, advanced surface generation techniques.

Multimedia Systems 3 Survey of recent advances in multimedia systems: applications, authoring tools, information retrieval, network and operating system support, and data management.

Neural Computation 3 Parallel processing inspired by natural neural systems; neural computer architecture, supervised and unsupervised learning, generalization, implementation, and application; neurophysiology basis.

Computer Vision 3 Prereq Cpt S 350. 2-D and 3-D image acquisition, imaging geometry, segmentation, feature extraction, object recognition, texture, active vision.

Computer Animation II 3 Same as Arch 546.

Statistical Pattern Recognition 3 Prereq Stat 444. Supervised and unsupervised classiﬁcation of multivariate data feature selection, extraction and display; application to computational and natural sciences.

Parallel Computation 3 Prereq Cpt S 450. Parallel machine models, principles for the design of parallel algorithms, interconnection networks, systolic arrays, computational aspects to VLSI.

Database Systems 3 Prereq Cpt S 451. Data models: ﬁle organization and searching; database system design.

Computer Communication Networks 3 Same as E E 555.

Operating Systems 3 Prereq Cpt S 460. Structure of multiprogramming and multiprocessing; efﬁcient allocation of systems resources; design implementation and performance measurement.

Computer Architecture 3 Prereq E E 424. Parallel and distributed processors; multiprocessors; interconnection topologies; language-directed architecture; special-purpose architecture.

Fault Tolerant Computer Systems 3 Prereq Cpt S 460, or E E 424 and elementary probability theory. Fault tolerance aspects involved in design and evaluation of systems; methods of detection and recovery: modeling, correcting codes and reconﬁguration.

Distributed Systems 3 Prereq Cpt S 460. Basic architectural models, network-transparent message passing, remote procedure call, distributed ﬁle systems, multi-site concurrency control, replication, error recovery.

Advanced Topics in Computer Science 3 May be repeated for credit.

Parallel Processing: Systems and Applications 3 Prereq E E 524. Parallel processing, partitioning, allocation and mapping, array processors, hypercubes, parallel routing algorithms, parallel memory access, examples of parallel machines.

Computer Science Seminar 1 May be repeated for credit; cumulative maximum 3 hours.

Special Projects or Independent Study Variable credit. S, F grading.

Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Doctoral Research, Dissertation, and/or Examination Variable credit. S, F grading.

Schedule of Studies

A BSEE or BSCS degree requires a minimum of 127 credit hours. The programs in Electrical Engineering (E E) and Computer Engineering (C E) lead to a Bachelor of Science in Electrical Engineering (BSEE). No courses listed in the chosen schedule of studies may be taken on a pass, fail basis. The student’s selection of General Education courses must reﬂect an area of coherence. The Computer Science program contains 6 additional required GER credits; these need not be chosen from the same area of coherence.

ELECTRICAL ENGINEERING

Freshman Year

First Semester

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<th>Hours</th>
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<tr>
<td>Chem 105 Principles</td>
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<td>E E 120 Innovov in Design</td>
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<tr>
<td>Engl 101 [W] Intro Wrtg (GER)</td>
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<tr>
<td>GenEd 110 or 111 [A] (GER)</td>
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<td>Math 171 Anal Geom Calc</td>
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Second Semester

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<th>Hours</th>
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<tbody>
<tr>
<td>Cpt S 251 Cpt Prog Eng’l</td>
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<tr>
<td>GenEd 110 or 111 [A] (GER)</td>
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<tr>
<td>Math 172 Anal Geom Calc</td>
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<tr>
<td>Math 220 Int Linear Alg</td>
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<td>Phys 201 Engineering</td>
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Sophomore Year

First Semester

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<th>Hours</th>
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<tr>
<td>Bio S [B] (GER)</td>
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Second Semester

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<th>Hours</th>
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<tbody>
<tr>
<td>Cpt S 250 Adv Prog</td>
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<tr>
<td>Math 172 Anal Geom Calc</td>
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<tr>
<td>Math 216 Dcrt Struc</td>
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<td>Phys 201 Engineering</td>
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COMPUTER ENGINEERING

Freshman Year

First Semester

<table>
<thead>
<tr>
<th>Hours</th>
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<tbody>
<tr>
<td>Chem 105 Principles</td>
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<tr>
<td>Cpt S 150 Prog Design</td>
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<tr>
<td>Engl 101 [W] Intro Wrtg (GER)</td>
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<tr>
<td>GenEd 110 or 111 [A] (GER)</td>
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<tr>
<td>Math 171 Anal Geom Calc</td>
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Second Semester

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<th>Hours</th>
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<tr>
<td>Cpt S 250 Adv Prog</td>
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<tr>
<td>Math 172 Anal Geom Calc</td>
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<tr>
<td>Math 216 Dcrt Struc</td>
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<tr>
<td>Phys 201 Engineering</td>
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</tbody>
</table>
School of Electrical Engineering and Computer Science

GenEd 110 or 111 [A] (GER) 3

Sophomore Year

First Semester

Bio S [B] (GER) 3
Cpt S 350 Data Str Mgt 3
E E 214 Logic Ckts 3
Math 220 Linear Alg 2
Math 273 Calculus III 2
Phys 202 Engineering Physics 4

Second Semester

E E 261 Electrical Circuits I 3
E E 262 Electrical Circuits I Lab 1
E E 314 Microprocessor Systems 3
GenEd 110 or 111 [A] (GER) 3
Math 315 Differential Equations 3
Junior Year

First Semester

Cpt S 317 Automata and Formal Language 3
Cpt S 330 Numerical Computing 4
Cpt S Option Course 3
Intercultural Studies [I] (GER) 3
E E 402 or 403 [W] Tech/Pro Writing (GER) 3
GenEd 110 or 111 [A] (GER) 3

Senior Year

First Semester

Arts and Humanities [H] or Social Science [S] (GER) 3
C E 213 Stat/Mech Mat 4
E E 424 Digital Syst Arch 4
E E 434 VLSI Design I 3
Engl 402 or 403 [W] Pro Tech Wrtg (GER) 3

Second Semester

C E 214 Intro Dynamics 2
Cpt S 422 Software E Prin 3
E E 444 VLSI Design II 1
E E 480 E E Dsn Precepts 1
Intercultural Studies [I] (GER) 3
Upper-division Capstone Elective [H], [S] (GER) 3
Approved Technical Elective 3

3The senior technical elective must be chosen from a 400-level Cpt S or E E course. The electives must be chosen with an adviser’s approval.

COMPUTER SCIENCE

Freshman Year

First Semester

Bio S 102 [B] (GER) 4
Cpt S 150 Program Design and Development 4
Engl 101 [W] Intro Wrtg (GER) 3
Math 171 Calculus I 4

Second Semester

Cpt S 250 Advanced Programming 4
Math 172 Calculus II 4
Math 216 Discrete Structures 3
Phys 201 Engineering Physics 4
Sophomore Year

First Semester

Arts and Humanities [H] (GER) 3
Cpt S 350 Data Structures 3
E E 214 Logic Circuits 3
Math 220 Linear Algebra 2
Math 273 Calculus III 2
Phys 202 Engineering Physics 4

Second Semester

E E 261 Electrical Circuits I 3
E E 262 Electrical Circuits I Lab 1
E E 314 Microprocessor Systems 3
GenEd 110 or 111 [A] (GER) 3
Math 315 Differential Equations 3
Junior Year

First Semester

Cpt S 317 Automata and Formal Language 3
Cpt S 330 Numerical Computing 4
Cpt S Option Course 3
Intercultural Studies [I] (GER) 3
Stat 443 Applied Probability 3

Second Semester

Cpt S 355 Programming Language Design 3
Cpt S 360 Systems Programming 4
Cpt S Option Course 3
Engl 402 or 403 [W] Tech/Pro Writing (GER) 3
GenEd 110 or 111 [A] (GER) 3

Senior Year

First Semester

Cpt S 422 Soft Eng Prin 3
Cpt S 450 Algorithms 3
Cpt S 452 Compilers Design 3
Cpt S 460 Operating Systems 3
Cpt S 495 Consulting 1
Cpt S Option Course 3

Second Semester

Cpt S Option Courses 6
E E 480 Design Precepts 1
Upper-division Arts and Humanities [H] and/or Social Science [S] Elective (GER) 9
Computer Science Option Areas

The computer science degree program includes an elective group of 15 credits (minimum) called an option area. Courses in the option area can reflect a technical emphasis (e.g., computer graphics or mathematics), a business emphasis (management information systems), or may be chosen for technical breadth in consultation with an academic adviser. Students are required to propose a preliminary set of option area courses at the time of certification. This proposed option sequence must be approved by the Computer Science Undergraduate Coordinator. Changes to the set of option courses must be made until the final semester, but must be approved by the Computer Science Undergraduate Coordinator.

Minors

Computer Science: The minor in computer science consists of 17-22 credits which must include Cpt S 150, 250, 350, and two 400-level Cpt S courses excluding Cpt S 405. All prerequisites for minor courses must be met. The minor program must be approved by the Computer Science Undergraduate Coordinator.

Electrical Engineering: 16 semester hours of courses in electrical engineering are necessary to earn a minor, 9 of which must be upper division. Three courses (8 semester hours) in addition to E E 214, 261, 262, 314 are required.

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 the School of Electrical Engineering and Computer Science for specific information.

Program in Engineering Management

Program Director, J. A. Ringo.

Engineering management is a graduate program designed to help technical professionals become effective managers. The program is administered by the College of Engineering and Architecture. Management training is integrated with upgraded technical skills to meet industry needs for the management of technology and the management of technical professionals. While MBA programs encompass the entire business spectrum, engineering management focuses on the management of those activities that have a high technological content.

This interdisciplinary master’s degree is offered to the Boeing Company in the Puget Sound area, at WSU Spokane, WSU Tri-Cities, and WSU Vancouver, at times convenient for the working engineer. Engineering management students are engineers who bring a

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significant amount of experience with them into the academic arena from a variety of engineering and management backgrounds.

Program Requirements

The master’s program with a nonthesis option consists of 32 credit hours including a minimum of 30 credit hours of approved graded course work and a minimum of 2 credit hours of Master’s Special Problems, which is a comprehensive take-home examination. The program of studies leads to a Master of Engineering Management degree. An overview of the engineering management curriculum can be summarized as follows:

Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Acctg 534 Survey of Acctg</td>
<td>3</td>
</tr>
<tr>
<td>C E 463 Engr Admin</td>
<td>3</td>
</tr>
<tr>
<td>E M 540 Oper Res Mgr</td>
<td>3</td>
</tr>
<tr>
<td>E M 564 Prod Mgt</td>
<td>3</td>
</tr>
<tr>
<td>E M 702 Master’s Sp Problems</td>
<td>2-4</td>
</tr>
<tr>
<td>Mgt 501 Mgt Org</td>
<td>3</td>
</tr>
<tr>
<td>Stat 430 Stat Methods</td>
<td>4</td>
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</table>

Electives

12 semester hours of course work may be taken as electives within the following framework:

Engineering/Engineering Management electives (technical electives in discipline): 6-12 hours. Management electives (courses in marketing, production, finance, law, computers or communications): 0-6 hours.

Admission Requirements

Students who apply to the Master of Engineering Management degree program will have earned a Bachelor of Science in Engineering from an accredited program with a minimum g.p.a. of 3.0. Working engineers with undergraduate degrees in other fields, particularly mathematics, physics, or other physical sciences, may be accepted for this program; requirements for additional undergraduate work in engineering (nonengineering majors) are evaluated on an individual basis. Prospective students must score above 500 on the Graduate Management Admission Test (GMAT), provide three letters of recommendation, a resume showing significant engineering experience, and a brief personal statement outlining the appropriateness of the program in light of career goals and work history.

Description of Courses

For explanation of symbols, see page 53.

Engineering Management

E M

540 Operations Research for Managers 3 Rec Math 273. Applying linear, integer, goal programming; network optimization; queuing analysis; dynamic programming; simulation; Markov analysis; and forecasting to engineering management decisions.

560 Manufacturing and Operation Design and Strategy 3 World-class concepts, tools and techniques for designing and operating manufacturing and service operations; layout, capacity planning, inventory management scheduling.

564 Project Management 3 Rec basic statistics course. Planning, organizing, scheduling and controlling major projects; human dimensions, PERT and CPM scheduling models, resource allocation, and cost controls.

570 Quality Management 3 Overview of the total field of quality, including strategic quality management programs, quality assurance, quality control, and product design.

575 Performance Management in Technical Organizations 3 Rec Mgt 501 or CSE. Management of high technology organizations; planning, measurement, and human factors in improving high technology organizations; productivity, motivation and performance systems.

580 Quality Control and Reliability Design 3 Quality improvement analysis for process and product quality; statistical process control; capability studies; acceptance sampling concepts; reliability models for predictions and testing.

584 Organizational Behavior 3 Same as Mgt 584.

585 Quality Engineering Using Experimental Design 3 Design of quality into products and processes using design of experiments including robust/parameter design and tolerance design techniques.

595 Advanced Topics in Engineering Management I V 1-3 May be repeated for credit; cumulative maximum in E M 595 and 596, 9 hours. A wide range of current high-interest engineering management topics.

596 Advanced Topics in Engineering Management II 3 May be repeated for credit; cumulative maximum in E M 595 and 596 is 9 hours. A wide range of current high-interest engineering management topics.

600 Special Projects or Independent Study Variable credit.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Department of English


The major in English provides students with a broad knowledge of literature, while at the same time emphasizing the writing and analytical skills that are vital to success in the university, in professional and graduate school, and in the workplace. The program of study is flexible and allows English majors both to pursue electives, minors, and second majors in other departments and to shape their academic careers in line with professional and personal interests. The curriculum is designed for (1) students who desire a broad education emphasizing language and literature, (2) students who wish to teach or to prepare for graduate studies in English, and (3) students who intend to use the background and skills learned in the major as a foundation for careers in law or business. The curriculum provides majors the opportunity to complete their studies with a small discussion seminar in their area of emphasis.

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 Elementary and Secondary 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 in American Studies leading to the degrees of Bachelor of Arts, Master of Arts, and Doctor of Philosophy in American Studies. Students interested in the Bachelor of Arts in this interdisciplinary field should consult the requirements listed under Program in American Studies. Students interested in interdisciplinary degrees in areas such as linguistics and classical studies should consult the requirements within the Program in General Studies.

For explanation of Courses

For explanation of symbols, see page 53.

English

Engl

100 Basic Writing 3 Prereq permission of director of composition. Designed to improve the student’s writing ability to a level appropriate for entrance into Engl 101. S, F grading.

101 [W] Introductory Writing 3 Prereq Engl 105 or placement exam. Academic writing, critical thinking, reading, library skills.

102 Writing Tutorial V I (0-3) to 3 (0-9). May be repeated for credit; cumulative maximum 5 hours. Prerequisite permission of Writing Lab Director. Assigned tutorials in the WSU Writing Lab for students with an identified need.

103 Basic Skills in English ESL 3 Prereq placement exam. English grammar, composition, and pronunciation for non-native speakers of English.

104 Intermediate Grammar and Basic Skills ESL 3 Prereq placement exam. English syntax; development of basic reading, abstract-
ing, and writing skills for non-native speakers of English.

105 Composition for ESL Students 3 Prereq Engl 104 or placement exam. Special grammatical and rhetorical problems for non-native speakers of English.

106 Conversation ESL 1 (0-2) May be repeated for credit; cumulative maximum 2 hours. Oral communication designed specifically to fit the needs of international students.

108 [H] Reading Literature 3 Reading for pleasure, appreciation, and enlightenment: short stories, novels, plays, poetry.

198 [W] English Composition Honors 3

199 [H] English Composition and Literature Honors 3

200 [W] Expository Writing 1 or 2 Prereq sophomore standing. For transfer students who need to make up writing credits.

304 [H] Women Writers 3 Women’s artistic and intellectual contributions to prose, fiction, drama, and poetry.

311 [G] Asian American Literature 3 Same as CAC 313.

312 [M] Topics in Asian American Literature 3 Same as CAC 314.

315 Topics in Canadian Studies 1 Same as Hist 315.

321 [G] Introduction to African American Literature 3 Same as CAC 331.

322 [M] Topics in African American Literature 3 May be repeated for credit; cumulative maximum 6 hours. Trends and major writers.

323 Approaches to the Teaching of English 3 English literature and composition in secondary schools.

323 [M] Topics in Poetry 3 May be repeated for credit; cumulative maximum 6 hours. Forms, history, development of poetry; the epic, the lyric, verse satire, dramatic monologue, modernist verse.

333 [M] Topics in Fiction 3 May be repeated for credit; cumulative maximum 6 hours. Forms, history, development of narrative fiction: the tale, short story, Continental and experimental novel.

334 [M] Topics in Drama 3 May be repeated for credit; cumulative maximum 6 hours. Forms, history, development of drama: comedy, tragedy, Medieval religious drama, theatre of the absurd.

335 [H] The Bible as Literature 3 Historical and literary approach to texts of the Jewish and Christian scriptures; emphasis on history, interpretation, and influence.

338 [M] Topics: Major Trends and Figures 3 May be repeated for credit; cumulative maximum 6 hours. Literary trends or major writers.

339 Topics in Film as Literature 3 May be repeated for credit; cumulative maximum 6 hours. Analytical study of film as major literary genre.

341 [G] [M] Native American Literature 3 Same as CAC 373.

345 [G] [M] Introduction to Chicano/Chicana Literature 3 Same as CAC 353.

346 Vanguard Poetics in Chicano/Latino Writers 3 Same as CAC 354.

351 Creative Writing: Prose 3 Prereq Engl 101. Writing the short story: practice and theory.

352 Creative Writing: Poetry 3 Prereq Engl 101. Workshop approach to poetry writing.

354 History of the English Language 3 Prereq one year for L. Language related to the origin, history, and literature of its speakers.

366 [H] The English Novel to 1900 3 Classic English novels in cultural perspective by such authors as Defoe, Fielding, Austen, the Brontes, Thackeray, Dickens, George Eliot, Hardy.

368 [H] The American Novel to 1900 3 Classic American novels in cultural perspective by such authors as Cooper, Hawthorne, Melville, Stowe, Twain, James, Jewett, Chopin, Crane, Dreiser.

380 American Literature to 1855 3 Prereq Engl 209, 210, or substitutions approved by adviser. American writing from Settlement and Revolution through the times of Irving, Poe, Emerson, Hawthorne, Fuller, Thoreau, and Melville.

381 American Literature 1855-1916 3 Prereq Engl 209, 210, or substitutions approved by adviser. American writing in an era of expansion, social and literary ferment: Whitman, Dickinson, Frost, the literature of realism and naturalism.

382 Modern American Literature 3 Prereq Engl 209, 210, or substitutions approved by adviser. Major literary movements and alternate voices in American poetry, fiction, and drama, from WW I to the present.

383 Chaucer and Medieval Literature 3 Prereq Engl 209, 210, or substitutions approved by adviser. Chaucer’s Canterbury Tales in the context of Medieval culture and literary tradition.

384 English Literature of the 16th Century 3 Prereq Engl 209, 210, or substitutions approved by adviser. Renaissance literature: emphasis on problems of interpretation, religious controversy, and civil war.

385 English Literature of the Restoration and 18th Century 3 Prereq Engl 209, 210, or substitutions approved by adviser. Neo-classical literature from 1660 to the Romantic era: Dryden, Swift, Pope, Johnson, Gray, Goldsmith, Burns, and others during the scientific revolution, religious controversy, and civil war.

386 Victorian Literature 3 Prereq Engl 209, 210, or substitutions approved by adviser. Major works by Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, and others during Romantic literary revolt, especially 1798-1832.

387 Modern British Literature 3 Prereq Engl 209, 210, or substitutions approved by adviser. Fiction, drama, poetry in age of conflict, artistic experimentation: Joyce, Woolf, Lawrence, Murdock, Shaw, Pinter, Yeats, Eliot, Auden, and others.

391 Topics—Study Abroad 3

392 Topics—Study Abroad 3

394 Topics—Study Abroad 3

402 [W] [M] Technical and Professional Writing 3 Prereq Engl 101. Research writing: defining, proposing, reporting progress; presenting a final product; other professional writing needs. Credit not granted for both Engl 402 and 403.


405 Advanced Professional Writing and Editing 3 Prereq Engl 402 or by interview. Professional writing and editing; textual alterations, design, and layout.

415 [H] Traditions of Comedy and Tragedy 3 Study of tragedy and comedy in the Age of Shakespeare.
419 (370) [H] The Twentieth Century Novel 3
The novel in English in the literary and cultural context of the modern age.

443 Problems in English Linguistics: Syntax and Phonology 3
May be repeated for credit; cumulative maximum 6 hours. Technical introductions to generative analysis of sentences and to sound systems of human languages. Credit not granted for both Engl 443 and 543.

451 Advanced Creative Writing: Prose 3
May be repeated for credit; cumulative maximum 6 hours. Prereq Engl 351 or consent of instructor. Writing the novel. (g)

452 Advanced Creative Writing: Poetry 3
May be repeated for credit; cumulative maximum 6 hours. Prereq Engl 352 or consent of instructor. Workshop approach to poetry writing for the advanced student. (g)

458 Topics in Sociolinguistics and Psycholinguistics
3 May be repeated for credit; cumulative maximum 6 hours. Relationship of language to social and psychological structures. (g)

470 American Culture Series 3
May be repeated for credit; cumulative maximum 6 hours. The West in American literature; American studies topics.

492 [M] Advanced Topics in Literature, Criticism, and Theory 3
Prereq senior in English. Not open to graduate students. Seminar with term paper project; focused studies in literature and critical theory.

493 [M] Advanced Topics in English Literature 3
Prereq senior in English. Not open to graduate students. Seminar with term paper project; focused studies in English literature.

494 [M] Advanced Topics in American Literature 3
Prereq senior in English. Not open to graduate students. Seminar with term paper project; focused studies in American literature.

495 [M] Advanced Topics in English for Teachers 3
Prereq senior in English/teaching option. Not open to graduate students. Seminar with term paper project; literature, composition theory, pedagogy.

496 Topics in American Studies 3
May be repeated for credit; cumulative maximum 9 hours. American Studies Summer Institute. Credit not granted for both Engl 496 and 596. (SS)

499 Internship V 1-15
May be repeated for credit; cumulative maximum 15 hours. Prereq junior in Engl. Off-campus cooperative education learning experience in business or industry in English-related jobs. S, F grading.

499 Special Problems V 1-4
May be repeated for credit. S, F grading.

501 Seminar in the Teaching of Writing: Methodology of Composition 3
Development of a workable definition of the methods of composing through a review of relevant research and problem-solving exercises.

502 Seminar in the Teaching of Writing: Contemporary Theories 3
Contemporary theories of composition and their application to the classroom.

503 Old English: Anglo-Saxon 3
Old English language and its literature with emphasis on short lyrics and prose.

504 Old English: Beowulf 3
Prereq Engl 503. Advanced study of Old English language and literature with focus on the epic Beowulf.

506 Seminar in 16th Century English Literature
3 May be repeated for credit; cumulative maximum 6 hours.

507 Shakespeare 3
Plays, poems, criticism, and background materials.

508 Seminar in Assessment of Writing 3
Problems involved in the diagnosis and assessment of student writing.

509 Seminar in Classical Rhetoric and its Influences 3
Study of Greek and Roman rhetorical theories and their influences.

510 Backgrounds of American Literature 3
Studies of American writing in cultural contexts.

511 Seminar in 17th and 18th Century American Literature 3

512 Introduction to Graduate Study 3

513 Seminar in American Studies 3
May be repeated for credit; cumulative maximum 6 hours.

514 Seminar in 20th Century American Literature 3
May be repeated for credit; cumulative maximum 6 hours.

521 Seminar in British Romantic Literature 3
May be repeated for credit; cumulative maximum 6 hours.

522 Seminar in Victorian Literature 3
May be repeated for credit; cumulative maximum 6 hours.

525 Seminar in English Literature of the 17th Century 3
May be repeated for credit; cumulative maximum 6 hours.

527 Seminar in English Literature of the Restoration and 18th Century 3
May be repeated for credit; cumulative maximum 6 hours.

529 Seminar in 19th Century American Literature 3
May be repeated for credit; cumulative maximum 6 hours.

531 Administering a Writing Lab 3
Prereq Engl 501 or 502 or consent of writing lab director. Combining theory and practice in writing lab supervision and management. Interns will work under direct faculty supervision.

532 Teaching Writing to Nontraditional Students 3
Prereq Engl 501 or 502 or consent of writing lab director. Theory and practice of the teaching of basic writers.

534 (505) Theories and Methods of the Teaching of Technical and Professional Writing 3
Historical and theoretical bases for production of scientific discourse; training in its practical applications.

537 Seminar in English Literature 3
May be repeated for credit; cumulative maximum 12 hours. Major topics and figures.

541 Seminar in TESOL and Linguistics 3
May be repeated for credit; cumulative maximum 6 hours. Cooperative course taught by UI (Eng 510), open to WSU students.

543 Problems in English Linguistics: Syntax and Phonology 3
May be repeated for credit; cumulative maximum 6 hours. Graduate-level counterpart of Engl 443; additional requirements. Credit not granted for both Engl 443 and 543. Cooperative course taught jointly by WSU and UI (Eng 543).

544 TESOL: Theory and Methods 3
May be repeated for credit; cumulative maximum 6 hours. Theories and critical theory. S, F grading.

547 Literary Criticism 3
Theories of literature from Plato and Aristotle to the present.

548 Seminar in Literary Theory 3
May be repeated for credit; cumulative maximum 6 hours. Problems in the theory and practice of literary criticism.

549 Seminar in 20th Century British Literature 3
May be repeated for credit; cumulative maximum 6 hours.

550 Seminar in Poetry or Non-fiction Prose 3
May be repeated for credit; cumulative maximum 6 hours. Historical and generic studies in poetry or non-fiction prose.

554 History of the English Language 3

555 Seminar in Middle English Literature 3
May be repeated for credit; cumulative maximum 6 hours.

560 Seminar in Drama 3
May be repeated for credit; cumulative maximum 6 hours. Historical and generic studies in dramatic literature.

567 Seminar in Prose Fiction 3
May be repeated for credit; cumulative maximum 6 hours. Historical and generic studies of prose fiction.

573 Seminar in American Literature 3
May be repeated for credit; cumulative maximum 12 hours. Major topics and figures.

580 Seminar in Medieval Literature 3
May be repeated for credit; cumulative maximum 6 hours. The literature of Western Europe from 450 to 1500.

591 The Teaching of Literature 3
Prereq two semesters full-time enrollment in program or consent of adviser. The theory and practice of designing and teaching courses in literature.

592 Language Arts: Methods of Composition 3
Methods of composition and relevant research in language arts. Cooperative course taught jointly by WSU and UI (ED 558).

593 Language Arts: Theories of Composition 3
By interview only. Contemporary theories of composition and their application to the language arts classroom. Cooperative course taught jointly by WSU and UI (ED 558).

595 TESOL 3
May be repeated for credit; cumulative maximum 6 hours. Language, English pedagogy, or literature of special or current interest; teaching of writing, current literary theories.

596 Topics in American Studies 3
May be repeated for credit; cumulative maximum 9 hours. Graduate-level counterpart of Engl 496; additional requirements. Credit not granted for both Engl 496 and 596. (SS)

598 Teaching Apprenticeship 1
May be repeated for credit. S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Schedule of Studies
As part of their graduation requirements in the College of Liberal Arts, all majors are required to take either Hum 101 or 103 and one of the following: Hum 202, 303, 304.

Five programs are offered for the English ma-
Requirements in this option include a core of 30 credit hours in English plus 6 hours each in philosophy, history, economics and/or business, and political science (among these, Acctg 230, Principles of Accounting; Phil 201, Elementary Logic; Phil 260, Ethics are required). For the junior and senior years, a wide variety of courses are specifically suggested by advisers to complete the broad-based liberal arts education recommended by law schools. The English core requirements are as follows:

A. Engl 209, 210, 302 9
B. Engl 305 or 306; 366 or 368 6
C. One course from each set:
   1) Engl 380, 381, 382
   2) Engl 383, 384, 385, 386
   3) Engl 387, 388, 389
D. One additional course from Engl 308, or the genre, period, or minority/women writers groups
E. One course from the grammar/linguistics group
F. English 402, 492, 493, 494 strongly recommended

Option V: English/Business

Requirements in this option include a core of 30 credit hours in English; to complete the liberal arts foundation for the major, 6 hours each in history and philosophy (at least one from Phil 102, 201, or 260) and 3 hours in political science must be included. To this foundation, students add 21 hours in business core courses and a minimum of 6 hours of computer science related courses to create a program requisite for beginning a career in business. The English core requirements are as follows:

A. Engl 209, 210, 302 9
B. Engl 305 or 306; 366 or 368 6
C. One course from each set:
   1) Engl 380, 381, 382
   2) Engl 383, 384, 385, 386
   3) Engl 387, 388, 389
D. One additional course from Engl 308, or the genre, period, or minority/women writers groups
E. English 402
F. English 492, 493, 494 and courses from the grammar/linguistics group strongly recommended

Business Core Courses: Acctg 230, B Law 210, Econ 101 or 201; 102, 320, Mgt 301, Mktg 360.

Computer Science Core Courses: One from Math 107, 201, 202 plus Cpt S 105 or 150.

English Minor

The student must complete a minimum of 16 hours in English courses (excluding 101, 108, 198, and 199), half of which must be upper-division. The 16 hours must also include one composition course beyond Engl 101. Engl 209 and 210 are strongly recommended.

Professional Writing Minor

The student must complete 16 hours in the following writing or writing-related courses: Engl 255, 300; Engl 256 or 354 or 458; 301 or 302; 402/403; 405 or 498.

Canadian Studies Minor

The minor in Canadian studies is offered jointly by WSU and the University of Idaho. A student must complete a minimum of 21 hours including Fren 101, 102 plus 13-21 hours from the following list: Anth 428; Com 315, Engl 315, Hist 312, 314, 406, 424, 425, 426, Pol S 380. Students interested in pursuing this minor should contact the department.

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 five 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

Associate Professor and Department Chair, G. E. Long; Professors, A. A. Berryman, J. J. Brown, E. P. Catts; Associate Professors, G. L. Piper, L. K. Tanigoshi, W. J. Turner.

Insects and other related arthropods are the dominant consumers in all terrestrial ecosystems. There are far more kinds of insects than all other creatures combined. They compete at all levels with humans in the production, processing and use of food and fiber resources. They are a major health threat to most of the world’s people. In-depth knowledge in basic areas of insect identification, morphology, physiology, behavior and ecology is prerequisite to developing and applying control measures against our arthropod competitors. Ecological and legal restrictions on pesticide usage require people knowledgeable in the safe use of pesticides and in the effect of such use on the environment.

The entomology curriculum provides the opportunity to study the basic and applied aspects of entomology. Courses are designed for majors and nonmajors, providing needed training for students in agriculture, education, veterinary medicine, microbiology, public health, environmental sciences, and natural sciences.

The curriculum prepares students for graduate study in entomology or for employment in institutional or private pest control oriented areas. An interdisciplinary curriculum in integrated pest management (IPM) is available to students with interests that span entomology and pest management.

Facilities are available for graduate study in the major areas of entomology; behavior, biological control and sustainable pest management, ecology, forest entomology, insect-plant relationships, medical/veterinary entomology, morphology, physiology, systematics, and environmental toxicology. Departmental faculty at outlying research centers also serve as advisers for graduate student research and sometimes teach over WHETS. Extensive insect collections, insectary, quarantine, computer and video facilities support teaching, extension, and research. The department is committed to developing...
biological control approaches to pest management. This commitment is reflected in the broad involvement of the faculty and evolving curricula in biocontrol.

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 (Entomology).

Description of Courses

For explanation of symbols, see page 53.

Entomology

101 [B] Insects and People: A Perspective 3 The world's most abundant animals and their extensive effects on people yesterday and today.


348 Forest Entomology 2 (1-3) Same as NATRS 348.

361 Beekeeping 3 Honey bee and beekeeping information. Including behavior, genetics, diseases, equipment, pollination, urban beekeeping and colony management.

362 Beekeeping Lab 1 (0-3) Prereq Entom 361 or c/l. Practical beekeeping, including honey extraction, equipment construction, colony manipulations, queen rearing, instrumental insemination and package installation.

429 (328) Animal Population Dynamics 3 Same as NATRS 429.

439 Insect Taxonomy 4 (2-6) Prereq Entom 340 or 343. Identification of insect orders and families; basic principles of taxonomic entomology; collection and preparation of adult insects for study. Insect collection required. Credit not granted for both Entom 439 and 539.


441 Insect-Plant Interactions: Community Dynamics 1 (0-3) Prereq Entom 343, Math 140. Causes and processes of temporal and spatial changes in terrestrial arthropod communities.

442 Physiological Ecology of Insects 1 (0-3) Prereq Entom 343, Math 140. Effects of and reactions to physical factors in the environment by arthropods.

443 Insect Ecology 3 (2-3) Prereq Bio S 104, Entom 343, Math 140. Interrelationships of insects with the physical and biotic environment; population dynamics and community relations. (a/y) Cooperative course taught by WSU, open to UI students (Ent 443).

444 Insect Morphology 4 (2-6) Prereq Entom 340 or 343. Comparative external morphology, internal morphology, and internal anatomy of insects. (a/y) Cooperative course taught by WSU, open to UI students (Ent 444).


446 Insect-Plant Interactions: Plant Resistance to Arthropods 1 Prereq Entom 343. Principles and methods of screening and developing crop cultivars resistant to arthropods. Cooperative course taught by UI (Ent 446), open to WSU students.

447 Introduction to Biological Control 3 (2-3) Principles and methods of controlling insect pests and weeds by biological means. Credit not granted for both Entom 447 and 547. Cooperative course taught by UI (Ent 447), open to WSU students.

448 Medical Entomology 4 (3-3) Prereq Bio S 103, 104. Insects and related arthropods affecting human and other vertebrate animal health; means of control. (a/y) Cooperative course taught by WSU, open to UI students (Ent 448).

450 Principles of Applied Entomology 4 (3-3) Prereq Entom 340 or 343. Utilization of biological, physical, cultural and chemical factors in managing insect pest populations.

460 Insects for Teaching 3 (2-3) Prereq general biology course. The use of insects in teaching scientific principles in the life sciences.

462 Systems in Integrated Crop Management 3 (2-3) Prereq one semester calculus. Evaluation and use of computer models to make decisions for managing pests, diseases, and crop productivity. Credit not granted for both Entom 462 and 562.

472 Aquatic Entomology 1 Identification and biology of insects associated with aquatic and subaqueous environments. Cooperative course taught by UI (Ent 472), open to WSU students.

474 Aquatic Entomology Lab 2 (0-6) Prereq c/l in Entom 472. Field trips required. Cooperative course taught by UI (Ent 474), open to WSU students.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

511 Principles of Systematic Biology 3 (2-3) Same as Zool 511.

539 Insect Taxonomy 4 (2-6) Graduate-level counterpart of Entom 439; additional requirements. Credit not granted for both Entom 439 and 539.

540 Taxonomy of Immature Insects 4 (2-6) Graduate-level counterpart of Entom 440; additional requirements. Credit not granted for both Entom 440 and 540.

541 Advanced Insect Ecology 3 (2-3) Prereq Entom 343; general ecology course. Population and community dynamics, theory and application in natural and artificial systems. Field trips required. Cooperative course taught by UI (Ent 541), open to WSU students.

542 Insect Behavior 4 (3-3) Prereq 10 hours Entom. Principles of behavior of insects; orientation to environmental conditions. (a/y) Cooperative course taught by WSU, open to UI students (Ent 542).

545 Toxicology of Pesticides 3 Prereq Chem 240, Entom 340 or 343, or Zool 322. General principles of pesticide toxicology; classification, mode of action and metabolism of each group of farm pesticide chemicals. (a/y) Cooperative course taught by WSU, open to UI students (Ent 545/VS 545B).

547 Introduction to Biological Control 3 (2-3) Graduate-level counterpart of Entom 447; additional requirements. Credit not granted for both Entom 447 and 547.

550 Insect Physiology 4 (3-3) Prereq Chem 240, Zool 352; Entom 340 or 343 or Zool 322. General principles of insect physiology; the mechanisms of vital processes in insects; organ, cellular, subcellular, chemical and physical levels. (a/y) Cooperative course taught by WSU, open to UI students (Ent 550).

551 Applied Biological Control: Weeds 1 Prereq ecology; principles of biological control. Principles and methodologies in biological control of weeds. Cooperative course taught jointly by WSU and UI (Ent 551).


553 Applied Biological Control: Microbial Control 1 Prereq microbiology, plant pathology, or entomology; principles of biochemistry. Principles and methodologies of microbial control of insect pests, weeds, and plant pathogens in agriculture and forestry. Cooperative course taught by UI (Ent 553), open to WSU students.

560 Photography for Entomologists 2 (1-3) Prereq Entom 343. By interview only. Techniques of scientific photography: macrophotography, cinematography, and microphotography; use of specialized films and methods. (a/y) Cooperative course taught by WSU, open to UI students (Ent 560).

561 Quantitative Methods in Entomological Research 4 (3-3) Prereq Cpt S 201; Math 171; 20 hours biological sciences. Practical methods for the acquisition, storage, analysis, and presentation of entomological data. (a/y) Cooperative course taught by WSU, open to UI students (Ent 561).

562 Systems in Integrated Crop Management 3 (2-3) Graduate-level counterpart of Entom 462; additional requirements. Credit not granted for both Entom 462 and 562.

580 Urban Entomology 3 (2-3) Graduate-level counterpart of Entom 480; additional requirements. Credit not granted for both Entom 480 and 580.

583 (543) Predator-Prey Dynamics 1 Prereq calculus, general ecology, statistics. Dynamic consequences of interactions between predators and their prey at the population, community and ecosystem level.

590 Special Topics in Entomology V 1-4 Graduate-level counterpart of Entom 490; additional requirements. Credit not granted for both Entom 490 and 590.

593 Seminar 1 May be repeated for credit. Prereq 20 hours biology. Reporting and discussing problems and research in entomology.

595 Noncropland Weed Biological Control Internship V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq graduate standing, by interview only. Supervised individual practicum in noncropland weed biological control.
cal control; professionally related field interaction. Cooperative course taught by WSU, open to UI students (Ent 595). S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Schedule of Studies

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

A major in entomology requires Entom 343 and 439 or 440, plus a minimum of 10 hours of Entom electives and the following: Ag Ec 201 or Econ 102; Bio S 103, 104, 372; Bot 120, 320, or 332; Chem 101, 102; or 105, 106; 240 or 340, GenCB 301, Math 140 or 205, Zool 352, 353 or Bot 320; one course in physical sciences.

Students planning to become pest control consultants or pest management specialists should include the following courses: Ag Ec 201, CropS 305; IPM 201, 452, 462; PI P 429; Soils 201; Stat 310 or 412 and crops courses in CropS and Hort.

Entomology Minor

A minimum of 16 hours is required for the minor and must include Entom 343, 439, or 440 and 9 hours from: Entom 348, 443, 444, 448, 450, 462; IPM 201, 452, 462.

Preparation for Graduate Study

As preparation for work toward an advanced degree in entomology, a student should have completed an undergraduate major in some field of biological science, chemistry, forestry or agriculture. Background work should include courses in general biology, organic chemistry, physics, genetics, invertebrate biology, ecology, botany, calculus, entomology, insect taxonomy and zoology.

INTEGRATED PEST MANAGEMENT

The integrated pest management major is a multidisciplinary course of study sponsored by the Departments of Crop and Soils Sciences, Entomology, Horticulture and Landscape Architecture, and Plant Pathology. Students acquire a holistic perspective and ecological understanding of the philosophy, principles, and practices of pest management and are trained to become professional crop protection specialists. Students in this major have the option of obtaining a general background in pest management or specializing in one or both of the areas of entomology and weed science within pest management. All students also participate in a summer internship program whereby they have the opportunity to gain work experience through supervised off-campus employment with pest management individuals or organizations.

All students are required to complete a minimum of 120 semester hours of course work, including the internship, to earn the Bachelor of Science degree in Agriculture. At least 40 of the total hours required must be in upper-division courses.

Description of Courses

For explanation of symbols, see page 53.

Integrated Pest Management

IPM 201 Introduction to Pest Management in a Quality Environment 2 Pest management to maximize plant protection and safeguard the quality of the environment.

399 Pest Management Internship V 1-4 Supervised individual practicum with IPM-oriented businesses, organizations, and governmental agencies; professionally related field interaction. S, F grading.

452 Pesticides and the Environment 2 Rec 12 hours Bio S. Immediate and prolonged effects of pesticides on man and other animals; legal and moral repercussions of pesticide use. (g)

462 [M] Systems of Integrated Pest Management 3 (2-3) Rec Bio S 372; IPM 201. Utilization of the systems approach in agricultural pest management; design, implementation, and analysis of IPM programs for selected crops. (a/y) (g)

Freshman Year

First Semester

Arts and Humanities Elective [H] (GER) 3
Bio S 103 Intro Biol 4
Chem 101 or 105 4
Engl 101 [W] Intro Wrtg (GER) 3
GenEd 110 or 111 [A] (GER) 3
IPM 201 Intro Pest Mgmt 2

Second Semester

Bot 120 or Bio S 104 4
Chem 102 or 106 4
GenEd 110 or 111 [A] (GER) 3
Math 140 4
Psych 105 Introduction 3

Sophomore Year

First Semester

Ag Ec 201 Econ Agric 3
AgHE 205 Human Rel 3
CropS 201 or Hort 201 4
ES/ RP 174 Intro Hum Life 4
ES/ RP 174 Intro Meteor 3

Second Semester

Arts and Humanities Elective [H] (GER) 3
Chem 240 Elem Org Chem 4
Intercultural Studies Elective [I] (GER) 3
Soils 201 3
Elective/Option Course 3

Junior Year

First Semester

Bot 320 Intro Plant Phys 3
CropS 305 Weeds 3
PI P 429 Gen Plant Path 3
Stat 212 Intro Stat 4
Elective/Option Course 3

Second Semester

Bio S 372 Gen Ecol 4
Bot 332 Intro Sys Bot 4
Entom 340 or 343 3
IPM 452 Pesticides Env 2
Elective/Option Course 3

Summer Session

IPM 399 3

Senior Year

First Semester

Elective/Option Courses 15

Second Semester

IPM 462 Sys Pest Mgmt 3
Elective/Option Courses 12

Entomology Option. Students must take the above listed courses plus the following: Entom 343 instead of 340; 439; plus either 348, 443, 448, 450.

Weed Science Option. Students must take the above courses plus the following: CropS 302, 303, 445, and Soils 301.

Program in Environmental Science and Regional Planning

Professor and Program Chair, G. W. Hinman; Professors, W. W. Budd, G. L. Young; Associate Professors, F. A. Ford, E. H. Franz, W. G. Hendrix; Program Coordinator at WSU Tri-Cities and Adjunct Associate Professor, G. Schreckhise.

The program coordinates two closely related fields of study: environmental science and regional planning. Environmental science is concerned with the study of natural and modified environments and their interactions with biological (including human) systems with an emphasis on the comprehensive understanding of the environmental/ecological context, assessment of beneficial and disruptive impacts, and methodologies 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 environmental planning with comprehensive studies of natural and human systems. Students of both fields acquire the holistic and interdisciplinary perspectives and ecological understanding necessary to prepare them for a variety of roles in the study, planning, and management of resources and the environment.

The program offers courses of study leading to the degrees of Bachelor of Science in Environmental Science, Master of Science in Environmental Science, Master of Regional Planning, and Doctor of Philosophy in Environmental and Natural Resource Sciences. The master’s and bachelor’s degrees in environmental science is offered at WSU Tri-Cities.

Because of the diversity of these fields, the course of study for each student is flexibly designed in a unique, multi-disciplinary interdisciplinary context. Environmental science majors
can specialize in agricultural ecology, biological science, human or cultural ecology, environmental education, environmental quality control, hazardous waste management, natural resource management, systems, physical science, or resource management. Regional planning majors can specialize in a variety of areas including land-use planning, ecological planning, geographic assessment and planning, and environmental policy and planning. Environmental science majors specializing in environmental education may work toward senior high school teaching certificates with endorsements for the major and minors in physical and biological science.

The program is closely coordinated with the Environmental Research Center, the Office of Applied Energy Studies, and other university research units. It is administratively supported by the Colleges of Agriculture and Home Economics, Business and Economics, Engineering and Architecture, Sciences and Liberal Arts. The participating faculty resource list for the program includes some 65 members representing many disciplines.

Description of Courses

For explanation of symbols, see page 53.

Environmental Science and Regional Planning

ES/RP


150 [Q] Natural Science in the Environment 3 (2-3) Introduction to scientific principles and problem solving with applications to studies of the environment.

174 Introduction to Meteorology and the Atmospheric Environment 3 Same as C E 174.

210 Microcomputer Models of Environmental Systems 3 Prereq Math 140 or 171; Rec ES/RP 101. Introduction to using microcomputers to model environmental systems.

301 Forest and Range Environments 3 Same as NATRS 301.

303 Conservation of Renewable Resources 3 Same as NATRS 303.

311 Natural Resource Economics 3 Same as Ag Ec 311.

328 Animal Population Dynamics 3 Same as NATRS 328.


370 [H] Environmental Ethics 1 Same as Phil 370.

403 Environmental Geology 3 Same as Geol 403.(g)

404 [M] The Ecosystem 3 Prereq Chem 240 or 340; Phys 102 or 202; Rec Bio S 372. Ecosystem organization and processes; theory and applications to contemporary environmental problems.

406 Introduction to Radiological Science 2 Prereq one course each in biology, calculus, chemistry, and physics. Fundamentals of atomic physics; interactions of radiation with matter; radiation dosimetry and biology, radiobiology, and radiological health protection.

409 Applied Radiological Physics 3 (2-3) Prereq calculus course; Phys course; Rec ES/RP 406. Production, interactions and measurement of radiation, with application to radiological health protection concerns. Credit not granted for both ES/RP 409 and 509.

410 Applied Radiation Dosimetry 3 (2-3) Prereq ES/RP 409 or course in radiological physics. Determination of exposure and doses from external and internal sources of radiation, with applications to environmental, occupational and medical protection. Credit not granted for both ES/RP 410 and 510.

411 Limnology 3 Same as Zool 411.(g)

412 Natural Resource Policy and Administration 3 Same as NATRS 412.(g)

414 Introduction to Environmental Biophysics 2 Same as Soils 414.(g)

415 Environmental Biophysics Lab 1 (0-3) Same as Soils 415.(g)

416 Radiation Biology 4 (3-3) Prereq introductory radiological physics, or one course each in biology and radiological physics; Rec ES/RP 406. Effects of ionizing radiation at the molecular, cellular, organ and organism level. Credit not granted for both ES/RP 416 and 516.

418 Human Issues in International Development 3 Same as Anth 418.

424 Environmental Health Assessment 2 Prereq one course each in biology, calculus, chemistry, general ecology and physics; Rec ES/RP 406. Environmental transport, fate and effects of radioactive and hazardous materials. Credit not granted for both ES/RP 424 and 524.

425 Economic Analysis of Public Projects and Policies 3 Same as Ag Ec 425.

427 Environmental Chemistry 2 Same as Chem 427. (a/yy/g)

428 Introduction to Pollution Prevention 3 Environmental, technical and legal aspects of pollution prevention. Cooperative course taught jointly by WSU and UI (Envs 428). (g)

444 Environmental Assessment 3 (2-3) Rec Bio S 372. 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 ES/RP 444 and 544. Cooperative course taught by WSU, open to UI students (Geog 444).

445 Hazardous Waste Management 3 Environmental, technical, and political aspects of hazardous waste management; evaluative methods, risk assessment, and current management requirements. Credit not granted for both ES/RP 445 and 545. (a/yy/g)

450 [M] Principles and Practice of Planning 3 Prereq ES/RP 101, senior standing. History, theory, methods, and processes in regional planning; contemporary issues and professional practice.(g)


452 Environmental Microbiology 3 Same as Micro 452. Credit not granted for both ES/RP 452 and 552.

466 Environmental Psychology 3 Same as Psych 466.

470 Advanced Remote Sensing 3 (2-3) Same as Soils 474.

471 Meteorology 3 Same as C E 471. Credit not granted for both ES/RP 471 and 571.

472 Economic Development and Underdevelopment 3 Same as Econ 472.(g)

480 Advanced Resource Economics 3 Same as AgEc 480.(g)

481 Economics of Environmental Issues 3 Same as Econ 481.(g)

486 Introduction to Geographic Information Systems 3 (1-6) Rec DOS knowledge. Geographic Information Systems technology. Credit not granted for both ES/RP 486 and 586.

490 Special Topics 1 May be repeated for credit; cumulative maximum 6 hours.(g)

491 Senior Seminar 1 Prereq senior in ES/RP.

492 Special Topics 1 May be repeated for credit; cumulative maximum 3 hours. (g)

493 Special Topics 1 May be repeated for credit; cumulative maximum 3 hours.(g)

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.

496 Cooperative Education Internship V 2-12 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. S, F grading.

503 Principles of Public Land Management Planning 3 Same as NATRS 503.

504 Ecosystem Management 3 Analysis of ecosystem processes; dual emphasis on ecological principles and development of methods and concepts to evaluate policies for management.

505 Principles of Molecular Toxicology 3 Same as P/T 305.

509 Applied Radiological Physics 3 (2-3) Graduate-level counterpart of ES/RP 409; additional requirements. Credits not granted for both ES/RP 409 and 509.

510 Applied Radiation Dosimetry 3 (2-3) Graduate-level counterpart of ES/RP 410; additional requirements. Credit not granted for both 410 and 510.

511 Legal Process 3 Rec ES/RP 444. Legal process in general and that of the judiciary in natural resources management. Cooperative course taught jointly by WSU and UI (Law 511).

512 System Dynamics Models of Environmental Systems 3 Prereq Math 140 or 171; graduate standing. Analysis of environmental system dynamics; development and uses of simulation models using the Stella software on Macintosh.

516 Radiation Biology 4 (3-3) Graduate-level counterpart of ES/RP 416; additional requirements. Credit not granted for both ES/RP 416 and 516.

519 (517) International Development and Human Resources 3 Same as Anth 519.

524 Environmental Health Assessment 2 Graduate-level counterpart of ES/RP 424; additional requirements. Credit not granted for both ES/RP 424 and 524.

526 Educational Resources for Community Problem Solving 3 Same as Ed Ad 526.
532 Environmental Toxicology 3 Prereq ES/RP 505. Overview of the field of environmental toxicology; interactions of xenobiotics with natural systems.

535 Foundations in Environmental Science and Planning 2 Prereq ES/RP graduate student. Theoretical traditions in environmental science and planning.

536 Modeling and Simulation of Ecological Systems 3 Same as Cpt S 536.

543 Toxicology of Pesticides 3 Same as Entom 545.

544 Environmental Assessment 3 (2-3) Graduate-level counterpart of ES/RP 444; additional requirements. Credit not granted for both ES/RP 444 and 544. Cooperative course taught by WSU; open to UI students (Geog 544).

545 Hazardous Waste Management 3 Graduate-level counterpart of ES/RP 445; additional requirements. Credit not granted for both ES/RP 445 and 545.

547 Public Budgeting 3 Same as Pol S 546.

548 Environmental Law 3 By interview only. Environmental protection, regulation of air and water pollution, waste disposal, use of pesticides and other toxic chemicals, and remedies for environmental injury. Cooperative course taught by UI (Law 947), open to WSU students.

551 Energy Production and the Environment 2 Graduate-level counterpart of ES/RP 451; additional requirements. Credit not granted for both ES/RP 451 and 551.

552 Environmental Microbiology 3 Same as Micro 552. Credit not granted for both ES/RP 452 and 552.

555 Environmental Planning 3 State, local and federal approaches to environmental planning and their interactions in private and public land use and development decisions.

560 Watershed Management 3 Same as NATRIS 560.

567 Regional Landscape Inventory and Analysis 5 (2-9) Graduate-level counterpart of LA 467; additional requirements. Credit not granted for both LA 467 and ES/RP 567.

571 Meteorology 3 Same as C E 571. Credit not granted for both ES/RP 471 and 571.

575 Geographic Information Systems 3 Prereq course in computer programming. Computerized management of data organized on regional geographic bases; preparation overlay, coding, and manipulation of data for regional planners and land managers. Cooperative course taught by UI (Geog 475), open to WSU students.

576 Advanced Remote Sensing 3 (1-4) Same as Soils 574.

584 Engineering Aspects of Aquatic Biology 4 (3-3) Same as C E 584.

585 Aquatic System Restoration 3 (2-3) Same as C E 585.

586 Introduction to Geographic Information Systems 3 (1-6) Graduate-level counterpart of ES/RP 486; additional requirements. Credit not granted for both ES/RP 486 and 586.

590 Special Topics 2 May be repeated for credit; cumulative maximum 6 hours. Cooperative course taught by WSU, open to UI students (Geog 590).

591 Special Topics 2 May be repeated for credit; cumulative maximum 4 hours.

592 Special Topics 2 May be repeated for credit; cumulative maximum 4 hours.

593 Seminar in Regional Planning and Environment-

594 Environmental and Natural Resources Issues and Ethics 2 or 3 Same as NATRIS 594.

595 Graduate Internship V 2-5 By interview only. Practical work experience in appropriate agencies; for graduate career students. S, F grading.

596 Cooperative Education Internship V 2-5 May be repeated for credit; cumulative maximum 5 hours. By interview only. Practical experience in appropriate agencies; for career graduate students in environmental science and regional planning. S, F grading.

597 Technical and Public Communications in Environmental Science 2 Prereq technical writing course; Rec public speaking course. Development of written and oral communication skills for practical application in the field of environmental science.

600 Special Projects or Independent Study Vari-

601 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

602 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

800 Doctoral Research, Dissertation, and/or Examina-

Requirements for certification into the Bachelor of Science Program in Environmental Science: 1.) completion of 30 semester hours of course work with a g.p.a. of 2.00, and 2.) completion of the courses listed in the catalog in the freshman year of the environmental science curriculum with a grade of C- or better. (Courses not required to fulfill university requirements for graduation may be waived for certification.)

Certificate Requirements

This course of study for the bachelor’s degree 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 eight optional areas of specialization: agricultural ecology, biological science, human ecology, environmental education, environmental quality control, natural resources management, physical science, systems, or regional and land use planning. (Fact sheets on each option are available from the program 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 Education Requirements as specified for majors in the College of Sciences and Arts. Many of these requirements are built into the curriculum below. Students should note the lack of specific courses in the arts and humanities, at least 6 hours of which must be included in their course work. Majors must also complete 8 hours in a modern foreign language unless they have completed two years of such language in high school (or one year in high school and 4 hours in the same language at WSU). The program provides a strong foundation for advanced study in many professional and basic research fields.

Freshman Year

First Semester

Chem 105 Principles 4
Engl 101 Intro Wrtg 3
ES/RP 101 or 150 3 or 4
Math 140 or 171 4

Second Semester

Anth 101 or Soc 101 3
Arts and Humanities [H] GER 3
Chem 106 Principles II 4
Econ 101 Fund of Micro 3
GenEd 110 World Civ I 3

Sophomore Year

First Semester

Arts and Humanities [H] or Social Science [S] GER 3
Bio S 103 Introductory Biology 4
Engl 201, 301, or 402 3
ES/RP 210 Environ Systems 3
Phys 101 or 201 4

Second Semester

Bio S 104 Introductory Biology 4
Chem 240 or 340, 341 4 or 5
GenEd 111 or Geol 102 3 or 4
Phys 102 or 202 4

Junior Year

First Semester

BC/BP 364 Intro Biochem 3
ES/RP 490 Special Topics3 1
GenCB or Micro 301 4
GenEd 111 or Soils 201 3
Elective/Option Course 3

Second Semester

Anth 309 Cultural Ecology3 3
Bio S 372 General Ecology 4
ES/RP 335 Env Policy 3
ES/RP 490 Special Topics3 1
Elective/Option Course 3

Senior Year

First Semester

Bio S 474 Human Ecology 3
ES/RP 404 The Ecosystem 3
ES/RP 491 Senior Seminar 1
Upper-division Soc3 3
Elective/Option Courses 6

Second Semester

Anth 309 Cultural Ecology3 3
Bio S 372 General Ecology 4
ES/RP 335 Env Policy 3
ES/RP 490 Special Topics3 1
Elective/Option Course 3

1 Other upper-division Anth with [I] or [K] designation with adviser’s approval.

2 For the upper-division Soc, one of the following is suggested: Soc 310, 315, 330, 331, 332, 418.

3 Environmental science majors are required to complete 3 hours of ES/RP 490, 492, or 493, Special Topics.
NOTES
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 options, ones more closely fitted to their specific needs; such option alternatives must be approved by the program adviser. Students with a dual major or who already have a bachelor’s degree may use the other degree program as a substitution for the required option, subject to adviser’s approval.

Minor in Environmental Science
A minor in environmental science requires 18 hours, including ES/ RP 101, 335, 444, and elective courses to be chosen in consultation with an ES/ RP adviser. For example, courses such as: any ES/ RP, C E 174, NATRS 403, Soc 331, Soils 301, 360, Zool 330.

Preparation for Graduate Study
Before applying for admission to the graduate programs, a student should have completed an undergraduate curriculum that included examination of a physical, biological, or social system in sufficient depth to serve as background for advanced investigation of one or more of these systems in an ecological context and a minimum g.p.a. of 3.0. For graduate study in environmental science, previous course work in sociology or cultural anthropology, conservation of natural resources, biological science, chemistry or physics, calculus, and ecology is required. Students interested in assistantships should provide Graduate Record Examination scores. General requirements for the Master of Science degree in Environmental Science include upper-division or graduate-level courses in ecology, mathematics, statistics, or computer science; applied physical, biological, or social science; environmental impact statement assessment; graduate seminar; and special topics in environmental science; an option (an area of specialization) with a minimum of 10 credit hours of courses; and a thesis or special project. A minimum of 32 hours of graduate credit is required. The program has been successful in placing MS graduates in a variety of positions with federal, state, and local agencies, industries, and academia, as environmental and resource management specialists.

Students entering the Master of Regional Planning (MRP) program are expected to have previous course work in economics, sociology or cultural anthropology, natural science, quantitative skills such as mathematics, and communication skills. Applicants are expected to have a minimum g.p.a. of 3.0 in their undergraduate field and to present evidence of commitment to the field of planning. Prior work experience in planning or related fields is considered in evaluating applicants. Students are required to complete not less than 35 graduate credit hours, including a minimum of 9 hours of core planning courses, and 6 hours of thesis or 4 hours of project credit.

MRP candidates are expected to develop a specialization through course work in an allied discipline, but the philosophy of the program is oriented toward preparing graduates for practice in public agencies, tribal agencies, or as consultants in the private sector.

Students entering the PhD program should have a g.p.a. of at least 3.0, 10 semester hours of basic biological and/or physical sciences, and a faculty member to act as adviser. A total of 72 hours is required beyond the bachelor’s degree, 34 of which must be in graded course work.

Department of Fine Arts

Professor and Department Chair, C. Watts; Professors, R. Coates, J. Dollhausen, R. Helm, F. Ho, J. Hockenhull, P. Siler; Associate Professors, R. Robillard; Assistant Professors, A. Christenson, D. Haynes, C. Ivory, P. Lee, M. Mandel.

The Fine Arts Department offers a diversity of experiences in the visual arts. Our Bachelor of Arts and Bachelor of Fine Arts programs are designed to open doors into the world of visual expression and intellectual development. In particular, we encourage students to sample a variety of art disciplines and make an informed choice about their direction in art. The department includes some six areas of emphasis within which to develop a program: painting, sculpture, printmaking, ceramics, photography, and graphic design. These are supported by a strong art history component. Many career possibilities involving art exist in the world outside the university. The reality of having a degree in Fine Arts versus what you can do with it is an issue of great concern to the faculty and is positively addressed within our program.

Students interested in preparing for secondary and primary art teaching may pursue a Bachelor of Arts or Bachelor of Fine Arts degree for their subject-matter preparation. The Department of Elementary and Secondary Education does not offer a certification program in art education. The department offers courses of study leading to the degrees of Bachelor of Arts in Fine Arts, Bachelor of Fine Arts and Master of Fine Arts.

Description of Courses

For explanation of symbols, see page 53.

Art History

FA 101 [H] Introduction to Art 3 For nonmajors. Appreciation of various visual art forms; emphasis on historical and cultural awareness.

201 [H] World Art History 3 Historical survey of art and architecture from prehistory through 1450.

202 [H] World Art History 3 Historical survey of art and architecture from 1450 to the present.

303 [H] Modern Art-19th Century 3 Prereq F A 201, 202. Modern art in the early modern period from around the globe.


308 Women Artists I, Middle Ages-1900 3 Survey of women artists from Middle Ages to end of nineteenth century.

310 Women Artists II, Twentieth Century 3 Survey of women artists in the twentieth century.

403 [M] Modern Theories of Art 3 Selected topics in 19th and 20th century theories of art.

404 [M] Advanced Non-western Art History 3 May be repeated for credit; cumulative maximum 6 hours. Prereq F A 201, 202. Different topics related to the arts in Africa the Americas, Oceania, and Asia.

405 [M] Contemporary Art: Theory and Practice 3 Contemporary theories of art and how those theories are developed.

498 Contemporary Issues Seminar 2 May be repeated for credit; cumulative maximum 4 hours. Prereq F A 304. Recent history of painting, sculpture, photography, graphic arts or criticism.

500 Graduate Art History 2 May be repeated for credit; cumulative maximum 6 hours. Prereq 9 hours undergraduate art history.

Studio Courses

Note: unless specified, media used in studio courses are at the option of the instructor.

Foundation

FA 103 Art 3 (0-6) Introduction to formal elements through studio experience.

Drawing

FA 110 Drawing 3 (0-6) Composition in pictorial space, visualization of ideas, drawing from life.

111 Figure Drawing 3 (0-6) Prereq F A 103, 110.

312 Drawing 3 (0-6) May be repeated for credit. Prereq F A 110 or 111.

313 Figure Drawing 3 (0-6) May be repeated for credit. Prereq F A 111.

510 Graduate Drawing 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

511 Graduate Drawing 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

512 Graduate Drawing 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

Painting

FA 320 Beginning Painting 3 (0-6) Prereq F A 103, 110. 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 103, 110.

423 Advanced Painting 3 (0-6) or 6 (0-12) May be repeated for credit. Prereq F A 321, major in F A(g).

520 Graduate Painting 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

521 Graduate Painting 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

522 Graduate Painting 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

Graphic Design

FA 331 Graphic Design 3 Prereq F A 103, 110. Introduction to visual communication; historical overview and research; students expected to creatively apply graphic design principles through hands-on projects and exercises.
Department of Fine Arts

332 Graphic Design 3 (0-6) Prereq F A 331. Graphic design production methods, graphic design darkroom techniques, computer applications, and methods for preparing artwork for printing.

433 Illustration/Graphic Design 3 (0-6) or 6 (0-12) May be repeated for credit. Prereq F A 332, 381, major in F A. Application of illustration, graphic design, and typography principles in a variety of formats; emphasis on individual concepts and creativity through drawing, painting, and three-dimensional application. (g)

434 Graphic Design 3 (0-6) or 6 (0-12) May be repeated for credit. Prereq F A 433, major in F A. Intensive in and out of class work, involves deadlines, research, and application of graphic design principles in a wide variety of formats. (g)

495 Graphic Design Internship V 8-12 Prereq 6 credits in F A 434, major in F A. Students are placed in work-related graphic design environments for practical application and experience.

530 Graduate Graphic Design 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Application of typography, illustration, and photography, to a variety of formats.

531 Graduate Graphic Design 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Research, concept, and application-oriented studies in graphic design.

532 Graduate Graphic Design 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Exploration of experimental imagery and application processes in a variety of formats.

Ceramics

FA

340 Ceramics 3 (0-6) Prereq F A 103, 110. Forming processes; the potter’s wheel; glazing; firing.

341 Ceramics 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Prereq F A 340.

Ceramics 3 (0-6) or 6 (0-12) May be repeated for credit. Prereq F A 341. (g)

540 Graduate Ceramics 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

541 Graduate Ceramics 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

542 Graduate Ceramics 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

Sculpture

FA

350 Sculpture 3 (0-6) Prereq F A 103, 110. Composition of form in the three-dimensional space.

351 Sculpture 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Prereq F A 350.

452 Sculpture 3 (0-6) or 6 (0-12) May be repeated for credit. Prereq F A 351, major in F A.

550 Graduate Sculpture 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

551 Graduate Sculpture 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

552 Graduate Sculpture 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

Printmaking

FA

370 Printmaking 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Prereq F A 103, 110. Variety of techniques: screenprinting, etching and lithography; emphasis is given to screenprinting during particular terms.

471 Printmaking 3 (0-6) or 6 (0-12) May be repeated for credit. Prereq F A 370. (g)

570 Graduate Printmaking 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

571 Graduate Printmaking 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

572 Graduate Printmaking 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

Photography

FA

380 Introduction to Photography 3 Prereq F A 103, 110. An experience with cameras and associate materials and techniques; photography in a historical and aesthetic context.

381 Photography 3 (0-6) Prereq F A 380. Beginning darkroom techniques.

382 Photography 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Prereq F A 381.

385 Color Photography 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Prereq F A 381. Color theory and methods of applied processes; practical and creative practices based on historical and contemporary information.

483 Photography 3 (0-6) or 6 (0-12) May be repeated for credit. Prereq F A 382, major in F A. (g)

580 Graduate Photography 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

581 Graduate Photography 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

582 Graduate Photography 3 (0-6) May be repeated for credit; cumulative maximum 9 hours.

Art Education

FA

389 Art Media for Schools 3 (0-6) Prereq F A 103, 110. Forming experiences in a variety of media utilized in public schools.

390 Elementary School Art Education 2 (1-2) Prereq certified Education major, EdPsy 301 or equivalent. Theory and methods for the study and making of art including practice using art media for creative expression.

Gallery Procedures

FA

490 Gallery Procedures with Museum of Art 3 (0-6) or 6 (0-12) May be repeated for credit; cumulative maximum 9 hours. By interview only. Introduction to art museums and galleries, including practicum in exhibition preparation, installation art handling, collections. (g)

Special Topics, Seminars, and Thesis

FA

361 Special Topics—Drawing V 1-6 May be repeated for credit. Prereq F A 103, 110.

362 Special Topics—Painting V 1-6 May be repeated for credit. Prereq F A 103, 110.

363 Special Topics—Graphic Design V 1-6 May be repeated for credit. Prereq F A 103, 110.

364 Special Topics—Ceramics V 1-6 May be repeated for credit. Prereq F A 103, 110.

365 Special Topics—Sculpture V 1-6 May be repeated for credit. Prereq F A 103, 110.

366 Special Topics—Printmaking V 1-6 May be repeated for credit. Prereq F A 103, 110.

367 Special Topics—Black and White Photography V 1-6 May be repeated for credit. Prereq F A 103, 110.

368 Special Topics—Color Photography V 1-6 May be repeated for credit. Prereq F A 103, 110.

400 Special Topics V 1-6 May be repeated for credit; cumulative maximum 18 hours.

401 Special Topics—Art History V 1-6 May be repeated for credit. Prereq 201, 202.


491 Seminar: Advanced Study, Art on Location 3 Travel to art collections in major urban centers; individual student research into how art functions within a major art center.

492 Designing Art Programs for the Public Schools 3 Same as E/Se 492.

493 Senior Exhibit 2 Prereq certified BFA major. Independent study involving exhibit, written thesis and oral examination working with area coordinator. S, F grading.

498 Contemporary Issues Seminar 2 Prereq F A 491. Recent history of painting, sculpture, photography, graphic arts or criticism. (g)

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

598 Graduate Seminar 2 May be repeated for credit; cumulative maximum 4 hours. Topics in contemporary theory and criticism.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

Study Abroad

FA

210 Topics—Study Abroad 3 May be repeated for credit; cumulative maximum 6 hours.

211 Topics—Study Abroad 3 May be repeated for credit; cumulative maximum 6 hours.

306 Topics—Study Abroad 3

310 Topics—Study Abroad 3

314 Topics—Study Abroad 3

315 Topics—Study Abroad 3

318 Topics—Study Abroad 3

319 Topics—Study Abroad 3

Schedule of Studies

For the degree Bachelor of Fine Arts a total of at least 70 hours in fine arts are required; 46 of these must be in upper-division courses.

Required Courses:

Bachelor of Fine Arts

Foundation Hours

FA 103 3

Art History

FA 201, 202, 303, 304 12

Drawing

FA 110, 311, 312 9

Painting

FA 320 3

Sculpture

FA 331 3

Bachelor of Fine Arts 120
Bachelor of Fine Arts certification requirements:

1. 12 hours from F A 103, 110, 111, 320, 350;
2. 3 hours from F A 201 or 202;
3. 2.0 cumulative g.p.a. in F A courses.

Art Minor
A minor in art requires 18 hours including F A 110, Drawing; and F A 303 or 304, Modern Art. The remaining 9 hours of electives must be in upper-division courses.

Art History Minor
A minor in art history requires 18 hours including F A 201 and 202. The remaining 12 hours of electives must be in upper-division art history courses.

Transfer Credits
The Department of Fine Arts will accept up to 18 credit hours in art toward the major and 9 credit hours in art toward the minor

Exchange Program
The Department of Fine Arts has a tuition-free exchange for four students with the School of Fine Arts at Nihon University, Tokyo, Japan. All art majors at WSU are eligible for this one-year study in Japan. Selection is made in the winter.

Preparation for Graduate Study
The Fine Arts Department graduate program offers the MFA degree in two-dimensional studio arts and in three-dimensional studio arts. The student may place major or minor emphasis in any of the following areas: drawing, graphic design, painting, photography, printmaking, ceramics, metalworking, and sculpture.

Certificate
Prospective applicants for certification are responsible for acquainting themselves with all requirements and procedures. Details including specific course requirements and portfolio submission are available in the departmental office.

Bachelor of Fine Arts certification requirements:
1. 12 hours from F A 103, 110, 111, 320, 350;
2. 3 hours from F A 201 or 202;
3. 6 additional hours in major emphasis;
4. 2.0 cumulative g.p.a. in F A courses;
5. slide portfolio and exhibit presentation of original art work.

Bachelor of Arts in Fine Arts certification requirements:
1. 12 hours from F A 103, 110, 111, 320, 350;
After completing academic and performance requirements, it is necessary to pass a registration examination which is given twice each year under the auspices of The Commission on Dietetic Registration. When students successfully complete the examination, they are Registered Dietitians and are entitled to use the initials R. D. to indicate professional competence.

Other Opportunities

The department offers minors in food science, foods and nutrition, and food service management. In addition to undergraduate studies, the department offers courses of study leading to the degrees of Master of Science in Food Science, Master of Science in Human Nutrition, and Doctor of Philosophy (Food Science). The department participates in interdisciplinary programs in nutrition leading to the degree of Doctor of Philosophy (Nutrition). An accelerated program to obtain both a Bachelor of Science degree in Food Science and Human Nutrition and a Master of Science degree in Human Nutrition within a five-year period is also offered.

Description of Courses

For explanation of symbols, see page 53.

Food Science and Human Nutrition

FSHN 120 Food Preparation 3 Principles and methods of food preparation, including physical and chemical changes, quality composition and use of foods.

FSHN 121 Food Preparation Lab 1 (0-3) Prereq c// in FSHN 120. Principles and methods of food preparation, including physical and chemical changes, quality, composition, and use of foods.

130 [B] Nutrition for Living 3 Information related to the interaction of nutrients in the body and factors which govern nutrient requirements.

170 Food for Mankind 2 Interrelationships between people and their food supply; broad coverage of contemporary food-related topics.

200 Food Quality Assurance 3 (2-2) Methodology and design of quality assurance programs for analyzing microbial and chemical hazards and physical factors associated with food quality. Cooperative course taught by WSU, open to UI students (FST 200).

233 Human Nutrition 3 Prereq Rec BC/BP or Chem course; or Zool 215, 351. Principles of human nutrition applicable to all ages of human development; impact of environment, economics, culture on food and nutrition.

281 Quantity Food Production Laboratory 1 (0-3) Prereq FSHN 120, 121, or 221; c// in H A 359. Recipe adjustment and costing; preparing and serving food in quantity.

301 Dairy Products 3 (2-3) Prereq Micro 101 or 301; org chem. Specialized techniques and practices of dairy product manufacturing and marketing. Field trip required. Cooperative course taught by WSU, open to UI students (FS 301).

302 Meat and Poultry Products 3 (2-3) Prereq Micro 101 or 301; org chem. Specialized techniques and practices of meat, poultry, and egg processing and marketing. Field trip required. (a/y)

303 [M] Food Processing 3 (2-3) Prereq Micro 101 or 301; org chem. Specialized techniques and concepts of food fruit and vegetable processing and marketing. Field trip required. Cooperative course taught by WSU, open to UI students (FS 303).

304 Cereal Products 2 Prereq org chem. Technical principles relating to the production and commercial processing of legume and cereal foods. Field trip required. Cooperative course taught by UI (FS 404), open to WSU students.

305 Nutrition Related to Fitness and Sport 3 Identification of energy, macro/micro nutrient and fluid requirements during exercise; fitness of dietary regimens and ergogenic aids for pre and post competition, weight maintenance, and wellness. Cooperative course taught by UI (FS 305), open to WSU students.

330 [M] Physiological Nutrition 3 Prereq Chem 240; FSHN 130 or 233; Zool 251, 315. Functional chemistry of nutrients in physiological systems and nutrient interactions.

331 Nutrition in the Human Life Cycle 3 Rec FSHN 130 or 233. How growth and development impacts nutrient requirements throughout the life cycle. Cooperative course taught jointly by WSU and UI (HE 486).

350 Dynamics of Dietetics 3 Prereq junior in dietetics. Dynamics of nutritional care and foodservice management in health and disease.

370 Food Laws and Quality 3 Food laws, industry standards and qualities of foods necessary for consumer acceptance; sanitation.

371 Cultural Food Patterns 3 (2-3) Prereq FSHN 120. Impact of ethnic background on food choices, cooking methods, meals service, holiday and religious celebrations of selected countries.

380 Management in Food Service Systems I 3 Prereq FSHN 281, H A 359. Management process, functions, inventory procurement and personnel management in food service.

401 Topics in Food Science and Human Nutrition 1 (2-3) May be repeated for credit; cumulative maximum 6 hours. Selected topics in food science and human nutrition. Credit not granted for both FSHN 401 and 501.

402 Seminar in Food Science 1 May be repeated for credit; cumulative maximum 2 hours. Current literature and special reports.

404 Food Product Development 2 Prereq senior standing; BC/BP 364. Development of food products from concept to marketplace. (a/y)

405 Eating Disorders 2 Examination of anorexia nervosa, bulimia nervosa, compulsive eating, obesity, and weight preoccupation; discussion of cultural and nutritional factors, family issues, and psychological consequences, as well as preventive and therapeutic interventions. Cooperative course taught by UI (FCS 405), open to WSU students.

416 Microbiology of Food 4 2-6 Cooperative course taught jointly by WSU and UI (FST 402). (g)

420 Comparative Foods 2 Rec organic chemistry. Experimental foods taught by means of demonstrations; chemical and physical principles in the preparation of foods.

422 Food Quality Evaluation 3 (2-3) Prereq 300-400-level statistic course. Techniques in evaluation of quality and safety of foods. Cooperative course taught jointly by WSU and UI (FST 402). (g)

423 Human Nutrition, Intermediary Metabolism 3 Prereq BC/BP 364, FSHN 330, Zool 251. Biochemical roles of nutrients and processes of intermediary metabolism affecting man’s need for food; integration of biochemical pathways of major and minor nutrients; important nutritional diseases and controversies. (g)

431 Prenatal, Infant and Child Nutrition 2 Prereq FSHN 331 or c//. Nutrition of the mother and fetus during pregnancy and of the child from infancy to adolescence. (a/y) (g)

433 Agricultural Processing Rec AgTM 210 or Math 140. Principles of heat transfer, steam, air-vapor mixtures, refrigeration and fluid flow as applied to commodity processing and storage. Cooperative course taught jointly by WSU and UI (AgMech 433/FST 433). (g)

434 Agricultural Processing Lab 1 (0-3) Rec FSHN 433 or c//. Experiments in heat transfer, fluid flow and dehydration. Cooperative course taught by WSU, open to UI students (FST 434).

435 Medical Nutrition Therapy 3 (2-3) Prereq FSHN 430 or c//. Nutrition principles applied to pathological conditions in people. (g)

436 Nutrition Education 3 Prereq FSHN 130, 233, or 331. Individual and group nutrition education programs; methods, resources, settings, and community structures for guiding change in nutritional behavior. (g)

437 Medical Nutrition Therapy Laboratory 1 (0-3) Prereq c// in FSHN 435. Nutritional care planning; modified diets; nutritional assessment and dietary analysis in clinical care settings. (g)

438 Readings in Foods and Nutrition 2 Prereq FSHN 450 or c//. Reports, discussions and reviews of recent scientific literature and developments in foods and food systems management. Credit not granted for both FSHN 438 and 538.

439 Current Topics in Nutrition 2 Prereq FSHN 430. Analysis of scientific, popular and legislative articles pertaining to topics of current interest in nutrition. Credit not granted for both FSHN 439 and 539.

440 Advanced Medical Nutrition Therapy 3 By interview only. Advanced nutrition principles applied to pathological conditions in humans and principles of participation in delivery of nutritional care.

450 Food Fermentations 3 (2-3) Prereq Chem 240, Micro 301; Rec BC/BP 364. Principles and procedures of fermentation of fruits and vegetables, meat products, and dairy products. Credit not granted for both FSHN 450 and 550. (a/y) Cooperative course taught by WSU, open to UI students (FS 450).

460 Food Chemistry 3 Prereq biochem, Chem 240; Rec BC/BP 364. Fundamentals of food chemistry; composition of foods and the changes that occur during processing. Cooperative course taught by WSU, open to UI students (FS 460). (g)

461 [M] Food Chemistry Laboratory 1 (0-3) Rec FSHN 460 or c//. Experiments related to the properties, reactions, and interactions of
513 Mineral and Vitamin Metabolism 4 Same as
520 Research Methods in Behavioral Nutrition 3 Prereq FSHN 130 or 233; Rec FSHN 426 or 436; statistics course. The application of behavioral theories and qualitative/quantitative methods of data collection to behavioral nutrition research. (a/y) Cooperative course taught by WSU, open to UI students (FCS 520).
521 Research Techniques in Nutrition 3 (1-6) Rec 6 hours upper-division nutrition. Methods of conducting field, applied and metabolic studies in human nutrition. (a/y)
522 Food Quality Evaluation 3 (2-3) Graduate-level counterpart of FSHN 422; additional requirements. Credit not granted for both FSHN 422 and 522. (a/y)
526 Advanced Community Nutrition 3 Rec upper-division nutrition course; by interview only. Components of community nutrition programs-needs assessment, planning, intervention, evaluation; application of concepts to case studies. (a/y) Cooperative course taught by WSU, open to UI students (FCS 526).
531 Nutrition and Aging 2 or 3 Rec upper-division nutrition course; by interview only. Asses-sessment, evaluation, and treatment of nutritional problems of the aged. (a/y)
533 Pathophysiology of Human Nutrition 3 Rec BC/BP 364; FSHN 435; Zool 353. Protein, fat, carbohydrate and other nutrient pathophysiology in the development and treatment of major human diseases.
538 Readings in Food and Nutrition 2 Graduate-level counterpart of FSHN 438; additional requirements. Credit not granted for both FSHN 438 and 538.
539 Current Topics in Nutrition 2 Graduate-level counterpart of FSHN 439; additional requirements. Credit not granted for both FSHN 439 and 539.
550 Food Fermentations 3 (2-3) Graduate-level counterpart of FSHN 450; additional requirements. Credit not granted for both FSHN 450 and 550. Cooperative course taught by WSU, open to UI students (FCS 550).
561 Sports Nutrition 3 Prereq by interview only. Macronutrient and selected micronutrient utilization during exercise and restoration after feeding, dietary surveys of athletes, dietary ergogenic aids and discussion of the origins of dietary recommendations for athletes. Cooperative course taught by UI (FCS 561), open to WSU students.
570 Advanced Food Technology 3 Graduate-level counterpart of FSHN 470; additional requirements. Credit not granted for both FSHN 470 and 570.
575 Preprofessional Dietetic Experience 2-16 May be repeated for credit; cumulative maximum 16 hours. Rec by interview only. Preprofessional supervised experience (AP4) in administrative, clinical, and community dietetics; meets American Dietetic Association requirements for registration eligibility. S, F grading.
583 Advances in Cereal Science and Technology 2 Prereq BC/BP 364. Background information, review of recent advances; relation to processing, and use properties and marketing. (a/y)
587 Food Processing Engineering Design 3 Same as BSysE 582.
598 Foods/Nutrition Practicum 2 (0-3) to 4
A S 513.
600 Special Projects or Independent Study Variable credit. S, F grading.
700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.
800 Doctoral Research, Dissertation, and/or Examination Variable credit. S, F grading.

Schedule of Studies

FOOD SCIENCE

SCIENCE OPTION

This option has been developed for the student who is interested in the science of food processing. Emphasis is placed on the scientific aspects of processing and it offers more laboratory analysis experience.

Freshman Year
First Semester
Engl 101 [W] Intro Writing (GER) 3
Chem 105 [P] Principles I (GER) 4
Math 140 or 171 [N] (GER)* 4

Second Semester
Arts and Humanities [H] GER 3
Bio S 103 [B] Introductory (GER) 4
Chem 106 [P] Principles II (GER) 4
FSHN 170 Food for Mankind 2
GenEd 111 [A] World Civ II (GER) 3

Sophomore Year
First Semester
Ag Ec 201 [S] Econ in Agriculture (GER) 3
Chem 240 Elem Organic 4
Food Production Course** 4

Second Semester
Phys 101 [P] General (GER) 4
SpCom 102 [C] Public Speaking (GER) 3
GenEd 211 [A] World Civ II (GER) 3

Junior Year
First Semester
Ag Ec 350 Intro Agricultural Marketing 3
FSHN 303 Food Processing 3
FSHN 416 Microbiology of Food 4
FSHN Commodity Course*** 4

Second Semester
Arts and Humanities [H] or Social Sciences [S] GER 3
FSHN 422 or 450 3
FSHN Commodity Course*** 3
FSHN 433 Agricultural Processing 3
FSHN 434 Agricultural Processing Lab 1
Intercultural Studies [J] GER 3

Senior Year
First Semester
Engl 402 [W] Tech Prof Writing (GER) 3
FSHN 402 Seminar in Food Science 4
FSHN 460 Food Chemistry 3
### First Semester

- **Hours**

- Freshman Year
  - Approved Chem Elective 1
  - Engl 101 [W] Intro to Wrtg (GER) 3
  - GenEd 110 or 111 [A] (GER) 3
  - Math Proficiency [N] GER 3
  - Psych 105 or Soc 101 3

- **Second Semester**
  - Acctg 230 Principles I 3
  - Approved Chem Elective 4
  - Communication Proficiency [C] GER 3
  - FSHN 233 Human Nutr 3
  - Micro 101 Intro Micro 4

- **Sophomore Year**

  - **First Semester**
    - Anth 309 [K] Cultural Anth (GER) 3
    - Arts and Humanities Elective [H] GER 3
    - Chem 240 Org Chem 4
    - FSHN 120 Food Prep 3
    - FSHN 121 Food Prep Lab 1
    - Zool 315 Gross Microanat 4

  - **Second Semester**
    - Ag Ec 201, Econ 102, or 201 3 or 4
    - FSHN 281 Quan Food Prod Lab 1
    - GenEd 110 or 111 [A] (GER) 3
    - H A 359 Foodservice Management 4
    - Zool 251 Intro Hum Phys 4

- **Junior Year**

  - **First Semester**
    - BC/BP 364 Intro Biochem 3
    - FSHN 330 Phys Nutr 3
    - FSHN 331 Life Cycle Nutr 3

  - **Second Semester**

### Second Semester

- **First Semester**
  - FSHN 350 Dynamics Dietet 3
  - Electives 4

- **Second Semester**
  - Arts and Humanities [H] GER 3
  - Beginning Cpt S course 3
  - FSHN 380 Mgt Foodserv Syst I 3
  - FSHN 430 Human Nutr 3
  - H D 204 Family Systems 3

### Senior Year

- **First Semester**
  - FSHN 370 Food Laws 3
  - FSHN 446 Nutr Ed 3
  - FSHN 483 Readings Fd 2
  - FSHN 480 Mgt Food Serv Syst II 3
  - Statistics 3
  - Electives 2

- **Second Semester**
  - FSHN 420 Comp Foods 2
  - FSHN 426 [M] Comm Nutr 2
  - FSHN 437 Diet Therapy Lab 1
  - Suggested Electives: Bio S 103, 104; FSHN 431, H D 201, 202, 403; PharP 217; Psych 306.

### Required for HNF majors: 1 D 101 or 202; H D 201 or 204. NOTE: 1 D 202 can also be used to partially fulfill a GER in Arts and Humanities.

### COORDINATED UNDERGRADUATE OPTION IN GENERAL DIETETICS (CUOGD)

Application for admission to the CUOGD is ordinarily made during the spring semester of the sophomore year. Application deadline is February 1. Transfer deadline is February 1. Transfer students should consult the director for advice on applying and planning.

- **Freshman Year**
  - **First Semester**
    - Chem 101 [P] Prin of Chem (GER) 4
    - Communication Proficiency Elective [C] GER 3
    - Engl 101 [W] Intro to Wrtg (GER) 3
    - GenEd 110 or 111 [A] (GER) 3
    - Math Proficiency Elective [N] GER 3

- **Second Semester**
  - Chem 102 [P] Prin Chem (GER) 4
  - FSHN 233 Human Nutr 3
  - GenEd 110 or 111 [A] (GER) 3
  - Micro 101 Elem Bact 4
  - Psych 105 or Soc 101 [S] (GER) 3

- **Sophomore Year**
  - Ag Ec 201, Econ 102, or 201 3 or 4
  - FSHN 281 Quan Food Prod Lab 1
  - GenEd 110 or 111 [A] (GER) 3
  - H A 359 Foodservice Management 4
  - Zool 251 Intro Hum Phys 4

- **Junior Year**

  - **First Semester**
    - BC/BP 364 Intro Biochem 3
    - FSHN 330 Phys Nutr 3
    - FSHN 331 Life Cycle Nutr 3

  - **Second Semester**

### Business/Marketing:

- Acctg 230, 231, Ag Ec 360, B Law 210, Cpt S 405, Mgt 301, Psych 306.

### Science/Research:


### Commodities:


### Internships, FSHN 495:

- Internships with food companies, processors, and wineries are arranged for three to six months to provide students with work experience in their areas of interest.

### HUMAN NUTRITION

**GENERAL DIETETICS OPTION**

### Transfer Students

- Students planning to transfer to the department should coordinate their programs of study with departmental advisers to select courses, in the proper sequence, that are applicable to the degree requirements.

### Preparation for Graduate Study
Students who plan to work toward an advanced degree should seek advice from their advisers in the selection of courses. This will ensure the courses selected will strengthen their education in areas needed for successfully completing an advanced degree program.

Students from related fields who wish to obtain an advanced degree in food science or nutrition are encouraged to apply as they may be well prepared for graduate studies. They would be required to take certain key courses required of undergraduates in addition to those needed for their graduate program.

Students who identify an interest in graduate work early in their studies are encouraged to participate in an accelerated course of study in which both a BS and MS can be earned in five years. A student should contact the adviser no later than the end of the junior year so a course of study can be planned which schedules appropriate prerequisites to graduate courses and an introduction to research projects.

Department of Foreign Languages and Literatures

Professor and Department Chair, M. M. Matteson; Professors, A. Chang, E. Hartman; Associate Professors, J. T. Brewer, B. Frederick, E. R. Gonzalez, B. M. Ingemanson, C. J. Kenlan, J. Labat, G. S. Mazur; Assistant Professors, Z. D. M. Glynn, J. Grenier-Winther, R. Halverson, W. Roby, A. M. Rodriguez Vivaldi, M. VanEpp Salazar; Visiting Assistant Professor, K. Andersen.

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, Danish, Japanese, and Latin. Majors are available in French, German, Russian, and Spanish. Other languages are offered through independent study.

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 as a practical way knowledge gained in the classroom, the department sponsors a wide variety of supplementary activities. 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. 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.

Departmental scholarship funds provide foreign language majors either with scholarships covering tuition and fees or smaller scholarships. They are awarded annually, to qualified majors of junior or senior standing. Study abroad opportunities are available to undergraduates and graduates.

The department offers courses of study leading to the degrees of Bachelor of Arts in Foreign Languages and Literatures (French, German, Russian, and Spanish) and Master of Arts in Foreign Languages and Literatures (Spanish).

Description of Courses

For explanation of symbols, see page 53.

Foreign Languages and Literatures

For L

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. Cooperative course taught by WSU, open to UI students (FL 300).1

315 Topics in Canadian Studies 1 May be repeated for credit; cumulative maximum 5 hours. Same as Hist 315.

340 Methods of Teaching Foreign Languages 3 Prereq two years foreign language. Survey of current methodology with emphasis on practical application in the classroom.

350 [S] Speech, Thought, and Culture 3 Same as Anth 350.

450 Descriptive Linguistics 3 Same as Anth 450.

474 Secondary School Foreign Language Methods 3 Prereq two years foreign language. Specific methods, research, curricula, and media in teaching secondary school foreign language. Cooperative course taught by UI (Ed 474), open to WSU students.

495 Cooperative Education Internship V 2-6 May be repeated for credit; cumulative maximum 6 hours. Off-campus cooperative education internship with business, industry, or government unit. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

540 Instructional Practicum 1 Analysis and practical application of foreign language teaching methodologies.

597 Seminar in Scholarly Methodology 2 Bibliography and formal aspects of scholarly writing; general introduction to literary criticism.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Chinese

Chin

1 Not open to native speakers except with permission. Bilingual speakers should consult departmental guidelines for proper placement.

101 First Semester 4 Fundamentals of speaking, reading, and writing. Cooperative course taught by WSU, open to UI students (FL/CH 101).

102 Second Semester 4 Prereq Chin 101. Continuation of Chin 101. Cooperative course taught by WSU, open to UI students (FL/CH 102).


Classics

Clas

101 Beginning Latin 4 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 Prereq Clas 101.

341 Elementary Greek 4 Pronunciation, vocabulary, reading, and functional grammar. Cooperative course taught by UI (FL/GK 341), open to WSU students.

342 Elementary Greek 4 Pronunciation, vocabulary, reading, and functional grammar. Cooperative course taught by UI (FL/GK 342), open to WSU students.

349 Greek Language Lab 1 May be repeated for credit; cumulative maximum 2 hours. Basic skills. S, F grading. Cooperative course taught by UI (FL/GK 349), open to WSU students.

365 Survey of Latin Literature 3 From early Latin to the Middle Ages. Cooperative course taught by UI (FL/LA 365), open to WSU students.

366 Survey of Latin Literature 3 From early Latin to the Middle Ages. Cooperative course taught by UI (FL/LA 366), open to WSU students.

369 Latin Language Lab 1 May be repeated for credit; cumulative maximum 2 hours. Prereq permission. Advanced-level expressive skills. S, F grading. Cooperative course taught by UI (FL/LA 369), open to WSU students.

404 Special Topics May be repeated for credit; cumulative maximum 3 hours. Cooperative course taught by UI (FL/GK 404), open to WSU students.

441 Intermediate Greek 4 Readings in classical Greek prose and poetry. Cooperative course taught by UI (FL/GK 441), open to WSU students.

442 Intermediate Greek 4 Readings in classical Greek prose and poetry. Cooperative course taught by UI (FL/GK 442), open to WSU students.

461 Latin Literature of the Augustan Age 3 Cooperative course taught by UI (FL/LA 461), open to WSU students.

462 Latin Literature of the Augustan Age 3 Cooperative course taught by UI (FL/LA 462), open to WSU students.

463 Latin Literature of the Republic 3 Cooperative course taught by UI (FL/LA 463), open to WSU students.

464 Latin Literature of the Republic 3 Cooperative course taught by UI (FL/LA 464), open to WSU students.
327 Special Topics—Study Abroad 3 (Avisson).
418 Topics in French Civilization—Study Abroad V 1-4 (Avignon).
320 Survey of French Literature After 1700 3 Prereq Fren 302 or 322. In-depth study of selected works by medieval authors, including, among others, Chretien de Troyes, Marie de France, Francois Villon.(g)
421 French Literature of the Renaissance 3 Prereq Fren 320 or 322. In-depth study of selected works from the late 14th through the 16th centuries, including poetry, essays, stories, and philosophical texts. (g)
422 Literature of the Classical Period 3 Prereq Fren 320 or 322. Authors and works from the 17th century, including Corneille, Racine, and Moliere.(g)
423 Literature of the Enlightenment 3 Prereq Fren 320 or 322. Authors and works from the 18th century, including Montesquieu, Voltaire, Diderot, and Rousseau. (g)
424 French Literature of the 19th Century 3 Prereq Fren 320 or 322. Authors and works from the Romantic, Realist, Naturalist, and Symbolist Schools.(g)
425 French Literature of the 20th Century 3 Prereq Fren 320 or 322. Authors and works from the post-WWI, pre-WWII, post-war, and contemporary periods.(g)
427 Seminar in French Language or Literature 3 May be repeated for credit. Prereq Fren 320 or 322.(g)
499 Special Problems V 1-4 May be repeated for credit. S, F grading.

German

304 Intermediate 4 Prereq Fren 203. Continued practice in spoken and written language; selected texts in a cultural context.1
305 Conversation 1 (0-3) May be repeated for credit; cumulative maximum 4 hours. Prereq Fren 304. Conversation practice in small groups.1
306 French for Reading Proficiency 2 Prereq Fren 304. Vocabulary building, contrastive English-French grammar, development of skills to increase reading speed and fluency.
307 Speaking Proficiency 3 Prereq Fren 304. Systematic development of speaking; development of speaking, reading, and writing skills. (g)
310 French for the Professions 3 Prereq Fren 304. Communication in French for professional purposes; telephone and meeting role-plays, letter-writing, television, discussions of current events in the Francophone world.
315 French Civilization Early Period 3 Cultural and social trends in France from ancient times to 1715; readings, lectures, and discussions in English.
316 French Civilization Modern Period 3 Cultural and social trends in France from 1715 to the present; readings, lectures, and discussions in English.
318 Topics in French Civilization—Study Abroad 3 (Avisson).
320 [M] Survey of French Literature to 1700 3 Prereq Fren 304. Works studied from the Middle Ages and Renaissance include the epic poem, courtly romance, fabliau, drama, and lyric poetry.
322 Survey of French Literature After 1700 3 Prereq Fren 304. Development of reading competence and written expression through study of great works of these times.
327 Special Topics—Study Abroad 3 (Avisson).
407 Advanced Practice in Speaking Proficiency 3 Prereq Fren 307. Systematic development of oral skills on the advanced level, including delivery of brief formal presentations involving specialized vocabulary.1
408 [M] Advanced Composition 3 Prereq Fren 308. Development of advanced proficiency in writing.(g)
409 Pronunciation and Phonetics 2 Prereq Fren 307 or 308. A theoretical and practical approach to French phonetics.
416 Seminar in French Civilization 3 Prereq Fren 307, 308, 320 or 322. May be repeated for credit; cumulative maximum 6 hours.(g)
418 Topics in French Civilization—Study Abroad V 1-4 (Avignon).
420 Medieval French Literature 3 Prereq Fren 320 or 322. In-depth study of selected works by medieval authors, including, among others, Chretien de Troyes, Marie de France, Francois Villon.(g)
421 French Literature of the Renaissance 3 Prereq Fren 320 or 322. In-depth study of selected works from the late 14th through the 16th centuries, including poetry, essays, stories, and philosophical texts. (g)
422 Literature of the Classical Period 3 Prereq Fren 320 or 322. Authors and works from the 17th century, including Corneille, Racine, and Moliere.(g)
ued development of basic skills in speaking, reading, and writing. Cooperative course taught by WSU, open to UI students (FL/RU 102). 1

203 Third Semester 4 Prereq Rus 102. Grammar review and further development of speaking, reading, and writing skills. Cooperative course taught by WSU, open to UI students (FL/RU 203). 1

304 Intermediate 4 Prereq Rus 203. Continued practice in spoken and written language; selected texts in a cultural context. Cooperative course taught by WSU, open to UI students (FL/RU 304). 1

305 Conversation 1 (0-3) May be repeated for credit; cumulative maximum 4 hours. Prereq Rus 304. Conversation practice in small groups. Cooperative course taught by WSU, open to UI students (FL/RU 305). 1

311 [M] Seminar in Russian Language 3 Prereq Rus 304. May be repeated for credit, cumulative maximum 6 hours. Application and elaboration of the basic syntactic and stylistic principles of the language. Taught in Russian.

315 Russian Civilization 3 Russian culture to 1917; readings, lectures, and discussions in English.

317 [G] Contemporary Russian Culture and Society 3 Readings, lectures, and discussions in English; current cultural and social trends in the former USSR.

318 Topics in Russian Study Abroad 4 Prereq Rus 304. (Vladivostok).

320 [M] Introduction to Russian Literature 3 Prereq Rus 304. Reading course shifting emphasis from language to literature.

323 [H] Masterpieces of Russian Literature in Translation 3 The masterpieces of the great Russian and Soviet writers of the 19th and 20th centuries. Taught in English.

424 Seminar in Russian Literature Prereq Rus 320. Selected works from the 19th century. Taught in Russian.


499 Special Problems V 1-4 May be repeated for credit. S, F grading.

Scandinavian

Scand 101 First Semester Danish 4 Introduction to Danish; fundamentals of speaking, reading, and writing. 1

102 Second Semester Danish 4 Prereq Scand 101. Intermediate Danish; continued development of the basic communicative skills in speaking, reading, and writing. 1

323 Masterpieces of Scandinavian Literature in Translation 2 May be repeated for credit; cumulative maximum 6 hours. Topics in Scandinavian literature from the Icelandic sagas to the present.

490 Topics in Scandinavian Studies V 1-3 May be repeated for credit.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

Spanish

Span 101 First Semester 4 Prereq appropriate placement score. Fundamentals of speaking, reading, and writing. 1

102 Second Semester 4 Prereq Span 101 or appropriate placement score. Continued development of basic skills in speaking, reading, and writing. 1

203 Third Semester 4 Prereq Span 102 or appropriate placement score. Further development of speaking, reading, and writing skills. 1

304 Intermediate 4 Prereq Span 203. Continued practice in spoken and written language; selected texts in a cultural context. 1

305 Spanish Conversation 1 May be repeated for credit; cumulative maximum 4 hours. Prereq Span 304. Conversation practice in small groups. S, F grading. 1

306 Spanish for Reading Proficiency 2 Prereq Span 203. Vocabularly building, contrastive English-Spanish grammar, development of skills to increase reading speed and fluency. 1

307 Speaking Proficiency 3 Prereq Span 304. Systematic development of speaking; pronunciation of basic Spanish sounds. 1


311 Advanced Grammar 3 Prereq Span 304. Recommended for those intending to take the upper-level composition or conversation courses.

315 (145) [H] Hispanic Civilization 3 Spanish culture with lectures and readings in English.

316 (146) [G] Hispanic American Culture 3 Contemporary social, political, and cultural issues as seen through literature. Taught in English.

318 Topics in Latin American Civilization Study Abroad V 1-6 (Guadalajara).


323 Masterpieces of Spanish American Literature in Translation 3 Twentieth century literary works that reflect Spanish America’s social diversity, nonwestern tradition, and artistic achievements. Taught in English.

324 Spanish for Spanish Speakers 3 Prereq fluency in Spanish. Teachings of Chicano and Mexican writers; popular culture, composition, grammar, indicative mood and vocabulary.

1Not open to native speakers except with permission. Bilingual speakers should consult departmental guidelines for proper placements.

407 Advanced Practice in Speaking Proficiency 3 Prereq Span 307. Systematic development of oral skills on the advanced level, including delivery of brief formal presentations involving specialized vocabulary. 1

408 [M] Advanced Composition 2 Prereq Span 308. Development of advanced proficiency in writing. 1

424 Spanish Literature of the 19th Century 3 Prereq Span 320. Drama, poetry, the short story, the costumbrista sketch, and novel in 19th century Spain. (g)

425 Spanish Literature of the 20th Century 3 Prereq Span 320. Reading and discussion of representative works by Peninsular writers of the 20th century. (g)

427 Seminar in Spanish Language or Literature 3 May be repeated for credit. Prereq Span 320. (g)

434 Spanish American Literature of the 19th Century 3 Prereq Span 320. Reading and discussion of representative works by Spanish American writers of the 19th century. (g)

435 Spanish American Literature of the 20th Century 3 Prereq Span 320. Reading and discussion of representative works by Spanish American writers of the 20th century. (g)

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

520 Medieval Literature 3 Selected works.

522 Seminar in Golden Age Literature 3 Reading and discussion of representative works of the Spanish Golden Age.

524 Cervantes 3 Quixote plus selected critical works.

527 Seminar in Spanish Literature 3 May be repeated for credit.

536 Seminar in Spanish American Literature 3 May be repeated for credit.

540 Instructional Practicum 1 May be repeated for credit; cumulative maximum 4 hours. Supervised practical experience in foreign language teaching. S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

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 30 hours beyond the 203 level (or the equivalent level 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 level in competence, (2) a minimum of 16 hours of related work from another field, (3) a teaching minor, or (4) 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.

No course in which a C- or lower grade is earned will be counted toward the major or minor. Upper-division courses taken pass-fail may not be included for credit toward the major.

 Majors and prospective majors are strongly encouraged to spend at least one semester abroad, living in the target culture and enhancing their fluency. Many accredited study abroad programs are available; students should work with their advisers in the selection of a program.

Of the 30 hours required for the major, a minimum of 15 must be taken in residence or in an approved study abroad program. Additionally, German majors must take a minimum of 6 hours at the 400 level in residence; Spanish majors must take at least one 3-hour Spanish literature course; and French majors at least two 3-hour French literature courses, in residence.

Minimal Requirements for Each Major

French: 304, 307 or 407; 308 or 408; 320, 322, 409; two from: 420, 421, 422, 423, 424, 425, 427; one from 315, 316, 416; one from 310, 407, 408.


Russian: 203, 304, 311, 315, 317, 320, 323; plus 7 hours from: 305 (maximum 2 hours), 320, 424, 426, 499.

INTERNATIONAL BUSINESS OPTION

The international business area studies curriculum combines a major in foreign languages with core courses in business. Complete details are available from the department. Through careful choice of electives and of courses meeting General Education 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 Elementary and Secondary 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.

General Education Courses

Description of Courses

For explanation of symbols, see page 53.

General Education

GenEd

110 [A] World Civilizations I 3 Integrated study of social, political, and philosophical/religious systems in early civilizations, with an introduction to distinctive art forms.

111 [A] World Civilizations II 3 Integrated study of social, political, and philosophical religious systems in modern civilizations, with an introduction to distinctive art forms of the major world civilizations.

302 [W] Advanced Writing Tutorial V 1(0-3) - 3(0-9) May be repeated for credit; cumulative maximum 5 hours. Prerequisite permission of Writing Lab Director/Writing Assessment Coordinator. Assigned tutorials in the WSU Writing Lab for students in [M] courses, S, F grading.

General Studies Program

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 in Humanities, Bachelor of Arts in Social Sciences, 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 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 listed below under the various divisions.

Description of course

For explanation of symbols, see page 53.

General Studies

GenSt

400 General Studies Portfolio 1 Prerequisite senior standing. Evaluating one's educational experience and presenting that evaluation in written form. S, F grading.

Biological, Mathematical, and Physical Sciences

B. Lentz, Coordinator

This division of general studies is for students who are interested in interdisciplinary programs in science or mathematics which offer broader options in course selections than are possible within single departments. Students who wish to earn a Bachelor of Science degree will devise an approved, coherent program of study with the coordinator which fulfills an academic or career goal and includes prerequisites consistent with the upper-division major course work. In addition, each student will satisfy the General Education Requirements and any additional requirements of the College of Sciences.

Plan A—Major/Minor Concentration

Major concentration: a minimum of 24 semester credits, including at least 15 upper-division credits, must be completed in biological sciences, in mathematics or in a single physical science with a minimum 2.00 major concentration GPA. Students who complete one of the above major concentrations will receive a Bachelor of Science degree with a major concentration in general biological sciences (Gen B), general mathematics (Gen M) or general physical sciences (Gen P).

Minor concentration: a minimum of 15 semester credits, including at least 6 upper-division credits, must be completed in another academic department, program or area with a minimum 2.0 minor concentration GPA.

Plan B—Three Related Areas in Biological Sciences

A combination of biological sciences courses of at least 39 credits in three or more departments or programs including at least 9 credits in each department or program and 21 upper-division hours must be completed with at least a 2.0 GPA in these courses. The related areas in general biological sciences (Gen B) include biology, biochemistry, botany, genetics and cell biology, microbiology, zoology and approved biology-based courses in agriculture. Students who complete a Plan B curriculum receive a Bachelor of Science degree with a major concentration in general biological sciences (Gen B).

Plan C—Three Related Areas in
Physical Sciences
A combination of physical sciences and mathematics courses of at least 39 credits in three or more departments or programs including at least 9 credits in each department or program and 21 upper-division hours must be completed with at least a 2.00 g.p.a. in these courses. The related areas in mathematical and physical sciences include chemistry, computer science, geology, mathematics, pharmacy, physics, and math/science-based engineering courses. Students who complete a Plan C curriculum receive a Bachelor of Science degree with a major concentration in general physical sciences (Gen P).

Prerequisite Courses

General Biological Sciences (Gen B): One year biology, one semester introductory calculus, one year general chemistry, and one semester organic chemistry.

General Physical Sciences (Gen P): One year calculus, one year calculus-based physics, and one year general chemistry. (Students who plan a major concentration in chemistry should also include one year general chemistry. Students who plan a major concentration in mathematics, one year calculus-based physics, and one year calculus and linear algebra.) Additional Greek and Latin beyond the basic language requirements, appropriate seminars, special offerings, and independent study from associated departments must be selected 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
B. Lentz, Coordinator

This division of general studies is for students whose primary interest in the humanities or social sciences requires interdisciplinary programs and course selections which are not possible within single academic programs or established curricula. Students who wish to earn a Bachelor of Arts in Humanities or a Bachelor of Arts in Social Sciences will devise an approved, coherent program of study with the coordinator who fulfills an academic or career goal and includes prerequisites consistent with the upper-division major course work. In addition, each student will satisfy the General Education Requirements and any additional requirements of the College of Liberal Arts.

Plan A—Major/Minor Concentration
Major concentration: a minimum of 24 semester credits, including at least 15 upper-division credits, must be completed in a single humanities or social sciences department or program with a minimum 2.00 major concentration g.p.a. The major (Gen H or Gen S) and the degree will depend on the major concentration.

Minor concentration: a minimum of 15 semester credits, including at least 6 upper-division credits, must be completed in another academic department, program or area with a minimum 2.00 g.p.a.

Plan B—Three Related Areas in Humanities
A combination of humanities courses of at least 39 credits involving three or more academic departments or programs, with a minimum of 9 credits in each of the three areas including at least 21 upper-division credits with at least a 2.00 g.p.a. in these courses. Students will major in general humanities (Gen H) and will receive a Bachelor of Arts in Humanities.

Plan C—Three Related Areas in Social Sciences
A combination of social sciences courses of at least 39 credits involving three or more academic departments or programs, with a minimum of 9 credits in each of the three areas including at least 21 upper-division credits with at least a 2.00 g.p.a. in these courses. Students will major in general social sciences (Gen S) and will receive a Bachelor of Arts in Social Sciences.

Liberal Arts
J. Dollhausen, Coordinator

This option is available to students who have interests and motivations which go beyond the defined departmental boundaries. A student who chooses this option designs a major in consultation with the coordinator and two other faculty members. Students who major in liberal arts will earn the Bachelor of Liberal Arts degree.

The course of study will be outlined by the student, with the advice and assistance of the coordinator. Course work will be selected to provide a coherent body of knowledge culminating in a relevant thesis or senior project. As part of the requirement for completion of the degree, the student’s committee will meet to discuss and evaluate the project. All General Education Requirements of the university and the College of Sciences and Arts must be met, as described in the academic regulations.

A student may select the option upon completion of 30 or more semester hours, with the approval of the coordinator. Approval will be granted to those students who demonstrate a sincere motivation to accomplish in their unique course of study. Requests for the option are made in an informal interview with the coordinator. Normally, upon acceptance to the option, students should anticipate at least two semesters of course work before graduation.

Linguistics
L. Gordon, 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. Students who major in linguistics will earn a Bachelor of Arts in Humanities degree.

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, 450, 456, 499; Engl 256, 354, 458, 499; 21 or more hours including at least one historical course.

Mathematics, Computer Science, and Statistics: Cpt S 150, 260, 405; Math 107, 171, 172, 201, 202; Stat 360; 3-12 hours depending upon special emphasis.

Philosophy: Phil 201, 320, 401, 410; 3-12 hours depending upon emphasis.

Foreign Language: 6-18 hours, depending on special emphasis; the 6-hour minimum, if elected, must be at the 300-level or higher.

Religious Studies
M. W. Myers, Coordinator
Religious studies is a cross-disciplinary program designed for students who wish to develop an understanding of the nature of religion and its role in individual and social life. The program enables students to analyze critically and evaluate western and non-western religions without a predisposition to defend or reject the claims of any particular faith. The program offers both a major and a minor; it is preparatory for careers and future study in international affairs, arts, humanities, social sciences, and intercultural studies. Students who major in religious studies will earn a Bachelor of Arts in Humanities degree.

A student may earn a major in religious studies by completing 59 semester hours of work from among the designated courses in the several departments involved. Of these 39 hours, 12 must consist of the core courses specified below for all majors. Further courses are specified as required or elective depending on the student's focus: western religions, non-western religions, or comparative religions. There is also a language requirement. See the list of options below.

A student must also satisfy the General Education and College of Sciences or College of Liberal 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 18 semester hours of work, including the core (minus the Seminar in Religious Studies) and three courses from the required list of comparative religion. Religious studies also makes an ideal second major.

Bachelor of Arts in Humanities (Religious Studies)

Core Courses: Anth 303, Phil 107, 407, Soc 341.

Language: Two years of study in language pertinent to chosen option.

One of the following options:

Western Religions:
Engl 357, Hist 445; seven courses from:

Non-Western Religions:
Hist 273, Phil 314, 315; six courses from:
Anth 330, Hist 270, 275, 308, 370, 373, 374, 390, 408, Hum 103.

Comparative Religions:
Engl 335; Hist 273; Phil 314, 315; five courses from:

Teacher-Training
Students who are preparing to teach at the secondary level may in some cases receive their degrees in general studies. Such students must fulfill the requirements for graduation of the College of Sciences or College of Liberal Arts. There are no further requirements if they complete their teaching major and minor and fulfill all the requirements for teaching certification. The degree awarded is Bachelor of Arts in Humanities, Bachelor of Arts in Social Sciences, or Bachelor of Science according to the endorsement granted in the student's major teaching field.

The secondary teaching major in physical science will receive a Bachelor of Science degree. For further information on teaching certification, refer to the Department of Elementary and Secondary Education.

University is genetic engineering of eukaryotes. Several faculty are working together on the basic biology of gene transfer with the intention of improving domesticated plants and animals.

The interdisciplinary role of genetics and cell biology is emphasized, thus permitting students to study with scientists who represent a wide range of research interests in plant, animal, and microbial genetics. Many of the faculty research interests have a major cellular orientation and consequently training in cell biology as well as more strictly genetic areas is available within the department.

The Department of Genetics and Cell Biology, being an interdepartmental organization, enjoys the availability of many and highly diverse facilities for research. Faculty laboratories are well equipped with modern equipment, especially in the recombinant DNA area, molecular genetics, and cell biology.

Biochemistry, cytology, mathematics, statistics, and physiology are the principal avenues through which knowledge of genetics and cell biology is acquired. These subjects are necessary supplemental areas of study for students in the department.

Students who receive master’s and PhD degrees obtain positions in basic and applied genetics at universities, federal departments and laboratories, private industry, including biotechnology and plant and animal breeding, and in some cases in specialized medical research.

Students who receive the Bachelor’s Degree in Agricultural Molecular Genetics and Cell Biology will be prepared to undertake graduate study leading to the Master’s and PhD degrees in a variety of areas in agriculture and basic science. They also will be prepared to work as high-level technicians in the biotechnology industry or in university and government laboratories.

Department of Genetics and Cell Biology

Core Courses: Anth 303, Phil 107, 407, Soc 341.

Language: Two years of study in language pertinent to chosen option.

One of the following options:

Western Religions:
Engl 357, Hist 445; seven courses from:

Non-Western Religions:
Hist 273, Phil 314, 315; six courses from:
Anth 330, Hist 270, 275, 308, 370, 373, 374, 390, 408, Hum 103.

Comparative Religions:
Engl 335; Hist 273; Phil 314, 315; five courses from:

Teacher-Training
Students who are preparing to teach at the secondary level may in some cases receive their degrees in general studies. Such students must fulfill the requirements for graduation of the College of Sciences or College of Liberal Arts. There are no further requirements if they complete their teaching major and minor and fulfill all the requirements for teaching certification. The degree awarded is Bachelor of Arts in Humanities, Bachelor of Arts in Social Sciences, or Bachelor of Science according to the endorsement granted in the student's major teaching field.

The secondary teaching major in physical science will receive a Bachelor of Science degree. For further information on teaching certification, refer to the Department of Elementary and Secondary Education.

Department of Genetics and Cell Biology

Core Courses: Anth 303, Phil 107, 407, Soc 341.

Language: Two years of study in language pertinent to chosen option.

One of the following options:

Western Religions:
Engl 357, Hist 445; seven courses from:

Non-Western Religions:
Hist 273, Phil 314, 315; six courses from:
Anth 330, Hist 270, 275, 308, 370, 373, 374, 390, 408, Hum 103.

Comparative Religions:
Engl 335; Hist 273; Phil 314, 315; five courses from:

Teacher-Training
Students who are preparing to teach at the secondary level may in some cases receive their degrees in general studies. Such students must fulfill the requirements for graduation of the College of Sciences or College of Liberal Arts. There are no further requirements if they complete their teaching major and minor and fulfill all the requirements for teaching certification. The degree awarded is Bachelor of Arts in Humanities, Bachelor of Arts in Social Sciences, or Bachelor of Science according to the endorsement granted in the student's major teaching field.

The secondary teaching major in physical science will receive a Bachelor of Science degree. For further information on teaching certification, refer to the Department of Elementary and Secondary Education.
techniques in cell biology, and physiology. (g)

462 Molecular Genetics 3 Same as Micro 462 (g)

488 [M] Perspectives in Biotechnology 3 Same as A S 488. Credit not granted for both GenCB 488 and 588.

490 [M] Genetics and Cell Biology Seminar 2 May be repeated for credit. Prereq GenCB 301. Classical literature in genetics and cell biology; current topics discussed by faculty experts in the field.

496 [M] Special Problems and Reports V 2-4 Prereq GenCB 301. Independent project with written progress report required. S, F grading.


499 Special Problems V 1-4 May be repeated for credit. S, F grading.

502 Eukaryotic Molecular Genetics 2 Prereq BC/BP 364, GenCB 301. Gene control and organization; lower eukaryotic and cell culture genetics.

505 Genetic and Molecular Aspects of Plant Reproduction 2 or 3 Graduate-level counterpart of GenCB 405; additional requirements. Credit not granted for both GenCB 405 and 505.

511 Introduction to Population Genetics 3 Prereq GenCB 301; Stat course. Survey of basic population and quantitative genetics. Cooperative course taught by WSU, open to UI students (Genet/PlSc 511).

512 Molecular Population Genetics and Evolution 2 Prereq GenCB 511. Evolutionary change of molecular sequences; genetic distance and phylogeny; genomic evolution.

513 Quantitative Genetics 2 Prereq GenCB 511; Stat 512. Fundamentals of quantitative genetics; estimation of variance components; evolutionary quantitative genetics.

516 Fish Genetics 2 Prereq GenCB 301. Chromosomal, biochemical, quantitative, and ecological aspects of fish genetics with emphasis on applications to aquaculture and fish management. Cooperative course taught by WSU, open to UI students (FISH 516). (a/y)

534 Fungal Genetics 4 (3-3) Same as PI P 534.

535 Molecular Genetics of Plant and Pathogen Interactions 2 Same as PI P 535.

540 Cytogenetics 2 Prereq GenCB 301. Chromosomal structure, behavior, and evolution; effects of changes in chromosome number and structure. (a/y) Cooperative course taught by WSU, open to UI students (FISH 530).

550 Cell Biology 3 Prereq BC/BP 364; GenCB 301. Cell structure and movement, organelle structure and genome, and cell signal processing. (a/y) Cooperative course taught by WSU, open to UI students (Genet/PlSc 550).

556 Cell Biotechnology V 1-3 Prereq BC/BP 364; GenCB 450. Contemporary cell biotechnology; techniques including: cell culture, immunology (including preparation and use of monoclonal antibodies), nucleic acid hybridization (including in situ).

560 Molecular Genetics 3 Prereq BC/BP 563; GenCB 301, 502, or Micro 301. Biochemical description of genetic processes in microorganisms.

565 Molecular Biology I 3 Same as BC/BP 565.

566 Molecular Biology II 3 Prereq BC/BP 565; GenCB 301. Gene regulation in prokaryotes and eukaryotes; chromatin structure; DNA repair; RNA processing.

569 Research Proposal 1 Written and oral presentation of a research paper. S, F grading.

570 Plant Molecular Genetics 3 Prereq GenCB 502. Plant molecular genetics with emphasis on systems specific to plants and plant genetic engineering. (a/y) Cooperative course taught by WSU, open to UI students (Genet 570/PlSc 571).

572 Fundamentals of Oncology 3 Same as P/T 572.

573 Cellular and Molecular Aspects of Development 3 Same as Zool 573.

576 Molecular Biology Techniques I 1 (0-3) Same as BC/BP 576.

577 Molecular Biology Techniques II 1 (0-3) Same as BC/BP 577.

581 Advanced Topics in Genetics V 1-2 May be repeated for credit. Prereq GenCB 502 or 511. Recent research in selected areas of genetics.

588 Perspectives in Biotechnology 3 Graduate-level counterpart of GenCB 488; additional requirements. Credit not granted for both GenCB 488 and 588.

592 Advanced Topics in Cell Biology V 1-3 May be repeated for credit; cumulative maximum 7 hours. Current research in cell structure and function. Cooperative course taught by WSU, open to UI students (Genet/PlSc 592).

598 Seminar 1 May be repeated for credit. Prereq GenCB 301. Reviews of recent and classical research in genetics, cytology, and cell biology.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Agricultural Molecular Genetics and Cell Biology

Schedule of Studies

The following is a list of the departmental requirements for the undergraduate degree in agricultural molecular genetics and cell biology. Total of 120 credits required for graduation: Core, 63-71; Option, 15-18. Other: General Education, 18; Electives, 13-24.

Biological Sciences

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Bio 103 [B] (GER)</td>
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<tr>
<td>Bio 104 [B] (GER)</td>
<td>4</td>
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<tr>
<td>GenCB 301</td>
<td>4</td>
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<tr>
<td>GenCB 450</td>
<td>3</td>
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<tr>
<td>GenCB 498</td>
<td>1</td>
</tr>
<tr>
<td>Micro 301</td>
<td>4</td>
</tr>
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<td>Two of the following:</td>
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<tr>
<td>BC/BP 366, GenCB 402, 452 Micro 464</td>
<td>3-6</td>
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<tr>
<td>One of the following:</td>
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<tr>
<td>GenCB 462, 502</td>
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Physical Science and Math

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<tr>
<td>Chem 105 [P] (GER)</td>
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<tr>
<td>Chem 106 [P] (GER)</td>
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<tr>
<td>Chem 240; or Chem 340, 341, 342</td>
<td>4-8</td>
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<tr>
<td>Math 107</td>
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<tr>
<td>Math 108</td>
<td>2</td>
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<td>Math 171 [N] (GER)</td>
<td>4</td>
</tr>
<tr>
<td>Phys 101 [P] (GER)</td>
<td>4</td>
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<tr>
<td>Phys 102</td>
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</tbody>
</table>

Social Science

Ag Ec 201 [S] (GER) 3

One of the following:
Soc 310 or 331 [S] (GER) 3

In addition to the above requirements, students must select one of the following options:

Plant Biotechnology Option
Bot 320 3
Bot 451 4

Two of the following:
CropS 445, GenCB 325, Hort 251, PI P 429 6 or 7

One of the following:
CropS 411, Hort 416 3

Animal Biotechnology Option
A S 330 3
A S 448 3

One of the following anatomy courses:
V An 308, Zool 324 3 or 4

One of the following nutrition courses:
A S 313, 314 3-4

One of the following physiology courses:
A S 440, Zool 353 3 or 4

Department of Geology


Geology is the study of the Earth, its composition, structure, origin and evolution. Virtually every aspect of modern life is in some way dependent on the science of geology. For example it is the geologist’s job to discover new reserves of energy and raw materials, evaluate geologic hazards in land-use planning and unravel the mechanisms of continental drift and biologic evolution.

Both general and advanced training is offered in most specializations in geology. The lower-division courses are designed to provide a strong foundation for those who major in geology as well as a stimulating introduction to earth science for the non-major. The upper-division courses provide training for professional geological work as well as
preparation for postgraduate study. The department has modern teaching facilities and special equipment, including an electron microscope, radiocarbon dating laboratory, X-ray diffraction and fluorescence instrumentation, inductively coupled plasma mass spectrometer, isotope extraction lines and isotope mass spectrometer, transmitted and reflected light microscopes, for graduate study and research. There are active research programs in igneous petrology, geochemistry and mineralogy, structural geology and tectonics, economic geology, groundwater hydrology, sedimentology and stratigraphy and paleontology.

The department offers courses of study leading to the degrees of Bachelor of Science in Geology, Master of Science in Geology, and Doctor of Philosophy (Geology).

Description of Courses

For explanation of symbols, see page 53.

Geology

101 [P] Introduction to Geology 4 (3-3) Introductory physical geology for non-science majors; emphasis on western U.S. Credit not granted for both Geol 101 and 102.

102 [P] Physical Geology 4 (3-3) For science majors and honors students. Modern concepts of earth science; mineral rock, resource, and map study. Field trip required. Credit not granted for both Geol 101 and 102.

201 Geology of the National Parks 2 Prereq Geol 101 or 102. Significant geologic features, processes, and geologic history of the national parks. Field trip optional. (a/y)

206 (306) Field Petrology 3 (2-3) Prereq Geol 101 or 102. Hand sample analysis, petrogenesis and field relationships of rocks. Field trips required.

210 (310) [P] Evolution and Earth 3 (2-3) Prereq Geol 101 or 102; Rec Bio S 102. History and development of the Earth's physical features and its inhabitants. Field trip required.

221 (321) Field Trip 1 (0-3) May be repeated for credit. Prereq Geol 210. One-week field trip to study geology of a selected area of the western United States. S, F grading.

240 (340) Geologic Structures 4 (3-3) Prereq 206, 210; Math 108. Basic understanding and techniques of working in deformed rocks in mountain belts. Field trip required.

250 (350) Mineralogy and Crystallography 4 (2-6) Prereq Geol 101 or 102; Chem 101 or 105. Composition, physical properties, structure, crystallography, identification, and origin of minerals. Field trip required.

260 (360) Quantitative Concepts in Geology 2 (1-3) Prereq Chem 105; Geol 250; Math 171 or c/w; Phys 101 or 201. Basic mathematical tools; physical principles for geologic problem solving.

300 Vertebrate Paleontology and Evolution 3 Prereq Geol 210. Vertebrate evolution with focus on dinosaurs including origins, physiology, behavior, and relationships. (a/y)

308 Field Geology 6 (0-18) Prereq Geol 240. Detailed geologic mapping of an area; practice in methods of geologic field work. Cooperative course taught jointly by WSU and UI (Geol 301i). (SS)

310 (410) [P] Invertebrate Paleontology 3 (2-3) Prereq Geol 210. Morphology, classification, evolution, and paleoecology of fossil invertebrate organisms. (g)

320 (420) Sedimentary Petrology and Sedimentation 3 (2-3) Prereq Geol 210, 355. Sedimentary rock composition and origins applying fundamental principles of sedimentology. Field trip required. (g)

322 Geology of the Pacific Northwest 3 Prereq Geol 101 or 102. Overview of the geology in the Pacific Northwest, United States.

355 Optical Mineralogy 2 (1-3) Prereq Geol 250; Phys 102 or 202; c/w in Geol 356. Elements of optical crystallography and optical identification of minerals.

356 (461) Igneous Petrology 2 (1-3) Prereq c/w in Geol 355. Mineralogy and petrology of igneous rocks, using the polarizing microscope. Field trip required. (g)

362 (462) Metamorphic Petrology 2 (1-3) Prereq Geol 356. Mineralogy and petrology of metamorphic rocks using the polarizing microscope. Field trip required. (g)

403 Environmental Geology 3 Prereq Geol 101 or 102. Geologic hazards and geologic problems associated with human activities. Optional field trip. (g)

405 Geophysics 4 (3-3) Prereq Geol 240. Theory and application of geophysical methods for hydrology, environmental, engineering, exploration, and structural geology; review of techniques. Credit not granted for both Geol 405 and 505. (a/y) Cooperative course taught by UI (GeolE 420), open to UI students (GeolE 524).

421 Principles of Stratigraphy 3 (2-3) Prereq Geol 210, 240. Correlation and dating of sedimentary strata; tectonics and sedimentary basins; regional patterns of sedimentation. (g)

426 Engineering Geology and Geotechnics 3 Same as C E 426. Credit not granted for both Geol 426 and 526. Cooperative course taught jointly by WSU and UI students (GeolE 428).

428 Geostatistics 3 Same as Stat 428. Cooperative course taught by UI (GeolE/Stat 428), open to WSU students. (g)

451 Pedology 3 (2-3) Same as Soils 451. (g)

470 Introduction to Economic Geology 4 (3-3) Prereq Geol 240, 250. Genesis, evolution and tectonic setting of ore deposits combining theoretical and descriptive, and detailed hand specimen analysis. Field trip to major mining districts. (g)

475 Groundwater Hydrology 3 (2-3) Prereq C E 317 or Geol 101, 102 or 260; Chem 105; Math 172 or c/w; Phys 101, 201. Introduction to groundwater occurrence, movement, quality, and resource management, emphasizing physical and biogeochemical principles. (g)

480 Introductory Geochemistry 3 Prereq Chem 106, Geol 250. The chemistry of Earth materials and processes. Cooperative course taught by WSU, open to UI students (Geol 583). (g)

491 Remote Sensing and Geologic Applications 3 (2-3) Prereq Geol 240; Phys 102 or 202. Remote sensing techniques and their utilization in geologic studies, air photos, radar, IR, and Landsat imagery used. Field trip required. Credit not granted for both Geol 491 and 591. (a/y)

493 Undergraduate Seminar 1 (0-9) May be repeated for credit; cumulative maximum 3 hours. Prereq major in Geol or related field. Research papers presented by students, faculty, and visiting scientists on geological research. S, F grading. (a/y)

499 Special Problems 1-4 May be repeated for credit. S, F grading.

505 Geophysics 4 (3-3) Graduate-level counterpart of Geol 405; additional requirements. Credit not granted for both Geol 405 and 505. (a/y) Cooperative course taught by WSU, open to UI students (GeolE 524).

508 Advanced Field Methods 3 (0-9) May be repeated for credit. Individual instruction in advanced methods of field geology. (SS)

511 Advanced Topics in Paleontology 3 Prereq Geol 410, 420. Advanced problems and new techniques in paleontology from current literature. (a/y) Cooperative course taught by WSU, open to UI students (Geol 511).

515 Paleozoology 3 Ecological dynamics as applied to the paleontological record; preservation constraints; animal-sediment interactions; organisms' role in the relative time scale. Field trip required. (a/y) Cooperative course taught by UI (Geol 515), open to WSU students.

520 Advanced Topics in Sedimentary Rocks 3 (2-3) May be repeated for credit; cumulative maximum hours. Prereq Geol 420. Modern aspects of sedimentary rocks. (a/y) Cooperative course taught by WSU, open to UI students (Geol 520).

521 Clastic Depositional Systems 3 (2-3) Prereq Geol 420. Clastic sedimentary environments; architectural elements and facies analysis. (a/y) Cooperative course taught by WSU, open to UI students (Geol 528).

523 Advanced Topics in Stratigraphy 3 May be repeated for credit. Prereq Geol 421. (a/y) Cooperative course taught by WSU, open to UI students (Geol 523).

525 Carbonate Depositional Systems 3 (2-3) Prereq Geol 420. Modern carbonate environments and processes; ancient carbonate rock sequences; carbonate platform-to-basin transition; diagenesis of carbonate rocks. Field trip required. (a/y) Cooperative course taught by WSU, open to UI students (Geol 525B).

526 Engineering Geology and Geotechnics 3 Graduate-level counterpart of Geol 426; additional requirements. Credit not granted for both Geol 426 and 526.

528 Petrology of Carbonate Rocks 3 (2-3) Prereq Geol 420. Origin, classification distribution, depositional environments, and diagenesis of modern and ancient carbonates; emphasis on petrographic analysis. Field trip required. Cooperative course taught by UI (Geol 526), open to WSU students.

529 Geologic Development of North America 3 Prereq Geol 410, 421. Tectonic, magnetic, and sedimentary sequence studies of North American continent through time; concepts of metal and petroleum enrichment related to time and geological processes.. Field trip required. Cooperative course taught by UI (Geol 532), open to WSU students.

540 Tectonics 3 Prereq Geol 340. Nature and origin of the Earth's major tectonic features. (a/y) Cooperative course taught by WSU, open to UI students (Geol 548).

541 Structural Analysis 3 (2-3) Prereq Geol 340. Structural analysis of complexly deformed rocks in orogenic belts. Field trip required. Cooperative course taught by WSU, open to UI students (Geol 541).
550 Advanced Mineralogy 3 Prereq Chem 106, Geol 355. Elements of crystal chemistry and crystal physics. (a/y) Cooperative course taught by WSU, open to UI students (Geol 550).

551 Ore Microscopy and Fluid Inclusion Analysis 3 (0-9) Prereq Geol 355, 470. Ore and alteration mineralogy of major ore deposits; mineral identification, textual interpretation, sample preparation, photomicrography, fluid inclusion analysis. Field trip required. (a/y) Cooperative course taught by WSU, open to UI students (Geol 551).

552 X-Ray Analysis in Geology 3 (2-3) Generation and use of X-rays for geological research; electron microprobe/SEM, X-ray fluorescence and X-ray powder diffraction. Cooperative course taught by WSU, open to UI students (Geol 552).

554 Physical Petrology 3 Prereq Geol 461. The applications of continuum mechanics and fluid dynamics to the generation, rise, storage, and eruption of magmas. Cooperative course taught by UI (Geol 554), open to WSU students.

561 Advanced Mineral Deposits 3 Modern concepts of the origin and geochemistry of metallic mineral deposits. Field trip required. (a/y) Cooperative course taught by UI (Geol 557), open to WSU students.

563 Igneous Petrogenesis 3 (2-3) Prereq Geol 356. Chemical and petrologic techniques used to interpret the origin and evolution of igneous rocks. (a/y) Cooperative course taught by WSU, open to UI students (Geol 563).

567 Volcanology 3 (2-3) Prereq Geol 356. Eruption mechanisms, volcanic processes and landforms, and volcanic deposits. Field trips required. Cooperative course taught by UI (Geol 567), open to WSU students.

569 Field Methods in Hydrogeology 2 (1-3) Prereq Geol 475; Geol 577 or 579. Theory and practice of acquisition of hydrogeologic data, emphasizing design and execution of field experiments. (a/y)

570 Advanced Topics in Hydrogeology V 1–4 May be repeated for credit; cumulative maximum 9 hours. Prereq Geol 475. Topics may include organic/inorganic contaminant fate, recharge, carbon cycling, isotope applications.

571 Geochemistry of Hydrothermal Ore Deposits 3 (2-3) Prereq Geol 470. Ore formation in hydrothermal environments; sulfide mineral stability, water/rock interactions, and stable isotope relationships to altered rocks. Field trip required. (a/y) Cooperative course taught by WSU, open to UI students (Geol 571).

573 Advanced Topics in Economic Geology 2 May be repeated for credit. Prereq Geol 470. Ore-forming process or deposit type combining literature synthesis, theoretical evaluation and field trip inspection. Cooperative course taught by WSU, open to UI students (Geol 573).

574 Advanced Remote Sensing 3 (1-4) Same as Soils 574.

575 Seminar in Remote Sensing 1 Same as Soils 575.

577 Advanced Groundwater Hydraulics 3 Same as C E 577.

579 Biogeochemistry of Groundwater 3 Prereq Geol 475. Processes controlling the quality and chemistry of groundwater; applications to geologic and water resource problems. Cooperative course taught by WSU open to UI students (Hydro 566).

581 Geochemical Phase Diagrams 3 Principles and application of geochemical phase diagrams. (a/y) Cooperative course taught by WSU, open to UI students (Geol 581).

582 Introduction to Geochemical Thermodynamics 3 Prereq graduate standing. Principles and applications of geochemical thermodynamics to mineralogy, petrology, and natural water systems.

584 Principles of Isotope Geochemistry 3 Principles and applications of isotope geochemistry in the geological sciences (a/y)

588 Isotope Geology 4 Prereq Geol 480. Geologically useful radioactive isotopes; geochronology and isotopes as tracers. (a/y) Cooperative course taught by UI (Geol 588), open to WSU students.

591 Remote Sensing and Geologic Applications 3 (2-3) Graduate-level counterpart of Geol 491; additional requirements. Credit not granted for both Geol 491 and 591. (a/y)

592 Advanced Topics in Structural Geology V 1–4 May be repeated for credit; cumulative maximum 6 hours. Advanced topics across normal subject boundaries; tectonics and magma origin. Cooperative course taught by WSU, open to UI students (Geol 592).

598 Graduate Seminar 1 May be repeated for credit; cumulative maximum 4 hours. Prereq graduate student in Geol or related field. Papers presented by students, faculty, and visiting scientists on geological research. S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Schedule of Studies

In addition to the General Education and Science and Arts graduation requirements, candidates for the B.S. degree in geology must follow the curriculum outlined below. A minimum of 120 semester hours of credit is required for graduation, including a minimum of 40 semester hours of credit in upper-division (300-400) course work with a 2.0 minimum g.p.a. overall and in the major.

Geology Requirements

- Geol 101 or 102 Intro or Phys Geol
- Geol 206 Intro Petro
- Geol 210 Evol & Earth Hist
- Geol 240 Geoc Struc
- Geol 250 Min and Crystallography
- Geol 308 Field Geol
- Geol 310 Paleolimnology
- Geol 320 Sedimentary Petrology
- Geol 355 Optical Mineralogy
- Geol 356 Igneous Petrology
- Geol 562 Metamorphic Petrology

Three courses from the following:

- Geol 403 Env Geol
- Geol 405 Geoecology
- Geol 421 Structural Geology
- Geol 470 Ecological Petrology
- Geol 475 Groundwater Chemistry
- Geol 480 Geochemistry

II. Specific Outside Requirements

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<tr>
<td>Cpt S 150 or Math 172</td>
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<tr>
<td>4</td>
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<tr>
<td>Engl 101* or equivalent</td>
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<td>3</td>
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<tr>
<td>(If student does not receive a B or better, Engl 402 must be taken.)</td>
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<tr>
<td>Math 171* Calculus I</td>
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<td>4</td>
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<tr>
<td>(Must earn a C or better)</td>
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<tr>
<td>Phys 210*, 220*</td>
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<td>8</td>
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<td>(Phys 101, 102 are acceptable alternatives)</td>
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</tbody>
</table>

*Also satisfies a GER

III. Suggested GE Electives: Geol 201, 221, 491, 498, 499; graduate-level geology courses (senior year).

IV. Suggested Outside Electives: CE 101, Chem 107, 220, 222, 331; ES/RP 445; Mgt 301; Psych 311; Stat 360.

Honors Students

A senior thesis or enrollment in Geol 499 is required.

Minor in Geology

A student with 90 semester hours may certify a minor. A minor requires a minimum of 16 semester hours of letter-graded geology coursework, half of which must be in upper-division course work. A minimum 2.0 g.p.a. in geology minor course work is required.

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, 210, 240, 250, 308, 310, 320, 355, 356, 362; one year of general physics; one year of general inorganic chemistry; mathematics through one semester of calculus.

Schedule of Studies

In addition to the General Education and Science and Arts graduation requirements, candidates for the B.S. degree in geology must follow the curriculum outlined below. A minimum of 120 semester hours of credit is required for graduation, including a minimum of 40 semester hours of credit in upper-division (300-400) course work with a 2.0 minimum g.p.a. overall and in the major.

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- Geol 310 Paleolimnology
- Geol 320 Sedimentary Petrology
- Geol 355 Optical Mineralogy
- Geol 356 Igneous Petrology
- Geol 562 Metamorphic Petrology

Three courses from the following:

- Geol 403 Env Geol
- Geol 405 Geoecology
- Geol 421 Structural Geology
- Geol 470 Ecological Petrology
- Geol 475 Groundwater Chemistry
- Geol 480 Geochemistry

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IV. Suggested Outside Electives: CE 101, Chem 107, 220, 222, 331; ES/RP 445; Mgt 301; Psych 311; Stat 360.

Honors Students

A senior thesis or enrollment in Geol 499 is required.

Minor in Geology

A student with 90 semester hours may certify a minor. A minor requires a minimum of 16 semester hours of letter-graded geology coursework, half of which must be in upper-division course work. A minimum 2.0 g.p.a. in geology minor course work is required.

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, 210, 240, 250, 308, 310, 320, 355, 356, 362; one year of general physics; one year of general inorganic chemistry; mathematics through one semester of calculus.
in History, and Doctor of Philosophy. In cooperation with the Departments of English and Speech and Hearing Sciences, the department participates in the interdisciplinary Program in American Studies leading to the degree of Doctor of Philosophy.

Description of Courses

For explanation of symbols, see page 53.

History

101 [H] Classical and Christian Europe 3 Greece and Rome, birth of Christianity and Islam, Middle Ages, Renaissance, Reformation, religious wars, Louis XIV.

102 [H] Modern Europe 3 War, revolution, industrialization, culture 18th to 20th centuries; imperialism, democracy, and totalitarianism; Europe’s leaders Napoleon to Hitler; Post-WW II developments.

110 [S] American History to 1877 3 Social, economic, cultural history of British mainland colonies/United States to 1877.

111 [S] American History Since 1877 3 Social, economic, cultural history of United States, 1877 to present.

198 [S] History Honors 3

201 [K] Introduction to Asian American History 3 Same as CAC 211.

205 [I] African American History 3 Same as CAC 235.

216 [H] Main Currents in American Culture 3 Same as Engl 216.

230 [K] Latin America, The Colonial Period 3 Overview of the most significant events, social and ethnic groups, practices, and institutions of colonial Latin America.

231 [K] Latin America, The National Period 3 Investigation of broad themes, individual national histories, and United States policy in Latin America over the past two centuries.


272 [I] Introduction to Middle Eastern History 3 History of the Middle East from Muhammad to the present; political and religious development and the impact of empires.

273 [G] Foundations of Islamic Civilization 3 Main ideas and institutions that have characterized Islamic civilization since its founding, presented thematically.

275 [K] Introduction to East Asian Culture 3 Civilizations of China and Japan.

298 [S] History of Women in American Society 3 The roles of women—social, economic, political—in American history from colonial times to the present.

300 Writing with Historical Emphasis 3 Prereq Engl 101. Historical topics, use of sources, analytical thought, and precision in language.

308 North American Indian History, Prehistory to Present 3 History of North American Indian peoples from circa 1350 to present.

312 [M] History of Canada 3 From European discovery through French settlement and English conquest to the persistent regional and ethnic diversity of the present.

313 [S] Civil Rights 3 Same as CAC 335.

314 U.S. and Canada 3 Regional and systematic geography; emphasis on contemporary problems. Field trips required. Cooperative course taught by UI (Geog 362), open to WSU students.

315 Topics in Canadian Studies 1 May be repeated for credit; cumulative maximum 5 hours. An interdisciplinary exploration through roundtable discussions, lectures, films, and readings of an important Canadian issue or region. S, F grading. Cooperative course taught jointly by WSU and UI (Hist 404).

320 [S] [M] American Agriculture and Rural Life 3 Same as Ag Ec 320.

325 [K] The City and Its People: Medieval to Modern 3 Comparison of urban society in western Europe with its counterparts in other areas of the world, medieval to modern.

331 [K] Cultural History in Latin America 3 Social development of Blacks, Whites, and Indians in Latin America from the conquest to the modern era.

335 Women in Latin American History 3 Survey of women’s changing roles throughout Latin America from precolonial to present.

340 [H] Ancient Greece 3 History and culture of the preChristian Greek civilization.

341 [H] Rome: Republic and Empire 3 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 English history; intellectual and cultural development.

343 [H] History of England Since 1485 3 Continuation of Hist 342. English history from the reign of the first Tudor monarch, Henry VII, to the present welfare-state era.

344 Topics in History Study Abroad 3 May be repeated for credit; cumulative maximum 6 hours.

345 Topics in History Study Abroad 3 May be repeated for credit; cumulative maximum 6 hours.

348 History of Scandinavia 3 A history of Scandinavia from earliest historical times to the present.

360 Foundations of Western Civilization 3 Major ideas and institutions from antiquity to the present which form the basis of Western civilization, presented thematically.

370 [G] Civilization of Classical India 3 Aspects of arts, literature, music, myth, philosophy, and religion of India to the British period, treated in historical and cultural context.

373 [G] Chinese Civilization 3 Growth of Chinese civilization from the dawn of history to the present.

374 [I] Pre-modern History of East Asia 3 Geographical, socioeconomic, and intellectual influences upon the development of China, Japan, and Korea to the 19th century.

380 [S] History of Medicine 3 Medicine in English-speaking societies, Middle Ages to present; development of medical care as a social institution.

381 [S] Science in Western Civilization Through Newton 3 Development of Western science and its influence on European culture and society.

382 [S] Science in Western Civilization from Newton to Einstein 3 Development of modern science and its influence on Western culture and society.


385 History of Modern Warfare 3 Warfare in the Western world; interrelationship with non-military institutions in age of nationalism from American and French revolutions through 1945.

386 World War II 3 Causes for war; military operations; economic mobilization; social and cultural change; occupation and resistance; the Holocaust; the legacy of war.

398 [M] History of Women in the American West 3 The history of women in the American Northwest through women’s literature, archives, and oral history.

408 Indians of the Northwest 3 Same as CAC 475.

409 American Environmental History 3 Environmental change, ideas of nature, natural resource development, conservation politics, science and environmental policy.

411 American Diplomatic History, 1776-1914 3 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 20th Century 3 Credit not granted for both Hist 412 and 512.

413 [M] Early American History to 1750 3 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 The origins of the American Revolution, the War of Independence, and the emergence of republican government and society.

415 Jeffersonian-Jacksonian America 3 Social and political history of the United States from 1789 to 1845. Jeffersonian and Jacksonian eras. Credit not granted for both Hist 415 and 515.

416 Civil War and Reconstruction 3 The Civil War as a problem in historical causation and social, political, and economic impact of the war. Credit not granted for both Hist 416 and 516.

417 Rise of Modern America 3 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 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 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 Prereq Hist 110 or Pol S 101. Credit not granted for both Hist 420 and 520.

421 The Frontier and the American West 3 Multicultural exploration of the frontier experience and western America; environment, economic development, gender, class and race emphasized. Credit not granted for both Hist 421 and 521.

422 History of the Pacific Northwest 3 Fulfills the teaching certification requirement in state
history and government in Washington and other Pacific Northwest states. Credit not granted for both Hist 422 and 522.

423 American Social and Intellectual History 3 Social and intellectual developments in the United States from colonial times to the present. Credit not granted for both Hist 423 and 523.

427 [M] Public History: Theory and Methodology 3 An introduction to the broad range of non-traditional careers in history. Credit not granted for both Hist 427 and 527.

430 [M] History of Mexico 3 War of independence, 19th century Mexico and the liberal-conservative struggle; modern Mexico since the Revolution of 1910. (a/y)(g)

432 20th Century Latin America 3 Contemporary developments, policies and trends in the Latin American states. (a/y)(g)

433 History of Cuba and the Caribbean 3 Historical development of the Caribbean, with emphasis on Cuba, from the Spanish arrival to Castro’s revolution. (a/y)(g)

434 History of Central America 3 Social and political development in Central America; reasons for dictatorships and radical social changes. (a/y)(g)

435 European Expansion Overseas, 1400-1800 3 The factors underlying European overseas expansion before 1800 and its impact on indigenous societies and world trading patterns. (g)

437 Topics in History—Study Abroad 3

438 Topics in History—Study Abroad 3

440 The Early Middle Ages, 330-1050 3 Western Europe, the Byzantine Empire, and Islam from the dissolution of classical Roman civilization to the 11th century revival. (a/y)(g)

441 The Later Middle Ages, 1050-1500 3 Western European and Byzantine civilizations from the 11th century revival to the advent of the Renaissance in the West. (a/y)(g)

442 Topics in History Study Abroad 3

443 Topics in History Study Abroad 3

444 The Renaissance 3 Political, cultural, and religious history of Europe, 1300-1500. (a/y)(g)

445 [M] The Reformation 3 Political, cultural, and religious history of Europe, 1500-1650. (a/y)(g)

446 Age of Louis XIV: Europe 1600-1789 3 Early modern Europe emphasizing artistic, intellectual, and political trends. (g)

447 Europe in the French Revolutionary and Napoleonic Era, 1789 to 1815 3 Credit not granted for both Hist 447 and 547.

448 Nineteenth-Century Europe, 1815-1914 3 The history of Europe from the defeat of Napoleon to the outbreak of World War I. Credit not granted for both Hist 448 and 548.

449 Europe and Two World Wars, 1914-1945 3 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 [M] Europe Since 1945 3 Europe from the end of World II to the present; the Cold War, European integration, social and intellectual life. Credit not granted for both Hist 450 and 550.

451 Topics in History—Study Abroad 3

452 Topics in History—Study Abroad 3

453 From the Tudor Revolution to the Glorious Revolution 3 England in the age of the Protestant Reformation. Credit not granted for both Hist 455 and 555.

459 Modern Britain 3 Britain and the Empire from the Napoleonic wars to the present. Credit not granted for both Hist 459 and 559.

461 European Diplomacy Since 1914 3 Credit not granted for both Hist 461 and 561.

462 History of Imperial Russia 3 History and culture of Imperial Russia from Peter the Great to the 1905 revolution. (a/y)

463 [M] History of the Soviet Union 3 The Russian revolutions and the Soviet regime: 1905 to the present. (g)

465 East-Central Europe 3 History, government, and culture of the countries between Germany and the Soviet Union; emphasis on the 20th century. (a/y)(g)

468 Hitler and Nazi Germany 3 Rise and fall of Nazism and Hitler; Nazi racial theories, Hitler’s triumph, the Third Reich, Holocaust and Ghettoerdaamungen. Credit not granted for both Hist 468 and 568.

469 [M] Seminar in History 3 May be repeated for credit. (g)

470 (390) [H] [M] Britain and India, India, and America 3 Study of British impact on India, Gandhian in America; development of satyagraha.

472 20th Century Middle East 3 Developments in the Middle East since World War I; nationalism, fundamentalism, and revolution. Credit not granted for both Hist 472 and 572.

476 Revolutionary China, 1800 to Present 3 Nature and effects of revolution on China from 1800 to present. Credit not granted for both Hist 476 and 576.

477 Modern Japanese History 3 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 Prereq certification; by interview only. Methods, resources, selection of content, past and present issues in social studies education.

486 United States Foreign Relations 3 Same as Pol S 427. Credit not granted for both Hist 486 and 586.

488 Classical Political Thought 3 Same as Pol S 437. (g)

489 Recent Political Thought 3 Same as Pol S 438. (g)

490 Politics of Developing Nations 3 Same as Pol S 435. Credit not granted for both Hist 490 and 590.

496 Topics in American Studies 3 May be repeated for credit; cumulative maximum 9 hours. Same as Engl 496. Credit not granted for both Hist 496 and 596. (SS)

497 Seminar 3 May be repeated for credit; cumulative maximum 6 hours. (g)

498 History Internship 3 V 2-12 May be repeated for credit; cumulative maximum in Hist 494 and 498 12 hours. Prereq major or minor in Hist. Participation as intern in public or private sectors. Credit not granted for both Hist 498 and 598. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

510 Field Course in American History 3 May be repeated for credit. Readings and interpretive study of American history.

511 American Diplomatic History 1776-1914 3 Graduate-level counterpart of Hist 411; additional requirements. Credit not granted for both Hist 411 and 511.

512 American Diplomatic History in the 20th Century 3 Graduate-level counterpart of Hist 412; additional requirements. Credit not granted for both Hist 412 and 512.

513 Seminar in American Studies 3 Same as Engl 413.

515 Jeffersonian-Jacksonian America 3 Graduate-level counterpart of Hist 415; additional requirements. Credit not granted for both Hist 415 and 515.

516 Civil War and Reconstruction 3 Graduate-level counterpart of Hist 416; additional requirements. Credit not granted for both Hist 416 and 516.

517 Rise of Modern America 3 Graduate-level counterpart of Hist 417; additional requirements. Credit not granted for both Hist 417 and 517.

518 United States, 1914-1941 3 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 Graduate-level counterpart of Hist 420; additional requirements. Credit not granted for both Hist 420 and 520.

521 The Frontier and the American West 3 Graduate-level counterpart of Hist 421; additional requirements. Credit not granted for both Hist 421 and 521.

522 History of the Pacific Northwest 3 Graduate-level counterpart of Hist 422; additional requirements. Credit not granted for both Hist 422 and 522.

523 American Social and Intellectual History 3 Graduate-level counterpart of Hist 423; additional requirements. Credit not granted for both Hist 423 and 523.

525 Seminar in American History 3 May be repeated for credit.

526 Seminar in American Diplomatic History 3 May be repeated for credit. Research in American diplomacy and a survey of pertinent literature in the field.

527 Public History: Theory and Methodology 3 Graduate-level counterpart of Hist 427; additional requirements. Credit not granted for both Hist 427 and 527.

528 Seminar in Public History 3 May be repeated for credit; cumulative maximum 6 hours. The development of skills at the graduate level to be used in nontraditional careers for historians.

535 Field Course in Latin American History 3 May be repeated for credit; cumulative maximum 9 hours. Readings and interpretive problems in Latin American history.

540 Seminar in European History 3 May be repeated for credit.

547 Europe in the French Revolutionary and Napoleonic Era, 1789 to 1815 3 Graduate-level counterpart of Hist 447; additional requirements. Credit not granted for both Hist 447 and 547.

548 Nineteenth-Century Europe, 1815-1914 3 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 Graduate-level counterpart of Hist 449; addi-
Honors Program

The University Honors Program is comprised of 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.

Honors Program

J. F. Lawrence, Director

The primary objective of the University Honors Program is to provide enriched educational opportunities for eligible students. The program promotes greater 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 University Honors Program is comprised of students from all departments and colleges who take honors courses throughout their undergraduate career. Each department or college, if it wishes, may offer special work for its students in addition to the university honors courses.

Students who are not admitted to the University Honors Program as incoming first year students may petition to enter the UHP any time after the end of their first semester but no later than the beginning of the junior year. For continued enrollment in the University Honors Program, students must maintain an overall B+ average (3.2) and must maintain this same average in honors work. Students in the UHP are not required to complete the General Education Requirements for graduation, except for the foreign language requirement where it applies.

A student may withdraw from the University Honors Program at any time within existing university rules, and the honors courses taken will be applied toward the General Education Requirements for graduation.

Students who satisfactorily complete all UHP requirements, earn a 3.2 grade point average in honors courses, and a cumulative grade point average of 3.2, will receive a University Honors Certificate of Completion provided they have completed a minimum of 14 credits of honors courses and seminars plus the required independent study. 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 3.5 but less than 3.8, or summa cum laude if the cumulative average is 3.8 or above.

The mathematics requirement for students in the University Honors Program can be met in a number of ways. Students who, on the basis of the mathematics placement exam, test into Math 172, are ex-

Honors Program

...tional requirements. Credit not granted for both Hist 449 and 549.

550 Europe Since 1945 3 Graduate-level counterpart of Hist 450; additional requirements. Credit not granted for both Hist 450 and 550.

555 From the Tudor Revolution to the Glorious Revolution 3 Graduate-level counterpart of Hist 455; additional requirements. Credit not granted for both Hist 455 and 555.

559 Modern Britain 3 Graduate-level counterpart of Hist 459; additional requirements. Credit not granted for both Hist 459 and 559.

560 Field Course in Early European History 3 May be repeated for credit; cumulative maximum 9 hours. Readings and issues in early European history.

561 European Diplomacy Since 1914 3 Graduate-level counterpart of Hist 461; additional requirements. Credit not granted for both Hist 461 and 561.

568 Hitler and Nazi Germany 3 Graduate-level counterpart of Hist 468; additional requirements. Credit not granted for both 468 and 568.

569 Field Course in Modern European History 3 May be repeated for credit; cumulative maximum 9 hours. Readings and interpretive problems in modern European history.

570 Field Course in Comparative History 3 May be repeated for credit; cumulative maximum 9 hours. Readings and issues in the comparative history of major world regions.

571 World History: Theory and Methodology 3 An introduction to themes, theories, methods, and literature of a global approach to history.

572 20th Century Middle East 3 Graduate-level counterpart of Hist 472; additional requirements. Credit not granted for both Hist 472 and 572.

576 Revolutionary China, 1800 to Present 3 Graduate-level counterpart of Hist 476; additional requirements. Credit not granted for both Hist 476 and 576.

577 Modern Japanese History 3 Graduate-level counterpart of Hist 477; additional requirements. Credit not granted for both Hist 477 and 577.

578 Field Course in Asian History 3 May be repeated for credit; cumulative maximum 9 hours. Readings and interpretive problems in Asian history.

581 American Historiography 3

586 United States Foreign Relations 3 Graduate-level counterpart of Hist 486; additional requirements. Credit not granted for both Hist 486 and 586.

590 Politics of Developing Nations 3 Graduate-level counterpart of Hist 490; additional requirements. Credit not granted for both Hist 490 and 590.

595 The Teaching of History in College V 1 or 2 May be repeated for credit; cumulative maximum 5 hours. Theory, problems, and methods of teaching history at the college level.

596 Topics in American Studies 3 May be repeated for credit; cumulative maximum 9 hours. Graduate-level counterpart of Hist 496; additional requirements. Credit not granted for both Hist 496 and 596. (SS)

597 Seminar in History 2 or 3 May be repeated for credit.

598 History Internship V 1-12 May be repeated for credit; cumulative maximum in Hist 594 and 598 12 hours. Graduate-level counterpart of Hist 498; additional requirements. Credit not granted for both Hist 498 and 598. S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

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 grade of C or better is required in all history courses used to fulfill the requirements for this major.

It is assumed that prior to the junior year the student will have completed courses meeting General Education and College of Liberal Arts requirements for graduation.

The schedule of studies for the history major follows:

36 semester hours history courses including at least:
- 6 hours US history;
- 6 hours European history;
- 6 hours history from other areas; and
- 12 hours 100-200-level Hist;
- 3 hours additional Hist;
- 21 hours 300-400 level Hist including 3 hours of Hist 469;
- 12 hour concentration (at least 6 upper-division) in the same or in related disciplines with the adviser’s approval.

SOCIAL STUDIES

Students desiring a teaching major in the social studies should see the teacher-education program outlined under elementary and secondary education in this bulletin. Enrollment will be in the Department of History and the Department of Teaching and Learning.

Teaching Major 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 Teaching and Learning while fulfilling the following departmental requirements:

36 semester hours history including at least:
- 6 hours US history, 6 hours European history, and 6 hours history from other areas; Hist 101, 102, 110, 111, and one 200-level survey course in Asia, Latin America, or Middle East;
- 21 hours 300-400-level Hist including 3 hours of Hist 469 plus Hist 422;
- 3 hours CAC 101, 111, 131, 151, 171, W St 200 or an approved substitute;
- Hist 480;
- a teaching minor;
-

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.

J. F. Lawrence, Director

The primary objective of the University Honors Program is to provide enriched educational opportunities for eligible students. The program promotes greater 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 University Honors Program is comprised of students from all departments and colleges who take honors courses throughout their undergraduate career. Each department or college, if it wishes, may offer special work for its students in addition to the university honors courses.

Students who are not admitted to the University Honors Program as incoming first year students may petition to enter the UHP any time after the end of their first semester but no later than the beginning of the junior year. For continued enrollment in the University Honors Program, students must maintain an overall B+ average (3.2) and must maintain this same average in honors work. Students in the UHP are not required to complete the General Education Requirements for graduation, except for the foreign language requirement where it applies.

A student may withdraw from the University Honors Program at any time within existing university rules, and the honors courses taken will be applied toward the General Education Requirements for graduation.

Students who satisfactorily complete all UHP requirements, earn a 3.2 grade point average in honors courses, and a cumulative grade point average of 3.2, will receive a University Honors Certificate of Completion provided they have completed a minimum of 14 credits of honors courses and seminars plus the required independent study. 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 3.5 but less than 3.8, or summa cum laude if the cumulative average is 3.8 or above.

The mathematics requirement for students in the University Honors Program can be met in a number of ways. Students who, on the basis of the math placement exam, test into Math 172, are ex-
empt from this requirement, as are students awarded Math 171 advanced placement credit. Most students fulfill their mathematics requirement by completing the math required by their major department, or, if no math is required by their major, by meeting the math requirements set by the General Education Program. Typical courses include the following: Math 140, 171, 202, 205, 206, 210, 222, or 251 and 252. For the University Honors preveterinary students, Stat 412 may be accepted with special permission of an honors adviser.

Courses offered through the University Honors Program are open to students enrolled in the program. Other students not enrolled in the UHP may sign up for honors courses on a space-available basis providing they meet eligibility criteria for the UHP.

Description of Courses

For explanation of symbols, see page 53

Anth 198 [S] Anthropology Honors 3
Bio S 298 [B] Biological Science Honors 4 (3-3)
Econ 198 [S] Economics Honors 3
Engl 198 [W] English Composition Honors 3
Engl 199 [H] English Composition and Literature Honors 3
Hist 198 [S] History Honors 3
Hum 198 [H] Humanities Honors 3
Phil 198 [H] Philosophy Honors 3
Ph S 298 [P] Physical Science Honors 4 (3-3)
Pol S 198 [S] Political Science Honors 3
Psych 198 [S] Psychology Honors 3
Soc 198 [S] Sociology Honors 3

University Honors

U H 200 Sophomore Summer Reading Examination V 1-3 May be used to fulfill the independent study requirement for the Honors Program. Examination to be taken during first six weeks of first semester of sophomore year. Variable credit depending on extent and quality of summer reading. S, F grading.

U H 300 Junior Summer Reading Examination V 1-3 May be used to fulfill the independent study requirement for the Honors Program. Examination to be taken during the first six weeks of first semester of junior year. Variable credit depending on extent and quality of summer reading. S, F grading.

U H 330 Development of Western Civilization 3 Required of all Honors Program students in their junior or senior year.

U H 350 Development of Eastern Civilization 3 Required of all Honors Program students in their junior or senior year.

U H 400 Senior Summer Reading Examination V 1-3 May be repeated for credit; Thesis or project directed by student’s major department. S, F grading.

460 Seminar 2 May be repeated for credit.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

Schedule of Studies

A bachelor’s degree earned through the University Honors Program requires approximately the same number of total semester hours as required by the corresponding non-honors general education curriculum. Some majors require different or fewer credit hours of their honors students. At least 40 of the total hours earned must be in upper-division courses.

The University Honors Program regards fluency in another language as an important skill of an educated individual and encourages all students to undertake a study of a foreign language. The UHP accommodates students who wish to pursue foreign languages through allowing them to slightly alter their program schedule of studies. Those students who complete the equivalent of four semesters of a single foreign language at WSU will complete two social science classes instead of three and will be exempt from completing the independent study requirement. All students other than foreign language majors who pursue study of a foreign language beyond the fourth semester, and all students who study abroad, will be recognized at graduation with a University Honors Program Certificate of Completion with International Emphasis. This option is available under special circumstances to foreign language majors who must petition the program for special consideration.

University Honors Program students are required to complete the courses (or approved substitutes) specified in the following schedule of studies. As stated above, UHP students are strongly urged to gain proficiency in a foreign language and to take advantage of the Study Abroad opportunities offered by Washington State University. Either or both of these options can be successfully integrated into the following schedule of classes in conjunction with the courses required by the student’s major.

Each semester, students enrolled in the Honors Program take one to three honors courses in addition to their major courses. The suggested schedule of studies, distributing the honors courses over four years, is as follows:

Freshman Year

First Semester

Engl 198 or 199
Math requirement1 or social science 198

Second Semester

Engl 198 or 199
Math requirement1 or social science 198

Spring

Freshman or Sophomore Year

Choose three:

Anth 198, Econ 198, Hist 198, Pol S 198, Psych 198, Soc 198

Sophomore Year

Bio S 298 (spring only)2
Ph S 298 (fall only)5

Junior Year

U H 330 Development of Western Civ
U H 350 Development of Eastern Civ

Senior Year

U H 440 Domain of the Arts
U H 450 Senior Thesis or Project (in majors which require one)

Timing Optional with Student:

Independent Study6

Choose one:

Hum 1987, Phil 198, U H 4606

Optional: U H 430 (Foreign Study Practicum and Report)

1 Students who qualify for Calculus II (Math 172) on the basis of the math placement test are exempt from this requirement. Other students take the math required by their major. Where no math is required beyond General Education Requirements, University Honors will accept: Math 140, 171, 202, 205, 206, 210, 222, 251 and 252, etc. For any questions concerning the math requirement, check with a University Honors Program adviser.

2 Students taking biological science laboratory courses for their majors may be exempt from this requirement.

3 Students taking physical science laboratory courses for their majors may be exempt from this requirement.

4 A minimum of 3 credits of independent study is required. This requirement may be fulfilled through a summer reading program (U H 200, 300, 400) or through Special Problems (U H 499), during the year. Either option involves a nonclassroom academic experience, under the guidance of a professor, designed by the student and the professor.

5 Students taking biological science laboratory courses for their majors may be exempt from this requirement.

6 Students taking physical science laboratory courses for their majors may be exempt from this requirement.

7 Students who qualify for Calculus II (Math 172) on the basis of the math placement test are exempt from this requirement. Other students take the math required by their major. Where no math is required beyond General Education Requirements, University Honors will accept: Math 140, 171, 202, 205, 206, 210, 222, 251 and 252, etc. For any questions concerning the math requirement, check with a University Honors Program adviser.

8 Students taking biological science laboratory courses for their majors may be exempt from this requirement.

9 Students taking physical science laboratory courses for their majors may be exempt from this requirement.

10 A minimum of 3 credits of independent study is required. This requirement may be fulfilled through a summer reading program (U H 200, 300, 400) or through Special Problems (U H 499), during the year. Either option involves a nonclassroom academic experience, under the guidance of a professor, designed by the student and the professor.

Seminars can be taken from the sophomore year on.

Department of Horticulture and Landscape Architecture

HORTICULTURE

Courses in horticulture are designed to give instruction in fruit, vegetable, and ornamental production, handling, utilization, and management. Emphasis is on developing an understanding of plant growth and development fundamental to crop management. A production and management emphasis is designed to prepare students to be professionals in production, handling and processing, marketing, consulting, government, management, and related fields. A science emphasis is designed to prepare students for graduate study and careers in research and teaching.

The department offers an undergraduate minor in the areas of fruit and vegetable production or environmental horticulture. Horticultural production and management students are encouraged to minor in business administration or agricultural economics. Horticultural science students are encouraged to take additional courses in chemistry, biochemistry, genetics, mathematics, and physics.

An interdisciplinary curriculum in integrated pest management is available to those students whose interests span the areas of horticulture and pest management. The curriculum is described under the entomology section of this bulletin.

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 of symbols, see page 53.

Horticulture

Hort

101 Horticulture and Society 3 (2-3) Principles and practices of gardening for personal, economic, environmental and social benefits; horticultural technologies; fruits, vegetables, landscape and interior plants.

201 Introduction to Horticultural Science 4 (3-3) Prereq Bot 120. Fundamentals of plant growth and development at the cellular and whole plant levels as influenced by environment and management decisions.

231 Landscape Plant Materials I 3 (2-3) Prereq Bot 120 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) Prereq Bot 120 or Hort 201. Continuation of Hort 231.

234 Controlled Environments for Horticultural Production 3 (2-3) Prereq Hort 201. Principles and practices for modifying environmental factors for horticultural production in controlled environments; methods for environmental measurements. Field trip required. Cooperative course taught by WSU, open to UI students (PlSc 234).

251 Plant Propagation 4 (2-6) Prereq Bio S 103, Bot 120, or Hort 101, 201. Principles and methods of multiplying herbaceous and woody plants and their handling up to useable size. Field trip required.

304 Growth and Development of Crop Plants 3 Prereq Bio S 104 or Bot 120. Understanding anatomical structure of plants, internal growth regulation, environmental effects on growth, application of knowledge to cropping systems.

310 (311) Pomology 3 Prereq Hort 201. Science, technology and management of deciduous tree-fruit production. Cooperative course taught jointly by WSU and UI (PlSc 461).

311 Pomology Laboratory 1 (0-3) Prereq Hort 201. Tree-fruit production practices; irrigation systems, orchard sprayers, plant characteristics, pruning, orchard design, fruit maturity, propagation, pests and diseases. Field trip required. (A/Y)

313 Viticulture and Small Fruits 3 Prereq biological science, botany, or plant science course. Botanical relationships, plant characteristics, fruiting habits, location, culture, marketing, and utilization of grapes, berries, and other small or bush fruits. Field trip required. (A/Y)

320 Olericulture 3 Prereq Hort 201 or plant science course; Soils 201. Science, business, and art of vegetable crop production: culture, fertility, growth, physiology, handling, marketing; garden, commercial, greenhouse, tropical, specialty vegetables. Cooperative course taught by WSU, open to UI students (PlSc 320).

321 Olericulture Laboratory 1 (0-3) Prereq Hort 201. Field trip required. Cooperative course taught by WSU, open to UI students (PlSc 321).

325 Plant Breeding 3 Same as Bot 325.

331 Landscape Plant Installation and Management 3 (2-3) Prereq Hort 231, 232. Principles and practices for installation and management of interior and exterior landscapes; specifications, site preparation transplanting, growth control, problem diagnosis.

340 Nursery Management 3 (2-3) Management of commercial nurseries from plant propagation through sale of plants. Field trip required. (A/Y) Cooperative course taught by UI (PlSc 340), open to WSU students.

350 Irrigated Crop Nutrition 3 Same as CropS 350.

356 Preparation for Entering the Horticulture Profession 1 Prereq junior in Hort. Resume writing; job application; interviewing; investigation of job opportunities; contact with employers; internship reports.

399 Professional Work Experience V 2-4 May be repeated for credit, cumulative maximum 8 hours. Prereq basic horticulture. By interview only. Planned and supervised work experience. S, F grading.

405 Genetic and Molecular Aspects of Plant Reproduction 2 or 3 Prereq BC/BP 364, Bot 320, GenCB 301. Genetic, molecular, cellular and evolutionary aspects of plant reproductive strategies and their manipulations. Credit not granted for both Hort 405 and 505.

416 Advanced Horticultural Crop Physiology 3 Prereq Hort 320. Growth and development of horticultural crops; effect of mineral nutrition and environment on physiological processes. (p)

417 Plant Pest Control 3 (2-3) Prereq Chem 240. Principles, methods, equipment, chemicals, benefits, and hazards of plant pest control. Field trip required. (g)

418 [M] Post-harvest Biology and Technology 3 (2-3) Prereq Hort 201; Bot 320. Physical and physiological basis for handling and storage practices; perishable organ ontogeny and physiological disorders; post-harvest environment requirements. Field trip required. (g) Cooperative course taught by WSU, open to UI students (PlSc 418).

420 Potato Physiology and Production Technology 2 (1-3) Prereq Bot 320. Plant and tuber physiology; physical, chemical, physiological and technical concepts of production, storage, and processing of potatoes. Field trip required. Credit not granted for both Hort 420 and 520. (A/Y) Cooperative course taught by WSU, open to UI students (PlSc 420).

421 Management of Woody Horticultural Crops 3 Prereq Hort 320. Management strategies for optimizing the productivity and resource utilization efficiency of woody fruit tree, vine, and ornamental crops. Credit not granted for both Hort 421 and 521.

425 [M] Current Topics in Horticulture 3 Prereq Bot 320; Hort 234, 311, or 320. Classical, current scientific, and popular literature on horticultural topics. (g)

438 Ornamental Plant Production 3 (2-3) Prereq Hort 234. Fall and winter production practices of greenhouse and nursery crops. Field trip required. (g) Cooperative course taught by WSU, open to UI students (PlSc 430).

439 Ornamental Plant Production II 3 (2-3) Prereq Hort 234. Production requirements for spring greenhouse and nursery crops; garden center management considerations. Field trip required. (g)

445 Plant Breeding 3 Same as CropS 445.

469 Seed Production 3 Same as CropS 469.

470 Potato Science 3 Prereq Hort 201. Origin, culture, harvesting, handling, storage, and marketing of the potato. (A/Y) Cooperative course taught by UI (PlSc 490/590), open to WSU students. (g)

475 Postharvest Pathology 3 Same as PI P 475.

480 Agricultural Issues 2 Prereq Bio S 103, Junior standing. Facts regarding current issues about pollution, the environment, marketing, and endangered species; formulation of position statements regarding current issues.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

503 Advanced Topics in Horticulture V 1-4 May be repeated for credit; cumulative maximum 8 hours. Prereq Bot 320. Current topics and research techniques in horticulture.

505 Genetic and Molecular Aspects of Plant Reproduction 2 or 3 Graduate-level counterpart of Hort 405; additional requirements. Credit not granted for both Hort 405 and 505.

509 Seminar 1 May be repeated for credit; cumulative maximum 4 hours. Continuous enrollment required for regularly enrolled graduate students in Hort. Recent developments in hor-
Students in horticulture may focus on fruits and vegetables, tree fruit management, or environmental horticulture.

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

FRUIT AND VEGETABLE HORTICULTURE

Freshman Year

First Semester
- Arts and Humanities [H] or Social Sciences [S]: Elective or GenEd 110 or 111 [A] (GER) 3
- Bot 120 Intro to Bot 4
- Chem 101 or 105 [P] (GER) 4
- Engl 101, H D 205, or SpCom 102 [C] (GER) 3

Second Semester
- Arts and Humanities [H], Social Sciences [S]: Elective, or GenEd 110 or 111 [A] (GER) 3
- Chem 102 or 106 [P] (GER) 3 or 4
- Engl 101, H D 205, or SpCom 102 [C] (GER) 3
- Hort 201 Intro Hort Science 4

Sophomore Year

First Semester
- Ag Ec 201 or Econ 201 3 or 4
- Chem 240 Elem Org Chem 4
- Hort 234 Controlled Environments 3

Fall Quarter
- Hort 311, 313; or 320, 321 3 or 4
- Soils 201 Intro Soils 3

Second Semester
- Ag Ec or Business Elective 3
- Arts and Humanities [H] or Social Sciences [S]: Elective GER 6
- Bot 320 Plant Physiology 4
- Hort 251 Plant Propagation 4

Junior Year

First Semester
- Hort 310, 311, 313; or 320, 321 3 or 4
- Hort 356 Hort Profess 1
- Math Proficiency [N] GER 3
- Pl P 429 Gen Pl Path 3
- Elective* 3

Second Semester
- Cpt S Elective 3
- Entom 340 Ag Entomology 3
- GenCB 210 or 301 4
- Hort Ornamental Elective 3
- Soils 441 Soil Fertility 3

Summer Session (or semester)
- Hort 399 Prof Work Exp 3

Senior Year

First Semester
- Hort 310, 311, 313; or 320, 321 3 or 4
- Hort 418 Post-harvest Biol 3
- Intercultural Studies Elective [I] (GER) 3
- Electives and Specialities* 3

Second Semester
- Hort 416 Advanced Hort Phys 3
- Hort 417 or IPM Elective 3
- Hort 425 Curr Topics 3
- Electives and Specialities* 6

Horticulture electives may include: Bio S 372; Bot 332, 411, 460; Chem 107; CropS 301, 305; Entom 450; Hort 445; IPM 201, 452, 462; Phys 101 and 102, or 201 and 202; Pl P 405; Soils 413, 414, 421, 422.

TREE FRUIT MANAGEMENT

The Tree Fruit option in the Horticulture B. S. degree is an integrated, cooperative program between Wenatchee Valley College and the Department of Horticulture and Landscape Architecture. This option is designed to train professional horticulturists for deciduous tree fruit industries. The first half of the program is taken at Wenatchee Valley College, where the educational emphasis is on applied aspects of tree fruit production and management through courses, orchard pracicum experiences and internships. Wenatchee Valley College, located in the heart of Washington’s tree fruit industry, has teaching orchards and well equipped facilities. The second half of the program is taken at Washington State University where courses, laboratories and research experience provide students with an advanced knowledge of the science, technology and management of tree fruit production systems. Additional courses are taken to increase the breadth of knowledge about the diversity of horticultural crops and awareness of current issues in horticultural science.

Freshman Year (Wenatchee Valley College)

Fall Quarter
- Agri 152 Orchard Entomology 4
- Hort 161 Plant Science 5

Spring Quarter
- Chem 110 (WSU [P] GER) 5
- Engl 101 (WSU [W] GER) 5

Winter Quarter
- Agri 154 Orchard IPM I 2
- Agri 163 Soils 5
- Math 201 Statistical Analysis (WSU [N] GER) 5

Sophomore Year (Wenatchee Valley College)

Quarter
- Agri 154 Orchard IPM I 2
- Agri 264 Tree Fruit Production I 5
- Agri 292 Internship 4
- Spch 220 Public Speaking (WSU [C] GER) 5

Fall Quarter
- Agri 242 Orchard Record Keeping 4
- Agri 266 Tree Fruit Production II 5
- Agri 218 Tree Fruit Nutrition 4
- Econ 202 Principles II (WSU [S] GER) 5
- Foreign Language elective 5

Spring Quarter
- Agri 265 Tree Fruit Production II 5
- Agri 243 Orchard Business Analysis 4
- Agri 266 Tree Fruit Production III 5
- Agri 292 Internship 4

Fall Quarter
- Agri 267 Tree Fruit Production IV 5
- Agri 292 Internship 4

Senior Year (Washington State University)

Fall Semester
- Chem 240 Organic Chemistry 4
- GenEd 110 [A] World Civilizations I (GER) 3
- Hort 499 Research Experience 4

Spring Semester
- GenCB 210 or 301 3 or 4
- Hort 251 Plant Propagation 4
- Arts and Humanities [H] (GER) 3
- Intercultural Studies [I] (GER) 3
- GenEd 111 [A] World Civilizations II (GER) 3

Junior Year (Washington State University)

Fall Semester
- Hort 356 Prep for Hort Profession 1
- Hort elective 3 or 4

Spring Semester
- Agri 230 Orchard Business Analysis 4
- Agri 218 Tree Fruit Nutrition 4
- Econ 202 Principles II (WSU [S] GER) 5
- Foreign Language elective 5

Senior Year
- Agri 267 Tree Fruit Production IV 5
- Agri 292 Internship 4

Fall Semester
- Agri 230 Orchard Business Analysis 4
- Agri 405 Tree Fruit Nutrition 4
- Econ 202 Principles II (WSU [S] GER) 5
- Foreign Language elective 5

Spring Semester
- Agri 416 Advanced Hort Crop Physiology 3
- Agri 421 Woody Hort Crop Mgt 3
- Hort 425 Current Topics in Hort 3
- Soils 414 Intro to Environmental Biophysics 2
- Soils 415 Environmental Biophysics Lab 1
- Soils 441 Soil Fertility 3

Department of Horticulture and Landscape Architecture

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FRUIT AND VEGETABLE HORTICULTURE

Freshman Year

First Semester
- Arts and Humanities [H], Social Sciences [S]
  - Elective or GenEd 110 or 111 [A] (GER) 3
- Bot 120 Introductory [B] (GER) 4
- Chem 101 or 105 [P] (GER) 4
- Engl 101, H D 205, or SpCom 102 [C] (GER) 3

Second Semester
- Arts and Humanities [H], Social Sciences [S]
  - Elective, or GenEd 110 or 111 [A] (GER) 3
- Chem 102 or 106 [P] (GER) 3 or 4
- Engl 101, H D 205, or SpCom 102 [C] (GER) 3
- Hort 201 Intro Hort Science 4
- L A 264 Basic Landscape Design 3

Sophomore Year

First Semester
- Chem 240 or 340* 3 or 4
- Hort 231 Landscape Plant Mls I 3
- Hort 234 Controlled Environments 3
- Math Proficiency [N] (GER) 3
- Soils 201 Soils 3

Second Semester
- AgEc 201 or Econ 201 [S] (GER) 3 or 4
- Business or Science Emphasis Elective* 3
- Hort 232 Landscape Plant Mls II 3
- Hort 251 Plant Propagation 4
- Intercultural Studies Elective [I] (GER) 3

Summer Session (or semester)
- Hort 399 Professional Work Exp 3

Junior Year

First Semester
- Arts and Humanities [H] or Social Sciences [S]
  - Elective GER 3
- Bot 320 Plant Physiology 4
- Business or Science Emphasis Elective* 3
- Hort 356 Prep for Entering Profession 1
- P I P 429 General Plant Pathology 3
- Elective* 3

Second Semester
- Business or Science Emphasis Elective* 3
- Cpt S Elective 3
- Entom 340 Ag Entomology 3
- Hort 331 Landscape Plant Install and Maint 3
- Soils 441 Soil Fertility 3

Senior Year

First Semester
- Business or Science Emphasis Elective* 3
- Hort 310, 311, or 313 3
- Hort 320 Oleiculture 3
- Hort 321 Olericulture Lab 1
- Hort 418 Post-harvest Physiology 3
- Hort 438 Ornamental Plant Prod I 3

Second Semester
- Hort 416 Advanced Hort Crop Physiology 3
- Hort 417 or IPM Elective 3
- Hort 425 Current Topics in Hort 3
- Hort 439 Ornamental Plant Prod II 3

Elective* 3

* Depending on a student’s goals and objectives, either a science or a business emphasis may be selected by modifying the above. Check with your advisor for specific courses.

Minor in Horticulture

A minimum of 16 hours in Hort is required, of which at least 8 hours must be in upper-division courses excluding Hort 355, 399, and 499. Hort 201 and 234 or 251 are required. All pass-fail enrollments must be approved by the department chair.

Preparation for Graduate Study

Students with undergraduate majors in the plant sciences, including horticulture, crop science, 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 should take 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 resources of the land so that the activities of people are in harmony with their environment. 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 of symbols, see page 53.

Landscape Architecture

LA 101 Landscape Architecture Graphics 3 (1-6)
  Basic mechanical and freehand drawing; use of various drafting media, two- and three-dimensional drawing, lettering, and rendering techniques.

202 [H] The Built Environment 3 Same as Arch 202.

260 History of Landscape Architecture 3 Historical development in the practice and profession of landscape architecture throughout the world, circa B.C. to present. Cooperative course taught jointly by WSU and UI (LA 289).

262 Landscape Architectural Design I 3 (2-3)
  Prereg Arch 102 or LA 101. Basic design and graphic techniques related to solving of elementary design problems.

263 Landscape Architectural Design II 3 (0-6)
  Prereg LA 262. Application of basic design principles and design process to site planning; integration of design graphics and verbal/graphic presentations.

264 Basic Landscape Design 3 For nonmajors.
  Design theory and principles; site design factors; design process application; construction criteria; graphic construction communication; landform; circulation systems; plant uses.

299 Professional Work Experience: Contracting and Maintenance 1 or 2 Prereg major in preLA or L A. Project planned with and approved by faculty as professional work experience; written report and presentation to faculty required.

362 (363) Landscape Architectural Design III 4 (2-6) Prereg LA 263, junior in L A. Professional site design processes; concentration on planting and site planning, design with urban community, ecological, and open-space projects.

363 (362) Landscape Architectural Design IV 4 (2-6) Prereg LA 263, junior in L A. Professional site design processes; concentration on recreation facilities and site planning within residential, urban, institutional, and regional projects.

365 Landscape Architectural Construction I 4 (2-6) Prereg LA 262. Basic grading and surface drainage facilities, subsurface drainage systems, horizontal and vertical road design, site design, and construction document techniques.


399 Professional Work Experience: Office Practice 1 or 2 May be repeated for credit; cumulative maximum 4 hours. Prereg junior in L A. Planned professional work experience in design and office practice as approved by faculty; written report and presentation to faculty required. S, F grading.

400 Introduction to Computer Graphics in Landscape Architecture 3 (2-3) Applications and techniques in computer graphics; 2-D and 3-D computer-aided design, animation, and paint systems; basics in operating systems.

440 Advanced Application in Computer-Aided Design 3 Prereg introductory course in CAD. Advanced applications in 2-D and 3-D CAD, including photorealistic modeling and rendering, landform analysis, animation, and customization.

450 [M] Principles and Practice of Planning 3 Same as ES/RP 450.

457 Regional Landscape Inventory and Analysis 4 (2-6) Prereg Bio S 120; Geol 101 or Soils 201. Application of ecological planning process for landscape inventory and analysis.

468 [M] Senior Creative Project 4 Prereg L A 475. Individually developed studio and scholarly project conducted with a faculty mentor; demonstration of advanced verbal, graphic, and written presentations required.

470 Landscape Architectural Design V 4 (1-9) Prereg senior in L A. Advanced group and in-
individual landscape architectural design and planning projects; professional applications of site design theory and design processes.

**475 Senior Project Proposal** 1 Prereq senior in L A. Program planning for senior project. S, F grading.

**480 Professional Practice** 2 Prereq senior in L A. Current office practices, design and construction management techniques; introduction to construction contract legal requirements within the practice of landscape architecture. Cooperative course taught jointly by WSU and UI (LA 358).

**499 Special Problems** V 1-4 May be repeated for credit. S, F grading.

**Schedule of Studies**

**PRELANDSCAPE ARCHITECTURE**

Prelandscape architecture (preLA) is a two-year, nondegree 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 Education Requirements (GERs) and basic professional courses. The completion of preLA prepares the student to make 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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch 101 or LA 101</td>
<td>3</td>
</tr>
<tr>
<td>Engl 101 [W] Intro Writing (GER)</td>
<td>3</td>
</tr>
<tr>
<td>F A 101 [H] Art History (GER)</td>
<td>3</td>
</tr>
<tr>
<td>GenEd 110 or 111 [A] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>Bot 120 [B] Intro Biology (GER)</td>
<td>4</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch 102 or F A 110 Graphics</td>
<td>3</td>
</tr>
<tr>
<td>Art and Humanities Elective [H] GER</td>
<td>3</td>
</tr>
<tr>
<td>GenEd 110 or 111 [A] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>LA 202 The Built Environment</td>
<td>3</td>
</tr>
<tr>
<td>Physical Science Elective [P] GER</td>
<td>4</td>
</tr>
<tr>
<td>Social Sciences Elective [S] GER</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>Communication Proficiency Elective [C] GER</td>
<td>3</td>
</tr>
<tr>
<td>Hort 231 Plant Materials I</td>
<td>3</td>
</tr>
<tr>
<td>L A 260 Landscape Arch History</td>
<td>3</td>
</tr>
<tr>
<td>L A 262 Landscape Arch Design I</td>
<td>3</td>
</tr>
<tr>
<td>Soils 201 Intro to Soils</td>
<td>3</td>
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</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hort 232 Plant Materials II</td>
<td>3</td>
</tr>
<tr>
<td>Intercultural Studies Elective [I] GER</td>
<td>3</td>
</tr>
<tr>
<td>L A 263 Landscape Arch Design II</td>
<td>3</td>
</tr>
<tr>
<td>L A 365 Landscape Arch Cstn II</td>
<td>4</td>
</tr>
<tr>
<td>L A 400 LA Computer Graphics</td>
<td>3</td>
</tr>
</tbody>
</table>

**Program in Hotel and Restaurant Administration**

The professional four-year course of study is divided into two segments. These are prelandscape 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 L A, the student should have completed the preLA curriculum and submitted an application. Application forms and instructions are available from the Admissions Office and the Department of Horticulture 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. The following courses (or approved equivalents) must be completed with a passing grade for students to be admitted into the professional program: Bot 120, Hort 231, 232; LA 101, 260, 262, 365, 400.

Transfer students who have completed the equivalent of the preLA curriculum may apply to the professional program.

**Junior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 362 Landscape Arch Design III</td>
<td>4</td>
</tr>
<tr>
<td>LA 366 Landscape Arch Cstn II</td>
<td>4</td>
</tr>
<tr>
<td>LA 480 Professional Practice</td>
<td>2</td>
</tr>
<tr>
<td>Physical Science Elective [P] (GER)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AgTM 346 Turf Irrigation</td>
<td>1</td>
</tr>
<tr>
<td>Hort 331 Landscape PI Inst</td>
<td>3</td>
</tr>
<tr>
<td>LA 363 Landscape Arch Design IV</td>
<td>4</td>
</tr>
<tr>
<td>Soils 374 Remote Sensing</td>
<td>3</td>
</tr>
<tr>
<td>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>Bio S 372 or Bot 462</td>
<td>3</td>
</tr>
<tr>
<td>LA 450 Principles of Planning</td>
<td>3</td>
</tr>
<tr>
<td>LA 470 Landscape Arch Design V</td>
<td>4</td>
</tr>
<tr>
<td>LA 475 Senior Project Proposal</td>
<td>1</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 467 Land Inventory</td>
<td>4</td>
</tr>
<tr>
<td>LA 468 Senior Project</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>5</td>
</tr>
</tbody>
</table>

**Description of Courses**

For explanation of symbols, see page 53.

**Hotel and Restaurant Administration**

**H A**

**181 Introduction** 3 Historical development and organizational structure of the hospitality service industries. Cooperative course taught by WSU, open to UI students (RcMgt/Rec 181).

**235 Principles of Tourism** 3 Underlying principles and practices in domestic tourism. Cooperative course taught by WSU, open to UI students (RcMgt 236/Rec 235).

**280 Lodging Systems and Procedures** 3 Management functions relating to the planning and operational policies of various hotel departments.

**301 Introduction to Conventions and Meetings Industry** 3 Prereq junior standing. Overview of industry, including components, interrelationships, economics and theory.

**310 Hospitality Industry Financial Control** 3 Prereq Acctg 231; junior standing. International control through financial and accounting systems for hotels and restaurants.


**320 Industry Experience** 2 (0-6) Prereq H A major. Students work in various hospitality operations for 1,000 hours; work performance must be documented. Two supervised reports required. S, F grading.

**350 Beverage Management** 3 Prereq junior standing. Beverage operations; detailed study of wines and spirits; consideration of social impacts such as trends in consumption.

**356 Food and Beverage Systems Design and Analysis** 3 Prereq FSHN 120; H A 280. Management theory, problems, and cases in food and beverage operations, work methods; sanitation; research.

**357 Food and Beverage Systems Control** 3 Prereq
### Department of Human Development

**Acctg 231; Cpt S 105. Problems encountered in the management of food and beverage operations such as control and forecasting.**

**358 Foodservice Systems and Control** 5 (3-6) Prereq Acctg 230, FSHN 120. Operational control processes, control systems, and cost analysis procedures in food and beverage management.

**359 Food Service Operations and Product Logistics** 4 (3-3) Prereq FSHN 120. Management of food service operations, control systems, and distribution networks.

**375 (HAS 375) Club Management** 2 Prereq junior standing. The identification of managerial problems unique to club operations and their potential solutions.

**381 (M) Hospitality Management and Organization** 3 Prereq H A 181. Advanced management methods and concepts utilized in the administration of hospitality service industries. Cooperative course taught by WSU, open to UI students (ReMgt 381/Rec 382).

**382 Multi-Unit Management** 3 Prereq H A 381. Concepts and principles involved in managing multiple restaurant units; finance, marketing, human resources, operations, and financial management. Special attendance hours may be required.

**383 Meeting and Convention Management** 3 Prereq H A 301. Theory and practice of meeting/convention/event management, including goals, organization on- and off-site operations, evaluation.

**386 (HAS 386) Applied Industrial Relations** 2 Prereq junior standing. Labor relations; history, organization, and elections of bargaining agents, negotiation and administration of contracts.

**435 Tourism** 3 International and domestic tourism; effects of tourism on the society.(g)

**440 Association Management** 3 Prereq H A 301. Theory, organization, structure and management of voluntary associations; economics and role in convention industry.

**450 Convention Facilities Management** 3 Prereq H A 301. Politics, siting, design, construction, organization and management of public assembly facilities, including private structures.

**450 (M) Marketing Strategy and Development** 3 Prereq Mktg 360. Theory and practice; problems in guest relations, special sales efforts, intramural promotion, research.(g)

**491 Operational Analysis** 3 Prereq Acctg 231; Dec S 215; Fin 325. Using management tools in analyzing operational effectiveness of hotel and restaurant organizations.(g)

**494 (HAS 494) Service Operations Management** 3 Prereq junior standing. Design and management of service delivery systems through operations management topics from a service perspective.

**495 Case Studies and Research** 3 Prereq H A 358, 380, 491. Use of the case method and computerized statistical programs in the analysis of administrative practices of organizations.(g)

**496 Seminar V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq junior standing. Selected topics.**

**497 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours. Topics of special interest within the area of hotel and restaurant organization.**

**498 Hotel and Restaurant Administration Internship V 2-15 May be repeated for credit; cumulative maximum 15 hours. Cooperative educational internship with a business, government or nonprofit organization, coordinated through the Professional Experience Program. S, F grading.**

**499 Special Problems V 1-4 May be repeated for credit. S, F grading.**

**535 International Tourism Strategy and Planning** 3 Tourism components; social, economic, and cultural effects on societies; the management of tourism businesses.

**580 Hospitality Services Marketing** 3 Prereq Mktg 505. Services marketing concepts and principles applied to hospitality organizations; strategies to market services and control quality.

**581 Services Management** 3 Prereq Mgt 501. Design and management of service systems in hospitality operations; control of customer interaction, personnel activities and inventory.

**597 Special Topics** 3 Strategic business policy, concepts, and practices in hospitality management.

### Schedule of Studies

At least 40 of the total hours required for this degree must be in upper-division courses. More than 40 percent of the work must be in subjects other than business, economics, and hotel and restaurant administration.

**Hotel and Restaurant Administration:**

**Hotel and Restaurant Administration:**

**General:**

- **Economics and Humanities (3 hours), Ecn 101, 102, English writing class [W], writing [W] or speech [C] class, FSHN 120, 121, GenEd 110, 111, Intercultural Studies (3 hours), lab science, Math 107 or 201, 202, Sciences. Cpt S 105 recommended.

**Business:**

- **Acctg 230, 231, B Law 210, Dec S 215, Econ 350, Fin 325, Mgt 350, Mktg 360.**

**H A 356 and 357 required as substitute for H A 358 at Seattle and Krems sites.**

Students in the College of Business and Economics must demonstrate performance at a level expected of seniors in their major by presenting WSU graded course work to satisfy at least 75 percent of the 300-400-level courses required by the major program. The chair of the department and the dean of the college must approve in writing any portion of the 300-400-level credit which is to be satisfied by transfer, correspondence, independent study, or other credit which does not carry WSU grade points. Additional transfer, correspondence, and independent study credit (within university limits on these credits) may count toward the 120 hours required for the degree and/or satisfy requirements other than major courses.

### Transfer Students

A student planning to transfer to hotel and restaurant administration.

**Transfer Students**

A student planning to transfer to hotel and restaurant administration from a two-year program should make appropriate academic progress before transferring. In addition, the student should have 500 hours (one semester) of gainful employment in the hospitality industry. However, it is strongly advised that the student utilize both summers in related employment before entering WSU.

Students may be admitted to the Seattle program if they are junior status and have completed two of the following business core classes: Acctg 230, 231, B Law 210, Dec S 215, Econ 101, 102, 350, Fin 325, Mgt 350, 450, Mktg 360. Qualified graduates of the International Institute of Tourism and Management in Krems, Austria, may be admitted to the Krems, Austria Center for HRA. Opportunities are available to all H A majors for a semester abroad at the Krems, Austria Center.

**Department of Human Development**

**Professor and Chair, J. Teachman; Professors, M. Galloway, J. Hiller, R. Jimmerson, J. Long, J. Newman, D. Price; Associate Professors, K. Bacon, R. Day, J. Dillman, L. Linden, E. Massier, E. Murphy, L. Parker, K. Peterson, M. Ray; Assistant Professors, B. Boyd, K. Carver, M. Deen, P. Mills, M. Young; Instructors, D. Cook, M. Wandschneider.**

Students seeking a bachelor of arts degree in this department focus on human development across the lifespan as it occurs within the family, and linked to a variety of contexts within communities. The program centers on understanding the complexity of physical, social, cognitive, and affective individual development with emphasis on development within the family. The curriculum examines human and family development across the lifespan (i.e., child, adolescent, younger and older adults). Opportunities are also available to become state certified as a teacher in preschool to third grade or as a family and consumer services teacher in junior high or senior high school.

In addition to the teaching certifications, the department offers two emphasis areas. The first emphasis is human development. Within this emphasis students prepare to work with children, adolescents, or older adults in a variety of professional settings. These may include positions in foster parent programs, adoption agencies, various child care or head start programs, teen centers, nursing homes, and other community-based programs for the elderly. The second emphasis is family studies. Students choosing this emphasis will be prepared for a wide range of careers, most of which focus on some aspect of services offered to families or family members by public agencies and/or private business. A student may choose to further specialize in areas such as family service, resource management, or pre-family therapy.

Both human development and family emphases provide preparation for graduate work leading to teaching, research, counseling, or administrative positions in social service, resource management, or pre-family therapy.

The department also offers a Master of Arts degree in Human Development. More information is available from the graduate school.

The outline below describes a course of study leading to a degree of Bachelor of Arts in Human Development: with emphasis in either human development or family.

Additionally, two minors are offered; one in general human development and one in early childhood (see description below).

NOTE: All degrees in human development are pending approval by the Washington State Higher
Description of Courses

For explanation of symbols, see page 53.

Human Development

H D

101 Human Development in Context Across the Lifespan 3 Overview of lifespan development from a psychosocial ecological perspective; individuals, families, organizations, and communities and their interrelationships.

201 Human Development - Prenatal Through Age 8 3 In-depth examination of growth and development from the prenatal period through age 8 in context of family, community and society.

202 Human Development - Middle Childhood Through Adolescence 3 In-depth study of school-age child and adolescent; observation and volunteer experience; theories and their application.

203 Human Development - Adulthood Through the Older Years 3 In-depth study of individual development from young adulthood through later years within the social context of family and community.


205 (AgHE 205) [C] Communication in Human Relations 3 (2-3) Developing an understanding of human behavior and learning skills in communication and leadership.

301 (CCFS 447) Families in Crisis 3 Prereq H D 101 or 204. Examination of the nature and course of family crisis, using a family systemic approach, including principles used in intervention strategies.

302 (CCFS 448) [M] Parent-Child Relationships 3 Prereq H D 101, 201 or 202. Parenting in contemporary society with focus on reciprocity of parent-child relationships and diversity of families.

305 Gerontology 3 Prereq 6 hours H D or social sciences. Examination and analysis of social context of aging including public policy, implications of demographic shifts, and quality-of-life issues.

308 Issues of At-Risk Individuals and Families 3 Prereq 6 hours H D or social science. Examination of model programs for empowering at-risk populations; perspectives of individuals being served and of professionals; roles of communities.

310 Research Approaches to Human Development 3 Prereq H D 101, Math 251 or Stat 205. Overview of research techniques in human development; methods of evaluating research products.

320 Resource Management and Problem Solving 3 Prereq H D 204. Styles of managing material, human and environmental resources with families; various approaches to problem solving with individuals and families.

330 (CCFS 497) Professional Preparation 2 Prereq 12 hours H D. Human service career preparation through: career exploration; relating students’ skills and educational plans to professional plans; cover letters; resumes; interviewing.

331 Internship Preparation 1 Prereq H D 330. Developing individually designed internships, acquiring job skills in placement, and orientation to work setting.

340 Human Service Programs 3 Prereq H D 204. Study of available prevention and intervention services for individuals and families in both publicly and privately sponsored programs.

342 (CCFS 342) Curriculum for Early Childhood Programs 4 (3-3) Prereq H D 101, 201. Planning and implementation of developmentally appropriate curriculum for use in programs serving young children.

344 (CCFS 344) Guidance in Early Childhood 3 Prereq H D 101 or 201; 204. Theories of child guidance; understanding of child behavior; strategies and techniques for effective group and individual guidance of young children.

350 [M] Diversity in Contemporary Families 3 Prereq 6 hours H D or social science. Preparation for students in human service professions to work with ethnic, cultural, economic, language, gender, religious and other types of diversity.

403 (CCFS 442) Families in Poverty 3 Prereq H D 101, 201; or 6 hours H D or social sciences. Examining poverty in US and globally; description of groups most often poor; identification of effective solutions and successful interventions.

406 Work and Family 3 Prereq 6 hours H D or social science. Issues related to work and family; workplace environments fostering effective policy responses to family needs; role of work-family coordinator.(g)

407 (AgHE 407) Directed Teaching, Agriculture and Home Economics 3 Same as Ag Ed 407.

408 Advanced Adolescent Development 3 Prereq H D 202, 204. In-depth examination of theories and research; developmental issues and prevention and intervention programs for school-aged child and adolescent.(g)

409 Current Issues. Issues 3 Prereq Econ 101 or 102; H D 101. Analysis of the consumer role; ecological perspective; interaction of consumers, government, market; effects on communities, families, and individuals.

410 [M] Public Policy Issues Impacting Families and Individuals 3 Prereq 6 hours H D or social science. Family policy issues in a changing society; ecological perspective; relationship of public policy to communities, organizations, families, and individuals.

420 (CCFS 440) [M] Application of Human Development Theories 3 Prereq H D 201, 202, or 203; 204. In-depth examination of theories and their use in understanding individual development in context of family and community.

430 Professional Skills for Working with Individuals and Families 3 Prereq H D 340. Development of skills important for effective human service professionals: communication, group dynamics, supervision, leadership, ethical behavior, cultural sensitivity, and others.

446 (CCFS 446) Practicum in Early Childhood Programs 6 (0-18) Prereq H D 342, 344. Teaching in department’s child development laboratory; emphasis on skill building in working with diverse groups and building partnerships with families.

449 (CCFS 449) Seminar in Human Development 1 By interview only. May be repeated for credit; cumulative maximum 4 hours. Small group seminar on issues, concerns, ideas of current interest in human development. S, F grading.

464 (CCFS 464) Administration of Early Childhood Programs 3 By interview only. Organization, administration, and management of early childhood programs; finance, program development, service delivery, personnel concerns, resource development, and evaluation.

480 Instructional Strategies 4 Prereq EdPsy 301, H D 201, 202, or 203; junior standing. Methods for teaching life skills, parent education, and youth development programs through extension, community agencies, and schools.

495 (CCFS 495) Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 4 hours. By interview only. Opportunity to assist with instruction; experience in further study of topic, organization of material, grading, management of resources. S, F grading.

498 (CCFS 498) Field Placement V 4 (0-12) to 8 (0-24) May be repeated for credit; cumulative maximum 8 hours. By interview only. Prereq H D 330. Self-initiated, supervised work experience with appropriate private organizations, businesses, or government agencies; interaction with professionals in related fields.

499 (CCFS 499) Special Problems V 1-4 May be repeated for credit. S, F grading.

510 Seminar in Human Development 1 Introduction to human development profession, departmental faculty and their research, WSU resources, conducting research, writing thesis; preparation for field placement.

511 Theory and Substance of Human Development I 3 Prereq graduate standing. Human development theories; application to life span development, cultural variations, resources, problem solving, interaction of families and individuals with other systems.

512 Theory and Substance of Human Development II 3 Prereq H D 511. Continuation of 511; theory and application to concepts and issues in human development.

513 Research Methods in Human Development I 3 Prereq graduate standing. Introduction to process of research and methods in human development: techniques of research, data collection, and data analysis procedures.

514 Research Methods in Human Development II 3 Prereq H D 513. Integration of formal decision making into the social science research process; procedures appropriate for experimental, quasi-experimental and field research.

515 Seminar 2 Prereq H D 510, 512, 514, 598 or c//. Application of knowledge in professional settings, analysis and integration of internship experience with theoretical and substantive expertise.

520 Adolescence 3 Prereq graduate standing. In-depth examination of theories and research, developmental issues and prevention and intervention programs for school-aged child and adolescents.

530 (CCFS 546) Management of Human Service Programs 3 Prereq graduate standing. Examines organization, administration, management, and evaluation of human service programs from theoretical and practical perspectives.

540 Effective Intervention Programs 3 Prereq H D 530. Innovative effective prevention and
intervention programs from theoretical, applied, and outcome evaluation perspectives.

550 Seminar on Family Relationships 3 Prereq graduate standing. Survey of family studies topics and issues examined from a research point of view.

560 (CCFS 549) Seminar in Child Development 3 Prereq graduate standing. Survey of literature on selected areas in child development; discussion of research and application related to current issues and trends.

570 Families and the Economy 3 Prereq graduate standing. Family/household as an earning and consuming unit; theoretical and policy approaches to income and household production and consumer behavior.

580 Families, Community and Public Policy 3 Prereq HD 513 or 514. Analysis of family policy research; role of family policy research in public policy and knowledge building processes.

595 (CCFS 595) Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 8 hours. Prereq senior standing. Supervised instructional practicum for departmental majors. S, F grading.

598 (CCFS 598) Professional Internship 3 Prereq HD 510. Supervised individual experiences with related organizations, businesses, or government agencies; opportunities for interaction with professionals in related fields. S, F grading.

600 (CCFS 600) Special Projects or Independent Study Variable credit. S. F grading.

700 (CCFS 700) Master’s Research, Thesis, and/or Examination Variable credit. S. F grading.

Schedule of Studies

At least 45 of the total hours required for this bachelor’s degree must be in upper-division courses.

Courses Required of Human Development majors emphasizing human development

H D 201, 202, 203, 204, 310, 330, 410, 420, 498. Students must then select a minimum of 15 additional course hours from within the Department of Human Development. (See a departmental adviser for a list of acceptable courses.) Additionally, each student must complete the requirements for a minor in one of the areas recommended below.

Courses Required of Human Development majors emphasizing family

H D 201, 202, 203, 204, 310, 320, 330, 410, 498. Students must then select a minimum of 15 additional course hours from within the Department of Human Development. (See a departmental adviser for a list of acceptable courses.) Additionally, each student must complete the requirements for a minor in one of the areas recommended below.

Areas recommended for minors:

(Students should consult with an adviser in human development before choosing a minor.)

Agricultural Economics; Anthropology; Apparel, Merchandising and Interior Design; Communication; Economics; Food Science and Human Nutrition; Foreign Language; Kinesiology; Music; Political Science; Psychology; Sociology; Speech and Hearing Sciences.

Certifications Offered in Home and Family Life Education and Preschool through Third Grade (P-3)

Students majoring in human development may choose to become certified in the State of Washington to teach in preschool through third grade (P-3), kindergarten through eighth grade (K-8), or home and family life. They must fulfill course requirements specified by the State of Washington. See the appropriate departmental adviser for a complete listing of required courses. Note that the certification programs available in human development are offered in conjunction with the WSU College of Education. Additionally, those teacher certification students who wish to have a supporting endorsement from the Department of Human Development must meet with the appropriate human development adviser to obtain the list of approved courses.

Minor in General Human Development

Those wishing to minor in general human development must take the following courses (18 credit hours): H D 101, 201; 202 or 203; 204 and 6 additional upper-division H D credit hours.

Minor in Early Childhood

Students obtaining a degree in elementary education and wishing to obtain a supporting endorsement in early childhood must take the following courses: H D 101, 201, 204, 302, 342, 344, 449; plus one of: H D 403, 410, or 420.

Humanities Courses

The humanities curriculum consists of a series of interdisciplinary courses designed to introduce students to some of the basic concepts of civilization through the study of representative master pieces of literature, music, art and related fields. The courses numbered 101, 202, 303, and 304 provide a survey of western civilization from ancient times to the twentieth century.

Using Humanities courses as part of General Studies-Humanities Major

WSU-Pullman students who are interested in the interdisciplinary study of culture can use a number of the courses listed below as a minor concentration in a degree program in General Studies-Humanities. A recommended sequence would include at least three from Hum 101, 202, 303, 304, which provide students a survey of arts and thought from ancient times to the present. Any of the other humanities courses, including the study-abroad option, could be used as well. Students of branch campuses, who want a coherent, minor concentration in humanities, should consult their advisers.

Description of Courses

For explanation of symbols, see page 53.

Humanities

Hum 101 [H] Humanities in the Ancient World 3 Integrated 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; exploring ideals of humanism in literature, philosophy, history, art, and music of the Middle Ages and Renaissance.

221 Topics in Humanities—Study Abroad 3

222 Topics in Humanities—Study Abroad 3 May be repeated for credit; cumulative maximum 6 hours.

224 Topics in Humanities—Study Abroad 3

303 [H] Reason, Romanticism, and Revolution 3 Integrated humanities; literature, philosophy, history, art, and music of the modern world.

304 [H] Humanities in the Modern World 3 Literature, philosophy, art, architecture, film, music since World War I; major works reflecting influential movements and concerns of the modern world.

322 Topics in Humanities—Study Abroad 3 May be repeated for credit; cumulative maximum 6 hours.

324 Topics in Humanities—Study Abroad 3

335 [H] The Bible as Literature 3 Same as Engl 335.

Interdisciplinary University Courses

Description of Courses

1Open only to students in Honors Program.

338 Topics in Humanities 3 May be repeated for credit; cumulative maximum 6 hours. Interdisciplinary, international topics in the humanities (art, architecture, music, literature, philosophy, film).

340 [H] American Foundings 3 Examination of the differing assumptions about the nation in such founding texts as The Federalist Papers and Emerson’s Essays.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

For explanation of symbols, see page 53.

University

Univ

100/101 College Majors and Career Choice 1 Career development and the decision-making process; exploration of academic majors and careers.

590 Preparation for College Teaching 2 Prereq graduate student/TA appointment. Cross-discipline instructional development for graduate teaching assistants; course development teaching techniques, university policies and procedures. S, F grading.

591 Seminar in Interdisciplinary Studies 1 May be repeated for credit. Contemporary issues in interdisciplinary education and research. Open to all interested students.
Department of Kinesiology and Leisure Studies

Associate Professor and Department Chair, E. Udd; Professors, L. Bruya, K. DePauw; Associate Professors, D. Albright, R. Doornink, D. Engerbretson, G. Hulac, M. Mowatt, R. Peavy, W. Thorland; Assistant Professors, S. Blank, A. Bright, R. Elam, J. Hemingway, C. Zweifel.

Degrees

The Department of Kinesiology and Leisure Studies offers two undergraduate degrees: the Bachelor of Science in Kinesiology and the Bachelor of Arts in Recreation Administration and Leisure Studies. These degrees offer opportunities for studying biological, physical, psychological, and social mechanisms contributing to human development as it relates to movement and leisure studies/services. Students majoring in athletic training, exercise science, and kinesiology focus on the behavioral aspects of human movement, exercise physiology, physical growth, motor development, motor control/learning, sports medicine, wellness, and biomechanics. The focus of the Recreation Administration and Leisure Studies Program is the preparation of students who will become 1.) certified leisure professionals working in a variety of leisure service settings and 2.) graduate students engaged in continued study of leisure behaviors and leisure services delivery systems. NOTE: All degrees in kinesiology are pending approval by the Washington State Higher Education Coordination Board.

Description of Courses

For explanation of symbols, see page 53.

PEACT These courses are open to all students. PEACT courses numbered 100 through 174 are for beginners. Those numbered 177 and above are for intermediate or advanced students. Credit. PEACT activity course credit is granted on the basis of 1 credit for two one-hour classes per week. PEACT courses may not be repeated for credit, with the exception of PEACT 200 Special Topics (1 credit hour, repeatable to a maximum of 4 hours).

Courses are graded A, S, or F, except as noted.

Physical Education Activity

PEACT

| 101 | Beg Conditioning S, F grading. |
| 102 | Beg Cond ROTC |
| 105 | Beg Wrestling |
| 106 | Self Defense |
| 107 | Beg Judo |
| 108 | Karate |
| 109 | Beg Boxing |
| 112 | Wt Training S, F grading. |

Athletic Training

| 114 | Beg Gym Tumbling |
| 116 | Rhythmic Gymnastics |
| 117 | Group Tumbling |
| 118 | Adapted PE |
| 119 | Aerobic Dance S, F grading. |
| 120 | Am Soc Dance Men |
| 121 | Am Soc Dance Women |
| 122 | Beg Ballet |
| 124 | Tap Dancing |
| 126 | Beg Mod Dance |
| 127 | Beg Jazz Dance |
| 128 | Beg Swimming |
| 129 | Beg Swimming Women |
| 130 | Diving |
| 131 | Scuba Diving I |
| 132 | Cond Swim S, F grading. |
| 133 | Water Aerobics S, F grading. |
| 134 | Cond Skiing S, F grading. |
| 135 | Aqua Fitness |
| 137 | Boating Safety Instruction |
| 140 | Jogging S, F grading. |
| 141 | Beg Golf |
| 143 | Beg Bowling |
| 145 | Beg Fencing Men |
| 146 | Beg Fencing Women |
| 147 | Beg Rolleskrating |
| 148 | Beg Badminton |
| 150 | Beg Tennis |
| 152 | Pocket Billiards |
| 153 | Ultimate Frisbee |
| 154 | Beg Racquetball |
| 158 | Beg Volleyball |
| 164 | Beg Soccer |
| 171 | Beg Off Ice |
| 174 | Beg Skiing S, F grading. |
| 177 | Int Racquetball |
| 200 | Special Topics |
| 201 | Int Conditioning ROTC |
| 208 | Int Karate |
| 209 | Int Boxing |
| 220 | Adv Soc Dance Men |
| 221 | Adv Soc Dance Women |
| 222 | Beg Ballet |
| 224 | Int Tap Dance |
| 227 | Int Jazz Dance |
| 228 | Int Swimming |
| 231 | Advanced Scuba Diving I |
| 234 | Emergency Water Safety |
| 235 | Lifeguarding I |
| 236 | Lifesaving Recertification |
| 241 | Int Golf |
| 242 | Adv Golf |
| 243 | Int Bowling |
| 245 | Int Fencing Men |
| 246 | Int Fencing Women |
| 247 | Adv Racquetball |
| 250 | Int Tennis |
| 251 | Adv Tennis |
| 258 | Int Volleyball |
| 259 | Adv Volleyball |
| 264 | Int Soccer |
| 265 | Adv Soccer |
| 266 | Fly Fishing |
| 274 | Int Skiing S, F grading. |
| 275 | Adv Skiing S, F grading. |

800 Doctoral Research, Dissertation, and/or Examination Variable credit. For Interdisciplinary PhD only. S, F grading.

305 Nutrition Related to Fitness and Sport 2

349 (PEP) Advanced Athletic Injuries 3 (2-3) Prereq Ath T 266. Etiologic symptoms of sports-related injuries; diagnostic emphasis given to specific injuries of the extremities. Cooperative course taught by UI (H&S 349), open to WSU students.

391 Practicum in Athletic Training V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Same as Kin 391.

465 (PEP) Medical Aspects of Athletic Injuries 1 Prereq Ath T 266. Role and function of various medical and paramedical specialists in the treatment of sport-related injuries/illnesses. S, F grading. Cooperative course taught by WSU, open to UI students (H&S 465).

466 (PEP) Athletic Training Evaluation 3 Prereq Ath T 266. Advanced injury evaluation theory and techniques in athletic training. Cooperative course taught by WSU, open to UI students (H&S 466).

467 (PEP) [M] Athletic Training Rehabilitation 3 Prereq Ath T 266. Advanced injury rehabilitation theory and techniques in athletic training. Cooperative course taught by WSU, open to UI students (H&S 467).

468 (PEP) Athletic Training Modalities 3 Prereq Ath T 266. Advanced theory and techniques of modality use in athletic training. Cooperative course taught by WSU, open to UI students (H&S 468).

469 (PEP) [M] Athletic Training Organization and Administration 3 Prereq Ath T 266. The organization and administration of athletic training programs. Cooperative course taught by WSU, open to UI students (H&S 469).

490 Athletic Training Clinical Internship I 3 (0-9) By interview only. Beginning techniques in management of sport injury/illness under supervision of a certified athletic trainer. S, F grading.

491 Athletic Training Clinical Internship II 3 (0-9) By interview only. Intermediate techniques in management of sport injury/illness under supervision of a certified athletic trainer. S, F grading.

492 Athletic Training Clinical Internship III 3 (0-9) By interview only. Advanced techniques in management of sport injury/illness under supervision of a certified athletic trainer. S, F grading.

Health Education

H Ed

361 Health and Wellness 3 Knowledge of the multi-dimensional aspects of wellness and concepts necessary for a positive lifestyle through self-assessment.

363 First Aid 2 (1-3) First aid; CPR; accident prevention; American Red Cross certification awarded to those who qualify.

365 Methods of First Aid Instruction 2 (1-3) Prereq Red Cross first aid and CPR certificate. Red Cross Standard First Aid and CPR instructor training; certification to those who qualify.
490 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 6 hours. Same as PEP 490. S, F grading.

496 Special Topics V 1-3 May be repeated for credit; cumulative maximum 9 hours. Special topics in health.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

Kinesiology

196 (PEP) Introductory Topics 1 May be repeated for credit; cumulative maximum 4 hours. Physical education, leisure, recreation, dance, health sports.


215 (PEP) History and Philosophy of Physical Education 1 Overview of historical and philosophical dimensions relating to physical education.

231-238 (PEP) Knowledge, Skills, and Basic Strategies 1 (0-3)

231 Recreational Dance

232 Track and Field

233 Flag Football/Volleyball

234 Softball/Basketball

235 Soccer/Golf

236 Educational Gymnastics/Tumbling

238 Tennis/Badminton

262 (PEP) Human Anatomy 3 (2-3) Human skeletal structure and articulations; skeletal musculature; the nervous, respiratory, and circulatory system. Cooperative course taught by WSU, open to UI students (PE 261).

266 (PEP) Care and Prevention of Athletic Injuries 3 (2-3) Prereq Kin 262 or c//. Administration of school sports health care programs; prevention, treatment, and rehabilitation of sports injuries.

289 (PEP) Introduction to Youth Sports 2 Same as RLS 289.

296/297 (PEP) Applied Computer Technology in Physical Education, Sport, and Recreation 1 (0-3) Computer technology, word processing, database, and spreadsheet methodologies for movement and recreation studies.

300-309 (PEP) Advanced Skills, Techniques, and Coaching of Sports 2 (1-3) Philosophy, safety, equipment, drills, competition, skills, techniques, and strategies.

300 Baseball

301 Basketball

303 Football

306 Softball

308 Track and Field

311 (PEP) Strength Training 3 Prereq PEA ACT 112 or c//. Basic information and guidelines for the enhancement of athletic performance, injury prevention, rehabilitation and general fitness.


314 (PEP) Philosophy of Human Movement 3 The philosophical dimensions of physical education, sport, and dance.

317 (PEP) K-12 Practicum and Seminar 3 (1-6)

Prereq Kin 472. 481; 10 hours in the subject-matter major. Gymnasium teaching experience prior to student teaching including TESA, ITIP, health concerns, abuse, HIV/AIDS, and reporting procedures. S, F grading.

362 (PEP) Biomechanics 3 Prereq Kin 262 or Zool 315. Anatomical and mechanical influences on human movement.

364 (PEP) Fitness 2 Physiological, mechanical and health-related basis of fitness practices.

384 (PEP) Lifeguard Instruction 1 (0-3) Prereq ARC lifeguard training; CPR; first aid. Methods, materials, and resources; American Red Cross lifeguard instructor certificates awarded to those who qualify.

385 (PEP) Methods of Water Safety and Swimming Instruction 3 (2-3) Prereq ARC LifeGuard Training or Emergency Water Safety certificates; ARC Swimmer Certificate, or equivalent ability. Methods, materials, and resources; American Red Cross certificates awarded to those who qualify.

390 (PEP) Practicum in Coaching V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. By interview only. Supervised practicum. S, F grading.

392 (PEP) Practicum in Physical Education V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. By interview only. Supervised practicum. S, F grading.

393 (PEP) Practicum in Special Populations V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. By interview only. Supervised practicum. S, F grading.

394 (PEP) Practicum in Exercise Science V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Supervised practicum. S, F grading.

415 (PEP) Assessment 3 Prereq senior in KLS. Program evaluation human techniques for curriculum pertaining to human movement.

430 (PEP) Biological and Mechanical Aspects of Sports 3 Not open to KLS majors. Anatomy, physiology, physiology of exercise, and kinesiology; practical applications to coaching situations.

461 (PEP) Motor Skill Acquisition 3 Motor learning and motor control areas; neural mechanisms, practice, feedback, retention, and transfer application of theoretical concepts.

463 (PEP) Physiology of Exercise 3 (2-3) Prereq Kin 262 or Zool 315; Zool 251. Basic physiological responses of the human organism to the stresses of exercise and training.


475 (PEP) Women and Sport 3 Understanding of the current status of women’s sports participation in the U.S. and of the woman participant herself.

476 (PEP) Exercise Testing and Prescription 3 (2-3) Prereq Kin 463. Principles of exercise testing and prescription based on current practices in physical education, physiology and rehabilitation. Credit not granted for both Kin 476 and 568.

481 (PEP) Analysis of Human Movement 3 (2-3) Design, knowledge and skills which assist the physical education teacher in planning for and responding to student skill learning.

483 (PEP) Management and Methods of Teaching Physical Education 3 (2-3) Prereq Kin 481 or c//. Management and control, teaching styles, methods, lesson design, discipline, with application in teaching labs. Cooperative course taught by WSU, open to UI students (PE 320, 321).

484 (PEP) Principles of Movement for Individuals with Disabilities 3 Knowledge, understanding, and skills for teaching movement activities to individuals with disabilities.

487 (PEP) Facilities and Equipment for Physical Education, Recreation, and Athletics 3 Credit not granted for both Kin 487 and 587.

488 (PEP) Current Issues in Sport 3 Administrative problems in coaching in school athletic programs based upon accepted education policies.

489 (PEP) Behavioral Aspects of Coaching 3 Psychological concepts and implications for performance in sport.

490 (PEP) Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 6 hours. S, F grading.

491 (PEP) Internship V 8-12 Supervised practicum in agency or business. S, F grading.

496 (PEP) Special Topics 1 May be repeated for credit; cumulative maximum 4 hours. Physical education, leisure, recreation, dance, health sports.

499 (PEP) Special Problems V 1-4 May be repeated for credit. S, F grading.

501 (PEP) Trends and Issues in Physical Education, Sport, and Leisure 3 May be repeated for credit; cumulative maximum 6 hours. Exploration of trends and issues in physical education, sport, and leisure.

Combined maximum for Kin and RLS 300-level practicum courses: 8 hours.

551 (PEP) Assessment and Evaluation of Motor Dysfunction 3 Principles of assessment/evaluation of motor dysfunction; tools and techniques; administration, interpretation, and translation into program plans.

552 (PEP) Neurological Impairment and Motor Behavior 3 Neurophysiological components of normal and abnormal motor behavior as a result of neurological impairments/dysfunction in children through the aged.

553 (PEP) Programming in Adapted Physical Activity 3 Intensive experiences in planning and implementing physical activity programs to include disabled individuals in urban, rural, integrated and segregated settings.

554 (PEP) Sport and Individuals with Disabilities 3 Issues and opportunities in sport for individuals with disabilities. (SS)

562 (PEP) Pediatric Exercise Physiology 3 Rec Kin 463. Influences of physical development on physiological responses of children and adolescents to exercise and training. (SS)

563 (PEP) Exercise and Immune Response 3 Rec Kin 463. Influence of physical exercise on immune response and consequent impact on host susceptibility to disease and infection. (SS)

564 (PEP) Mechanical Analysis of Motor Activity 3 Prereq Kin 362. Fundamental laws of mechanics applied to motor activities. Cooperative course taught by WSU, open to UI students (PE 564).

566 (PEP) Biomechanics 3 Prereq Kin 564. Biological and mechanical aspects of human movement. Cooperative course taught by WSU, open to UI students (PE 566).

567 (PEP) Advanced Physiology of Exercise II 3 Rec Kin 463, Pulmonary, circulatory, thermoregulatory, fluid balance and physiological system integration responses to exercise and training.

568 (PEP) Fitness Assessment and Prescription 3 (2) Prereq Kin 463. Development of skills in testing analysis, and prescription for health-related fitness. Credit not granted for both Kin 476 and 568. Cooperative course taught by UI (PE 593), open to WSU students.

573 (PEP) Philosophical Perspectives of Sport and Physical Activity 3 Ontological, ethical, aesthetic views of physical activity (a/l).

574 (PEP) Social and Cultural Issues of Physical Activity and Sport 3 Exploration, analysis and understanding of human movement in the context of the individual, cultural, and physical environments.

578 (PEP) Sports in Society 3 The social significance of sports; sociology of sport research (a/y).

579 (PEP) Psychology and Physical Activity 3 Current research findings in psychology pertinent to the teaching and coaching of physical activities.


582 (PEP) Observation and Analysis of Teaching Physical Activity 3 (2-3) Systematic approach to observation/analysis of teaching physical activity; evaluation of instructional process. Cooperative course taught jointly by WSU and UI (PEP 522).

583 (PEP) Teaching Strategies in Physical Activity 3 Research materials and methods related to effective teaching in physical education.

585 (PEP) Curriculum Development in K-12 Physical Education 3 Principles of curricular construction and the process of curricular development. Cooperative course taught jointly by WSU and UI (PE 544).


587 (PEP) Facilities and Equipment for Physical Education, Recreation, and Athletics 3 Graduate-level counterpart of Kin 487; additional requirements. Credit not granted for both Kin 487 and 587.

589 (PEP) Research Techniques 2 (1-3) or 3 (2-3) Application and use of research techniques and tools in physical education.

590 (PEP) Internship V 2-12 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. S, F grading.

591 (PEP) Motor Learning 3 Learning theory, learning models, and experimental evidence related to learning of perceptual-motor skills.

592 (PEP) Perceptual-Motor Development 3 Physical growth and perceptual-motor development (a/y).

594 (PEP) Athletic Internship V 2-9 May be repeated for credit; cumulative maximum 9 hours. Internship in educational setting; direct participation in tasks, research, planning, activity controlling and reporting. S, F grading.

596 (PEP) Seminar 1 or 2 May be repeated for credit.

597 (PEP) College Teaching: Physical Education 1 (0-3) May be repeated for credit; cumulative maximum 4 hours. By interview only. Supervised experience in college teaching. S, F grading.

598 (PEP) Methods of Research 3 Application of the scientific approach to research in physical education, sport and leisure.

600 (PEP) Special Projects or Independent Study Variable credit. S, F grading.

700 (PEP) Master's Research, Thesis, and/or Examination Variable credit. S, F grading.

702 (PEP) Master's Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

800 (PEP) Doctoral Research, Dissertation, and/or Examination Variable credit. S, F grading.

Recreation and Leisure Studies

RLS 110 Recreation for Special Populations 3 History, etiology, characteristics, services, resources, professional competencies and opportunities; recreation programs. Credit not granted for both RLS 110 and 383. Cooperative course taught by UI (Rec 110), open to WSU students.

221 Outdoor Recreation 2 (1-3) Analysis of activities, equipment, safety, environmental impact, and skills basic to outdoor recreation.

229 Nature and the American Experience V 1-6 May be repeated for credit; cumulative maximum 6 hours. Study of nature writings and the integration of these writings with natural setting observations.

230 Principles of Therapeutic Recreation 3 Prereq RLS 110. Philosophy, design, and development of recreation programs for persons with disabling conditions; theory and rationale of therapeutic recreation. Cooperative course taught by UI (Rec 230), open to WSU students.

231 Recreational Dance 1 (0-3) Same as Kin 231.

275 Leisure in Society 3 The leisure movement in society; history, philosophies, trends; socioeconomic values; professional responsibilities within governmental and nongovernmental agencies.

284 Recreation Activities 2 (1-3) Development of theories, knowledge, and skills in a variety of recreation activities.

285 Recreation Leadership 3 (2-3) Theories and techniques of leadership.

288 American Outdoor Recreation Areas V 1-6 May be repeated for credit; cumulative maximum 6 hours. Field study and readings in outdoor recreation administrative, managerial, and planning practices.

289 Introduction to Youth Sports 2 Coaching philosophy; sport psychology, conditioning, and pedagogy; psychology; legal aspects; recreational youth sports programs.

321 Social Psychology of Leisure and Recreation 3 Prereq Psych 105, Soc 101 or 102; RLS 275, 285; certified major in RLS. Presentation, interpretation and discussion of research and literature related to the social psychological aspects of leisure activities.

330 Implications of Disabling Conditions 3 Prereq RLS 110. Prevalent disabling conditions (etiology, symptomatology, and characteristics); implications for recreation programming; intervention in clinical and nonclinical settings. Cooperative course taught by UI (Rec 330), open to WSU students.

341 Commercial Recreation 3 Prereq RLS 275, 285. Identification, organization, and function of the various types of commercial recreation businesses; recreation as a business.

365 Recreation for the Elderly 3 Recreation programming for the elderly based on aging process, cultural influences, and psychological and social aspects. Cooperative course taught by UI (Rec 365), open to WSU students.

371 Wildland Recreation 3 Same as NATRS 371.

375 Recreation Programming 3 (2-3) Prereq RLS 285; certified major in RLS. Current principles and practices in recreation programming.

383 Therapeutic Recreation Service 3 Prereq RLS 285. Foundations for therapeutic recreation services, recreation services for special populations, people with disabilities and older adults. Credit not granted for both RLS 110 and 383.


390 Practicum in Commercial Recreation V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. By interview only. Supervised practicum. S, F grading.

391 Practicum in Municipal/Agency V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. By interview only. Supervised practicum. S, F grading.

392 Practicum in Parks/Facilities V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. By interview only. Supervised practicum. S, F grading.

393 Practicum in Therapeutic Recreation V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. By interview only. Supervised practicum. S, F grading.

395 Practicum in Recreation/Leisure Research V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. By interview only. Supervised practicum. S, F grading.

421 [M] Assessment in Recreation and Leisure 3 Prereq RLS 321; Soc 320 or approved stat course. Designing, implementing, and interpreting the information generated by instruments which evaluate recreation and leisure services, leisure service programs, and personnel.

430 Problems in Therapeutic Recreation 3 Problems encountered in the delivery of therapeutic recreation services to clients with special needs. Cooperative course taught by UI (Rec 430), open to WSU students.

431 Medical Terminology 1 Basic concepts of medical terminology and symbols related to working with people with disabilities. Cooperative course taught by UI (Rec 431), open to WSU students.

435 Comprehensive Planning and Operations in Leisure Services 3 Prereq RLS 321, 375. Techniques and problem solving in the planning and operation of leisure services.

467 Physical Education and Recreation for Severely Handicapped 3 Prereq RLS 110. Characteristics of individuals with severe handicaps; problems encountered in physical education classes and recreational activities. Cooperative course taught by UI (Rec 467), open to WSU students.
Leisure 3 Past and current literature related to objectives and values of recreation; analysis of philosophical beliefs.

530 Urban Outdoor Recreation 3 Problems, methods, and techniques of providing outdoor recreation opportunities in urban settings. (a/y)

535 Comprehensive Planning and Operations in Leisure Services 3 Graduate-level counterpart of RLS 435; additional requirements. Credit not granted for both RLS 435 and 535.

582 Recreation Law and Risk Management 3 Graduate-level counterpart of RLS 482; additional requirements. Credit not granted for both RLS 482 and 582.

590 Internship V 3 (0-9) to 12 (0-36) 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. S, F grading.

594 Sport and Recreation Budget and Finance 3 Policies and practices involved in acquisition and financial management in sport and recreation agencies. Cooperative course taught by UI (Rec 594), open to WSU students.

596 Seminar 1 May be repeated for credit; cumulative maximum 3 hours. Topics related to recreation and leisure studies and service.

597 Computer Applications 3 Focus on computer applications in recreation/leisure field; specialized software packages for registration, scheduling, budgeting, league operations; production of schedules, registration forms. Cooperative course taught by UI (Rec 597), open to WSU students.

598 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq RLS major.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Schedule of Studies

Departmental Undergraduate Degrees

All letter-graded courses specifically required for each degree program must be taken for letter grade (i.e. not pass, fail). This applies to all students in the Bachelor of Science in Kinesiology and Bachelor of Arts in Recreation Administration and Leisure Studies.

BACHELOR OF SCIENCE IN KINESIOLOGY

The three kinesiology majors (athletic training, exercise science, and kinesiology) share a set of General Education Requirements (GERs), core kinesiology and health courses. The kinesiology core is composed of a broad spectrum of courses designed to expose students to a variety of experiences, concepts, and philosophies. In addition, each major has a specialized curriculum designed to meet the requirements of the appropriate professional experience in which the student is interested.

Professional Core for the Bachelor of Science in Kinesiology

GER Courses

In fulfilling the General Education Requirements for graduation, students must include Bio S 103; FSHN 130 or 233; Psych 105, SpCom 102.

Kinesiology Core Courses required for Athletic Training, Exercise Science, and Kinesiology


ATHLETIC TRAINING MAJOR

Accredited by the Commission on Accreditation of Allied Health Education Programs, the athletic training curriculum is designed to provide students with the necessary academic and clinical competency required to be certified by the National Athletic Trainers’ Association. All students majoring in athletic training will complete the kinesiology core, the athletic training major course work, and 1200 hours of clinical internship experience.

Because of curriculum accreditation regulations for student/faculty ratio, the program admits a limited number of students in the clinical internship. Application into the clinical internship occurs in the second semester of the freshman year. Academic requirements for this application process include but are not limited to 1.) completion of Bio S 103, Kin 262, 266, and 2.) a minimum g.p.a. of 2.8. Students are advised to consult with athletic training advisers early in their academic careers for specific application procedures.

Internship experiences combine the theory and management of sport-related injury/illness under the direct supervision of certified athletic trainers. Twelve hundred hands-on clinical hours are arranged over five semesters within a variety of settings including high school and collegiate sport medicine centers. Students are expected to maintain high academic standards and clinical competence to remain a part of the athletic training student clinical staff. Specific policies and procedures governing the clinical experience are available through athletic training advisers.

Athletic Training Major Course Work

In addition to the core courses in the kinesiology degree program and GERs, students desiring the athletic training major must take the following: Ath T 465, 466, 467, 468, 469, 490, 491, 492; Chem 101, PharP 217; Psych 311, RLS 482.

KINESIOLOGY MAJOR

The kinesiology curriculum is designed to provide students with the education basis for successfully pursuing a professional career in movement-related fields.

Kinesiology Major Course Work

In addition to the core courses in the kinesiology degree program and GERs, students desiring the kinesiology major must take the following: Kin 314, 415, 496, RLS 285; RLS 321 or Soc 345; T & L 330, and demonstrated proficiency in four of five activity areas: aquatics, individual/dual sports, team sports, dance and gymnastics-related. Proficiency may be demonstrated by testing or taking a comparable PEACT exam. Elective core: 6 hours from Kin 475, PharP 217, Psych 220, 321, 361, 370, SHS 250.
EXERCISE SCIENCE MAJOR

WSU graduates with a degree in exercise science are prepared for employment within the physical fitness industry to practice as exercise specialists either in private health clubs, fitness centers, corporate fitness programs, cardiac rehabilitation programs, or for enrollment in graduate school to pursue advanced study in the exercise sciences.

Exercise Science Major Course Work

In addition to the core courses in the kinesiology degree program and GERs students desiring the exercise science major must take the following:


Activity Core: PEA CT 119, 132, 140, 154, 228.


Recommended courses: BC/BP 364, H Ed 463, Kin 487, Mgt 301.

BACHELOR OF ARTS IN RECREATION ADMINISTRATION AND LEISURE STUDIES

A National Recreation and Parks Association accredited degree program, the recreation administration and leisure studies curriculum is designed to provide a broad-based professional preparation to students entering the recreation and leisure service profession. All students majoring in RLS must complete a core program of general education and professional recreation administration and leisure studies requirements. Additionally, each student will design an area of concentration based on the student’s professional goals.

Theory and practice are combined to prepare the student for employment in recreation administration and leisure services. A total of 1000 hours of documented practical experience is required of all RLS majors prior to their enrollment in RLS 491. Internship. A minimum of 180 hours of the 1000 hours are completed through credited practice. The remaining 820 hours may be accumulated through a variety of approved practical experiences. Field experiences may be paid or voluntary. No student will be allowed to begin the internship experience if that student’s cumulative g. p. a. is less than the current grade point standard at the completion of that student’s course of study.

At least 40 of the total hours required for the Bachelor of Arts degree in Recreation Administration and Leisure Studies must be in upper-division courses.

To be eligible to certify as a recreation administration and leisure studies major, a student must have earned at least 30 semester hours of credit on graded course work and meet the current standards of 1.) cumulative g. p. a. or 2.) g. p. a. based on at least 15 hours of RLS core courses. Full details are available from the department. If the cumulative g. p. a. of a certified major in RLS falls below the current standard any time after certification and the student becomes deficient under Academic Regulations, that student will be decertified. Certification will be reinstated when the student’s cumulative g. p. a. returns to the current standard and criteria established for recertification are met.

A grade of C or better must be obtained in all RLS professional core classes.

A major in RLS may secure a second degree by meeting the requirements of the subject-matter area and presenting not less than the 150 semester hours.

Degrees: The department offers courses of study leading to a Bachelor of Arts in Recreation Administration and Leisure Studies. A master’s degree is available for those wishing to pursue advanced degree work in Recreation Administration and Leisure Studies.

General Requirements: 58 hours

These classes have been selected to enhance the student’s general preparation and fulfill General Education Requirements:

- Arts and Humanities (9 hours), Cpt S (3 or 4 hours), Communication Proficiency (9 hours including Engl 101, SpCom 102, plus 3 credits from Engl 201 or 402), Social Science (12 hours including Psych 105, 361; Soc 101 or 102, 320, Science (10 hours including ES/RP 101), General Education course work as specified by the university, H Ed 363 (or its equivalent certification).

Recreation Core Requirements: 53-55 hours


Area of Concentration: 16-18 hours

Courses are selected to meet the student’s professional goals. The area of concentration is designed in consultation with the student’s advisor and is approved by the RLS curriculum committee. The course work for the area of concentration must be determined prior to the beginning of the first semester of the student’s junior year or in case of a transfer student, the second semester of the junior year.

An area of concentration may correspond to a designated minor as listed in the WSU Catalog or may be constructed from courses selected to give the student background for a chosen segment of the leisure services industry.

Departmental Minors

Health and Wellness

F S H N 130, H Ed 361, 363, PEA CT (2 hours), Kin 364, PharP 217, Psych 363; one of: ES/RP 101, Psych 220, or 230. Total: 20 or 21 hours.

Recreation Administration and Leisure Studies

RLS 275, 285, 375; select 6 hours from: RLS 321, 341, 383, 388; 6 hours from RLS 421, 435, 475, 481. Practicum credit will strengthen this minor. Total: 21 hours.

Sport Management

See Department of Educational Leadership and Counseling Psychology.

Transfer Students

Transfer students should note the sequence of professional requirements in specialized areas. Sequences are designed to provide progression from one course to another. For information regarding acceptability of professional courses taken at other institutions, prospective students should communicate with the departmental chair.

Preparation for Graduate Study

Admission to graduate study requires 1.) a bachelor’s degree in one of the fields represented in the department or an equivalent related field and 2.) evidence of ability to complete advanced academic work. Applicants without an appropriate undergraduate degree will be required to complete supplemental course work. Current graduate school admissions requirements govern departments admission decisions.

Program in Materials Science


Materials science includes the principles and practice of designing, synthesizing, characterizing, preparing, and fabricating useful materials. The Materials Science Program accepts qualified bachelor’s and master’s graduates in the sciences and engineering who now wish to pursue graduate research for a PhD in the area where the disciplines overlap. A broad range of topics is included under this program and it is usual for students to select one of the following tracks within materials science: Chemical Physics which emphasizes condensed matter and atomic and molecular physics and chemistry, including application of spectroscopy to synthesis, irradiation effects at surfaces, thin film phenomena, and layered and atomic structures; Materials Engineering which emphasizes the methodology and principles relating the structure of metals, polymers, and ceramics to their mechanical, physical, and chemical properties and their utilization; and Materials Physics and Chemistry which emphasizes applications of condensed matter, atomic and molecular physics and chemistry to improve understanding of the processing and characterization of materials. Students who plan a career in materials science are expected to obtain a strong foundation in mathematics, physics, and chemistry.

Requirements for the Materials Science PhD include a minimum of 72 credit hours of which at least 34 hours are graded course work. The common ground for all participants in materials science is covered by the core of courses (14 hours) required of all students: thermodynamics, statistical mechanics, solid state physics, phase transformations, and a survey of current topics in materials science. All students must attend the materials science seminar program. Additional required courses (23 hours or more) vary with the chosen track and the research programs of individual students. In the chemical physics track students are required to study quantum mechanics, atomic and molecular physics, atomic and molecular phenomena, and group theory which should be supplemented with a selection from
advanced chemistry, physics and materials engineering courses. In the materials engineering track the required courses are mechanical properties and applied mathematics to be supplemented with selected materials science engineering and related courses. In the materials physics and chemistry track students must take quantum mechanics which should be supplemented by advanced courses in chemistry, engineering, and physics.

An original research dissertation (Mat S 800) is required. After admission to candidacy for the degree, students select a research supervisor from the materials science faculty. A broad spectrum of contemporary research areas is available.

**Description of Courses**

For explanation of symbols, see page 53.

**Materials Science**

Mat S 503 Current Topics in Materials Science V 1-3 May be repeated for credit. Recent advances and current research at the forefront of materials science. (A) 513 Crystal Plasticity 3 Same as MSE 513. 516 Phase Transformations 3 Same as MSE 516. 538 Special Topics V 1-3 May be repeated for credit. Selected topics of current interest in advanced materials science. 571 Microscopic Analysis of Solid Surfaces 3 Modern spectroscopic methods for microscopic analysis of solid surfaces; emphasizes electron, ion, laser, and x-ray techniques. (A) 590 Seminar 1 May be repeated for credit; cumulative maximum 3 hours. Same as MSE 520. 600 Special Projects or Independent Study Variable credit. S, F grading. 800 Doctoral Research, Dissertation, and/or Examination Variable credit. S, F grading.

**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.

Undergraduate training for mathematics majors is provided at WSU in the following seven options: Actuarial Science, Applied Statistics, Computational Mathematics, Mathematical Modeling, Operations Research, Secondary Mathematics Teaching, and Theoretical Mathematics. The first six options prepare students for careers related to the respective fields, while the option in Theoretical Mathematics is the traditional curriculum for Mathematics majors. Talented undergraduate majors in mathematics are given individual and small group instruction outside of class, sometimes resulting in research publications.

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 both classical and modern areas. The Doctor of Arts and the Ph.D. with Teaching Emphasis programs are 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.

The Mathematics Department runs the Newton Microcomputer Laboratory where a variety of computers is available for students to do assignments in both basic and advanced courses. In addition, research is conducted using a wide variety of machines available to faculty and students.

Astronomy 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. Opportunities are available for students to collaborate with faculty to do research projects with the 3.5 m Apache Point Telescope which can be operated remotely from the WSU campus.

Entering freshmen are required to take the mathematics placement test for enrollment in basic courses.

The department offers courses of study leading to the degrees of Bachelor of Science in Mathematics, Master of Science in Mathematics, Doctor of Arts, Doctor of Philosophy, and Doctor of Philosophy with Teaching Emphasis.

**For explanation of symbols, see page 53.**

**Mathematics**


108 Precalculus Trigonometry 2 Prereq Math 101 or satisfactory math placement score. Trigonometry, complex numbers, and discrete mathematics.


171 [N] Calculus I 4 (3-3) Prereq Math 107, 108, or satisfactory math placement score. Differential and integral calculus of one variable with associated analytic geometry. Credit not normally granted for more than one of Math 140, 171, 202, 206.

172 Calculus II 4 (3-3) Prereq Math 171. Techniques and applications of one-variable calculus; estimation; series, derivative of a vector function.

201 Introduction to Finite Mathematics 3 Prereq Math 101 or satisfactory math placement score. Basic notions of logic, linear algebra, matrices and analytic geometry, applications to linear programming. Credit not normally granted for both Math 201 and 220.

202 [N] Introduction to Mathematical Analysis 3 Prereq Math 107 or satisfactory math placement score. Differential and integral calculus of the polynomial, exponential, and logarithmic functions. Credit not normally granted for more than one of Math 140, 171, 202, 206.

205 [N] Statistical Thinking 3 Prereq Math 101 or satisfactory math placement score. Scientific explanation; correlations and causality; presenting statistical evidence; graphical and numerical methods; chance and gambling; the bell-shaped distribution.

206 [N] Mathematical Analysis for Architects 3 Prereq Math 107, 108, or satisfactory math placement score. Calculus of elementary functions; trigonometry; applications to architects. Credit not normally granted for more than one of Math 140, 171, 202, 206.

210 [N] Introduction to Mathematics 3 Prereq Math 101 or satisfactory math placement score. Nature and scope of modern mathematics, relationships to other disciplines.

212 [N] Introduction to Statistical Methods 4 (3-3) Same as Stat 212.

216 Discrete Structures 3 Prereq Math 107 and a programming course. Discrete mathematics, trees, graphs, elementary logic, and combinators with application to computer science.

220 Introductory Linear Algebra 2 Prereq Math 171 or c//. Elementary linear algebra with geometric applications. Credit not normally granted for both Math 201 and 220.

251 Mathematics for Elementary School Teachers I 3 Prereq satisfactory math placement score or passing the Math 251 competency test at the 80% level. Logical and historical development of present-day number systems and associated algorithms; methods of problem solving.

252 [N] Mathematics for Elementary School Teachers II 3 Prereq one year high school geometry; Math 251. Informal approach to basic ideas: mensuration, geometrical constructions, similarity, congruence, symmetry, probability, counting principles, measures of central tendency, graphical representation.

273 Calculus III 2 Prereq Math 172; 220 or c//.

302 Theory of Numbers 3 Prereq Math 172, 220. Divisibility properties of integers; congruences; Diophantine equations; quadratic residues.


315 Differential Equations 3 Prereq Math 273. Linear differential equations and systems; series, numerical and qualitative approaches; applications.

320 [M] Elementary Modern Algebra 3 Prereq Math 220. Algebra as a deductive system; number systems; groups, rings, and fields.

325 Elementary Combinatorics 3 Prereq Math 220. Introduction to combinatorial theory: counting methods, binomial coefficients and identities, generating functions, occurrence relations, inclusion-exclusion methods.


351 Mathematics for Elementary School Teachers III 3 Prereq Math 252. Geometric transformations, coordinate methods in geometry, applications of school mathematics, mathematics software.


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.

375 Vector Analysis 3 Prereq Math 315. Line integrals, gradient, curl, divergence; Stokes' theorem, potential functions.

397 Mathematicians at Work 1 Introduction to various occupations in mathematics and the oral, written and leadership skills required for success in the field.

398 Mathematical Snapshots 1 Prereq Math 172. Character, life work, and historical importance of mathematicians from various eras and branches of mathematics.

401 [M] Introduction to Analysis I 3 Prereq Math 315. Properties of sets and sequences of real numbers; limits, continuity, differentiation and integration of functions; metric spaces.

402 [M] Introduction to Analysis II 3 Prereq Math 401. Sequences of functions, power series, multivariable calculus, inverse and implicit function theorems, Lagrange multipliers, change of variable in multiple integrations.

408 Mathematics for Economists 3 Prereq Math 201, 202. Mathematical topics applicable to economic analysis and research.

409 Elements of Mathematical Economics 3 Same as Econ 410.

410 Topics in Probability and Statistics 3 Prereq Math 410 and 510. Current topics in probability and statistics of mutual interest to faculty and students. Credit not granted for both Math 410 and 510.

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 Dec S 417.

418 Mathematical and Scientific Visualization 3 Prereq Math 172, 220, a programming language. Use of computers to image and visualize mathematical and scientific phenomena.

420 Linear Algebra 3 Prereq Math 220. Advanced topics in linear algebra including similarity transformations, canonical forms, dual spaces, Hermitian matrices, bilinear forms.


429 Microcomputers in Mathematics 3 Prereq Math 438 and teaching experience. For preservice teachers. Microcomputer hardware and software; text processing evaluation of software useful to mathematicians; development of microcomputer-based lessons.

430 Statistical Methods in Engineering 4 Prereq Math 172, 220. Random variables, sampling, hypothesis testing; linear, multilinear, and nonlinear regression; analysis of variance for designed experiments; statistical computing. Credit not normally granted for more than one: Math 430, 442.

431 Topics in Science and Mathematics Teaching 1 or 2 May be repeated for credit. Prereq Bio S 430, or c/M/Math 172, 251. For preservice teachers. New curricula and pedagogical techniques for middle school/high school instruction in science and mathematics.

432 Foundations of Secondary School Mathematics 3 Prereq teaching experience. For preservice teachers. Pre-algebra and algebra from a mature point of view; properties of systems; open sentences; equations; functions and graphs.

433 Informal Geometry 3 Prereq teaching experience. For preservice teachers. Nature of geometry, maps, networks, loci, congruence and similarity, invariances, regularity, coordinate geometry, mensuration, symmetry, and tiling.

434 Approaches to Mathematics Teaching 2 Prereq teaching experience. For preservice teachers. Problem solving and the use of manipulative devices in the teaching of K-8 mathematics.

435 Astronomy and Astrophysics 3 May be repeated for credit; cumulative maximum 6 hours. Same as Aste 435.

436 Mathematics and Plausible Reasoning 3 Prereq teaching experience. For preservice teachers. Heuristics used in problem solving: special cases, pattern recognition, generalization, analogies, restating problem, asking right questions.

437 Mathematical Topics in the Social Sciences 3 Prereq teaching experience. For preservice teachers. Problem solving applied to fair division, apportionment, group rankings, voting flows, Arrow's impossibility theorem, role of computer.

438 Algebra for Teachers 3 Prereq Math 432, 433. For preservice teachers. Algebra from a mature point of view; linear, quadratic, polynomial, exponential, and logarithmic functions; inequalities; sequences.

439 Applications of School Mathematics 3 Prereq Math 432, 433. For preservice teachers. Role of application in the classroom; examples using arithmetic, algebra, geometry, counting principles and probability; teaching concepts in applications.

440 Applied Mathematics I 3 Prereq Math 315. Partial differential equations; Fourier series and integrals; Bessel functions; calculus of variations; vector calculus; applications.

441 Applied Mathematics II 3 Prereq Math 315. Complex variable theory including analytic functions, infinite series, residues, and conformal mapping; Laplace transforms; applications.

442 Statistical Methods for Engineers and Scientists 3 Prereq Math 220; 360 or other statistics course. Hypothesis testing; linear, multilinear, and nonlinear regression; analysis of variance for designed experiments; quality control; statistical computing. Credit not normally granted for more than one: Math 442.

443 Applied Probability 3 Prereq Math 172, 220. Axioms of probability theory; random variables; expectation; generating function; law of large numbers; central limit theorem; Markov chains. Cooperative course taught jointly by WSU and UI (Math 451).

444 Introduction to Statistical Theory 3 Prereq Math 430 or 443. Sampling distributions; hypothesis testing and estimation; maximum likelihood; likelihood ratio tests; theory of least squares; nonparametrics. Cooperative course taught jointly by WSU and UI (Math 452).

448 Numerical Analysis 3 Prereq FORTRAN programming; Math 315. Fundamentals of numerical computation; finding zeroes of functions, approximation and interpolation; numerical integration (quadrature); numerical solution of ordinary differential equations.

450 Calculus for Teachers 3 Prereq Math 438. For preservice teachers. Limits, continuity, differentiation and integration of polynomials and rational functions; applications.

451 Statistics for Teachers 3 Prereq teaching experience. For preservice teachers. Basic concepts in probability and statistics; permutations, combinations, finite probability, simulations, distributions, graphical methods, median, mode, and standard deviations.

453 Graph Theory 3 Prereq Math 220. Graphs and their applications, directed graphs, trees, networks, Eulerian and Hamiltonian paths, matrix representations, construction of algorithms.

461 Metallurgical Control and Optimization 3 Basics of process control and optimization applied to metallurgical engineering. Cooperative course taught by UI (Met 461), open to WSU students.

464 Operations Research and Game Theory 3 Prereq Math 273. Linear and integer programming; optimization problems; applications to economic and military strategies; rectangular games; minimax theory. Cooperative course taught by WSU, open to UI students (Math 464).

466 Optimization in Networks 3 Prereq Math 325 or 364. Formulation and solution of network optimization problems including shortest path,
minimum cost flow, assignment, covering, postman, traveling salesman, and location. (g)

472 Statistical Packages 3 (2-3) Prereq statistical methods course. No previous computer experience required. Computer techniques for statistical methods; comparison of capabilities of major statistical packages; analysis techniques, graphics, terminal use, data structures, numerical algorithms. (g)

481 Topics in Analysis 3 May be repeated for credit. (g)

497 Instructional Practicum 1 or 2 May be repeated for credit; cumulative maximum 2 hours. By interview only. S, F grading.

498 Career Experience Internship V 2-12 May be repeated for credit; cumulative maximum 12 hours. By interview only. Industrial or governmental career experience in a mathematics or mathematics-related area, supervised by qualified professionals. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

500 Proseminar 1 May be repeated for credit; cumulative maximum 2 hours. S, F grading.


507 Advanced Theory of Numbers 3 May be repeated for credit; cumulative maximum 6 hours. Analytic and algebraic number theory. Cooperative course taught by WSU, open to UI students (Math 507).


509 Foundations of Mathematics 3 The basis of mathematics in logic and set theory; continuum hypothesis; Godel’s theorems, recent developments. (a/y) Cooperative course taught by WSU, open to UI students (Math 509).

510 Topics in Probability and Statistics 3 Graduate-level counterpart of Math 410; additional requirements. Credit not granted for both Math 410 and 510.

512 Ordinary Differential Equations 3 Prereq Math 300. Existence of solutions; linear systems; qualitative behavior, especially stability; periodic solutions. Cooperative course taught jointly by WSU and UI (Math 539).

525 General Topology 3 Prereq Math 402. Sets, metric spaces, topological spaces; continuous mappings, compactness, connectedness, local properties, function spaces, and fundamental groups. Cooperative course taught jointly by WSU and UI (Math 511).

526 Advanced Topology 3 Prereq Math 421, 525. General topology; basic ideas of algebraic topology. Cooperative course taught jointly by WSU and UI (Math 512).

527 Algebraic Topology 3 Prereq Math 526. Basic homotopy theory and application. (a/y) Cooperative course taught by UI (Math 523), open to WSU students.

528 Algebraic Topology 3 Prereq Math 527. Continuation of Math 527. (a/y) Cooperative course taught by UI (Math 524), open to WSU students.

530 Topics in Modern Astrophysics 3 May be repeated for credit; cumulative maximum 9 hours. Same as Astr 538.


541 Partial Differential Equations II 3 Prereq Math 540. Continuation of Math 540. Cooperative course taught by WSU, open to UI students (Math 541B).

543 Approximation Theory 3 Univariate polynomial and rational approximation techniques; approximation using splines and wavelets; selected topics in multivariate approximation; algorithms for approximation. (g)

544 Advanced Matrix Computations 3 Prereq Math 548. Advanced topics in the solution of linear systems and eigenvalue problems, including parallel matrix computations.

545 Numerical Analysis of Evolution Equations 3 Prereq Math 448. Discretization and numerical solution of partial differential equations of evolution; stability, consistency, and convergence; shocks; conservation of forms.

546 Numerical Analysis of Elliptic PDEs 3 Prereq Math 448. Methods of discretizing elliptic partial differential equations and solving the resulting systems of equations; error analysis.

548 Statistical Theory I 3 Prereq Math 273; 430 or 443. Probability spaces, combinatorics, multi-dimensional random variables, characteristic function, special distributions, limit theorems, stochastic processes, order statistics. Cooperative course taught by WSU, open to UI students (Math 548).

549 Statistical Theory II 3 Prereq Math 548. Continuation of Math 548. Statistical inferences; estimation and testing hypotheses; regression analysis; sequential analysis and nonparametric methods. Cooperative course taught by WSU, open to UI students (Math 549).

550 Advanced Topics in Geometry 3 Prereq Math 540. Continuation of Math 540. Cooperative course taught by WSU, open to UI students (Math 550).

552 Galois Theory 3 Prereq Math 548. Jordan forms, inner products, eigenvalues, eigenvectors, spectral theory. (a/y) Cooperative course taught by UI (Math 550), open to WSU students.

553 Ring Theory 3 Ideals, quotient rings, modules, radicals, semi-simple Artinian rings, Noetherian rings. (a/y) Cooperative course taught by UI (Math 551), open to WSU students.

555 Topics in Combinatorics 3 May be repeated for credit; cumulative maximum 6 hours. Combinatorics, generating functions, recurrence relations, inclusion-exclusion, coding theory; experimental design, graph theory.

562 Secondary School Mathematics 3 Same as El/Se 562. Cooperative course taught jointly by WSU and UI (Math 504).

563 Mathematical Genetics 3 Prereq GenCB 301; Stat 412, 430, or 443. Statistical approaches to Mendelian and population genetics; theories and estimation of genetic parameters; testing genetic hypotheses. (a/y)

564 Topics in Optimization 3 May be repeated for credit. Prereq advanced multivariable calculus and a programming language; Rec Math 464, 544. Advanced topics in the theory and computing methodology in optimization with emphasis on real-life algorithmic implementations. Cooperative course taught by WSU, open to UI students (Math 564).


570 Mathematical Foundations of Continuum Mechanics II 3 Prereq Math 570. Continuation of Math 570. Cooperative course taught by WSU, open to UI students (Math 570).

571 Mathematical Foundations of Continuum Mechanics III 3 Prereq Math 570. Cooperative course taught by WSU, open to UI students (Math 570).

573 Reliability Theory Prereq Math 430, 443. Statistical concepts; stochastic material strengths and lifetimes; strength vs safety analysis; reliability of coherent systems; maintenance models; complex systems. Cooperative course taught jointly by WSU and UI (Math 571).

581 Seminar in Analysis 3 May be repeated for credit. Cooperative course taught jointly by WSU and UI (Math 541A).

582 Seminar in Algebra 3 May be repeated for credit. Cooperative course taught jointly by WSU and UI (Math 561).

583 Seminar in Applied Mathematics 3 May be repeated for credit. Cooperative course taught by WSU, open to UI students (Math 583).

584 Seminar in Topology and Geometry 3 May be repeated for credit. Cooperative course taught by WSU, open to UI students (Math 584).

585 Seminar in Number Theory 3 May be repeated for credit. Cooperative course taught by WSU, open to UI students (Math 585B).

586 Topics in Mathematical Modeling in Natural Sciences V 1-3 May be repeated for credit; cumulative maximum 12 hours. Selected topics in the mathematical modeling of physical and biological phenomena. Cooperative course taught by WSU, open to UI students (Math 586).

589 Seminar in Precalculus Mathematics Education 3 Same as El/Se 563.
590 Seminar in Undergraduate Mathematics Instruction 3 May be repeated for credit; cumulative maximum 6 hours. Curricular and other problems of teaching mathematics to undergraduates.

591 Seminar in the History of Mathematics I 1 Topics in the history of mathematics to 1800.

592 Seminar in the History of Mathematics II 1 Topics in the history of mathematics from 1800 to present.

600 Special Projects or Independent Study Variable credit. S, F grading.

602 Internship V 2-12 May be repeated for credit. Prereq 40 hours graduate work. A structured internship from two to nine months; teaching at the postsecondary level or applied work in a non-academic environment. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Schedule of Studies

There is a core of requirements common to all of the mathematical sciences options. Students are required to take the core courses and to complete one of the options listed below.

A major in mathematics requires Math 171, 172, 202, 273, 315; 360 or 443; 398, 401, 402, 420, 421; Phys 201, Cpt S 203, Engl 402 (students whose native language is not English may substitute Engl 403 for 402). Hist 381 and 382 are strongly recommended for partial satisfaction of the GER requirements.

In addition to the core requirements, mathematics majors must complete one of the following options:

1. Actuarial Sciences. Math 360, 364, 443, 444, and 448 are required; Actct 230, 231, B Law 210, Econ 101, 102, 301, 411, Ins 320, Math 340; Math 442 or Stat 530; Stat 464 are recommended.

2. Applied Statistics. Math 360, 442, 443, 444, and 417 are required; Cpt S 250, Dec S 418, Math 364, 448, 464, Stat 530 and at least one additional Stat elective are recommended.

3. Computational Mathematics. Cpt S 150 or 251, Cpt S 203 and Math 364, 448 are required. Students are also required to take two of the following: Math 417, 418, 440, 464.

4. Mathematical Modeling. Math 340, 415, 440, and 448 are required. Two additional courses from the following list are recommended: Math 364, 417, 441, 464 and Stat 442 or 530. In addition, a minor in an applied subject area is also strongly recommended.

5. Operations Research. Math 364 and 464 are required. Students are also required to take two of the following: Math 417, 416, Stat 472 (primary recommendations) or Math 325, 448, 453, and Stat 444 (other options).

6. Secondary Mathematics Teaching. Math 303 (may be substituted for Math 420), Dec S 542, Math 330 and 360 are required. Math 320 may be substituted for Math 421. Cpt S 153 should be substituted for Cpt S 203. Math 402 is not required.

7. Theoretical Mathematics. Math 441 required. Students are required to take two courses from the following: Math 302, 303, 325, 453, 464. In addition, students must take one of the following: Math 375, 415. In addition to these requirements, it is recommended that students take at least two additional upper-division math electives.

Certification Requirements

1. Applications for certification are accepted at any time during fall and spring semesters. Decisions are made within ten working days of receipt of application. Application forms are available in the Mathematics Department office and at the Student Advising and Learning Center (SALC), Cleveland Hall 57.

2. Applications are evaluated, and certification decided, by a faculty committee.

3. Applicants must have an overall grade point average of at least 2.0.

4. The mathematics core consists of Math 171, 172, 220. This core (or its equivalent for transfer students) must be completed before application.

5. Students with at least a 2.5 grade point average in the mathematics core will be certified automatically. Those with less than a 2.0 g.p.a. in the mathematics core will normally not be certified. Others will be considered on a case-by-case basis.

6. Appeals on certification decisions are considered by the department chairperson.

7. Students who are denied certification may reapply after completing at least 12 more semester hours, whereupon decisions are based on grades in mathematics, science, and computer science courses; cumulative grade point average and grade patterns; and a personal interview.

8. Certified students whose cumulative grade point average or grade point average in mathematics courses numbered 171 and above falls below 2.0 for two consecutive semesters, or who are academically deficient, are subject to decertification.

9. Applications for recertification are handled in the same manner as certification applications for those previously denied.

10. Women and minorities are encouraged to apply. Special consideration will be given to affirmative action candidates.

Mathematics Minor

A mathematics minor requires 18 hours, with at least 9 hours of upper-division credits (excluding Math 330, 351, 431, 497). The g.p.a. requirements for the major (see graduation requirements) also apply to the minor in mathematics.

Courses required for either the major or minor may not 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. Students who contemplate undertaking studies leading to a doctoral degree should contact the department for advice and assistance in the development of their plans.

School of Mechanical and Materials Engineering


MECHANICAL ENGINEERING

The mechanical engineering program 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 work, (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, manufacturing, CAD/CAM, project engineering, production management, applied research and sales and service.

The curriculum emphasizes foundation courses at the third year which are fundamental to all aspects of mechanical engineering. These courses emphasize both analysis and design while accompanying laboratory courses provide opportunities for hands-on experiences. Computer applications are interleaved throughout the program. In the fourth year each student selects an emphasis area with two design-focused electives to build upon material from the foundation courses and to integrate across the emphasis area. The undergraduate program is completed with both a capstone project design course and a capstone laboratory course. 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 careers. An integrated BS/MS program facilitates the completion of a master’s degree in one additional year beyond the bachelor’s degree.

The school offers courses of study leading to the degrees of Bachelor of Science in Mechanical Engineering (accredited by the Accrediting Board for Engineering and Technology), Master of Science in Mechanical Engineering, and Doctor of Philosophy (Mechanical Engineering) and participates in the in-
terdepartmental program leading to the degree Doctor of Philosophy (Engineering Science).

MATERIALS SCIENCE AND ENGINEERING

Materials science and engineering is the application of methodology and principles of the pure sciences to the study and utilization of engineering materials. The undergraduate program focuses on (a) the relationship of the microscopic structure, e.g. crystal structure and defects to the macroscopic properties of materials, e.g. strength, (b) the relationship of materials, (c) experimental techniques for characterizing physical, chemical and structural properties of materials and, (d) the design and selection of appropriate materials for given engineering applications.

The specific fields of application covered by research and instruction programs can be expressed by the nominal designations of metals (metallurgy), polymers, ceramics, electronic materials and composites. Due to the diversity of useful properties encountered in materials engineering, attention must be given to application and peculiarities of these specific types of materials. Where possible, however, a generalized approach toward the study of materials, their properties, their selection, and their utilization is fostered. The broad-based instructional approach prepares graduates for careers in a wide range of industrial settings, from aerospace companies to corporations specializing in the production of solid state electronics. In addition, the undergraduate curriculum prepares students for continued education at the graduate level. 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.

The school offers courses of study leading to the degrees of Bachelor of Science in Materials Science and Engineering (accredited by the Accrediting Board for Engineering and Technology) and the Master of Science in Materials Science and Engineering. The school participates in the interdepartmental program leading to the degree of Doctor of Philosophy (Engineering Science) and an interdisciplinary program leading to the Doctor of Philosophy (Materials Science).

Description of Courses

For explanation of symbols, see page 53.

Mechanical Engineering

M E

103 Engineering Graphics 3 (1-6) Orthographic theory, conventions, and visualization; isometric and oblique pictorials; graphical analysis and solution of spatial problems, computer-aided drafting. Cooperative course taught by WSU, open to UI students (ME 101).

120 Innovation in Design 2 Engineering and architectural creativity: role, function, enhancement, integration in design methods.

301 Fundamentals of Thermodynamics 3 Prereq Phys 201; Rec Math 315. Thermodynamic properties of matter, ideal and real gases, work and heat, first and second laws and their application to engineering systems. Cooperative course taught jointly by WSU and UI (CHE 321).

303 Fluid Dynamics 3 Prereq Phys 202; major in M E; Rec M E 301 or c//. Laminar and turbulent flow of ideal and viscous fluids, pipe flow, boundary layers, wing theory, supersonic flow, nozzles, shock waves. Cooperative course taught jointly by WSU and UI (CE 320).

305 Thermal and Fluids Laboratory 2 (1-3) Prereq M E 303, major in engr; Rec E E 305. Instrumentation, data acquisition and control, and theory verification in the thermal and fluid sciences.

310 Manufacturing Processes 3 Prereq MSE 301, major in engr. Cutting operations, metal forming by deformation, material fabrication, and nontraditional processing.

311 Manufacturing Processes Laboratory 1 (0-3) Prereq M E 310 or c//, major in engr. Manufacturing processes laboratory; use of statistical data analysis and design of experiments in manufacturing.

312 Kinematic Analysis 3 Prereq C E 212; major in engr. Motion transfer; velocity, acceleration, and inertia forces in machines; static and dynamic force systems; cam profiles; gears and gearing systems. Cooperative course taught by UI (ME 324), open to WSU students.

313 Engineering Analysis 3 Prereq Math 315, major in engr; Rec FORTRAN or C program. Analysis and modeling of engineering problems utilizing numerical and mathematical techniques and computers.

316 [M] Systems Design 3 Prereq MSE 301 or c//; Rec C E 211. Engineering design process for systems and components; design criteria, creativity, engineering economics, engineering statistics, standards, product safety; design project.

320 Materials Laboratory 1 (0-3) Prereq C E 215 or c//, major in engr. Mechanical behavior of materials and application to engineering structures.

348 Dynamics Systems 3 Prereq M E 313, major in engr. Fundamentals of vibration analysis, control systems, system modeling and dynamical analysis.

349 Dynamic Systems Laboratory 1 (0-3) Prereq M E 348 or c//. Laboratory investigations of dynamic systems.

402 (302) Thermodynamic Systems 3 Prereq M E 301, major in engr. Power and refrigeration cycles, thermodynamic relations, mixtures, reacting systems and combustion, phase and chemical equilibrium, compressible flow.

404 Heat Transfer 3 Prereq M E 303 or c//, major in engr. Conduction, radiation, and convection heat transfer; analytical, numerical, experimental results for solids, liquids, and gases; heat exchanger design. Cooperative course taught jointly by WSU and UI (ME 345).(g)

405 Thermal Engineering 3 Prereq M E 404 or c//. Heat, mass, and momentum transfer in thermal systems and system components; computer-aided analysis; optimization and design of thermal systems.

406 [M] Experimental Design 3 (1-6) Prereq M E 305; 404; major in engr; Rec M E 348. Designing, conducting, and reporting of experimental investigations involving mechanical equipment.

407 Computational Fluid Dynamics 3 Prereq M E 303. Basic concepts and applications of computational fluid dynamics to the analysis and design of fluid systems and components.

413 Mechanics of Solids 3 Same as MSE 413.(g)

414 Machine Design 3 Prereq C E 215, major in engr; Rec M E 320. Optimal design of machine; analysis for prevention of machine elements failure.(g)

415 Integrated Design 3 Prereq M E 310, 414 or c//, major in engr. Methodologies to optimize product design incorporating functionality, reliability, manufacturability and maintainability.

416 Design Project 3 (1-6) Prereq M E 348; 404, 414; Rec M E 316. Integrative design in mechanical engineering; multidisciplinary design project considering both technical and non-technical contexts; organizational dynamics and communications.

419 Air Conditioning 3 Prereq M E 404. Principles of heat and moisture transfer; air motion and purity in buildings; design of systems. Cooperative course taught jointly by WSU and UI (ME 444). (g)

420 Capstone Engineering Design 3 (1-4) Prereq senior in engr. Integrative design in engineering; multi-disciplinary design project considering both technical and nontechnical contexts; organizational dynamics and communications.

424 Flow of Compressible Fluids 3 Prereq M E 303. Quasi-one-dimensional flow, shock waves, unsteady one-dimensional flow and steady two-dimensional flows.(g)

435 Thermal Energy Systems 3 Prereq M E 404 or c//. Thermal energy systems of current interest including combustion, nuclear, and direct conversion based systems.(g)

436 Combustion Engines 3 Prereq M E 303. Internal combustion engines; spark ignition engines, diesels, and gas turbines.(g)

439 Applied Aerodynamics 3 Prereq M E 303. Aerodynamic lift and drag; circulation; boundary layers, application to vehicle and structural design and pollution control.(g)

442 Robotics 3 Same as E E 442.(g)

449 Vibrations and Noise Control 3 Prereq M E 348. Vibrating systems and noise producing mechanisms; design for noise and vibration control. Cooperative course taught jointly by WSU and UI (ME 442).(g)

450 Stress Design Codes 3 Prereq C E 215. Theoretical bases and application of the principal regulatory stress analysis design codes.

460 Nuclear Reactor Engineering 3 Prereq M E 461. Nuclear reactor design problems in thermodynamics, fluid flow, heat transfer, fuel preparation, waste disposal, materials selection; discussion of reactor types. Cooperative course taught jointly by WSU and UI (ME 472).(g)

465 Nuclear Reactor Systems and Safety 3 Same as M E 465.(g)

470 Dynamics of Machinery 3 Prereq M E 348. Kinematics and kinetics of mechanisms and machines; static and dynamic force analyses of planar and spatial systems; synthesis for functionality.

472 Finite Element Methods in Design 3
Prereq M E 414. Design of selected mechanical systems components using finite element analysis. (g)

473 Computer-aided Design 3 Prereq M E 313. Interactive computer programming and graphics in the design of engineering systems. (g)

474 Advanced Manufacturing Processes 3 Prereq M E 310. Mechanical and metallurgical fundamentals of metal machining and materials processing by deformation; manufacturing systems concepts in production. (g)

475 Manufacturing Automation 3 (2-3) Prereq M E 310, 348 or c/f. Computer control of manufacturing processes; numerically controlled machine tools, robotics, control algorithms, component and system design. (g)

481 Control Systems 3 Prereq M E 348. Analysis and design of feedback control systems. Cooperative course taught jointly by WSU and UI (ME 481). (g)

495 Internship in Mechanical Industry 3 May be repeated for credit; cumulative maximum 6 hours. Prereq major in M E or MSE. By interview only. Students work full time on engineering assignment in approved industries with industrial and faculty supervision. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

501 Continuum Mechanics 3 Prereq graduate standing. Unified presentation of principles common to all branches of solid and fluid mechanics; viscous fluids, elasticity, viscoelasticity, and plasticity.

513 Conduction Heat Transfer 2 Rec M E 404. Analytic methods applied to multidimensional steady-state and transient conduction heat transfer, melting and ablation, numerical methods.

514 Thermal Radiation Processes 2 or 3 Rec M E 404. Thermal radiation within enclosures, ideal and real surfaces; radiative processes within absorbing/emitting media; applications to furnaces, solar energy systems. Cooperative course taught jointly by WSU and UI (ME 547).

515 Convective Heat Transfer 3 Rec M E 404, 521. Derivation of the energy conservation equation; laminar and turbulent forced convection heat transfer with internal and external flow; free convection. Cooperative course taught jointly by WSU and UI (ME 546).


522 Viscous Fluid Mechanics 3 Rec M E 521. Deterministic fluid phenomena, exact solutions of Navier-Stokes equations, boundary layer analysis, vorticity generation and development, stability, and transition.

526 (511) Microscopic Thermodynamics 3 Microscopic development of equilibrium; classical and quantum particle statistics; statistical description of real and ideal gases, solids, and liquids. Cooperative course taught jointly by WSU and UI (ME 526).

527 (510) Macroscopic Thermodynamics 3 Advanced thermodynamics from macroscopic viewpoint; basic postulates, equilibrium, stability, property relations; application to thermal-fluid and solid mechanics; irreversible thermodynamics. Cooperative course taught jointly by WSU and UI (ME 527).


531 Theory of Plasticity 3 Rec M E 501. The fundamentals of the theory of plasticity; the classical theory of plasticity; the classical theory and modern continuum theories of large elasto-plastic deformations.

532 Finite Elements 3 Same as C E 532.

533 Experimental Methods in Materials and Manufacturing Process 3 Rec M E 530. Theoretical and experimental techniques in engineering material behavior and manufacturing processes. Cooperative course taught by WSU, open to UI students (ME 533).

534 Mechanics of Composite Materials 3 Rec C E 314. Micromech and macromech behavior; prediction of properties; stiffness and strength theories; laminated beams and plates; dynamic behavior; environmental effects. Cooperative course taught by UI, open to WSU students (ME 554).

535 Tribology 3 Rec M E 530. Friction, wear, and lubrication of solids with emphasis on metals.

537 Fracture Mechanics and Mechanisms 4 Same as MSE 537.

540 Advanced Dynamics of Physical Systems 3 Newtonian dynamics, rotating coordinate systems; Lagrangian and Hamiltonian mechanics; gyroscopic mechanics, other applications.

541 Advanced Mechanical Vibrations 2 or 3 Rec M E 449. Response of single and multi degree of freedom systems; finite element formulation; matrix methods, random vibrations. (a/y) Cooperative course taught jointly by WSU and UI (ME 572).

542 Optimal Control of Dynamic Systems 3 Introduction to optimal control theory, differential games, and multiple criteria systems; applications in engineering, biology, economics, agriculture, and medicine. Cooperative course taught by WSU, open to UI students (ME 542).

544 Optimal Systems Design 3 Parameter design optimization techniques for nonlinear systems; theory, numerical methods, and applications; multiple criteria optimal trade-off analysis and game theory. (a/y)

545 Nonlinear Dynamics 3 Rec M E 540 or 541. Fundamentals of nonlinear oscillations, stability theory, perturbation methods, and chaotic behavior in nonlinear dynamical systems. (a/y)

548 Acoustics 3 Fundamental principles of linear and nonlinear acoustics and its applications. (a/y)

551 Turbulent Flow 3 Rec C E 550 or M E 521. Turbulent flow; dimensional analysis, statistical models and descriptions of organized structures.

552 Experimental Methods in Thermal-fluid Science 3 (2-3) Theory and practice in the use of instrumentation for measuring temperature, velocity, pressure and concentration; measurement of classical flow fields. (a/y)

553 Two-phase Flow V 1-3 May be repeated for credit, cumulative maximum 3 hours. Rec M E 521. Fundamentals of the flow of fluids with two phases and applications. (a/y) Cooperative course taught by WSU, open to UI students (ME 553).

556 Numerical Modeling in Fluid Mechanics 3 Same as C E 556. Cooperative course taught by WSU, open to UI students (ME 556).

561 Combustion 3 Rec M E 521. General combustion phenomena, chemical reactions, combustor modeling, laminar and turbulent flame theory, emissions. (a/y) Cooperative course taught by WSU, open to UI students (ME 561).

562 Nuclear Reactor Theory 3 Prereq M E 461; differential equations. Basic reactor neutron theory including the transport equation; multi-group, multi-region diffusion theory; kinetics; and perturbation theory.

565 Nuclear Reactor Engineering 3 Prereq M E 461. Reactor power distribution; thermal and exposure limits; critical heat flux and pressure design; neutronic/thermal hydraulic relationships; transient/accident analysis.

569 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.

574 Advances in Manufacturing Science 3 Rec M E 474. Advances in machinability, formability and precision engineering; new manufacturing processes of precise and electronic components. Cooperative course taught by WSU, open to UI students (ME 574).

575 Computer Integrated Manufacturing 3 Rec M E 475. Hierarchical control of manufacturing systems; interface and network considerations; process planning; optimization strategies. (a/y)

579 Advanced Topics in Design and Manufacturing V 1-3 May be repeated for credit.

598 Seminar 1 May be repeated for credit. Seminar on current research interests. S, F grading.

600 Special Projects or Independent Study V Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Materials Science and Engineering

MSE

110 Introduction to Materials Science 2 Introduction to the science and technology of metals, polymers, ceramics and composites.

120 Innovation in Design 2 Same as M E 120.

301 Materials Science 3 Prereq Chem 106, Phys 202 or c//. Structure of materials, phase equilibrium, phase transformations, and mechanical properties.

302 Materials Science 3 Prereq Chem 105, Phys 202 or c//. Structure of materials, phase equilibrium, transformations; electronic structure of solids; thermal, electrical, and magnetic properties of materials; semiconductors, dielectrics.

309 Metallurgy Transport Phenomena 3 Prereq Math 315 or c//. Introduction to principles of metallurgy transport phenomena including heat, mass, and momentum transfer. Cooperative course taught by UI (Met 309), open to WSU students.

312 Thermodynamics and Phase Equilibrium 3 Prereq MSE 301. Concepts of activity, equilibrium, solution properties; relationship between free energy, composition, and temperature; heterogeneous equilibria.

314 Equilibrium Diagrams 2 Prereq MSE 301, 312. Interpretation of equilibrium diagrams;
applications of these materials. Cooperative course taught by UI, open to WSU students (MET 421). (g)
425 [M] Physical Metallurgy Laboratory I 2 (0-6) Prereq MSE 316; major in MSE. Selected experimental work in physical metallurgy. (g)
426 [M] Physical Metallurgy Laboratory II 2 (0-6) Prereq MSE 425; major in MSE. Selected experimental work in physical metallurgy. (g)
429 Powder Metallurgy 3 Fundamentals of conventional press-and-sinter powder metallurgy (PM) and more advanced techniques; commercial applications of PM parts. Cooperative course taught by UI (MET 429), open to WSU students. (a/y)
450 Seminar 1 May be repeated for credit. For seniors only. (g)
461 Metallurgical Control and Optimization 3 Basics of process control and optimization applied to metallurgical engineering. Cooperative course taught by UI (MET 461), open to WSU students.
499 Special Problems V 1-4 May be repeated for credit. S, F grading.
501 Advanced Topics in Materials Science 2 or 3 May be repeated for credit; cumulative maximum 6 hours. Chemical crystallization, microstructure, ultra-structure, theories of crystalline and non-crystalline solids, rheology and fracture mechanism of materials. Cooperative course taught by WSU, open to UI students (MET 544).
503 Advanced Topics in Materials Engineering V 1-3 May be repeated for credit; cumulative maximum 6 hours.
511 Deformation 3 Rec MSE 413. Elementary dislocation theory and its application to some important deformation processes. (a/y)
513 Crystal Plasticity 3 Rec Math 440. Dislocation theory; slip; climb; mechanical properties of crystals, compounds and alloys.
514 Thermodynamics of Solids 3 Rec MSE 312. Thermodynamic properties of solid solutions; models for substitutional and interstitial solutions; configurational and non-configurational contributions; calculation of phase diagrams. (a/y)
515 Electronic Properties of Materials 3 Electron energy bands in solids, electrical conduction in metals and semiconductors, applications to semi-conduction devices based on silicon and III-V compounds.
516 Phase Transformations 3 Rec MSE 314, 416. Thermodynamics, nucleation, interface motion, mechanisms and kinetics of chemical reactions between solid metals and their environment. (a/y)
519 Corrosion and Oxidation of Metals 3 Prereq MSE 316. Basic corrosion and oxidation mechanisms for various metals with emphasis on those pertaining to stainless steels.
520 Seminar 1 May be repeated for credit; cumulative maximum 3 hours. Reporting problems, research and research methods in materials science and engineering. S, F grading.
537 Fracture Mechanics and Mechanisms 4 Fracture mechanics and mechanisms and the microstructural origins of toughness in metals, polymers and composites.
543 Natural and Synthetic Polymeric Materials 3 Rec MSE 402. Glassy, crystalline, and rubbery states of synthetic and natural polymers.
547 Basic Principles of Adhesion 3 Rec MSE 402. Principles of interfacial bonding applied in the engineer- ing, design, and processing of polymers, wood and heterophase systems.
548 Reinforced Polymer and Wood-based Composites 3 Fundamentals of composite materials having polymers and wood as major components.
549 Nondestructive Testing of Wood-based Materials 3 Same as C E 536.
550 Parameters for Synthesis of Wood Composition Materials 3 Theory and practice of wood composite materials, manufacture and development. Cooperative course taught by WSU, open to UI students (ForPr 537).
562 Transmission Electron Microscopy 3 Development of the principles and applications of electron optics in microscopy.
600 Special Projects or Independent Study 1-5 Variable credit. S, F grading.
700 Master’s Research, Thesis, and/or Examination 1-6 Variable credit. S, F grading.
702 Master’s Special Problems, Directed Study, and/or Examination 1-6 Variable credit. S, F grading.
800 Doctoral Research, Dissertation, and/or Examination 0-12 Variable credit. S, F grading.

Schedule of Studies

MECHANICAL ENGINEERING

<table>
<thead>
<tr>
<th>Years 1 and 2</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Arts and Humanities [H] and Intercultural Studies [I] GER</td>
<td>6</td>
</tr>
<tr>
<td>Biological Sciences [B] GER</td>
<td>3</td>
</tr>
<tr>
<td>C E 211, 212, 215</td>
<td>9</td>
</tr>
<tr>
<td>Chem 105, 106</td>
<td>8</td>
</tr>
<tr>
<td>Cpt S 203 or 251</td>
<td>2</td>
</tr>
<tr>
<td>Econ 102 [S] (GER)</td>
<td>3</td>
</tr>
<tr>
<td>Engl 101 [W] (GER)</td>
<td>3</td>
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<tr>
<td>GenEd 110, 111 [A] (GER)</td>
<td>6</td>
</tr>
<tr>
<td>M E 103, 120, 320</td>
<td>6</td>
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<tr>
<td>Math 171, 172, 220, 273, 315</td>
<td>15</td>
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<tr>
<td>Phys 201, 202</td>
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<table>
<thead>
<tr>
<th>Years 3 and 4</th>
<th>Hours</th>
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<tbody>
<tr>
<td>E E 304, 305</td>
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<tr>
<td>Engl 402 [W] or other [C] GER</td>
<td>3</td>
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<tr>
<td>M E 301, 303, 305, 404</td>
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<tr>
<td>M E 310, 311</td>
<td>4</td>
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<td>M E 313</td>
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<td>M E 316, 414</td>
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<td>M E 348, 349</td>
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<td>M E 406, 416</td>
<td>6</td>
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<td>MSE 301</td>
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<tr>
<td>Emphasis Area Design Focus Courses*</td>
<td>6</td>
</tr>
<tr>
<td>Technical Electives**</td>
<td>9</td>
</tr>
<tr>
<td>Arts and Humanities [H] or Social Sciences [S] Capstone***</td>
<td>3</td>
</tr>
</tbody>
</table>

*Two required design focus elective courses from one of the following emphasis areas: applied mechanics, design and manufacturing; energy and environmental systems, fluids and aerospace.

**Technical electives are to include one course (b) from M E or MSE, one course (c) from computer science, mathematics or statistics and one course (d) from any upper-division course in engineering, science, (a), (b), (c) lists, or Mgt 301 or Mktg 360 or engineering management.

***Upper-division (300-level) Arts and Humanities or Social Science course must be a Tier III (capstone) course in an area of coherence. See adviser for further information.

MATERIALS SCIENCE AND ENGINEERING
Years 1 and 2
Arts and Humanities [H] Intercultural 6
Studies [I] GER 6
Biological Sciences [B] GER 3
C E 211, 215 6
Chem 105, 106 8
Cpt S 203 2
Econ 102 [S] (GER) 3
Engl 101 [W] (GER) 3
GenEd 110, 111 [A] (GER) 6
Math 171, 172, 220, 273, 315 15
MSE 110, 301 5
Phys 201, 202 8

Years 3 and 4
E E 304 2
Engl 402 [W] or other [C] GER 3
M E 310, 316 6
MSE 312, 314, 316, 413 11
MSE 320, 321, 323 6
MSE 401, 402, 403, 404, 405 15
MSE 420, 425, 426, 450(2) 9
Upper-division Science* 6
Technical Electives** 6
Arts and Humanities or Social Science 3
Capstone*** 3

*One year of upper-division physical science selected from one of the following: Chem 331, 333, 336; Chem 340, 341, 342; Phys 303, 304.
**Technical electives to include one course from C E 212, Ch E 480, E E 214, 305, M E 303, 404 and one course at upper-division from C E, Ch E, Chem, Cpt S, E E, M E, Math, Phys, or Stat.
***Upper-division (300-level) Arts and Humanities or Social Sciences must be a Tier III (capstone) course in an area of coherence. See adviser for further information.

MATERIALS SCIENCE AND ENGINEERING MINOR
A minor in MSE requires 16 credits: M E 320, MSE 301 or 302, plus 12 credits from: E E 496, M E 310, MSE 401, 402, 403, 404, 405, 413.

MECHANICAL ENGINEERING MINOR
A minor in M E requires 16 credits of upper-division M E courses, including two of the following four courses: M E 303, 348, 404, 414.

Certification Materials Science and Engineering
Certification into the Bachelor of Science program in Materials Science and Engineering is limited to 21 students per entering class. To be eligible for certification, a student must have completed at least the following:

a. 30 semester hours of graded course work at WSU or the equivalent of 30 semester hours of acceptable transfer credit with an overall g.p.a. of 2.0 or above.
b. Chem 105 or equivalent.
c. Chem 106, Phys 201, or equivalent.
d. Math 171, 172, or equivalent.

Other criteria considered for certification are overall g.p.a. and performance in other mathematics, science and engineering courses. Additional details and application forms are available from the department student services office.

Transfer Students
The Department of Mechanical and Materials Engineering cooperates with the community colleges in Washington to minimize problems associated with transfer. Inquiries are welcome. A strong preparation in mathematics, physics, and chemistry 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 mechanical engineering or materials science and engineering programs upon transfer are the same as listed above for certification. Transfer student applications will be handled by the Admissions Office and sent to 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

Transfer Students
Certification into the Bachelor of Science program in Materials Science and Engineering is limited to 21 students per entering class. To be eligible for certification, a student must have completed at least the following:

a. 30 semester hours of graded course work at WSU or the equivalent of 30 semester hours of acceptable transfer credit with an overall g.p.a. of 2.0 or above.
b. Chem 105 or equivalent.
c. Chem 106, Phys 201, or equivalent.
d. Math 171, 172, or equivalent.

Other criteria considered for certification are overall g.p.a. and performance in other mathematics, science and engineering courses. Additional details and application forms are available from the department student services office.

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

Professor and Program Chair, M. B. Laskowski; Professors, R. W. Bronsnner, R. B. Croteau, S. R. White, R. B. Wilson, R. G. Yount; Associate Professors, D. W. King, J. M. Mallatt; Assistant Professor, M. Sanchez-Lanier; Clinical Affiliates, L. H. Fearn, F. E. Martinez, D. R. Rauch, J. F. Thompson.

The Program in Basic Medical Sciences is an integral part of the Washington-Alaska-Montana-Idaho (WAMI) Cooperative Program in Medical Education. 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. Courses are taught on both campuses with faculty from WSU and the University of Idaho taking part in each, all WAMI students 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 apply to the M.D. degree granted by the university.

Because of specialized support material required and the nature of course content, course enrollment is restricted. With the approval of the course director and the student’s adviser, certain of the courses listed below may be taken by graduate students enrolled 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

For explanation of symbols, see page 53.

Medical Sciences

Med S

501 Medical Preceptorship 1 May be repeated for credit; cumulative maximum 2 hours. For WAMI students only. Practicum, observations of medical practice with individual physician volunteers.

502 Problem-based Learning 1 For WAMI students only. Studies of cases integrating content from basic science courses.

503 Methods in Rural Health Research 1 For WAMI students only. Assistance in developing a literature review paper on some aspect of rural health. S, F grading.

510 Histology 3 (2-3) Description and microscopic examination of cell types, tissues, and major organs of the human body.

511 Anatomy of the Trunk 5 (4-3) For WAMI students only. Extensive regional study of human thorax, abdomen, pelvis, and perineum; embryology and living anatomy; correlates gross with clinical anatomy.

512 Basic Mechanisms in Cellular Physiology 4 Basic physiological mechanisms, primarily at the cellular level.

513 Introduction to Clinical Medicine 1 1 For WAMI students only. Instruction in communications skills and interview techniques to form the basis for the eventual doctor-patient relationship.

514 Molecular and Cellular Biology 13 Classical molecular and cellular biochemistry, cellular physiology and molecular genetics.

516 Systems of Human Behavior 12 Physical and psychological development of the individual; conceptual systems and models of behavior related to medicine.

520 Cell and Tissue Response to Injury 3 Patterns of cell and tissue response to injury; inflammation; neoplasm.

521 Natural History of Infectious Disease and Chemotherapy 5 (4-3) Pathogenesis and immunity of infectious diseases, clinical manifestations and control of representative bacterial, fungal, parasitic, and viral infectious diseases.

522 Introduction to Clinical Medicine II 2 For WAMI students only. Communication skills as related to patients and dealing with problem identification and patient history.
523 Medical Immunology 2 For WAMI students only. Principles of immunology and their relationship to human medicine.
524 Molecular and Cellular Biology II 2 Continuation of Med S 514.
526 Systems of Human Behavior II 2 Continuation of Med S 516 with an emphasis on models of behavior, normality and abnormality related to medicine.
530 Epidemiology 2 Basic principles of epidemiological processes; statistical inference from clinical data.
531 Head, Neck, Ear, Nose and Throat 5 (4-3) Gross anatomy, including skull, pharynx, and larynx; audition and balance.
532 Nervous System 5 (4-3) Normal structure and function of the nervous system, including the eye.
535 Introduction to Clinical Medicine III 2 (1-2) 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 Microbiology

Professor and Department Chair, L. P. Mallick; Professors, M. L. Kahn, K. Postle, W. R. Rayburn, K. D. Spence; Associate Professors, K. P. Bertrand, R. E. Hurlbert, N. S. Magnuson, K. L. McIvor, J. L. Paznokas; Assistant Professors, M. Konkel, M. Sanchez-Lanier, L. Xun; Professor Emeritus, H. M. Nakata, Adjunct Associate Professor, L. Thomaeshow.

Microbiology is both a basic and an applied science. At the undergraduate level, the Department of Microbiology offers options in microbiology and medical technology, leading to a Bachelor of Science degree in Microbiology. The department also participates in the interdisciplinary molecular biology minor, listed separately in this catalog. Majors are required to develop a strong background in the basic sciences before taking courses in microbiology and those required by the various options. Employment opportunities in industrial, government, hospital and private laboratories and agencies are excellent for qualified graduates. A one-year hospital internship in an accredited school of medical technology is required after graduation for those interested in becoming certified medical technologists. Career opportunities in this area are also excellent. Majors may also prepare for advanced degrees and easily complete the requirements for application to medical, dental, veterinary or other professional schools. At the graduate level, the department offers programs leading to the degrees of Master of Science in Microbiology and Doctor of Philosophy. Areas in which the department is prepared to direct research include the biology of membranes, bioremediation, molecular genetics, molecular basis of cell-cell interactions and virulence, microbial differentiation, cellular and tumor immunology and the regulation of the immune response, diseases of insects and their development of resistance to microbial pathogens.

**Description of Courses**

For explanation of symbols, see page 53.

**Microbiology**

101 [B] Introductory Microbiology 4 (3-3) Microbiology for the informed citizen as it impacts humans and their environment. Not for students who have taken Bio S 103 and 104.

301 (201) General Microbiology 4 (3-3) Prereq Bio S 104; Chem 240 or c//. Structure, function, nutrition, physiology and genetics of microbes and their application to immunology, pathology, microbial diversification and environmental microbiology.

310 Medical Microbiology 3 Prereq BC/BP 364 or c//; Micro 301. Microbial pathogens and their relationship to disease.

311 Diagnostic Medical Bacteriology 2 (0-6) Prereq Micro 310 or c//. Techniques and tests for the identification of bacteria pathogenic for humans.

350 Clinical Diagnosis 4 (2-6) Prereq Bio S 104; organic chemistry. Theory, techniques, and interpretation of urinalysis, clinical chemistry, and hematology.

412 Immunology 2 Prereq Micro 301; org chem. Principles of basic immunology.(g)

413 [M] Immunology Laboratory 2 (0-6) Prereq Micro 412 or c//. Fundamental principles and techniques used in immunology.(g)

414 General Virology 3 Prereq BC/BP 364; GenCB 301; organic chemistry. The biology of bacterial, animal, and plant viruses. Credit not granted for both Micro 414 and 514. Cooperative course taught by WSU, open to UI students (Bact 130).

415 [M] General Virology Laboratory 2 (0-6) Prereq Micro 414 or c//. Laboratory techniques concerning cultivation and characterization of viruses. Cooperative course taught by WSU, open to UI students (Bact 130).(g)

416 Food and Applied Microbiology 4 (2-6) Prereq Micro 301. Microorganisms important in foods: spoilage; preservation; food-borne disease. Cooperative course taught by UI (MMBB 402), open to WSU students.

420 Epidemiology 3 Prereq junior standing. Study of diseases in human populations; concepts of etiology, disease rates, susceptibility and risk factors, screening for disease, and prevention. Cooperative course taught by WSU, open to UI students (Bact 420).(g)

428 Basic and Applied Microbial Physiology 3 Prereq BC/BP 364, Micro 301. Basic microbial physiology and its relevance to the processes of applied microbiology. Credit not granted for both Micro 428 and 528.

431 Soil Microbial Ecology 3 Same as Soils 431.

452 Environmental Microbiology 3 Prereq college-level biology, microbiology, organic chemistry. Microbial contamination and interactions between micro-organisms and the environment, methods and mechanisms of bioremediation. Credit not granted for both Micro 452 and 528.

462 Microbial Genetics 3 Prereq BC/BP 364 or GenCB 301; Micro 301. Genetics of bacteria, bacteriophages and plasmids; regulation of gene expression; genetic manipulation of micro-organisms.(g)

464 Techniques in Molecular Biology 3 (1-6) Prereq BC/BP 482, GenCB 402, or Micro 301. Basic principles and techniques of gene manipulation.(g)

489 Biotechnology for High School Teachers 3 (1-6) Prereq high school science teaching experience. Methodologies illustrating the use of microbes to implement laboratory exercises in biotechnology.

495 Internship in Microbiology V 2-4 May repeated for credit; cumulative maximum 8 hours. Prereq Micro 301. Experience in work related to specific career interests. S, F grading.

496 Senior Project in Microbiology 1 Prereq senior Micro major. Laboratory research or library project; seminar presentation.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

512 Immunology 3 The immune system at the animal, cellular, and molecular levels. Cooperative course taught by WSU, open to UI students (Bact 512).

514 General Virology 3 Graduate-level counterpart of Micro 414; additional requirements. Credit not granted for both Micro 414 and 514.

528 Basic and Applied Microbial Physiology 3 Graduate-level counterpart of Micro 428; additional requirements. Credit not granted for both Micro 428 and 528.

529 Molecular Techniques in Microbiology 3 (1-6) Current molecular biology techniques applied to DNA and protein isolation and characterization: southern and western blots, PCR, PAGE, computer cloning. Cooperative course taught by WSU, open to UI students (Bact 529).

541 Seminar 1 May be repeated for credit. Literature reviews and research reports.

552 Environmental Microbiology 3 Graduate-level counterpart of Micro 452; additional requirements. Credit not granted for both Micro 452 and 552.

560 Molecular Genetics 3 Same as GenCB 560.

565 Molecular Biology I 3 Same as BC/BP 565.

566 Molecular Biology II 3 Same as GenCB 566.

568 Microbial Transformation 3 Prereq BC/BP 364, Micro 428. Use of microbes in the biodegradation of wastes and bioprocessing to produce valuable chemical stocks. Cooperative course taught by UI (MMBB 568), open to WSU students.

570 Advanced Immunology 3 Prereq introductory course in immunology. Cellular and molecular regulation of the immune response. (a/y) Cooperative course taught by WSU, open to UI students (VetSc 570).

580 Selected Topics in Microbiology 1 May be repeated for credit; cumulative maximum 2 hours. Prereq 9 hours upper-division Micro.

582 Advanced Topics in Microbiology V 1-3 Prereq junior status. Topics in microbiology.

590 Selected Topics in Immunology 1 May be repeated for credit; cumulative maximum 2 hours. Prereq course in immunology. Seminar series on advances in immunology.

592 Selected Topics in Virology 1 May be repeated for credit. Prereq Micro 414/514 or c//; by interview only. Selected topics in virology using the current literature.

593 Research Proposal 2 Written and oral presen-
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 the departmental courses and a minimum g.p.a. of 2.0 is required in these courses for graduation. The core requirements for the freshman and sophomore years are the same for microbiology and medical technology options. None of the core courses or departmental courses may be taken pass, fail.

Core Requirements

BC/BP 364, 366; Bio S 103, 104; Chem 105, 106, 220, 222, 240; Math 140; Phys 101, 102.

Microbiology Option

GenCB 301; Micro 301, 310, 311, 412, 413, 414, 415, 9 additional hours Micro; and one advanced lecture-lab course outside the department are required as a minimum. Those contemplating graduate study are urged to take Chem 340-343 series (in lieu of Chem 240).

Medical Technology

Same as microbiology option except that Micro 350 and Zool 417 are required. Micro 350 partially fulfills requirement for 9 credits of Micro electives and Zool 417 fulfills the requirement for one advanced lecture-lab course outside the department. Zool 251 is strongly recommended. To become a certified medical technologist, a one-year internship at an accredited school of medical technology is required after graduation.

Schedule of Studies

MICROBIOLOGY

Freshman Year

First Semester

Bio S 103 [B] Introduction (GER) 4
Chem 105 [P] Principles I (GER) 4
Engl 101 [W] Intro Wrtg (GER) 3
GenEd 110 [A] World Civ I (GER) 3

Second Semester

Bio S 104 [B] Introduction (GER) 4
Chem 106 [P] Principles II (GER) 4
GenEd 111 [A] World Civ II (GER) 3
Math 140 [N] Math for Life Scientists (GER) 3

Sophomore Year

First Semester

Chem 240 Organic 1 4
GER Electives 2 6-8
Phys 101 [P] General (GER) 4

Second Semester

BC/BP 364 Biochem 3 3
BC/BP 366 Biochem Lab 3 1

GER Electives 3 or 4
Phys 102 [P] General (GER) 4
1 Pre-med students and those interested in advanced degrees should take Chem 340, 341, 342, 343, a one-year course in organic chemistry.
2 General Education Requirement: Electives should satisfy requirements in communication, social sciences, arts and humanities, intercultural studies and, if necessary, foreign languages. A student must have two years of one foreign language in high school or take one year in college of a modern foreign language before graduation. Eighteen credits in social science, arts and humanities and intercultural studies are required in the College of Sciences.
3 Chem 220, 222, Quantitative Chemistry, 4 credits, should be taken after biochemistry.

Junior Year

First Semester

Chem 220 Quant Chem 2
Chem 222 Quant Lab 2
GER and/or Micro 1 Electives 6
Micro 301 General Micro 4

Second Semester

GER and/or Micro Electives 9 or 10
Micro 310 Med Bact 3
Micro 311 Med Bact 2

Senior Year

First Semester

GER Elective 3
Micro 412 Immunology 2
Micro 413 Immunology Lab 2
Micro Electives 3-6

Second Semester

GER or Micro Electives 9
Micro 414 General Virology 3
Micro 415 Virology Lab 2
Micro 496 Senior Project 1

1 Micro electives may include Micro 350, 420, 428, 462, 464.
2 Entom 448, Zool 315, 352, 353, 417, 420, etc may satisfy this requirement.

Minor in Microbiology

A minimum of 16 semester hours including Micro 301 and the remaining at the upper-division level selected from: Micro 310, 311, 350, 412, 413, 414, 415, 416, 420, 428, 462, 464, 499.

Transfer Students

Students transferring from other institutions as juniors should have taken the equivalent of Bio S 103, 104; Chem 105, 106, 220, 222 or 440 (preferably both); Engl 101; Micro 301; one year of one modern foreign language in college or two years in high school; and part of the required hours in social sciences and arts 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 microbiology a student should have a bachelor’s or master’s degree and present evidence of proficiency in academic work. Normally the applicant should have an undergraduate major in microbiology, biological science, molecular biology, or chemistry; however, candidates with a good record in related fields may be well prepared for certain areas of advanced study in microbiology.

Department of Military Science

Professor and Department Chair, Lieutenant Colonel K. Vreeland, Jr.; Assistant Professors, Major C. Ericks, Major R. Randall, Captain B. Johnson, Captain M. Zimmerman; Instructors, Master Sergeant W. Phillips, Sergeant First Class M. Tedder.

The Department of Military Science at WSU is designed to supplement a student’s academic studies by motivating, educating, and training qualified students to serve as commissioned officers in all components of the U.S. Army. The military science academic, professional and technical education and training complement the educational programs at WSU. A copy of the student’s birth certificate is required for participation in the ROTC program.

The military science curriculum comprises a two-year basic course (freshman and sophomore years), and a two-year advanced course (junior and senior years). The basic course is open to all WSU students. Enrollment into the advanced course is highly competitive and is offered only with the approval of the department chair. During the summer between the junior and senior years of military science, cadets attend ROTC Advanced Camp (six weeks at Fort Lewis, WA). It is a training/evaluation/leadership/practicum opportunity taught by ROTC faculty from across the country and includes cadets from across the United States.

At WSU, military science courses are academic in nature. The practical aspects of military education and training are taught in leadership labs and summer camps. Basic and advanced course students are required to participate in leadership labs which are conducted throughout the year. These events provide instruction in individual military skills and group leadership techniques. Practical leadership experience is also gained through these labs since they are organized and conducted by the cadets under faculty supervision.

In addition to the military science courses, in order to be commissioned into the U.S. Army, cadets are required to complete courses in mathematics, computer science, military history, human behavior, and written communication. Information as to specific courses which need to be completed is available in the department.

Advanced course cadets receive a monthly stipend of $150 per month during the school year to cover the additional costs associated with advanced course standing. Competitively awarded scholarships are available which, in addition to the monthly stipend, pay full tuition, enrollment fees and defray the costs of necessary books and supplies. High school students may apply for a four-year Army ROTC scholarship in the fall of their senior year; all students may apply for two- or three-year scholarships whether or not they are enrolled in the ROTC Program. Additionally, scholarships are available on a competitive basis for students...
desiring to earn a commission in the National Guard and Army Reserve, without a commitment to full-time active duty upon graduation.

Upon successful completion of the advanced course and graduation from WSU, cadets selected for commissioning are commissioned as Reserve or Regular Army officers and serve in Army Reserve, National Guard, or active Army units. Cadets may also compete for active duty and commissions in the Regular Army. Those who wish to seek advanced degrees may apply for a delay to active duty in order to complete their graduate studies before entering active service.

Description of Courses

For explanation of symbols, see page 53.

Basic Course

Mil S

101 The United States Army | Role of the Army in contemporary society.
102 National and International Role of the Army | Role of the Army in today’s international affairs.
110 Cougar Rangers I | Military adventure training, pioneering activities, military skills and small unit tactics. Field trip required.
111 Cougar Rangers II | Military adventure training, pioneering activities, military skills and small unit tactics. Field trip required.
201 Introduction to Leadership | Multidisciplinary approach to military leadership.
202 The Officer as a Professional | 2 U.S. Army Officer Corps as a profession; the U.S. Army Officer as a professional.
205 Basic Summer Camp 6 | Prereq junior standing. By interview only. Intensive orientation and internship in military training and skills held at an active Army post. Successful completion qualifies for Advanced ROTC. S, F grading. (SS)
206 Military Science Overview 5 | Preparation for advanced military science program; map reading, tactics, leadership, U.S. military history, fundamentals of army duty. (SS)

Advanced Course

Mil S

301 Applied Leadership and Management 3 | Troop leadership procedures emphasizing instruction in military professionalism and ethics; practical aspects of tactics and leadership practice.
302 Small Unit Tactics and Military Leadership 3 | Preparation, delivery, and critique of practical oral presentations; leadership of small units; offensive and defensive operations.
320 Advanced Summer Camp 6 | Prereq Mil S 301, 302. By interview only. Intensive study and internship in military tactics, command and leadership; held at Fort Lewis, WA. S, F grading. (SS)
384 U.S. Military History 3 | U.S. military history from the colonial period through the 1990s.
401 Advanced Military Leadership 3 | Historical and legal basis of military justice; small unit management; military professionalism and ethics.
402 Advanced Military Management and Practice 3 | Theory and practice of Army administration/management; staff planning and correspondence; pre-commission orientation; unit management/resources application.
499 Special Problems V 1-4 | May be repeated for credit. S, F grading.

Molecular Biology Minor

Graduate training in molecular biology is performed under numerous life science graduate programs on campus. An undergraduate minor in molecular biology is available, jointly administered by the faculties of biochemistry/biophysics, genetics and cell biology, and microbiology. Students majoring in these three areas and possibly in other areas may satisfy the requirements for this minor. Requirements of 18-21 credit hours are as follows:

BC/SP 364
BC/SP 366, GenCB 402, or Micro 464
Chem 331 or GenCB 450
GenCB 301
GenCB 502 or Micro 462
Micro 301

Further information can be obtained from the Department of Genetics and Cell Biology.

School of Music and Theatre Arts

The School of Music and Theatre Arts offers courses of study leading to the degrees of Bachelor of Music, Bachelor of Arts in Music, Bachelor of Arts in Theatre Arts and Drama, Master of Arts in Music, Master of Arts in Theatre Arts and Drama, and Master of Arts in the Teaching of Theatre Arts and Drama.

Endorsement curricula offered in cooperation with College of Education provide certification for teachers of music or drama. Minors in music and drama are available as are many courses, performance opportunities, and other activities for students interested in music and theatre.

Music

Professor and Director of the School of Music and Theatre Arts, Erich J. Lear; Professors, B. Harbach, H. J. Schoeplin; G. Yasinitsky; Associate Professors, C. Argersinger, G. Berthiaume, D. Jarvis, L. R. Johnson, P. Klemme, C. J. von Baeyer; Assistant Professors, S. Chan, D. Hower, A. Mueller, K. Wicklund, L. Wiest; Instructor, J. Jones, R. Logan, B. Novak, J. Reid, P. Smith, K. Thomas, A. Yasinitsky.

The Music Program is committed to a tradition of excellence in performance, teaching, and the study of theoretical, historical, and philosophical aspects of the musical arts. Its chief objectives are:
— to assist the aspiring performer and composer to reach the highest potential of artistic capacity;
— to contribute to a varied humanistic education within the university community.

As an integral part of the academic program, an active schedule of recitals and concerts by students, faculty, and guest artists is maintained. The Music Program is a fully accredited member of the National Association of Schools of Music.

Description of Courses

For explanation of symbols, see page 53.

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. 100-level performance studies in selected instruments are open to any student without audition through class instruction. The 200-level denotes group or private instruction for advanced non-music majors by special permission of the area coordinator (audition required) 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 coordinator, to advanced non-music majors who meet all requirements for music majors as listed below. All students enrolled in 200- through 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 take jury examinations at the end of each term. Students enrolled in 300- and 400-level performance study must enroll in a music theory or music history course each semester until music core requirements have been completed. No student will be permitted to enroll in upper-division performance studies unless all of these criteria are met. In addition, each music major must pass the piano proficiency exam, as a precondition to 400-level standing.

Performance studies may not be taken on a pass/fail basis.

Nonmajor and Secondary Performance Studies

Lower-division courses and Mus 319 available for 2 credits only and may be repeated for credit. Mus 319 is designed for upper-division study on secondary instrument or voice by music majors.

Class Instruction

Mus
102 Piano
103 Voice
120 Guitar

Studio Instruction

Mus
201 Organ
202 Piano
203 Voice
204 Horn
205 Trumpet
206 Trombone
207 Baritone
208 Tuba
209 Percussion
210 Violin
211 Viola
212 Violoncello
213 Contrabass
214 Flute
215 Oboe
216 Clarinet
217 Bassoon
218 Saxophone
220 Guitar

319 Secondary Performance Study 2 Prereq music major. Instruction on instruments or voice other than major performing medium.

Major Performance Studies

Admission to 300 level is by examination only. Students 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 performance, literature, and core music requirements.

The 500 level represents credit given for graduate study and is limited to enrolled graduate students pursuing a master’s degree. Credit for the 300, 400 and 500 levels is granted on the basis of 2 credits for one half-hour lesson per week and 4 credits for two half-hour lessons per week. All major performance studies may be repeated for credit.

Mus
301, 401, 501 Organ
302, 402, 502 Piano
303, 403, 503 Voice
304, 404, 504 French Horn
305, 405, 505 Trumpet
306, 406, 506 Trombone
307, 407, 507 Baritone
308, 408, 508 Tuba
309, 409, 509 Percussion
310, 410, 510 Violin
311, 411, 511 Viola
312, 412, 512 Violoncello
313, 413, 513 Contrabass
314, 414, 514 Flute
315, 415, 515 Oboe
316, 416, 516 Clarinet
317, 417, 517 Bassoon
318, 418, 518 Saxophone
320, 420, 520 Guitar

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.

Music Performing Groups

Mus
428 Opera Workshop 1 (0-4) May be repeated for credit; cumulative maximum 8 hours. By audition only. Public performances may be required.(g)
429 Crimson Company Quartet 1 (0-4) May be repeated for credit; cumulative maximum 8 hours. By audition only. SATB. All styles of popular music; public performances required.
430 Crimson Company Show Choir 2 (0-8) May be repeated for credit; cumulative maximum 16 hours. By audition only. Popular music performances with choreography. Public perfor-

257 Jazz Improvisation 1 May be repeated for credit; cumulative maximum 3 hours. Melodic jazz improvisation.
281 Class Piano III 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. Prereq Mus 182. By audition only. Principles, functional keyboard.
351 Materials and Structures of Music III 3 Prereq Mus 253, 254. Vertical, linear and formal relationships of chromatic music; writing, analysis, coordinated with aural study.
352 Applied Theory III 1 (0-3) Prereq Mus 254. Continued musical development in ear training, sight singing, applied theory, keyboard dictation.
353 Materials and Structures of Music IV 3 Prereq Mus 351. Vertical, linear and formal relationships of 20th century music; writing, analysis, listening.
354 Applied Theory IV 1 (0-3) Prereq Mus 352. Continued development in ear training, sight singing, keyboard and dictation, emphasizing 20th century music.
355 Seminar in Jazz Arranging/Composition 2 Arranging and composing for instrumental jazz ensembles.(g)
451 Seminar in Counterpoint 2 May be repeated for credit; cumulative maximum 4 hours. Prereq Mus 353. Contrapuntal techniques of the 16th and 18th century with original stylistic writing.(g)
452 Electronic Music 2 (1-3) Prereq Mus 353. Introduction to computer-controlled digital, analog, and sampling synthesis; topics include sequencing, waveform editing, and creative projects.(g)
453 Form and Analysis 2 Prereq Mus 353. Organization of musical works according to the relationships in sectional divisions, thematic divisions, and tonal bases.(g)
455 Seminar in Instrumentation 2 May be repeated for credit. Prereq Mus 352. Scoring for various instrumental combinations.(g)
456 Seminar in Advanced Composition V 1-3 May be repeated for credit. Prereq upper-level composition review. Original writing in small and large forms (traditional and experimental).(g)
550 Seminar in Analysis 2 May be repeated for credit; cumulative maximum 4 hours. Prereq Mus 453 or c//. Required of all graduate students. Applications of analytical techniques to develop a basis for musical understanding and interpretation.
553 Seminar in Music Theory 2 May be repeated for credit; cumulative maximum 4 hours.

History and Literature

Mus
160 [H] Survey of Music Literature 3 Exploration of predominantly western music through demonstrations, performances, lectures, concerts, and discussions.
161 Introduction to Critical Studies in Music 3 Prereq Mus 152, 251, or c//. Historical styles of music through analytical listening, score examination and source materials.
163 [G] World Music 3 Exploration of music from a global perspective through demonstrations, performances, lectures and discussion.
265 [G] Native Music of North America 3 Music and ceremonialism as a reflection of reali-
ties in North American native cultures, past and present.


362 [H] History of Jazz 3 History of jazz in chronological sequence from early Dixieland to jazz-rock combinations of 1980s; stylistic and improvisational developments.

363 [H] Women of Note 3 Survey of the world's history of women in music in their respective social and political contexts.

364 [H] Musical Theatre 3 Survey of musical theatre from Vienna to Broadway, lyric drama from Mozart to the present.

369 Topics Study Abroad 3 May be repeated for credit; cumulative maximum 6 hours.

465 Seminar in Major Performance Literature 2 May be repeated for credit; cumulative maximum 6 hours. Prereq Mus 351 or c/l. Survey/performance of solo and chamber literature for voice, keyboard, strings, winds, brass, percussion.(g)

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.(g)

467 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.

468 Seminar in Literature of 20th Century Music 2 Prereq Mus 351. Impressionism, expressionism, neoclassicism, neoromanticism, jazz and recent electronic music. (a/y)

469 Symphonic Literature 2 Symphony orchestra and symphonic form from its beginning to modern times studied from the score.

470 Seminar in Music History 2 May be repeated for credit; cumulative maximum 6 hours. Prereq Mus 361. Various historic periods and composers.

Music Education

Mus

371 Diction for Singers I 2 Prereq Mus 303. Italian and German; International Phonetic Alphabet; fundamental diction principles, applied to each language and oriented to needs of the singer. (a/y)

372 Diction for Singers II 2 Prereq Mus 303. French and English; International Phonetic Alphabet; fundamental diction principles, applied to each language and oriented to needs of the singer. (a/y)

388 Music for the Classroom Teacher 2 For elementary education majors. Prereq Mus 153 or satisfactory score on music fundamentals test administered by music faculty. Movement, singing, listening and instrumental resources appropriate for use in the elementary grades.

480 Instrumental Music Education 3 Prereq Mus 490. Philosophies, administration, organization, methods and instruments for instructional music education K-12.(g)

481 Fundamentals of Conducting 1 (0-3) Prereq Mus 254. Basic techniques, patterns, preparations and releases; musical styles and score reading for beginning conductors.

482 Instrumental Conducting 1 (0-3) Prereq Mus 481. Score preparation of orchestra and band literature; transpositions; clefs; rehearsal techniques for instrumental ensembles.

483 Choral Conducting I (0-3) Prereq Mus 481. Conducting choral and vocal jazz ensembles.

485 Seminar in Vocal Pedagogy 2 Prereq performance studies in voice. Vocal mechanism, teaching procedures, and materials. (a/y) (g)

486 Seminar in Piano Pedagogy 2 Prereq Mus 202. Materials and methods of teaching experiences. (a/y) (g)

487 String Techniques 2 (0-6) Prereq Mus 490. String techniques, materials and methods for music education majors. (a/y) (g)

488 Choral Methods and Materials I 2 (0-6) Prereq Mus 490. Preparation in the administration of choral programs from auditions to the selection and rehearsal of choral literature. Credit not granted for both Mus 488 and 588.

489 Choral Methods and Materials II 2 Prereq Mus 488/588. Development of skills in choral arranging, curriculum construction, research, and job placement. Credit not granted for both Mus 489 and 589.

500 General Music Material/Methods 4 (3-2) Prereq Mus 490. Materials and methods for general music education majors; accompanying, instruments, Orff, Kodaly, ETM, classroom management; observations. (g)

507 Voice Techniques 2 (1-3) Prereq Mus 254. Voice techniques for music education majors. (a/y)

509 Wind and Percussion Techniques I 2 (0-6) Prereq Mus 481. Brass, woodwind, and percussion techniques for music education majors. (a/y)

511 Wind and Percussion Techniques II 2 (0-6) Prereq Mus 493. Brass, woodwind and percussion techniques; elementary instrument conducting for music education majors. (a/y)

513 Directed Student Teaching in Music 1 (0-6) Prereq maintenance of 2.5 g.p.a. in primary, supporting, and professional education core courses; completion of all required courses. By interview only. Supervised teaching in public schools (full day, full semester), including a two-hour weekly seminar reflecting on effective teaching. S, F grading.

515 Advanced Conducting 2 or 3 May be repeated for credit. Prereq Mus 482. Rehearsing orchestras, bands, and choruses. Public performance may be required.

588 Choral Methods and Materials I 2 (0-6) Graduate-level counterpart of Mus 488; additional requirements. Credit not granted for both Mus 488 and 588.

589 Choral Methods and Materials II 2 Graduate-level counterpart of Mus 489; additional requirements. Credit not granted for both Mus 489 and 589.

Problems, Research, Recitals, and Thesis

Mus

496 Topics in Music V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq permission of program coordinator. Advanced seminar with required projects in music history, literature, pedagogy, theory, composition or performance.

498 Special Readings V 1-4 May be repeated for credit. S, F grading.

522 Graduate Recital 2 May be repeated for credit; cumulative maximum 4 hours. Private screening and public performance as required within each performance emphasis.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Schedule of Studies

Normal progress in all music degree curricula requires enrollment during the freshman year in 300-level performance studies. Such enrollment requires an audition which is best completed during the semester (usually spring) prior to the student’s matriculating in the university. Students who do not audit early must do so during the first week of classes in the term. Students who do not qualify for 300-level performance studies as freshmen will usually require more semesters and credit hours of performance studies to complete a degree than listed in this schedule of studies. To certify as a major pursuing any degree in music, students must meet the following criteria:

Completion of 30 semester hours
Cumulative g.p.a. of 2.00.
Completion of 10 hours with a cumulative g.p.a. of 2.0 from any of the following courses: Mus 152, 161, 181, 182, 251, 252, 254, 281.
Approval of the appropriate applied study area coordinator.
Completion of application available from department.

In addition the College of Education requires 2.5 g.p.a. and C or better in each course listed for the major, minor and professional core of students certifying in any of the Bachelor of Music, Option IV, curricula. As indicated in 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: Mus 161, 251, 252, 253, 351, 352, 353, 354, 360, 361 with a minimum 2.00 g.p.a. Each student is required to pass the piano proficiency exam and the upper-division exam. Students must also complete the General Education Requirements plus those for the College of Liberal Arts.

BACHELOR OF MUSIC

This four-year program offers options for specialization in performance, composition and music education. At least 42 of the 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 option I, II, III, V are required to present an acceptable junior and senior recital in the major performance medium.

Students following any of the option IV endorsements are required to present an acceptable senior half recital in the major performance medium. Students following any of the option IV endorsements must have a minimum g.p.a. of 2.5 in all of the following areas: cumulative g.p.a., Professional Education Core with a C or better in each course, and academic major (and minor if any) with a C or better in each course. Students certifying as majors in any of the option IV endorsements must also cer-
Option Ia. Keyboard—89 hours

<table>
<thead>
<tr>
<th>Theory-History</th>
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<tbody>
<tr>
<td>Theory-History Core</td>
<td>25</td>
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<tr>
<td>Mus 451 Counterpoint</td>
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<td>Mus 453 Form and Analysis</td>
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<tr>
<td>Mus 465 Major Perf Lit</td>
<td>2</td>
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<tr>
<td>Performance</td>
<td></td>
</tr>
<tr>
<td>Major Instrument</td>
<td>32</td>
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<tr>
<td>Secondary Instrument</td>
<td>2</td>
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<tr>
<td>Performance Studies, Ensembles (including 1 hour of 435 and 1 hour of 441)</td>
<td>6</td>
</tr>
<tr>
<td>Mus 481 Fund of Conducting</td>
<td>1</td>
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<tr>
<td>Mus 486 Piano Pedagogy</td>
<td>2</td>
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<tr>
<td>Music Electives</td>
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<td>Electives</td>
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Option Ib. Keyboard, elective studies in Pedagogy—89 hours

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<td>Major Instrument</td>
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<td>Secondary Instrument</td>
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<tr>
<td>Performance Studies, Ensembles (including 1 hour of 435 and 1 hour of 441)</td>
<td>6</td>
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<tr>
<td>Mus 481 Fund of Conducting</td>
<td>1</td>
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<tr>
<td>Mus 486 Piano Pedagogy</td>
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<td>Mus 499</td>
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<td>Psych 105</td>
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<td>Psych 361, 490, or EdPsy 301</td>
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Option II Brass, Percussion, Strings, Woodwinds—89 hours

<table>
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<tr>
<td>Theory-History Core</td>
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<tr>
<td>Mus 453 Form and Analysis</td>
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<td>Mus 455 Sem in Instrumentation</td>
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<td>Mus 465 Major Perf Lit</td>
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<tr>
<td>Performance</td>
<td></td>
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<tr>
<td>Major Instrument</td>
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<tr>
<td>Secondary Instrument or Mus 487</td>
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<tr>
<td>String Techniques (if in strings)</td>
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<tr>
<td>Performance Studies, Ensembles (including 2 hours of 435)</td>
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<tr>
<td>Mus 481 Fund of Conducting</td>
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<tr>
<td>Mus 482 Instrumental Conducting</td>
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Option III. Voice—90 hours

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<tr>
<td>Mus 364 Mus Theatre</td>
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<tr>
<td>Mus 453 Form and Analysis</td>
<td>2</td>
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<td>Mus 465 Major Perf Lit</td>
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<tr>
<td>Performance</td>
<td></td>
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<tr>
<td>Voice Major</td>
<td>32</td>
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<tr>
<td>Performance Studies, Ensembles (including 2 hours of 428)</td>
<td>8</td>
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<tr>
<td>Mus 371, 372 Diction for Singers</td>
<td>4</td>
</tr>
<tr>
<td>Mus 481 Fund of Conducting</td>
<td>1</td>
</tr>
<tr>
<td>Mus 483 Choral Conducting</td>
<td>1</td>
</tr>
<tr>
<td>Mus 485 Sem Vocal Pedagogy</td>
<td>2</td>
</tr>
<tr>
<td>Mus Electives and Foreign Language (two semesters minimum of foreign language study, exclusive of literature, beyond the WSU admissions requirement)</td>
<td>10</td>
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<tr>
<td>and a minimum of 2 credits of music electives required.)</td>
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</table>

Option Iva. Music Education Broad Endorsement—116 hours

| Theory-History Core | 25 |
| Performance Studies (at least 2 hours at 400-level) | 14 |
| Performing Groups (at least 2 hours instrumental and 2 hours choral; instrumentalists 1 hour 435; vocalists 1 hour 428). | 7 |
| (Within Performance Studies and Performing Groups, applied vocal majors must include at least 4 credits total of instrumental study; applied instrumental majors must include at least 4 credits total of choral vocal study.) | |
| Mus 453 or 455 | 2 |
| Studies in Music Education and Education Mus 480, 488, 489, 490 | 11 |
| Mus 481, 482, 483 | 3 |
| Mus 487, 491, 493, 494 | 8 |
| Professional Education Core | 34 |
| (Students may apply for a waiver of T & L 450/451.) | |

Option Ivb. Music Education Choral/General Endorsement—109 hours

| Specified General Education Requirements Engl 101 [W] Intro to Writing | 3 |
| Engl 201 [W] Expos Wrtrg | 3 |
| Psych 105 [S] Princ Behav | 3 |
| SpCom 102 [C] Public Speaking | 3 |
| Studies in Music Theory-History Core | 25 |
| Performance Studies (at least 2 hours at 400-level) | 14 |
| Performing Groups (at least 4 hours choral) Mus 453 or 455 | 2 |
| Studies in Music Education and Education Mus 480, 490 | 7 |
| Mus 481, 483 | 2 |
| Mus 488, 489, 491 | 6 |
| Professional Education Core | 34 |
| (Students may apply for a waiver of T & L 450/451.) | |

Option Iv. Music Education Instrumental/General Endorsement—111 hours

| Specified General Education Requirements Engl 101 [W] Intro to Writing | 3 |
| Engl 201 [W] Expos Wrtrg | 3 |
| Psych 105 [S] Introductory | 3 |
| SpCom 102 [C] Public Speaking | 3 |
| Studies in Music Theory-History Core | 25 |
| Performance Studies (at least 2 hours at 400-level) | 14 |
| Performing Groups (at least 4 hours instrumental) Mus 453 or 455 | 2 |
| Studies in Music Education and Education Mus 480, 490 | 7 |
| Mus 481, 482, 483 | 2 |
| Mus 487, 491, 493, 494 | 8 |
| Professional Education Core | 34 |
| (Students may apply for a waiver of T & L 450/451.) | |

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. Of the total 120 credits required for a degree in this program, 73 credits are devoted to courses outside music, including the General Education Requirements. Non-music courses other than those used for the GERs must be at the 200-level or above. 40 credits of the 120 required for the degree must be in upper-division. Music credits beyond the required 47 credits in music add to the number of credits required in the degree.

Bachelor of Arts in Music

| Music Major—47 hours |
|---------------------|-------|
| Studies in Theory-History Theory-History Core | 25 |
| Performance Major Instrument or Voice Performance Groups | 8 |
| Music Electives (minimum) | 6 |

MASTER OF ARTS IN MUSIC

Please consult the current WSU Graduate Study Bulletin.

Music Minor and Supporting Teaching Endorsements

A 22-hour music minor course of study is available. For details contact the Music Program. Also available are supporting teaching endorsements in music for students whose primary teaching endorsements are in other majors.

Theatre Arts and Drama

Associate Professor and Theatre Arts and Drama Coordinator, G. R. Caldwell; Professor, L. H. Harris; Associate Professors, G. R. Caldwell, L. Furman, W. H. Sheppard, R. G. Slabaugh; Assistant Professor, T. Converse.

The Theatre Arts and Drama Program provides students with a foundation of studies in production, history and analysis of the theatre arts within
For explanation of symbols, see page 53.

Drama Arts and Drama

160 [H] Introduction to Theatre 3 Drama as prepared and presented for cinema, television, and stage.

163 Beginning Stagecraft 3 (2-3) Basic techniques of scene construction and painting in the performing arts; practical application with WSU theatre productions.

260 Acting I 3 (2-3) Creative process of acting; psychophysical awareness, group improvisation, and work with the partner.

264 Stage Makeup 2 (0-6) Basic techniques in the design and execution of makeup for the stage and television.

294 Stage Speech 2 (0-6) May be repeated for credit; cumulative maximum 4 hours. Techniques and exercises for development of the actor’s voice for the stage; voice production, articulation, and application.

296 Practical Theatre V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 12 hours. Practical projects in theatre production, scenery, lights, sound, box office and publicity for nonmajors.

360 Acting II 3 (0-6) Prereq Drama 260. By interview only. Intensive work in textual analysis and character development in scenes and dramatic monologues.

361 Play Directing I 3 (0-6) Prereq Drama 260, 362. Theories of directing; principles of composition, blocking, casting, organization, and rehearsal; scenic rehearsals and presentation.

362 Script Analysis 3 For directors, designers, performers. Aristotelian analysis of scripts for stage and film.

363 Lighting for the Theatre 3 (2-3) Design and execution of lighting for the performing arts; instruments, control systems, principles of electricity, optics and color; required practicum.

365 [H] [M] Theatre History I: Beginnings to 1700 3 Development of theatre and drama from its beginning to 1700: major trends, plays, playwrights, actors, architecture, scenery, and costumes.

366 [H] [M] Theatre History II: 1700 to 1900 3 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 Analysis of the visual aspects of theatre, film and television applying research in perceptual psychology. (a/y)

402 Production Analysis I 1 (0-3) May be repeated for credit; cumulative maximum 6 hours. Analysis and comparison of theatre productions through discussion and written evaluation. Credit not granted for both Drama 402 and 502.

418 Topics—Study Abroad 3

419 Topics—Study Abroad 3 May be repeated for credit; cumulative maximum 6 hours.

420 Topics—Study Abroad 3 May be repeated for credit; cumulative maximum 6 hours.

450 Advanced Techniques of Acting 3 (0-6) May be repeated for credit; cumulative maximum 6 hours. Preparation for performance and individual character study for the advanced student of acting. (g)

460 Play Production with Nonprofessionals 3 Acting, directing, design, stage management, and front-of-the-house organization for producers of amateur theatre. Suitable for high school teachers. (a/y)

461 Play Directing II 3 (0-6) Prereq Drama 361, 362. Continuation of Drama 361. Credit not granted for both Drama 461 and 561.

463 Seminar in Theatre Design 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Visual elements in the performing arts; appropriate for designers, directors, performers; individual drawing skills are taken into account. (a/y)(g)

464 Creative Drama I: Philosophy and techniques of informal drama; practical experience integrated into the curriculum; emphasis on application to educational setting. (g)

467 Topics in Drama 3 May be repeated for credit; cumulative maximum 6 hours. Individualized study and discussion of drama and performance theory from different historical eras and social contexts. (g)

468 [M] Theatre for Children and Youth 3 Theories, dramatic literature and production demands of theatre for children and youth. (g)

470 Theory and Practice of Puppetry Arts 1 or 2 1 (2-2) The puppet as a tool for educators, artists, and therapists. Credit not granted for both Drama 470 and 570.

471 Applied Puppetry Arts 2 (1-3) Prereq in Drama 470 or 570. Applications of puppetry arts theory to specific emphases: production, education and therapy. Credit not granted for both Drama 471 and 571.

472 Drama Therapy Prereq current knowledge in psychology/counseling theory. Balanced theoretical and experiential approach toward understanding therapeutic applications of drama and theatre. Credit not granted for both Drama 472 and 572.

480 Playwriting 3 Prereq Eng 351. Practical experience in the creative process of playwriting.

490 Internship in Professional Theatre V 2-15 Prereq Drama 163, 264; 360 or 361; 362 or 365. Off-campus experience with Seattle area professional theatres in all aspects of production excluding performance. S, F grading.

494 Acting: Rehearsal and Performance V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 6 hours. By interview only. Practical application of acting techniques during the production of plays.

496 Theatre Practicum 2 (0-4) May be repeated for credit; cumulative maximum 12 hours. Advanced projects in scenery and properties; costumes, lights, sound, box office and publicity, for theatre majors.

498 Repertory Theatre 3 (0-9) May be repeated for credit; cumulative maximum 6 hours. Rehearsal, performance and related technical and management work in Summer Palace Theatre. (SS) (g)

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

501 Research Methods 3 Theory, methods, and practice of graduate-level research.

502 Production Analysis I 1 (0-3) May be repeated for credit; cumulative maximum 6 hours. Graduate-level counterpart of Drama 402; additional requirements. Credit not granted for both Drama 402 and 502.

504 Instructional Practicum 1 May be repeated for credit; cumulative maximum 4 hours. Instruction and guidance in teaching theatre arts and drama. S, F grading.

541 History of the Theatre I 3 Major developments of all aspects of theatre arts from preliterate times to 1650. (a/y)

542 History of the Theatre II 3 Major developments of all aspects of theatre arts from 1650 to 1800. (a/y)

561 Play Directing II 3 (0-6) Graduate-level counterpart of Drama 461; additional requirements. Credit not granted for both Drama 461 and 561.

565 Seminar in Drama 3 May be repeated for credit; cumulative maximum 6 hours. Seminar in various periods, movements, and phases of drama.

570 Theory and Practice of Puppetry Arts 1 or 2 1 (2-2) Graduate-level counterpart of Drama 470; additional requirements. Credit not granted for both Drama 470 and 570.

571 Applied Puppetry Arts 2 (1-3) Graduate-level counterpart of Drama 471; additional requirements. Credit not granted for both Drama 471 and 571.

572 Drama Therapy 3 Graduate-level counterpart of Drama 472; additional requirements. Credit not granted for both Drama 472 and 572.

590 Graduate Internship in Professional Theatre V 2-15 Prereq Drama 501; completion of one academic year of master’s level course work in Theatre Arts and Drama at WSU. Internship position at upper levels of administration or production that requires expertise in specific area; theories/practical application. S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Schedule of Studies

Students seeking the Bachelor of Arts in Theatre Arts and Drama must complete the General Education Requirements plus those for the College of Liberal Arts. Students pursuing a teaching endorsement option must have a minimum g.p.a. of 2.5 in all of the following areas: cumulative g.p.a., Professional Education Core with a C or better in each course, and academic major with a C or better in each course (and minor if any). Students certifying as majors in teacher endorsement curricula must also certify as majors in the College of Education.

Theatre Arts and Drama—51 hours

Studies in Performance/Production 19 Hours

Drama 163, 260, 264, 294, 361, 363, 468 19
Drama 360 or 463 3
Drama 368 or 460 3
Studies in Dramaturgy 12 Drama 362, 365, 366, 467
Drama 402 2
Approved literature courses (may apply toward General Education

Department of Natural Resource Sciences
Requirements) 6
Practicum Studies  4
Drama 296 or 496  2
Drama 494  2

Department of Natural Resource Sciences


Natural resources are the basis for much of the economic activity in the state of Washington and in the world. Highly trained and motivated resource managers and natural resource scientists are needed to meet today’s and tomorrow’s demands for the multiple products and services supplied by the world’s natural resources. The objectives of the Department of Natural Resource Sciences are to prepare students for careers in forestry, range, wildlife, and wildland recreation professional areas with a holistic perspective on resource management and an ability to conduct research in natural resource sciences that will increase the basic knowledge and productivity of the resources while maintaining or improving the aesthetic qualities.

Within the undergraduate program, students can choose to concentrate on either natural resource management or natural resource sciences. Graduates of the department are employed by all the major public and private land management and wildlife organizations in the United States. They work as foresters, range conservationists, wildlife biologists, park managers, information specialists, game managers, consultants, researchers, and in a variety of roles in developing countries.

At the graduate level, MS and PhD programs provide students not only with an increased knowledge of the scientific basis of their profession but also with a more complete understanding of the holistic nature of successful natural resource management and science. Graduate-level students work with their academic committees in the development of academic programs and selection of research topics. Student chapters of professional societies (Society of American Foresters, Society for Range Manage-ment, and The Wildlife Society) provide additional opportunities for students to interact with the faculty and other professionals. Faculty contacts with many of the employing organizations and interaction with the Professional Experience Program on campus help students obtain summer and permanent employment as well as internships and cooperative education opportunities in their chosen field.

Facilities such as the department’s microcomputer laboratory, the ecophysiology laboratory, bear research laboratory, large animal holding complex, and the greenhouses at the Steffen center complex, the Hudson Biological Reserve at Smoot Hill, the Owneby Herbarium, and the 12,000-acre Colokum multiple-use research area provide students with access to the facilities and technologies needed to develop competence in their chosen professions.

Description of Courses

For explanation of symbols, see page 53.

Natural Resource Sciences

NA TRS

100 Introduction to Natural Resource Management I 1 May be repeated for credit; cumulative maximum 5 hours. Nature and significance of natural resources; types of renewable natural resource systems; goals and principles of natural resource management. S, F grading.

101 Introduction to Natural Resource Management II 1 Professional fields of natural resource management. Field trip required.

204 Introduction to Measurements and Computers in Natural Resources 2 (1-3) Prereq Math 107, sophomore standing. Introduction to basic concepts, field techniques and the use of spread sheets in natural resources. Field trips required.

275 Recreation in America 2 Same as RLS 275.

280 Introductory Wildlife Management 3 (2-3) Prereq Bio S 104 or Bot 120. An introductory course in the principles of wildlife management. Field trip required.

301 Forest and Range Plant Resources I 3 (2-3) Prereq Bio S 104 or Bot 120. Identification and ecology of important forest and range plants with emphasis on woody plants; attributes significant to vegetation management. Field trips required.

302 [M] Forest and Range Plant Resources II 3 (2-3) Prereq NATRS 301. Identification and ecology of important forest and range plants with emphasis on herbaceous plants; attributes significant to vegetation management. Field trips required.

303 Conservation of Renewable Resources 3 Philosophy and principles of conservation; identification of major uses of natural resources; case studies to illustrate conservation practices.

304 Forest and Range Biology 3 Prereq Bio S 372, NATRS 302 or c/f. Structure and functions of forest and range plants; influence of biotic and environmental factors on plant and stand growth.

305 Silviculture 3 Prereq NATRS 204, 302, 304. Stand dynamics, natural regeneration methods, intermediate stand treatment, relationships of natural resource management to silvicultural practice. Field trips required.

311 Natural Resource Economics. Same as Ag Ec 311.

312 Natural Resources and Society 2 Prereq NATRS 100; junior standing. Social views of natural resources, processes by which these views are developed and expressed, social conflict over natural resources.

313 Forest Measurements 2 (1-3) Prereq NATRS 204. Theory and application of forest measurements. Field trips required. Cooperative course taught jointly by WSU and UI (ForPr 374).

320 Timber Harvesting 3 Prereq NATRS 204. Current practices and problems; planning and coordinating timber harvesting with forest management. Cooperative course taught by UI (ForPr 430), open to WSU students.

321 Introduction to Wood Technology 3 (2-3) Prereq Bio S 103. Anatomy of woody plants, identifying characteristics and properties of woods; relation of wood properties to processing and use. Field trips required. Cooperative course taught by UI (ForPr 331), open to WSU students.

331 Forest Pathology 2 (0-6) Same as Pl P 331.

348 Forest Entomology 2 (1-3) Principles and concepts of forest entomology: integration and application of basic knowledge; processes in dealing with forest insect problems. (a/ y)

351 Principles of Range Management 3 Prereq NATRS 301. Basic concepts in range management; range history; physiology of range productivity and utilization; grazing management; range improvements.

353 Range Plant Identification Laboratory 1 (0-3) May be repeated for credit; cumulative maximum 5 hours. Identification, forage value, and habitats of North American range plants. S, F grading.

371 Wildland Recreation 3 Prereq junior standing. Historic development; benefits; federal, state, and local involvement; current problems and trends in the field of wildland recreation.

372 Wildland Recreation Field Laboratory 1 (0-3) Prereq NATRS 371 or c/f. Field observation of recreation practices. Field trips required. (a/y)

373 Interpretive Techniques 3 (2-3) Prereq junior standing. Fundamentals and practices in interpreting wildland biological and physical phenomena as related to public recreation. Field trip required. (a/y)

374 Remote Sensing and Airphoto Interpretation 3 (2-3) Same as Soils 374.

403 Natural Resource Planning 3 (2-3) Prereq junior standing. Natural resource management planning processes to include public and private lands: inventory, public involvement, implementation, monitoring, assessing resource values. Credit not granted for both NATRS 403 and 503. Field trip required.

406 Issues and Ethics in Natural Resources 3 Analysis of natural resource issues from an ethical perspective; viewpoints and value systems which determine management decisions.

407 Forest Populations 1 Prereq enrollment in CEFES Program. Concepts of genetics, population dynamics and pest management applied to forest management. (g)

410 Forest Finance and Valuation 3 Prereq Ag Ec 201 or Econ 101; Math 107. Economic and finance principles applied to forest management and appraisals. Credit not granted for both NATRS 410 and Soils 510. (a/y)

413 Forest Nursery Management 2 Forest nursery design; seed processing and quality; nursery...
equipment and cultural practices; seedling quality. Field trips required. Credit not granted for both NA TRS 413 and 513. Cooperative course taught by UI (For 413/513), open to WSU students.

414 Forest Sampling 2 Prereq Dec S 215, Stat 212 or 412; NATRS 204. Forest sampling and cruising; sampling designs and estimating techniques needed in stand management.

416 Principles of Fisheries Management 3 Application of principles toward managing recreational and commercial aquatic resources. Cooperative course taught jointly by WSU and UI (Fish 419).

417 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours.

418 Forest Growth and Yield 2 (1-3) Prereq Dec S 215, Stat 212, or 412. Factors influencing forest yields, traditional prediction methods; development and application of growth and yield simulators. Credit not granted for both NATRS 418 and 518.

419 Topics in Natural Resource Sciences V 1-3 May be repeated for credit; cumulative maximum 9 hours. Topical issues in natural resource sciences.

420 Wood Products and Marketing 2 Prereq NATRS 304 or c//. Wood science and its role in the manufacture and marketing of forest products. Credit not granted for both NATRS 420 and 520. (a/y)

421 Fish Diseases 3 (2-3) Epidemiology, diagnosis, prevention, and treatment of infectious and noninfectious diseases of free living and confined finfish. Cooperative course taught jointly by WSU and UI (Fish 420).

422 Tropical Dendrology and Ecology 3 (2-4) Distribution, physiognomy and climate of world tropical and subtropical vegetation types. Credit not granted for both NATRS 422 and 522. Cooperative course taught by UI (For 420), open to WSU students.

423 Forest Genetics and Tree Improvement 3 Same as GenCB 427. Credit not granted for both NATRS 427 and 527. Cooperative course taught by UI (For/Genet 428/528), open to WSU students.

429 (328) Animal Population Dynamics 3 Prereq Bio S 104 or animal ecology; statistics. Theory and analysis of natural animal populations; diagnosis and forecasting of population changes; application in resource and pest management.

430 Introduction to Wildland Fire 2 Prereq Bio S 372. Physical nature and behavior of wildland fire; the fire environment; fire ecology; practice of wildland fire management. Credit not granted for both NATRS 430 and 530. (a/y)

431 Wildlife Nutrition 3 (2-3) Nutritional requirements and interactions of wildlife populations. Credit not granted for both NATRS 431 and 531.

432 Low-volume Forest Roads 3 Prereq NATRS 320. Road classification; design of forest roads; construction techniques; costing; environmental considerations, design project. Three days of field trips. Cooperative course taught by UI (ForPr 432), open to WSU students.

433 Forest Tractor System Analysis 3 Prereq NATRS 320. Planning, layout, and cost analysis of forest tractor systems, production estimating, machine capabilities, and options; layout project. Three days of field trips. Cooperative course taught by UI (ForPr 433), open to WSU students.

434 Cable Systems Analysis 3 Prereq NATRS 320. Layout, planning, and design for cable logging systems; analysis of forces involved in cable logging; crew and terrain requirements; layout and design project; cost and equipment analysis. Three one-day field trips. Cooperative course taught by UI (ForPr 434), open to WSU students.


437 Wildland Fire Management Laboratory 1 (0-3) Prereq NATRS 430. Wildland fuel combustion; fire behavior; fuel evaluation; fire effects; application to fire management. Field trips required. Credit not required for both 437 and 537.

438 [M] Natural Resource Policy and Administration 3 (2-2) Prereq Engr 402. NATRS 312, junior standing, development, content, and implementation of federal public land and natural resource policies emphasizing forest, range, wildlife, and wildland recreation. Credit not granted for both NATRS 438 and 538.

440 Integrated Forest Management Models 2 Prereq NATRS 313; 410 or 510. Applied mathematical programming techniques for simultaneous multiple product, intertemporal and interspatial decisions in forest planning, procedures to coordinate site projects, area analysis, strategic forest plans, and regional forest resource policies. Credit not granted for both NATRS 440 and 540. Cooperative courses taught by UI (For 477), open to WSU students.

445 Nongame Management 2 Same as Zool 445.

450 [M] Conservation Biology 3 Ecological and genetic considerations for maintenance of biological diversity and their practical applications to resource management. Credit not granted for both NATRS 450 and 550.

452 Range Development and Improvements 3 (2-3) Prereq NATRS 351. Developing and improving rangeland forage resources; ecological considerations, plant control, seeding, fertilization, fire, facilitating animal use. Field trips required. Credit not granted for both NATRS 452 and 552. (a/y)

453 Range Livestock Management 3 Rec NATRS 351. Range livestock management, nutrition and behavior; plant responses to grazing; grazing systems; stocking variables. Field trip required. Credit not granted for both NATRS 453 and 553.

457 Range Habitat Analysis 3 (2-3) Prereq course in statistics. Production utilization, condition, and trend methodology for livestock and big game range; computer technology applied. Field trip required. Credit not granted for both NATRS 457 and 557. (a/y)

459 Rangeland Ecology 3 Prereq NATRS 302. Application of ecological principles in rangeland management; stressing response and behavior of rangeland ecosystems to various kinds and intensities of disturbance and management practice. Field trips required. Cooperative course taught by UI (Range 459), open to WSU students.

460 Watershed Management 3 Prereq Science GERs, junior standing. Principles and practices of management of forest and rangelands for protection, maintenance, and improvement of water resource values. Field trip required. Credit not granted for both NATRS 460 and 560.

471 Wildland Recreation Management 3 (2-3) Prereq NATRS 371. Planning and management techniques applied to wildland recreation problems and situations. Field trips required. Credit not granted for both NATRS 471 and 571. (a/y)

472 Dispersed Recreation Management 3 (2-3) Prereq NATRS 471. Inventory systems, monitoring and assessing resources and social impacts associated with dispersed recreational use of wildlands. Field trips required. Credit not granted for both NATRS 472 and 572. (a/y)


478 [M] Senior Thesis in Natural Resources V 3-6 May be repeated for credit; cumulative maximum 6 hours. Prereq senior in NATRS.

490 Wildlife Science Internship V 2-6 May be repeated for credit; cumulative maximum 12 hours. A cooperative internship with wildlife agencies, coordinated through the Professional Experience Program. S, F grading.

491 Integrated Field Studies 2 (1-3) Prereq NATRS 204, 302, 374, junior standing. Two-week field course at the end of spring semester to emphasize interdisciplinary studies of natural resource management.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

503 Natural Resource Planning 3 (2-3) Graduate-level counterpart of NATRS 403; additional requirements. Credit not granted for both NATRS 403 and 503.

504 Agroforestry Systems 2 Prereq NATRS 304. Agroforestry systems used in the world including their current use in developing countries. Cooperative course taught by UI (Range 558), open to WSU students.

510 Forest Finance and Valuation 3 Graduate-level counterpart of NATRS 410; additional requirements. Credit not granted for both NATRS 410 and 510. (a/y)

511 Advanced Forest Economics 2 Legislation and economic policies affecting forestry and the character and intensity of land use. Cooperative course taught by UI (For 581), open to WSU students.

513 Forest Nursery Management 3 Graduate-level counterpart of NATRS 413; additional requirements. Credit not granted for both NATRS 413 and 513. Cooperative course taught jointly by WSU and UI (Fish 419).
requirements. Credit not granted for both NATRS 413 and 513. Cooperative course taught by UI (For 513), open to WSU students.

517 Advanced Forest Mensuration 1 Prereq enrollment in CEFES program. Evaluation of forest growth and yield in forest ecosystem management.

518 Forest Growth and Yield 2 (1-3) Graduate-level counterpart of NATRS 418; additional requirements. Credit not granted for both NATRS 418 and 518.

519 Advanced Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours.

520 Wood, Wood Products and Marketing 2 Graduate-level counterpart of NATRS 420; additional requirements. Credit not granted for both NATRS 420 and 520. (a/y)

521 Experimental Plant Ecology 3 (2-4) Graduate-level counterpart of NATRS 422; additional requirements. Credit not granted for both NATRS 42 and 522. Cooperative course taught by UI (For 520), open to WSU students.

524 Range Autecology 3 Prereq course in ecology or plant physiology. Adaptations of plant species in rangeland and forest communities; morphological and physiological mechanisms influencing establishment, productivity, competition, and grazing sensitivity. Field trips required. Cooperative course taught by UI (Range 560), open to WSU students.

525 Forest Genetics and Tree Improvement 3 Graduate-level counterpart of NATRS 427; additional requirements. Credit not granted for both NATRS 427 and 527. Cooperative course taught by UI (For 528), open to WSU students.

530 Introduction to Wildland Fire 2 Prereq Bio S 372. Graduate-level counterpart of NATRS 430; additional requirements. Credit not granted for both NATRS 430 and 530. (a/y)

531 Wildlife Nutrition 3 (2-3) Graduate-level counterpart of NATRS 431; additional requirements. Credit not granted for both NATRS 431 and 531.

532 Wildlife Ecology 4 (3-3) Graduate-level counterpart of NATRS 435; additional requirements. Credit not granted for both NATRS 435 and 535.

536 Advanced Wildlife Management 4 (3-3) Graduate-level counterpart of NATRS 436; additional requirements. Credit not granted for both NATRS 436 and 536.

537 Wildland Fire Management Laboratory 1 (0-3) Graduate-level counterpart of NATRS 437; additional requirements. Credit not granted for both NATRS 437 and 537.

538 Natural Resource Policy and Administration 3 (2-2) Graduate-level counterpart of NATRS 438; additional requirements. Credit not granted for both NATRS 438 and 538.

540 Integrated Forest Management Models 2 Graduate-level counterpart of NATRS 440; additional requirements. Credit not granted for both NATRS 440 and 540.

545 Advanced Forest Environments 4 Prereq enrollment in CEFES program. Meteorology, soils, and vegetation classification of forest environments.

546 Upland Game Ecology 2 Prereq NATRS 435. Ecology and management of wildlife species using forest and rangeland habitats; current management problems and procedures. (a/y) Cooperative course taught by UI (Wlf 546), open to WSU students.

550 Conservation Biology 3 Graduate-level counterpart of NATRS 450; additional requirements. Credit not granted for both NATRS 450 and 550.

551 Range Ecology Concepts 3 Prereq two ecology courses. Ecological concepts of dynamics and distribution of plant communities; secondary succession processes, soil-vegetation relationships and development of vegetation classification schemes. Cooperative course taught by UI (Range 551), open to WSU students.

552 Range Development and Improvements 3 (2-3) Graduate-level counterpart of NATRS 452; additional requirements. Credit not granted for both NATRS 452 and 552. (a/y)

553 Range Livestock Management 3 Graduate-level counterpart of NATRS 453; additional requirements. Credit not granted for both NATRS 453 and 553.

554 Restoration Ecology 2 Prereq NATRS 302. Restoration of disturbed or damaged ecosystems; fundamental principles from stress physiology and community ecology; review of case studies. Cooperative course taught by UI (Range 552), open to WSU students.

555 International Resource Management Seminar 3 May be repeated for credit; cumulative maximum 9 hours. An issues-centered analysis of natural resource management in global context. Cooperative course taught by WSU, open to UI students (Range 554).

557 Range Habitat Analysis 3 (2-3) Graduate-level counterpart of NATRS 457; additional requirements. Credit not granted for both NATRS 457 and 557. (a/y)

559 Advanced Topics in Range Management V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq NATRS 452. Review of current literature and its application in range management.

560 Watershed Management 3 Graduate-level counterpart of NATRS 460; additional requirements. Credit not granted for both NATRS 460 and 560.

571 Wildland Recreation Management 3 (2-3) Graduate-level counterpart of NATRS 471; additional requirements. Credit not granted for both NATRS 471 and 571.

572 Dispersed Recreation Management 3 (2-3) Graduate-level counterpart of NATRS 472; additional requirements. Credit not granted for both NATRS 472 and 572. (a/y)

574 Managing Public Use of Wildland Recreation Settings 3 Graduate-level counterpart of NATRS 474; additional requirements. Credit not granted for both NATRS 474 and 574.

575 Advanced Remote Sensing 3 (1-4) Same as Soils 574.

580 Big Game Range Management 3 Graduate-level counterpart of NATRS 480; additional requirements. Credit not granted for both NATRS 480 and 580.

588 Advanced Topics in Wildlife V 1-3 May be repeated for credit; cumulative maximum 10 hours. Biology and management of wildlife species. Cooperative course taught jointly by WSU and UI (WLF, For, FWR, Range, ReMgt 503).

593 Special Topics Seminar 1 May be repeated for credit. Prereq 20 hours NATRS. Literature and problems.

594 (505) Environmental and Natural Resources Issues and Ethics 2 or 3 Prereq senior standing. May be repeated for credit; cumulative maximum 7 hours. Ethical systems applied to natural resources; issues of professionalism and ethics in natural resource management.

595 Seminar in Forest and Range Management 1 May be repeated for credit. Literature review; preparation and presentation of reports in natural resource sciences.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study and/or Examination Variable credit. S, F grading.

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

Departmental Undergraduate Degrees

All departmental letter-graded courses specifically required for each degree program must be taken for letter grade (i.e., not pass-fail). This applies to all students in Natural Resource Sciences major and minor/option programs.

Bachelor of Science in Natural Resource Management

Students pursuing the BS in Natural Resource Management must major in one (or more) of four areas: forestry, range, wildlife, and wildland recreation. All majors share a set of basic science requirements and General Education Requirements and a core of natural resource courses. The natural resource core is composed of a broad spectrum of courses designed to expose students to a variety of natural resource disciplines, concepts and philosophies. In addition, each major has a specialized curriculum designed to meet the requirements of the appropriate professional society or a specific objective set by the department’s faculty. Forestry, range and wildland recreation also include options which enable students to further specialize their education.

FORESTRY MAJOR

The forestry major is designed to provide students with the educational basis for successfully pursuing a professional career in forestry. This program is fully accredited by the Society of American Foresters.

Basic science and GER courses

Ag Ec 201 or Econ 101

Arts and Humanities Electives [H] (GER)

Arts and Humanities [H] or Social Sciences [S] (GER)

Biol S 103; 104 or Bot 120; Biol S 372

Chem 101 or 105, Geol 102

Engl 101, 402, H D 205

GenEd 110 and 111 [A] (GER)

Intercultural Studies Elective [I] (GER)

Math 107; Stat 212; one of: Math 140, 171, 201,

202, 220, Stat 401, 412, 422

Social Sciences Elective [S] (GER)

Natural Resource Management Core Courses:

NATRS 100, 101, 204, 301, 302 [M], 311, 312, 374,
403, 438 [M], 460, 491, Soils 201; Animal Resources (NATRS 280 or 480; 351).

Forestry Core Courses:
NATRS 304, 305, 313, 320, 410, 414, 418, 420, 430, 440.

Each forestry student, in addition to completing the educational core, natural resource core and the forestry core, selects a professional option. The forestry options include forest management, forest business, forestry wildlife habitat, and directed studies. The management option provides a student with an understanding of the underlying principles and techniques used in forest management. The forest business option (with business minor) provides a student with a basic understanding of business and forestry needed in the business aspects of forestry in the public and private sectors. The wildlife habitat option provides organizations with forestry professionals sensitive to the needs of wildlife and able to bridge the gap between the traditional forester and the wildlife biologist. The directed studies option provides a student with the opportunity to develop a professional program that will meet individual career goals. Students completing the forest management option meet the qualifications of the U.S. Office of Personnel Management for forester. With careful selection of courses students in the wildlife habitat option will meet the federal qualifications for wildlife biologist.

Forest Management option: NATRS 331, 348, 371.

Wildlife Habitat option: NATRS 280, 435, 480.

Forest Business option: At least three from: Acctg 230, B Law 210, Dec S 215, Dec S 340, Econ 101; and at least three from: Econ 320 or 340; Fin 325, 1 Bus 380, Ins 320, Mgt 301, 340, 350, Mktg 360.

Directed Studies option: At least 12 credits of approved course work, 9 of which must be at the 300 and 400 level.

Range Management MAJOR

The range management major contains an array of courses designed to prepare students for professional careers in one or several of the many facets of range management. This major is fully accredited by the Society for Range Management.

Basic Science and GER courses:
Ag Ec 201 or Econ 101

Arts and Humanities Electives [H] (GER)
Arts and Humanities [H] or Social Sciences [S] (GER)
Bio S 103; 104 or Bot 120; Bio S 372
Chem 101, 102; or 105, 106
Engl 101, 402, H D 205
GenEd 110, 111 [A] (GER)
Intercultural Studies Elective [I] (GER)
Math 107, Stat 212; one of Math 140, 171, 201, 202, 220, Stat 401, 412, 422

Natural Resource Management Core Courses:
NATRS 100, 101, 204, 301, 302 [M], 311, 312, 374, 403, 438 [M], 460, 491, Soils 201, Animal Resources (NATRS 453, 480).

Range Core Courses:
A S 101 or 176; 174, 213, NATRS 304, 351, 430, 452, 457, Soils 451.

Each student in the range program, in addition to completing the educational core, natural resource core and the range core, selects a professional option. The wildlife studies option is particularly useful to students who wish to acquire greater knowledge of forest and range wildlife resources and their management. Students who complete this option may qualify to apply for wildlife biologist on the federal civil service register as well as range conservationist. The directed studies option is designed to give the student an opportunity to minor in a subject area that will complement the major subject. Subject areas may include crop science, soils, business, integrated pest management, entomology, water resources, range livestock management, or other disciplines within the department.

Wildlife Habitat option: NATRS 280, 435; and 8 hours of approved electives.

Directed Studies option: At least 15 credits of approved course work, 9 of which must be at the 300 and 400 level.

WILDLIFE MANAGEMENT MAJOR

The wildlife management major provides students with a basic background in the sciences plus additional interdisciplinary courses emphasizing the management aspects of wildlife biology. Students completing the management major in wildlife are employed by federal and state organizations such as US Fish and Wildlife Service, US Forest Service, National Park Service, and Washington Department of Wildlife, as well as nonprofit and private organizations. The core requirements plus the electives in wildlife management allow majors to meet the U.S. Office for Personnel Management requirements for wildlife biologist, wildlife refuge manager, general biologist, and zoologist. Through judicious use of electives a student can also meet additional civil service requirements for fish biologist, range conservationist, and soil scientist. Wildlife students can individualize and often enhance their professional development by minors in other subjects such as communications, computer science, and other natural resource fields (forestry, range or wildland recreation).

Basic science and GER courses:
Ag Ec 201 or Econ 101

Arts and Humanities Electives [H] (GER)
Bio S 103, 104, 372
C E 174, Chem 240, Geol 102, or Phys 101
Chem 101, 102; or 105, 106
Engl 101, 402, H D 205
GenEd 110, 111 [A] (GER)
Intercultural Studies Electives [I] (GER)
Math 107, Stat 212; one of: Math 140, 171, 201, 202, 220, Stat 401, 412, 422
Social Sciences Elective [S] (GER)

Natural Resource Management Core Courses:
NATRS 100, 101, 204, 301, 302 [M], 311, 312, 374, 403, 438 [M], 460, 491, Soils 201, Animal Resources (A S 101, NATRS 351, or 453; 280).

Wildlife Core Courses:

WILDLAND RECREATION MANAGEMENT MAJOR

The wildland recreation major is designed to train wildland recreation managers who recognize, provide and perpetuate the recreational opportunities associated with natural environments.

Basic science and GER courses:
Ag Ec 201 or Econ 101

Arts and Humanities Electives [H] (GER)
Bio S 103; 104 or Bot 120; Bio S 372
Chem 101 or 105
Engl 101, 402, H D 205
GenEd 110, 111 [A] (GER)
Geol 102
Intercultural Studies Elective [I] (GER)
Social Sciences Elective [S] (GER)
Stat 212; Math 107; one of: Math 140, 171, 201, 202, 220, Stat 401, 412, 422

Natural Resource Management Core Courses:
NATRS 100, 101, 204, 301, 302 [M], 311, 312, 403, 438 [M], 460, 491, Soils 201, 474 Animal Resources (A S 366 or NATRS 351; NATRS 280 or Zool 412).

Wildland Recreation Core Courses:
NATRS 351, 371, 372, 373, 471, 472, 474, 487

In addition to the required courses in the curriculum, students are expected to select or develop an option (16-18 hours) in the recreation field. This could be wilderness or dispersed area management, interpretation, state parks management, cultural resources management or it could be a minor in another discipline area such as business, environmental science, regional planning, forestry, wildlife or anthropology.

Management option: Anth 435, 462, ES/RC 444, and 10 credits of approved management electives.

Interpretation option: communication elective; two natural history electives from: Bot 332, Entom 343, Geol 310; Zool 423 or 428; 6 credits of approved interpretation option electives.

Directed Studies option: 16 hours of approved courses.

BACHELOR OF SCIENCE IN NATURAL RESOURCE SCIENCE

The BS in Natural Resource Science is offered for students most interested in the scientific basis of natural resource management and includes three majors: plant science, wildlife resource science, and an individualized natural resource science major which can be developed with the approval of the department. Each major is composed of a core of basic science and GER courses, a common core of basic natural resource courses and a core of more advanced science courses in the area of the major. Students selecting these curricula frequently intend to pursue graduate study or enter professional schools such as veterinary medicine.

WILDLIFE RESOURCE SCIENCE MAJOR

Basic science and GER courses:
A S 440 or Zool 353
Ag Ec 201 or Econ 101

Arts and Humanities Electives [H] (GER)
BC/PS 364, C E 174, Geol 102, or Phys 101
Bio S 103, 104, 372, GenCB 301
Chem 105, 106, 240, Soils 201
Engl 101, 402, H D 205
GenEd 110, 111 [A] (GER)
Intercultural Studies Elective [I] (GER)
Math 107, Stat 212; one of: Math 140, 171, 201, 202, 220, Stat 401, 412, 422
Social Sciences Elective [S] (GER)

Natural Resource Management Core Courses:
NATRS 100, 101, 204, 301, 302 [M], 311, 312, 374, 403, 438 [M], 460, 491, Soils 201, Animal Resources (A S 101, NATRS 351, or 453; 280).

Wildlife Core Courses:
PLANT RESOURCE SCIENCE MAJOR

Basic science and GER courses:
Ag Ec 201 or Econ 101
Arts and Humanities Electives [H] GER
Arts and Humanities [H] or Social Sciences [S] GER
BC/BP 364, C E 174, Geol 102, or Phys 101
Bio S 103; 104 or Bot 120; Bio S 372; GenCB 301
Chem 105, 106, 240, Soils 201
Engl 101, 402, H D 205
GenEd 110, 111 [A] (GER)
Intercultural Studies Elective [I] (GER)
Math 107, Stat 212; one of Math 140, 171, 201, 202, 220, Stat 401, 412, 422

Natural Resource Core Courses:
NATRS 100, 101, 204, 301, 302 [M], 311, 312; 438 [M] or 450 [M]; 6 credits of approved animal resource electives.

Plant Resource Core Courses:
Ecology Elective, Anatomy or Morphology Elective, Physiological Elective, NATRS 488 [M].

Students in the plant resource sciences program in consultation with their adviser develop an individualized curriculum consisting of an additional 21 hours of approved course work emphasizing vegetation sciences.

NATURAL RESOURCE SCIENCE MAJOR

Basic science and GER courses:
Ag Ec 201 or Econ 101
Arts and Humanities Elective [H] GER
Arts and Humanities [H] or Social Science [S] Elective GER
Bio S 103; Bio S 104 or Bot 120; Bio S 372; GenCB 301
Chem 105, 106, 240, Soils 201
Engl 101, 402, H D 205
GenEd 110, 111 [A] (GER)
Intercultural Studies Elective [I] GER
Math 107; Stat 212; one of Math 140, 171, 201, 202, 220, Stat 401, 412, 422
One of BC/BP 364, C E 174, Geol 102, Phys 101

Natural Resource Core Courses:
NATRS 100, 101, 204, 301, 302 [M], 311, 312; 438 [M] or 450 [M]; 6 credits of approved animal resource electives.

Natural Resource Science Core Courses
Anatomy or Morphology Elective, Quantitative Ecology Elective, Physiology Elective, NATRS 488 [M].

Students in the natural resource science major, in consultation with their adviser, develop an individualized curriculum consisting of 21 hours of approved additional course work.

Transfer Students
Transfer students should plan to complete the basic required courses in English composition, chemistry, speech, biological sciences, mathematics, microeconomics, social sciences, and arts and humanities by the end of their sophomore year. Students may be granted credit for equivalent technical courses taken at other academic institutions. Refer to WSU Transfer Guides for Community Colleges, available through community college advisers, for details.

Graduate Programs
Students who plan to work toward an advanced degree should seek advice from their adviser in the selection of their courses. This will ensure that the courses selected will strengthen their education in areas needed to successfully complete an advanced degree program. Students from related fields who wish to obtain a master’s degree in either natural resources or natural resource sciences or the PhD in Environmental and Natural Sciences are encouraged to apply. They may be required to complete selected undergraduate courses in addition to the courses needed for their graduate programs. To be admitted to the department’s graduate program a student must (1) meet the Graduate School’s minimum admission requirements, (2) complete the department’s supplemental application form, (3) have three letters of reference and GRE scores submitted to the department and, (4) have at least one member of the department’s faculty willing to be the student’s major adviser.

MINORS IN FORESTRY, RANGE, WILDLAND RECREATION, WILDLIFE AND NATURAL RESOURCES

Four minors (forestry, range, wildland recreation and wildlife) are available both to students majoring in other natural resource fields and to students in other degree programs at WSU. A fifth, broader minor in natural resource sciences is designed to serve the needs of students who are not matriculated in a natural resource degree program/major at WSU (and can be taken only by non-natural resource science majors).

Requirements for these minors are listed below:

**Forestry: minimum of 16 credit hours. Required courses:** NATRS 204, 301, 304, 305. Restricted electives: at least 5 credit hours selected from NATRS 331, 348, 406, 420, 430, 460.

**Range: minimum of 18 credit hours. Required courses:** NATRS 301, 302, 351, Soils 201. Restricted electives: at least 6 credit hours selected from NATRS 452, 453, 457, 460, 480.

**Wildland Recreation: minimum of 18 credit hours. Required courses:** NATRS 371, 373, 403, 471, 472. Restricted electives: at least 3 credit hours selected from NATRS 312, 438, 460, 474, 487.

**Wildlife: minimum of 19 credit hours. Required courses:** NATRS 280, 435. Restricted electives: at least 12 credit hours from NATRS 340, 406, 429, 431, 436, 450, 460, 480; no more than one from Zool 423, 428, 430.

**Natural Resources: minimum of 16 credit hours. For non-natural resource majors only. Required courses:** NATRS 100, 101, 280, 351, 371; at least one of NATRS 312, 406, 438. Restricted electives: at least one course selected from NATRS 304, 403, 460, and (if not taken as required courses) 312, 406, 438.

Naval Science Program

The Naval-Marine Corps Officer Education Program, administered and taught by the NROTC staff at the University of Idaho, is open to men and women and offers scholarships leading to regular and reserve commissions in the Navy and Marine Corps and active duty as Navy or Marine Corps officers. Normally, students enter the program at the beginning of their freshman year; however, selected students may enter up to the beginning of their junior year. Students take 20 hours of professional courses taught by the Navy and Marine Corps staff at the NROTC unit. In addition to the professional courses, students enrolled in the NROTC Program must also participate in Naval Science Drill (N S 100) each semester. Following graduation, the newly commissioned officer is offered a broad variety of duty assignments including duty on nuclear submarines and surface ships, in naval aviation, and ground or aviation assignments in the Marine Corps. All commissionees go on active duty at full pay and allowances immediately upon graduation.

Scholarship Program

The scholarship benefits include tuition, fees, books, and a $150 a month stipend.

Application for this program is normally made during the early fall of the student’s senior year of high school. Initial selections are based on college entrance examination scores (SAT or ACT) and high school academic performance.

A student on scholarship participates in three summer training cruises of four to six weeks duration. During the first cruise, students are introduced to the submarine, amphibious warfare (Marine Week), surface warfare, and aviation communities. The second and third cruises are aboard ships of the Pacific or Atlantic fleets and often include travel to Europe or the Far East.

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 reserve officers in the Navy or Marine Corps.

College 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 a monthly stipend of $150 per month at the beginning of their junior year.

College Program students may be nominated by the Professor of Naval Science for a scholarship, if their grades and military aptitude marks are sufficient to warrant such nomination. The program requires one training cruise during the summer following the junior year.

Graduates of this program are commissioned as Reserve officers and are ordered to active duty upon graduation.

Marine Corps Option

Both male and female Scholarship and College Program 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 Development and Education Center, Quantico, Virginia during the summer following their junior year.

Navy Science Institute

Navy-Marine Corps Scholarship and College Program 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 their 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 scholarships for their last two years of college. The remaining graduates enter the College Program and receive those benefits.

Field Trips
Field trips to Navy and Marine Corps facilities are arranged periodically in order to allow the Navy-Marine Corps Officer Education Program members the opportunity to learn more about the naval service.

Description of Courses

For explanation of symbols, see page 53.

Navy Science

N S

100 Drill Lab
No credit. Required of all Navy-Marine Corps Officer Education Program students. One hour lab per week. S, F grading. Cooperative course taught by UI (NS 100), open to WSU students.

101 Introduction to Naval Science
2 Roles of major elements of naval service; design and structure of ships. Cooperative course taught by UI (NS 101), open to WSU students.

102 Ships Systems I
3 Introduction to damage control and propulsion systems of naval ships; nuclear and conventional power. Cooperative course taught by UI (NS 102), open to WSU students.

201 Ships Systems II
3 Naval weapons: ballistics, control, propulsion, components, systems analysis. Cooperative course taught by UI (NS 201), open to WSU students.

202 Seapower and Maritime Affairs
2 U.S. Navy and merchant marine seapower, development, and policy. Cooperative course taught by UI (NS 202), open to WSU students.

299 Directed Study
1 or 2 May be repeated for credit; cumulative maximum 12 hours. By interview only. Cooperative course taught by UI (NS 299), open to WSU students.

301 Navigation
3 Theory, principles, and procedures of terrestrial and celestial navigation. Cooperative course taught by UI (NS 301), open to WSU students.

302 Naval Operations
3 Prereq N S 301. Naval operations and tactics, relative motion, rules of the nautical road. Cooperative course taught by UI (NS 302), open to WSU students.

311 Evolution of Warfare
3 Rec N S 101, 202. Evolution of war through tactics; strategy from Sun Tzu to J.F.C. Fuller. Cooperative course taught by UI (NS 311), open to WSU students.

401 Naval Organization and Management
2 Theories of management and management resources, motivational theories and leadership. Cooperative course taught by UI (NS 401), open to WSU students.

402 Naval Leadership
2 Rec N S 401. Principles and styles of leadership, personal attributes, and UCMJ. Cooperative course taught by UI (NS 402), open to WSU students.

412 Amphibious Operations
3 Rec N S 311. Amphibious doctrine from Gallipoli to Mayaguez. (a/y) Cooperative course taught by UI (NS 412), open to WSU students.

499 Directed Study
V 1-4 May be repeated for credit. By interview only. S, F grading. Cooperative course taught by UI (NS 499), open to WSU students.

Minor in Naval Science
N S 101, 102, 201, 202; four to six courses from the following: N S 301, 302, 311, 401, 402, 412.

Intercollegiate Program in Nursing


BACCALAUREATE PROGRAM

The Intercollegiate Center for Nursing Education (ICNE) was established July 1, 1968 and exists as the First of its kind among colleges and universities in the United States. Its cooperative undergraduate program is the first of its kind among colleges and universities in the United States.

The program is designed for two types of students: those with no previous preparation in nursing and registered nurses. The curriculum is four academic years of full-time study for the student with no previous preparation in nursing. The length of the program for the registered nurse (RN) varies depending upon previous education and credit granted by examination.

The lower-division courses, for students with no previous preparation in nursing, are offered on the Pullman campus. They provide the student with a foundation in the natural and social sciences and the humanities.

The upper-division courses, junior and senior years, are offered at the Intercollegiate Center for Nursing Education in Spokane, and in Yakima. They provide the professional preparation in nursing. To apply for admission to the center, students must have at least 60 semester hours and all courses prerequisite to nursing completed the term prior to enrollment in the upper division.

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

Transfer Students

Students who plan to transfer to nursing at Washington State University from other institutions should discuss 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 curriculum information from their nursing advisers on the Pullman, WSU Tri-Cities and WSU Vancouver (including Wenatchee site) campuses.

MASTER OF NURSING PROGRAM

The Graduate Program in Nursing at the Intercollegiate Center for Nursing Education (ICNE) was established in 1983 and has been accredited by the National League for Nursing (NLN) since 1986. The program builds upon an undergraduate baccalaureate degree in nursing and provides a basis for further study at the doctoral level. The purpose is to prepare students for leadership positions in nursing education, nursing administration, and advanced nursing practice. Seven options are available: Nursing Service Administration, Nursing Education, Acute Care Nursing, Community Health Nursing, Psychiatric/Mental Health Nursing, Family Nurse Practice, and School Nursing.

The Master of Nursing program is open to students who hold a Bachelor of Science in Nursing degree from a National League for Nursing (NLN)-accredited program. Admission is granted on the basis of the student’s (1) undergraduate g.p.a., (2) performance on the Graduate Record Examination, (3) skills in history taking and physical assessment, (4) completion of a course in basic descriptive and inferential statistics, (5) eligibility for licensure as a registered nurse in Washington state, and (6) recommendations relative to professional nursing competence and prediction of success as a graduate student.

Students entering through Washington State University apply to the Graduate School Office in Pullman and the Graduate Program Office at the ICNE. Program information, determination of student interests and goals, and assignment of a faculty adviser are provided by the Graduate Program Office at the ICNE.

Description of Courses

For explanation of symbols, see page 53.
The following courses are offered at the Intercollegiate Center for Nursing Education Spokane and Yakima. Courses in the bachelor of science program for registered nurses are also offered at WSU Tri-Cities and WSU Vancouver.

Nursing

200  Profession of Nursing  2 Theoretical/historical aspects of professional nursing; development of nursing roles, scopes of practice, problem solving, and ethical decision making.

307  Assertiveness Training for Nurses  2 Prereq junior in Nurs. Assertion techniques and conflict management skills in personal and nursing situations; integrating theoretical concepts into practical situations. S, F grading.

310  Pharmacological Basis of Nursing Practice  2 Prereq major in Nurs or written permission of instructor. Major drug classes, pharmacokinetics, mechanisms of drug action, toxic effects; nursing implications including age, misuse, patient education.

312  Pathophysiological Basis of Nursing Practice  3 Prereq major in Nurs or written permission of instructor. Pathophysiologic processes, interrelatedness with physiological defense mechanisms, theories of stress adaptation, age and psychologic behavior/behavioral responses.


320  Nursing Concepts: Foundations  3 (Prereq Nrs 310, 312, 330, or c//) Nursing concepts foundational to care of well/ill clients; nursing process, nurse/client roles, communication, relationship, basic needs and teaching-learning theories.

321  Nursing Practice: Foundations  4 (Prereq Nrs 310, 312, 320, 330, or c//) Clinical application of the nursing process; psychomotor skills and interpersonal relationships in the care of adult clients.

330  Nursing Concepts and Practice: Health Assessment  3 (Prereq major in Nurs or written permission of instructor. Holistic multidimensional assessment of the well client throughout the adult years; comparison of findings with established norms.

342  Nursing Concepts: Maternity Nursing  2 Prereq Nrs 310, 312, 320, 321, 330, 313, 346, or c//. Normal reproductive processes and common health problems associated with reproduction; assessment and nursing care during the antepartum, intrapartum, and postpartum cycles.

343  Nursing Practice: Maternity Nursing  3 (Prereq Nrs 310, 312, 320, 330, 331, 342, 346, or c//. Experience in the care of mothers in the antepartum, intrapartum, and postpartum periods and newborns; family care and family planning.

344  Nursing Concepts: Nursing of Children  2 Prereq Nrs 310, 312, 320, 330, 313, 346, or c//. Normal growth and development concepts applied to maintenance of child health, care of acutely ill hospitalized children, and needs of children requiring chronic care.

345  Nursing Practice: Nursing of Children  3 (Prereq Nrs 310, 312, 320, 321, 330, 313, 344, 346, or c//. Experience in health maintenance and nursing care of children with acute and/ or chronic health problems; family is included in care planning. S, F grading.

346  Nursing Concepts: Family and Child Development  2 Prereq major in Nurs or written permission of instructor. Physical, cognitive, psychosocial, and moral development of children, infancy through adolescence; theoretical framework; family development and family theory.

350  Therapeutic Communication in Nursing  1 or 2 Prereq junior in Nurs. Therapeutic communication and relationship development with the well/ill client; various coping strategies used by nurse and client. S, F grading.

360  Professional Nursing Concepts and Issues  2 Prereq major in Nurs, RN or by interview. Philosophical, historical, economic, legal/ethical, and professional issues designed for registered nurses to build upon previously acquired professional concepts.

364  Nursing Concepts and Practice: Health Assessment for RNs  3 (2-3) Prereq major in Nurs, RN or by interview. Holistic assessment of clients throughout the age continuum. For RNs with a basic knowledge of assessment skills of adult clients.

398  Special Topics  V1-3 May be repeated for credit; cumulative maximum 6 hours.

401  [M] Nursing Leadership: Research  2 Prereq major in Nurs or written permission of instructor. Concepts and approaches used in investigating nursing problems; research critique process; evaluation and interpretation of statistics.

402  Nursing Leadership: Group Theory  2 Prereq major in Nurs or written permission of instructor. Group and leadership theories as they relate to the practice of professional nursing.

403  Nursing Leadership and Management  3 Prereq Nrs 420, 421; or written permission of instructor. Application of leadership/management theories to steps of the management process; analysis of selected issues critical to the professional nurse.

420  Nursing Concepts: Adult  5 Prereq Nrs 342, 343, 344, 345, or c//. Theoretical basis for nursing management of clients throughout the adult lifespan; health/illness problems which occur commonly in society.

421  Nursing Practice: Adults  6 (0-18) Prereq Nrs 342, 343, 344, 345; 401, 402, 420, or c//. Nursing process in management of adults of all ages with health/illness problems; holistic approach to patients using nursing process; development of clinical judgement and skills.

440  Nursing Concepts: Community Health  2 Prereq Nrs 420, 421, or c//. Nursing process applied to community clients; health care delivery, scope of practice, community health problems, community assessment and high-risk populations.

441  Nursing Practice: Community Health  4 (0-12) Prereq Nrs 421; 402, 403, 440, or c//. Clinical experience providing nursing services in selected community settings; community assessment strategy; application of management theory.

450  Nursing Concepts: Psychiatric/Mental Health  3 Prereq Nrs 420, 421. Nursing process with clients experiencing psychiatric/mental health disruptions; history, theories, legal/ethical issues of psychiatric/mental health nursing.

451  Nursing Practice: Psychiatric/Mental Health  3 (0-9) Prereq Nrs 402, 420, 421; 450 or c//. Clinical application of nursing process with patients experiencing acute and chronic psychiatric/mental health disruptions.


461  Nursing Practice: Clinical Decision Making  3 (0-9) Prereq Nrs 460 or c//. Diagnostic reasoning skills in a clinical setting; acute care, long-term care, child nursing, or maternity nursing.

462  Selected Nursing Concepts: Psychiatry/Mental Health  2 Prereq Nrs 402 or c//; Nrs 461 or by interview. Nursing process with individuals and families experiencing psychiatric/mental health disruptions.

463  Selected Nursing Practice: Psychiatry/Mental Health  2 (0-6) Prereq Nrs 402 or c//; Nrs 462 or by interview. Clinical application of psychiatric/mental health nursing process with individuals and families experiencing acute and chronic psychiatric/mental health disturbances.

466  Nursing Leadership/Management: Concepts and Principles  2 Prereq Nrs 360, 461 or by interview. Leadership/management applied to nursing; theoretical basis for the baccalaureate nurse’s role in nursing management.

477  Health Care Ethics  2 or 3 Prereq senior standing. Ethical theories including deontology, teleology, virtue ethics and applicability to ethical dilemmas in nursing. Credit not granted for both Nrs 477 and 577.

483  Gerontological Nursing  3 Prereq senior standing. Selected physical, emotional and social problems of the elderly; identification of nurse’s role and interventions in a variety of settings; public policy issues.

498  Special Topics in Nursing  V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq Nrs 320 or by interview.

499  Special Problems  V 1-4 May be repeated for credit. S, F grading.

503  Theoretical Perspectives in Nursing  3 Prereq graduate standing in Nurs. Theory development and evaluation; models and methods; criteria for analysis; selected theories of nursing.

504  Methods of Nursing Research  4 Prereq Nrs 503 or c//. Research process as foundational to both conduct of scientific inquiry and utilization of findings.

507  Professional Issues  2 Prereq graduate standing in Nurs. Key issues affecting health care and the nursing profession; societal trends and issues and the implications for nursing.

513  Innovative Leadership and Management  V3, 4 (3-3), or 5 (3-6) Prereq graduate standing in Nurs. Key issues affecting nursing administration; nursing and management theories for application in nursing service settings.

514  Human Resources in Nursing  3 Prereq graduate standing in Nurs. Theories and concepts related to human behavior in the work situation; staffing, recruitment, hiring, retention, performance appraisal, labor-management relations.

515  Financial Management in Nursing  2 or 3 Prereq admission to graduate program. Application of economic theory and principles of finan-
516 Practicum in Nursing Service Administration 4 (1-9) or 5 (1-12) Prereq Nurs 513, 514. Management theories, concepts, processes in nursing service settings; development of leadership behavior, validation of nurse manager role.

517 Financial and Human Resources Management V 3, 4 (3-3), or 5 (3-6) Prereq graduate student in Nurs. Human resource utilization theories and concepts in nursing settings; application of economic principles to human resource utilization and program development.

521 Teaching, Learning and Evaluation in Nursing 3 Prereq graduate standing in Nurs. V 3, 4 (3-3), 5 (3-6), or 6 (3-9) Critical analysis of concepts related to teaching-learning, assessment of learning needs, instructional strategies, learning objectives, evaluation of performance, measurement.

523 Nursing Education: Theory and Role Analysis 4 Prereq graduate standing in Nurs. Key issues affecting nursing education; application of educational theories in a variety of nursing education settings; critical analysis of concepts.

524 Multimedia Approaches to Instruction and Evaluation V 2-4 Prereq Nurs 521. Group and individualized instruction and evaluation; creating instructional software, use of TV studio, AV, and computers.

536 Practicum in Adult Acute Care Nursing 4 (1-9) or 5 (1-12) Prereq graduate standing in Nurs. Individualized field experience and seminar designed to provide advanced competence in acute care nursing of adults in role of expert clinician.

537 Role Analysis: Clinical Nurse Specialist/ Nurse Practitioner 2 (1-3) Prereq graduate student in Nurs. Key concepts/issues essential to nurse specialist practice; implications for clients, families, society, health care delivery systems; role analysis.

538 Acute Care Clinical Nurse Specialist 4 (2-6) Prereq graduate student in Nurs. Acute care nursing; role analysis; clients, families, society, health care delivery systems.

539 Clinical Nurse Specialist Practicum 2 (0-6) Prereq Nurs 537 or c//. Selected key concepts and issues essential to the practice of clinical nurse specialists.

541 Psychiatric/Mental Health Nursing: Individuals 4 (3-3) Prereq graduate standing in Nurs. Psychopathology and appropriate nursing interventions with individuals across age continuum; families, groups, and communities.

543 Psychiatric/Mental Health Nursing: Groups and Families 4 (3-3) Prereq graduate standing in Nurs. Therapeutic approaches and key issues affecting psychiatric/mental health nursing; implications for clients, families, society, mental health care delivery systems.

546 Practicum in Psychiatric/Mental Health Nursing 4 (1-9) or 5 (1-12) Prereq Nurs 543. Individualized clinical experience/seminar designed to provide advanced competency, accountability, leadership in psychiatric/mental health nursing.

551 Community Health Nursing Concepts 3 Prereq graduate standing in Nurs. Roles/scopes of practice in community health nursing; health care issues; needs/service demands; policy formulation; organizational structure.

553 Community and Family Analysis 4 (3-3) Prereq graduate student in Nurs. Nursing process applied to community client; emphasis on analysis, planning, designing evaluation strategies; high-risk families; groups as units of service.

554 Epidemiological Approaches to Community Health 3 Prereq graduate standing in Nurs. Epidemiological application to health; implications for health promotion, disease prevention; focus: knowledge and skills required to obtain and use data bases.

556 Advanced Community Health Nursing Practice V 3 (2-3) or 4 (2-6) Prereq Nurs 551, 554, 556, 565 or c//. Combination of group seminar, individualized field experience with focus on application, analysis of concepts and implementation of project.

562 Advanced Health Assessment and Differential Diagnoses 3 Prereq graduate standing in Nurs. Advanced holistic health assessment/differential diagnosis; analysis of data from biological, sociological, psychological, cultural, and spiritual perspectives.

563 Pharmacology: Advanced Concepts and Practice 3 (2-3) Prereq graduate standing in Nurs. Advanced pharmacology concepts focused on pharmacokinetics, clinical decision making, administration, monitoring drug therapy, patient education, and legality of pre-scriptive authority.

564 Health Promotion in Nursing Practice 3 Prereq graduate standing in Nurs. Theoretical bases including cultural variations for selected health promotion strategies for neonates through elderly clients.

565 Information Management for Nursing Practice 3 (2-3) Prereq computer competency in word processing/spreadsheets. Application/evaluation of nursing informatics; use for management of patient care data in nursing practice and administration.

566 Community and Program Analysis 3 (2-3) or 4 (2-6) Prereq graduate standing in Nurs. Application of nursing process to community as client; community analysis, program planning, designing evaluation strategies, community health nursing project.

567 Primary Care: Adults and Elders 4 (1-9) Prereq Nurs 562. Assessment, differential diagnosis, therapeutic intervention with adults; developmental changes; opportunities to provide diagnostic, maintenance, and follow-up care.

568 Primary Care: Infants, Children and Adolescents 3 (1-6) Prereq Nurs 567. Assessment, differential diagnosis, and therapeutic intervention with infants, children, and adolescents in rural and urban settings.

569 Primary Care: Family 4 (1-9) Prereq Nurs 567, 568 or c//. Assessment, differential diagnosis, therapeutic intervention with individuals in childbearing, childrearing, and multigenerational families.

576 Advanced Concepts in Nursing 3 Nursing diagnosis, management in selected nursing phenomena from perspective of advanced practitioner.

577 Health Care Ethics 2 or 3 Graduate-level counterpart of Nurs 477; additional requirements. Credit not granted for both Nurs 477 and 577.

581 Advanced Physiology and Pathophysiology 1 4 Prereq graduate standing in Nurs. Advanced physiology/pathophysiology related to nursing care with cardiopulmonary, renal, and hematological diseases.

582 Advanced Physiology and Pathophysiology II 3 Prereq graduate standing in nursing. Advanced physiology/pathophysiology related to nursing care with neuroendocrinological, gastrointestinal, and immunological diseases.

583 Advanced Gerontological Nursing 3 or 4 Prereq graduate standing in Nurs. Comprehensive analysis of research regarding nursing care of elderly persons; nursing interventions and health of elderly persons.

School Nursing 5 (3-6) or 6 (4-6) Prereq graduate standing in Nurs. Use of nursing process to assess and evaluate total health-development status of students in school environment.

594 School Nursing II 3 (2-3) or 4 (3-3) Prereq Nurs 504, 592. Knowledge and application: advanced health assessment, care of the school-aged child, consultation, school health program development and evaluation.

598 Advanced Topics in Nursing V 1-3 May be repeated for credit; cumulative maximum 6 hours.

599 Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Schedule of Studies

BACHELOR OF SCIENCE

The Bachelor of Science in Nursing degree requires a total of 120 semester hours. All students must meet the General Education Requirements for graduation as described elsewhere in the catalog. The prenursing course requirements are indicated by an asterisk (*) in the schedule of studies listed below.

Fifty-nine semester hours are required in upper-division nursing major courses. Additional upper-division nursing or non-nursing electives may be required.

A grade of C or better is required in all prerequisite courses and nursing courses. Criteria for admission to the upper-division nursing major include an overall cumulative g.p.a. of 2.5 or higher and a cumulative g.p.a. of 2.5 or higher in prerequisite courses.

Freshman Year

First Semester Hours
*Chem 101 [P] Introductory (GER) 4
Engl 101 [W] Intro Wrig (GER) 3
GenEd 110 [A] World Civ I (GER) 3
*Psych 105 [S] Intro Psychology (GER) 3
Soc 101 or 102 [S] (GER) 3

Second Semester
Bio 5 102 or 103 [B] (GER) 4
*Chem 102 [P] Chemistry II (GER) 4
Communication Proficiency Elective [C] (GER) 3
## Bachelor of Science

### First Semester

- **Arts and Humanities Elective [H] GER** 3
- **Micro 101 Intro Microbiology** 4
- **Nurs 200 Prof of Nursing** 2
- **Zool 251 Human Physiology** 4
- **Elective** 2

### Second Semester

- **Nurs 313 [M] Indiv and Family** 3
- **Nurs 342 Con Mater Nurs** 2
- **Nurs 343 Prac Mater Nurs** 3
- **Nurs 344 Con Nurs Children** 2
- **Nurs 345 Prac Nurs Children** 3
- **Nurs 346 Con Fam/Child Devel** 2
- **Elective** 2

### Junior Year

#### First Semester

- **Nurs 310 Pharm Basis Nurs** 2
- **Nurs 312 Path Basis Nurs** 3
- **Nurs 320 Foundations** 3
- **Nurs 321 Foundations** 4
- **Nurs 330 Health Assessment** 3

#### Second Semester

- **Nurs 313 [M] Indiv and Family**
- **Nurs 342 Con Mater Nurs**
- **Nurs 343 Prac Mater Nurs**
- **Nurs 344 Con Nurs Children**
- **Nurs 345 Prac Nurs Children**
- **Nurs 346 Con Fam/Child Devel**
- **Elective**

### Senior Year

#### First Semester

- **Nurs 401 Research**
- **Nurs 402 Grp Theory**
- **Nurs 420 Con Adults**
- **Nurs 421 Prac Adults** 6

#### Second Semester

- **Nurs 403 Nurs Lead Mgt** 3
- **Nurs 440 Comm Health** 2
- **Nurs 441 Comm Health** 4
- **Nurs 450 Psych/MH** 3
- **Nurs 451 Psych/MH** 3

### BACHELOR OF SCIENCE

Option for Registered Nurses

16 credits from Nurs 360, 364, 460, 461, 462, 463, 466.
15 credits from Nurs 310, 312, 401, 402, 440, 441.
30 credits from Nurs 320, 321, 342, 343, 344, 345, 346, 420, 421 or through credit by exam. 2 credits elective.

### MASTER OF NURSING

The program consists of 39 semester credits (50 semester hours for FNP option) which may be completed in one and one-half academic years (two academic years for the FNP option). Provision is made for part-time matriculation over a longer period of time, subject to policies and requirements of Washington State University and the ICNE. Candidates for the MN degree are required to demonstrate competency in relevant computer applications. A thesis is required (a clinical project replaces the thesis requirement in the FNP option).

### Core Courses and Credit Hours in the Seven Areas of Concentration

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Nurs 503 Theory Development &amp; Evaluation*</td>
<td>3</td>
</tr>
<tr>
<td>Nurs 504 Methods of Nursing Research</td>
<td>6</td>
</tr>
<tr>
<td>Nurs 507 Professional Issues</td>
<td>2</td>
</tr>
<tr>
<td>Nurs 600 Thesis</td>
<td>6</td>
</tr>
<tr>
<td>Nurs 700/702 Clinical Project**</td>
<td>3</td>
</tr>
</tbody>
</table>

### Courses Required for Nursing Education

- **Nurs 521 Teaching Learning and Evaluation in Nursing** 3
- **Nurs 523 Nursing Education: Theory and Role Analysis** 4
- **Nurs 526 Practicum in Nursing Education 4 or 5**
- **Electives Variable**

### Courses Required for Psychiatric/Mental Health Nursing

- **Nurs 541 Psychiatric/Mental Health Nursing Individual** 4
- **Nurs 543 Psychiatric/Mental Health: Groups & Families** 4
- **Nurs 546 Practicum in Psychiatric/Mental Health Nursing** 4 or 5
- **Electives Variable**

### Courses Required for Acute Care Nursing

- **Nurs 536 Practicum in Acute Care Nursing 4 or 5**
- **Nurs 538 Acute Care Clinical Nurse Specialist** 3
- **Nurs 576 Advanced Nursing Concepts**
- **Nurs 581 Advanced Physiology & Pathophysiology I** 4
- **Nurs 582 Advanced Physiology & Pathophysiology II** 3
- **Electives Variable**

### Courses Required for School Nursing

- **Nurs 521 Teaching, Learning & Evaluation in Nursing** 3
- **Nurs 541 Psychiatric/Mental Health Nursing: Individual** 4
- **Nurs 592 School Nursing I 6-9**
- **Nurs 594 School Nursing II 6**
- **Electives Variable**

### Courses Required for Community Health Nursing

- **Nurs 551 Community Health Nursing Concepts**
- **Nurs 553 Community and Family Analysis**
- **Nurs 554 Epidemiologic Approaches to Community Health**
- **Nurs 556 Practicum in Community Health Nursing 4 or 5**
- **Electives Variable**

### Courses Required for Family Nurse Practice

- **Nurs 537 Role Analysis: Clinical Specialist/Nurse Practitioner** 2
- **Nurs 562 Advanced Physical Assessment & Differential Diagnosis**
- **Nurs 563 Pharmacology: Advanced Concepts & Practice or PharP 455**
- **Nurs 564 Information Management for Nursing Practice**
- **Nurs 565 Health Promotion in Nursing Practice**
- **Nurs 566 Community Analysis & Program Planning**
- **Nurs 567 Practicum in Primary Care of Adults** 4

### Program in Nutrition


The interdepartmental graduate Program in Nutrition offers a program of study leading to a Doctor of Philosophy (Nutrition). Participating faculty are from the areas of Food Science and Human Nutrition, Animal Sciences, Pharmacy, Natural Resource Sciences, and Child, Consumer, and Family Studies.

The PhD program has two options: biological science and social science. In addition to taking advanced courses in nutrition, all students must select some supporting course work in physiology, biochemistry, and statistics. Students in the social science option select 12 credits of graduate social science, such as education, psychology, sociology, while biological science option students select additional course work in chemistry and biology. Programs of study and research are individually planned by the student with an appropriate graduate advisory committee. The emphasis is on scientific research in nutrition. Studies of the metabolism of nutrients, additives and various other biological chemicals are currently being explored in human beings and other animal systems. Behavioral nutrition research examines sociocultural, economic and political influences on food choice, dietary quality and nutritional status using social science research methods such as surveys, focus groups and in-depth interviews. The combined research facilities of participating departments are available. Students are generally located in the various cooperating departments where they conduct their research.

Expected preparation for doctoral study in nutrition are biochemistry, three semesters of biological science, physiology, mathematics and two semesters of upper-division nutrition. Students choosing the biological science option should also have quantitative chemistry and physics. Applications must include complete transcripts, GRE scores and three letters of recommendation attesting to the applicant’s qualifications for graduate study, and a statement of area of interest and program option.
Description of Courses

For explanation of symbols, see page 53.

Nutrition

500 Seminar in Nutrition 1 May be repeated for credit; cumulative maximum 5 hours. Seminar on current research issues in nutrition.

505 Experimental Nutrition 3 (1-6) Same as A S 507.

507 Advanced Nutrition Metabolism 3 Same as A S 507.

508 Seminar-Written 2 Same as FSHN 508.

513 Mineral and Vitamin Metabolism 4 Same as A S 513.

520 Research Methods in Behavioral Nutrition 3 Same as FSHN 520.

521 Research Techniques in Human Nutrition 3 (1-6) Same as FSHN 521.

526 Advanced Community Nutrition 3 Same as FSHN 526.

531 Nutrition and Aging 2 or 3 Same as FSHN 531.

533 Pathophysiology of Human Nutrition 3 Same as FSHN 533.

598 Advanced Topics in Nutrition 1 or 2 May be repeated for credit. Recent research in nutrition.

600 Special Projects or Independent Study Variable credit. S, F grading.

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

Program in Pharmacology and Toxicology


The sciences of pharmacology and toxicology are important to maintenance of human and animal health, food resources, and environmental quality. Pharmacologists and toxicologists study the interaction of chemicals with biological systems to understand their adverse effects and their useful effects for the treatment of disease. The Pharmacology and Toxicology Program consolidates the research and teaching expertise of faculty primarily in the Colleges of Pharmacy and Veteri- nary Medicine and also in the departments or programs of chemistry, entomology, food science, genetics, neuroscience, and zoology at Washington State University and in the veterinary science department at the University of Idaho. The Pharmacology and Toxicology Program is designed to prepare students for careers in research and teaching with both Master of Science and Doctor of Philosophy degrees offered.

Students entering the Pharmacology and Toxicology Program should have completed undergraduate work in biology, chemistry, including organic chemistry and biochemistry, mathematics through calculus, and physiology. Deficiencies may be rectified during the first year of graduate study. Each student in the program is required to complete the core curriculum:

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>6</td>
<td>BC/BP 563/564 General Biochemistry</td>
</tr>
<tr>
<td>3</td>
<td>P/T 501 Philosophy of Pharmacology and Toxicology</td>
</tr>
<tr>
<td>3</td>
<td>P/T 506 Principles of Pharmacology I</td>
</tr>
<tr>
<td>1</td>
<td>P/T 597 Seminar (required each year)</td>
</tr>
<tr>
<td>3</td>
<td>Stat 512 Analysis of Variance and Experimental Design</td>
</tr>
</tbody>
</table>

In addition, 13 hours from advanced courses in pharmacology or toxicology are required for the various areas of emphasis. Elective course work that complements each student’s research and career interests is selected by the student in consultation with their advisers. Each student is required to write a thesis based upon original laboratory research. The research interests of the faculty span a broad spectrum, e.g., carcinogenesis and cancer chemotherapy, endocrine pharmacology, immuno-pharmacology, neurochemical and central nervous system pharmacology, thrombosis and hemostasis, cardiovascular pharmacology, mutagenesis, teratology, and developmental toxicology, xenobiotic metabolism, design of enzyme inhibitors, and chemical residues and natural toxicants in food.

Pharmacy and veterinary medicine faculty in the Pharmacology and Toxicology Program are housed primarily in Wegner Hall. The building was recently remodeled and provides an excellent atmosphere for study and research. Modern instruments available for pharmacological and toxicological research include: ultraviolet, infrared, circular dichroism, fluorescence, and Fourier transform nuclear magnetic resonance spectrometers, mass spectrometer, gas and high performance liquid chromatographs, centrifuges, ultracentrifuges, an electron microscope, and scintillation counters. In addition, the building houses a health sciences library and a vivarium equipped to maintain a variety of research animals. Excellent research facilities house other members of the pharmacology and toxicology faculty at the University of Idaho, and at various locations on the WSU campus.

Applications for admission to the program must include GRE scores, transcripts for all college level work, three letters of recommendation, and a description of career objectives. For students whose native language is not English, TOEFL scores are also required. Applications and inquiries should be directed to Admissions Committee Chair, Pharmacology and Toxicology Graduate Program, Pullman, WA 99164-6510.

For explanation of symbols, see page 53.

Pharmacology and Toxicology

P/T

501 Perspectives in Pharmacology and Toxicology 1 Same as V Ph 501.

505 Principles of Molecular Toxicology 3 Prereq P/T 506. Principles of modern, predictive toxicology; actions, biological disposition and environmental fate of natural products, drugs, pesticides, food chemicals and pollutants. Cooperative course taught by WSU, open to UI students (FST 505).

506 Principles of Pharmacology I 3 Prereq BC/BCP 563 or c//. Fundamental mechanisms of drug action and the factors that modify drug responses; autonomic and cardiovascular pharmacology. Cooperative course taught by WSU, open to UI students (FST 506).

510 Advanced Pharmacokinetics/Toxicokinetics 2 Prereq P/T 506. Kinetics of drug absorption, distribution, elimination, and pharmacologic response. (a/y) Cooperative course taught by WSU, open to UI students (FST 510A).

511 Topics in Toxicology V 1-4 May be repeated for credit; cumulative maximum 12 hours. By interview only. Topics of current interest in toxicology and closely related areas. Cooperative course taught by WSU, open to UI students (FST 511B).

512 Topics in Pharmacology V 1-4 May be repeated for credit; cumulative maximum 12 hours. By interview only. Topics of current interest in pharmacology and closely related disciplines. Cooperative course taught by WSU, open to UI students (VS 512C).

525 Instrumental Methods in Pharmacology and Toxicology 3 (2-3) Prereq Chem 342. Procedures and instruments used in analytical and separation methods. (a/y) Cooperative course taught by WSU, open to UI students (FST 525).

532 Metabolism of Drugs and Toxins 2 Prereq BC/BP 563/564; Rec P/T 506. Pathways, enzymology and mechanisms of metabolism of drugs, environmental contaminants and other xenobiotics; pharmacological and toxicological impact of metabolism. (a/y) Cooperative course taught by WSU, open to UI students (FST 532A).

535 Pathophysiology of Blood 3(2-3) Same as V Ph 535.

540 Neuropharmacology 3 Same as Neuro 540.

545 Toxicology of Pesticides 3 Same as Entom 545.

561 Receptorology 2 Prereq P/T 506. The role of ligand-receptor interactions in biological responses to drugs and poisons. (a/y) Cooperative course taught by WSU, open to UI students (VS 561).

564 Brain-Endocrine Interaction 3 Same as V Ph 564.

566 Target Organ Toxicity 2 Chemical toxicity manifested in damage to structure and function of liver, kidney, lung, nerve, cardiac and skin tissue. (a/y) Cooperative course taught by WSU, open to UI students (FST 566).

567 Risk Assessment Methodologies 2 Prereq
Pharmacology and Toxicology Seminar 1
May be repeated for credit; cumulative maximum 12 hours. S, F grading. Cooperative course taught by WSU, open to UI students (FST 597).

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

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

College of Pharmacy


The objective of the College of Pharmacy is the development of students for a lifetime of responsible service in the pharmaceutical profession. The curriculum of the college is designed to prepare graduates for careers in retail pharmacy, hospital practice, industry, nursing homes, government, and teaching.

The current Bachelor of Pharmacy degree will be phased out in May 1997 when the last class of students in that degree program will graduate.

The entry-level PharmD (Doctor of Pharmacy) degree will commence with the fall 1995 semester. The current Bachelor of Pharmacy degree will be phased out in May 1997 when the last class of students in that degree program will graduate. The schedule of studies for the PharmD degree is a six-year program consisting of two pre-pharmacy years and four professional years. 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.

Throughout the professional years of instruction, special attention is given to developing students a concern for the total health care of patients and the general public. For example, the clinical pharmacy program on campus and in cooperating hospitals of the area emphasizes the role of the pharmacist in patient care in both institutions and community practice. The preclinical basic science courses are carefully designed to prepare students for such experience. The experiential component of the pharmacy curriculum is conducted primarily off campus. The experiential program is composed of 42 weeks divided into seven six-week blocks, two blocks of externships and five blocks of clerkships. The externship program is designed to provide students with practical professional experience in both community pharmacy settings and institutional pharmacy settings including hospitals, extended care facilities, etc. The clinical clerkship is an interdisciplinary experience in which the pharmacy student is assigned to a team of health care professionals in a hospital or other patient care setting. These practice experiences are conducted at a variety of community and hospital sites, primarily in the Spokane Washington area but may also include other locations. Students are encouraged to complete one or both externships during the summer following the second professional year. The remaining externships and clerkships are completed during the calendar year immediately following the end of the spring semester of the third professional year. (The BPharm degree program is phased out effective fall 1995. Students currently enrolled in this program should consult with the College of Pharmacy Office of Student Services for course descriptions and program of study for the BPharm degree program.)

Description of Courses

For explanation of symbols, see page 53.

Pharmaceutical Science
PharS
332 Pharmaceutical Calculations 1 or 2 The mathematics of pharmacy for dispensing practitioners; introduction to statistical methods. S, F grading.


433 Pharmaceuticals III 3 Prereq PharS 332, 432. Kinetics of drug absorption, distribution, and elimination; dosage regimens, design, bioavailability.

437 Pharmaceautics Laboratory I 2 Prereq PharS 431 or c/l. Laboratory in the preparation of solutions, solid, semisolid, and dispersed liquid dosage forms. S, F grading.

438 Parenteral Products Laboratory 2 (1-3) Preclinical, PharS 433, 437. Preparation of intravenous dosage forms, intravenous admixtures, parenteral nutrition and fluid/electrolyte mixtures.

441 Pharmacological Basis of Therapeutics I 3 Prereq BC/BP 364, Chem 342 or c/l. Mechanisms of drug action, physiochemical and physiological factors involved in drug disposition, drug biotransformation, micronutrients, Cooperative course taught by WSU, open to UI students (Phar 441).

442 Pharmacological Basis of Therapeutics II 8 Prereq BC/BP 364, Micro 412, PharS 441 or c/l. Structure activity relationship, mechanism of action, pharmacodynamics and toxicology of chemotherapeutics, immunological, peripheral nervous system, cardiovascular, renal and gastrointestinal drugs. Cooperative course taught by WSU, open to UI students (Phar 442).

443 Pharmacological Basis of Therapeutics III 4 Prereq PharS 442, Zool 315, 353. Medicinal chemistry, pharmacology and toxicology of drugs acting on the peripheral nervous system, autacoids, cardiovascular, renal and gastrointestinal drugs. Cooperative course taught by WSU, open to UI students (Phar 443).

444 Pharmacological Basis of Therapeutics IV 4 Prereq PharS 443. Medicinal chemistry, pharmacology and toxicology of drugs acting on the central nervous system, endocrine agents and micronutrients. Cooperative course taught by WSU, open to UI students (Phar 444).

446 Toxicology 2 Clinical toxicology emphasizing the mechanism of action of common household and environmental toxins and addressing public health issues.

500 Special Problems V 1-4 May be repeated for credit. S, F grading.

Pharmacy Practice
PharP
217 Drugs in Our Society 2 For nonmajors. The fundamental study of drugs.

250 The American Health Care System 3 Development of the American health care delivery system; emergence of the health professions, insurance, hospitals, consumer advocacy, health policy formation.

301 (201) Orientation I Orientation to pharmacy. S, F grading.

415 Human Pathology 3 Prereq Zool 315 or c/l. A fundamental study of disease processes in people.

450 Peer Health Advocacy 3 By interview only. Principles and techniques of peer health education and advocacy.

451 Pharmacy Practice I 1 Basic clinical skills, interpretation of patient data, problem-solving skills, professional communications, professionalism and pharmacy ethics.

452 Pharmacy Practice II 2 Quality and use of nonprescription drug items and selected health care products.


454 Pharmacy Practice IV 4 Prereq PharS 433, 437, 443. Professional competence in applying principles of pharmacetics, medicinal chemistry, and pharmacology to selecting therapeutic products, dispensing procedures.

455 Pharmacy Practice V 5 (4-3) Prereq PharP 415, 454, PharS 446. Biopharmaceutics and pharmacology applied to clinical situations, drug information and evaluation of disease state.

457 Clinical Pharmacokinetics 2 Prereq PharP 454; c/l in PharP 455. Application of basic pharmacokinetic principles to patient care.

461 Community Practice Externship 7 (0-21) Prereq PharP 455. Practical professional experience in community pharmacy setting under
the supervision of an approved pharmacist preceptor. S, F grading.

462 Institutional Pharmacy Externship 7 (0-21)
Prerequisites: Prereq PharP 455. Practical professional experience in an institutional pharmacy setting under the supervision of an approved pharmacist preceptor. S, F grading.

463 [M] Clinical Clerkship 7 (0-21)
Prereq PharP 455. Clinical experience in the delivery of health care and the role of the pharmacist in patient care.

472 Pharmaceutical Care Laboratory I 1 (0-3)
Prereq PharP 451 or c//. Practicum designed to integrate classroom-acquired knowledge, behaviors and values into professional skills.

473 Pharmaceutical Care Laboratory II 1 (0-3)
Prereq PharP 451 or c//. Practicum designed to integrate classroom-acquired knowledge, behaviors and values into professional skills.

474 Pharmaceutical Care Laboratory III 2 (0-6)
Prereq PharP 451 or c//. Practicum designed to integrate classroom-acquired knowledge, behaviors and values into professional skills.

475 Pharmaceutical Care Laboratory IV 2 (0-6)
Prereq PharP 451 or c//. Practicum designed to integrate classroom-acquired knowledge, behaviors and values into professional skills.

476 Pharmaceutical Care Laboratory V 1 (0-3)
Prereq PharP 451 or c//. Practicum designed to integrate classroom-acquired knowledge, behaviors and values into professional skills.

481 [M] Pharmacy Management 3 Prereq Econ 101; senior in Phar. Problems and procedures in the establishment and management of a pharmacy; examination of the health care delivery system.

482 Pharmacy Law 2 Prereq senior in Phar. Laws relating to pharmacy and professional practice.

485 Practice Seminar I or 2 Prereq PharP 454, 461, 462, 463, or c//. Professional standards of practice; a companion course for experimental education courses.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

501 Health Sciences Seminar Series I 1 May be repeated for credit; cumulative maximum 3 hours. Prereq PharP 511 or c//. Weekly student presentations on pharmacy-related topics with an emphasis on effective presentation skills.

502 Health Sciences Seminar Series II 1 May be repeated for credit; cumulative maximum 3 hours. Prereq PharP 511 or c//. Weekly student presentations on pharmacy-related topics with an emphasis on effective presentation skills. S, F grading.

503 Clinical Research for Health Professionals 2 Presentation/discussion of current methods of research in health sciences.

504 Health Care in Rural America 3 Description and analysis of rural health care issues and alternatives.

511 Communications for the Health Professional I 1 Principles of verbal and written communications with patients for the health professional.

512 Communications for the Health Professional II 1 Prereq PharP 511. Principles of verbal and written communications for the health professional with multiple classroom projects and videotaping.

521 Contemporary Topics I 1 Contemporary topics in pharmacy practice, including pharmacoeutical care, pharmacotherapy, drug use evaluations and total quality management.

522 Contemporary Topics II 1 Prereq PharP 521. Contemporary topics in pharmacy, including ethics, social aspects of pharmacy practice, leadership skills, and health care delivery systems.

531 Clinical Research Methods 3 (2-3) Prereq Math 140. Introduction to data analysis methods and study design principles for clinical research; use of computers to analyze and present data.

532 Principle of Epidemiology 3 Prereq PharD student. Fundamentals and principles of the distribution of diseases and their causes in human populations.

533 Pharmacy Informatics 2 Prereq PharD student. Managed care pharmacy and its role in health care.

541 Physical Assessment 2 (1-3) Collection and evaluation of medicated patient information; monitoring efficacy and toxicity of drug therapy; physical assessment and clinical laboratory values.

542 Wellness and Health Promotion 2 Prereq PharD student. Health needs and problems of distinct populations and behaviors aimed at prevention, early detection, and treatment of health problems.

551 Advanced Therapeutics I 1 Series of modules that provide the foundation of pathophysiology and treatment of various diseases.

552 Advanced Therapeutics II 4 Series of modules that provide the foundation of pathophysiology and treatment of various diseases.

557 Clinical Pharmacokinetics 2 (1-3) Prereq PharP 443. Applications of pharmacokinetic principles to safe and effective therapeutic management of individual patients in a clinical setting.

558 Drug Information Retrieval and Evaluation 1 Prereq PharP 551 or c//. An overview of the biomedical literature emphasizing how to evaluate the pharmaceutical and biomedical literature to provide better patient care.

561 Acute Care Clerkship 1 (0-3)-12(0-36) May be repeated for credit; cumulative maximum 12 hours. Prereq PharP 552, 557. Advanced clinical pharmacy clerkship experience in the delivery of health care; pharmacist role in providing acute pharmaceutical care.

562 Ambulatory Care Clerkship 1 (0-3)-12(0-36) May be repeated for credit; cumulative maximum 12 hours. Prereq PharP 552, 557. Advanced clinical pharmacy clerkship experience in the delivery of health care; pharmacist role in providing ambulatory pharmaceutical care.

563 Long-Term Care Clerkship 1 (0-3)-20(0-60) May be repeated for credit, cumulative maximum 20 hours. Prereq PharP 552, 557. Advanced clinical pharmacy clerkship experience in health care delivery; pharmacist role in providing pharmaceutical care in various care settings.

599 Special Projects 2 Laboratory research, clinical research, or comprehensive review of selected subjects.

600 Special Projects or Independent Study Variable credit. S, F grading.

For Entry-Level PharD Degree

<table>
<thead>
<tr>
<th>Hours</th>
<th>Courses</th>
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<tbody>
<tr>
<td>8</td>
<td>1. Bio S 103, 104 General Biology</td>
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<tr>
<td>8</td>
<td>2. Chem 105, 106 General Chemistry</td>
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<tr>
<td>8</td>
<td>3. Chem 340, 341, 342 Organic Chemistry</td>
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<td>4</td>
<td>4. Math 140 Calculus</td>
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<td>4</td>
<td>5. Micro 301 Microbiology</td>
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<td>3</td>
<td>6. Statistics</td>
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<td>3</td>
<td>7. BC/1BP 364 Biochemistry</td>
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Total Credit Hours 38

8. Computer Literacy: Students must demonstrate knowledge in use of word processing and spreadsheet software.

9. Medical Emergencies: Students are required to become certified in first aid and CPR. Students must demonstrate competence in verbal, written and interpersonal communication skills and demonstrate commitment to leadership, community service and activism.

Total Credit Hours for General Education and Prepharmacy Requirements = 62
Total Credit Hour Required for Graduation Under the PharD Program = 208 credits

The program will enroll 72 students annually for a total enrollment of 288 in all four years.

Schedule of Studies

First Semester (Fall)
- Micro 412 Immunology 2
- PharP 450 Peer Hlth Adv 3
- PharP 451 Pharmacy Practice I 1
- PharS 431 Pharmaceutics I 3
- PharS 437 Pharmaceutics Lab I 1
- Zool 315 Gross/Micro Anat 4
- Zool 352 Cell Phys 3

Second Semester (Spring)
- GenCB 450 Cell Biol 3
- PharP 472 PCL I 1
- PharS 432 Pharmaceutics II 3
- PharS 441 PBT I 3
- Zool 353 Zoology 4
- Electives (non-professional) 3

Third Semester (Fall)
- PharP 453 Pharmacy Practice II 2
- PharP 473 PCL II 1
- PharP 481 Pharmacy Mgt 3
- PharS 433 Pharmaceutics III 3
- PharS 442 PBT II 8

Fourth Semester (Spring)
- PharP 454 Pharmacy Practice III 4
- PharP 474 PCL III 2
- PharS 443 PBT III 3
- PharS 438 Parenteral Products 2
- PharS 446 Toxicology 2
- Electives (non-professional) 3

First Summer Term
- PharP 461 Comm PharS Prac Ext and/or PharP 462 Inst Prac Ext 7-14

Fifth Semester (Fall)
- PharP 475 PCL IV 2
PharP 531 Clin Res Methods 3
PharP 541 Phys Assessment 2
PharP 551 Advanced Therapy I 5
PharP 557 Clin Pharmacokin 2
PharP 558 Drug Inform Retrieval 1
PharS 531 Adv Pharmaceutics 2

Sixth Semester (Spring)
PharP 476 PCL V 2
PharP 482 Pharmacy Law 2
PharP 532 Epidemiology 3
PharP 542 Wellness & Disease 2
PharP 552 Adv Therap II 4
PharP 554 Selective Topics 2
PharS 541 PBT IV 2

Second Summer Term
PharP 461 Comm Pract Ext and/or 7-14
PharP 462 Inst Pract Ext 7
PharP 561 Acute Care 1-12
PharP 562 Ambul Care 1-12
PharP 563 Elective Clerk 1-20
PharP 599 Special Projects 2

Seventh Semester (Fall)
PharP 561 Acute Care 0-12
PharP 562 Ambulatory Care 0-12
PharP 563 Elective Clerkship 0-6
PharP 599 Special Projects 2

Eighth Semester (Spring)
PharP 561 Acute Care 0-12
PharP 562 Ambulatory Care 0-12
PharP 563 Elective Clerkship 0-6
PharP 599 Special Projects 0-2
PBT = Pharmacological Basis of Therapeutics
PCL = Pharmaceutical Care Laboratory

Students must complete 12 credits each in acute care and ambulatory care and 6 credits in other clerkships. Students may complete 480 hours of approved internship to fulfill each of these courses.

Health Policy and Administration Courses

Description of Courses

For explanation of symbols, see page 53.

Health Policy and Administration

HPA 455 The Economics of Health Care 3 Same as Econ 455. (g)
500 Introduction to the Health Care System 3 Orientation to history and organization of the health care system.
502 Health Care Ethics 3 Ethical issues affecting health care institutions, professionals and consumers.
503 Research and Evaluation Methods 3 Prereq statistics. Basic research and evaluation methods for health care professionals.
505 Comparative International Health Care 3 Analysis of key attributes of health care in selected countries and comparisons with the US health care system.
506 (PharP 504) Rural Health Care in America 3 The unique characteristics, professional opportunities, problems and reform alternatives in rural health care.
507 Health Care Finance 3 Prereq Acctg course. Aspects of health care financial management fundamentals and managerial accounting for strategic financial management.
508 Managed Care/Integrated Delivery Systems 3 Prereq HPA 500, 507. Business, regulatory and liability issues in field of managed care.
509 Health Care Information Systems 3 Prereq HPA 500. Key attributes of health care information systems and their evolution in health care environment.
513 Innovative Leadership and Management 3, 4 (3-3), or 5 (3-6). Same as Nurs 513.
514 Women’s Health: Social, Psychological, and Physiological Issues 2 Contemporary issues in women’s health focusing on physiological, social and psychological aspects.
570 Quality Management 3 Same as E M 570.
598 Seminar in Health Policy and Administration 1 Prereq HPA 500, 503. Major problems and research issues in field; dialogue among students and experts.
599 Special Topics in Health Policy and Administration 1-3
600 Special Projects or Independent Study Variable credit. S, F grading.
700 Masters’ Research, Thesis, and/or Examination Variable credit. S, F grading.
702 Masters’ Special Problems, Directed Study and/or Examination Variable credit. S, F grading.

Department of Philosophy

Associate Professor and Department Chair, M. R. Neville; Professors, J. E. Broyles, H. S. Silverstein; Associate Professor, G. W. Lijie; Assistant Professors, D. M. Holbrook, T. McGrew, M. Meyers.

The Department of Philosophy offers courses which provide the student with an introduction to fundamental intellectual problems and both classical and contemporary attempts at their solutions. Students are encouraged to develop their own critical faculties. The department offers a course of study leading to the degree of Bachelor of Arts in Philosophy and to a supporting endorsement in education.

Description of Courses

For explanation of symbols, see page 53.

Philosophy

Phil

101 [H] Introduction to Philosophy 3 Nature and place of philosophy in human thought; problems and achievements.
198 [H] Philosophy Honors 3 (102) [W] Writing and Reasoning 3 Application of critical thinking skills to essay writing.
201 [H] Elementary Logic 3 Analysis and evaluation of deductive and non-deductive arguments.
207 (107) [H] Philosophy of Religion 3 Western religious thought, nature and knowledge of God, relations to science, morality, and society.
220 [H] Aesthetics 3 Philosophy of art; analysis of aesthetic experience; criteria of art criticism. (a/y)
260 [H] Introduction to Ethics 3 Ethics through analysis of contemporary moral and social issues.
285 (485) Rights and Welfare of Animals 3 Same as A S 285. (g)
290 (300) [H] History of Ancient and Medieval Philosophy 3 Pre-Socratics, Plato, Aristotle; post-Aristotelian philosophy to the Renaissance. (a/y) Cooperative course taught jointly by WSU and UI (Phil 309).
305 [H] History of Modern Philosophy 3 Renaissance, 17th and 18th century philosophers. (a/y) Cooperative course taught jointly by WSU and UI (Phil 310).
310 [H] Nineteenth-century Philosophy 3 Focus on the continental tradition in philosophy.
314 [G] [M] Philosophies and Religions of India 3 Prereq 3 hours Phil. Metaphysical, epistemological, ethical, aesthetic, social, and political views of Hinduism, Buddhism, and Islam, and their influence on Indian civilization.
315 [G] [M] Philosophies and Religions of China and Japan 3 Hours Phil. The philosophies and religions of China and Japan, and their metaphysical, epistemological, ethical, social, and political positions and views of God and gods.
325 [M] 20th Century Philosophy 3 Prereq 3 hours Phil. Selected major philosophers and movements; pragmatism and analytic philosophy.
335 [M] Seminar in Theory of Knowledge 3 Prereq 3 hours Phil. Problems of immediate knowledge and mediate knowledge, modes of cognition. (a/y) Cooperative course taught jointly by WSU and UI (Phil 431).
340 [M] Seminar in Metaphysics 3 Prereq 3 hours Phil. Theories of self, world, God, nature of being. (a/y) Cooperative course taught jointly by WSU and UI (Phil 311).
345 [G] [H] Philosophy of Science 3 Purpose and logical structure of science; human implications. (a/y) Cooperative course taught jointly by WSU and UI (Phil 412).
360 Business Ethics 3 The principles of ethics as applied to specific problems in business faced by individuals and corporate institutions.
365 Biomedical Ethics 3 Ethical problems in medicine and biological research.
370 [H] Environmental Ethics 3 The place of humans in nature and human obligations to nature, if any.
390 Topics in Philosophy 3 May be repeated for credit; cumulative maximum 6 hours.
401 Seminar in Symbolic Logic 3 Prereq Phil 201. (a/y) Cooperative course taught by WSU, open to UI students (Phil 402). (g)
407 Seminar in Religious Studies 3 May be repeated for credit; cumulative maximum 6 hours. Senior seminar for majors in religious studies. (g)
499 Special Problems 3 Prereq 3 hours Phil. Concepts, principles, and processes from astronomy and physics for a general student audience.

298 Physical Science Honors 4 (3-3) Concepts from cosmology, astronomy, physics, chemistry, and biochemistry; how matter evolved from the Big Bang to intelligent life forms.

430 Methods of Teaching Physical Science 3 (2-3) Prereq El/Se 303; 12 hours science. Methods, philosophy, and structure of science; application in teaching middle/secondary school physical science courses.

Department of Physics


Description of Courses

For explanation of symbols, see page 53.

Physical Science

Phys

101 [P] General Physics 4 (3-3)Algebra- and trigonometry-based physics; topics in mechanics, wave phenomena, temperature, and heat; oriented toward non-physical science majors.


201 [P] Physics for Scientists and Engineers 4 (3-3) Prereq Math 171 or c/l. Calculus-based physics; topics in motion and dynamics of particles and rigid bodies, vibrations, wave phenomena, and the laws of thermodynamics.


203 Modern Physics I 3 Prereq Math 220 or c/l; Phys 202. Quantum and relativity theories with applications to atomic, solid state, nuclear and elementary particle physics.

204 Modern Physics II 3 Prereq Phys 303. Continuation of Phys 303.

300 Principles of Astronomy and Physics 3 (3-3) Concepts, principles, and processes from astronomy and physics for a general student audience.

320 Mechanics 3 Prereq Math 315 or c/l; Phys 102 or 202. Motion in one-, two-, and three-dimensions; motions of systems of particles; rigid body motion; Lagrange’s equations.

330 Thermal Physics 3 Prereq Math 273; Phys 202. Thermal behavior of systems; energy and entropy; equations of state; changes of phase; elementary statistical thermodynamics.

341 Electricity and Magnetism I 3 Prereq Math 315 or c/l; Phys 202. Electrostatic fields, magnetic fields, dielectric and magnetic media.

342 Electricity and Magnetism II 3 Continuation of Phys 341. Maxwell’s equations; electromagnetic waves, special relativity.

345 Principles of Astronomy 3 Same as Astr 345.

371 Mathematical Physics 3 Prereq Math 273, Phys
304. Mathematical techniques needed in upper-division physics courses, including vector analysis, matrices, Sturm-Liouville problems, special functions, partial differential equations, complex variables. Cooperative course taught by UI (Phys 371), open to WSU students.

380 [P] Physics and Society 3 Interactions of physics with society; energy; air and water pollution; recycling; communications and computers; physics and war; physics and art.

385 Environmental Physics 3 Prereq Math 171; Phys 101 or 201; 102 or 202. Basic physics concepts applied to environmental problems engendered by technology; physical understanding of the earth, resources; environmental changes induced by people.

410 Electronics 3 (1-6) Prereq Phys 102 or 202. Laboratory construction and investigation of electronic circuits employed in research instruments.

412 Modern Optics Laboratory 3 (2-3) Prereq Phys 443 or c//. Fundamentals of experimental modern optics and applications in science and engineering.


435 Astronomy and Astrophysics 3 May be repeated for credit; cumulative maximum 6 hours. Same as Astr 435.

443 Optics 3 Prereq Phys 341 or c//. Polarization, interference, coherence, and diffraction phenomena of the electromagnetic spectrum; optics of solids; laser resonators; gaussian beams; ABCD matrices.

450 Introduction to Quantum Mechanics 3 Prereq Math 315; Phys 303. Introduction to quantum theory with applications to atomic physics. Cooperative course taught jointly by WSU and UI (Phys 450).

461 Atomic and Molecular Physics 3 Prereq Phys 304. Introduction to atomic and molecular physics; spectroscopy.

463 Introduction to Solid State Physics 3 Prereq Phys 304. Introduction to the physics of solids; crystal structures, lattice vibrations, and electron theory. Cooperative course taught jointly by WSU and UI (Phys 463).


490 [M] Seminar in Physics Literature 1

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

521 Classical Mechanics I 3 Prereq Math 320; 571 or c//. Laws of motion developed by Newton, d'Alembert, Lagrange, and Hamilton; dynamics of particles and rigid bodies. Cooperative course taught jointly by WSU and UI (Phys 521).


533 Thermodynamics 3 Prereq Math 440; Phys 330. Entropy, equilibrium, and stability; work, reversible processes, phase transitions and critical phenomena; irreversible processes and applications; introduction to statistical mechanics. Cooperative course taught jointly by WSU and UI (Phys 533).

534 Statistical Mechanics 3 Prereq Chem 531, 535; or Phys 533, 551. Fundamental theory, calculation of equilibrium properties and fluctuations, interacting systems, quantum statistics. Cooperative course taught jointly by WSU and UI (Phys 531).

538 Topics in Modern Astrophysics 3 May be repeated for credit; cumulative maximum 9 hours. Same as Astr 538.

541 Electromagnetic Theory 3 Prereq Phys 342, 571 or c//. Special relativity and the classical electromagnetic field; emission, propagation, and absorption of electromagnetic waves. Cooperative course taught jointly by WSU and UI (Phys 541).

542 Electrodynamics 3 Prereq Phys 541. Interaction of matter and electromagnetic radiation; classical and quantum electrodynamics. Cooperative course taught jointly by WSU and UI (Phys 542).

545 Nonlinear Optics 3 Prereq Phys 534, 542, 551. Nonlinear wave propagation theory applied to several nonlinear-optical phenomena; experimental techniques that probe a material's nonlinearity.

546 Quantum Electronics 3 Prereq Phys 542, 551. The physics of lasers and of coherent optical radiation generation and propagation.

550 Quantum Theory I 3 Prereq Math 440, 441; Phys 450. Introduction to quantum theory; physical and mathematical foundations; application to atomic systems. Cooperative course taught jointly by WSU and UI (Phys 551).

551 Quantum Theory II 3 Prereq Phys 550, 571. Symmetry and invariance; angular momentum theory; approximation methods. Cooperative course taught jointly by WSU and UI (Phys 552).

552 Quantum Theory III 3 Prereq Phys 551. Scattering theory; relativistic wave mechanics; quantum field theory. Cooperative course taught jointly by WSU and UI (Phys 553).


563 Physics of the Solid State 3 Prereq Phys 534, 551. Lattice vibrations and defects; ionic and electronic conductivities; band theory; magnetic properties; luminescence. Cooperative course taught jointly by WSU and UI (Phys 563).

565 Nuclear Physics 3 Prereq Phys 465, 551. Nuclear and nuclear interactions of theoretical and experimental viewpoint, properties of nuclei, two-body problems, complex nuclei, nuclear spectroscopy, reactions, models. Cooperative course taught jointly by WSU and UI (Phys 566).

571 Methods of Theoretical Physics 3 Prereq Math 440, 441. Mathematical methods for theoretical physics; linear algebra, tensor analysis, complex variables, differential equations, integral equations, variational calculus, and group theory. Cooperative course taught jointly by WSU and UI (Phys 571).

573 Physical Applications of Group Theory 3 Prereq Phys 551. Introduction to group theory with applications to physical systems, crystallography, and quantum mechanics. Cooperative course taught jointly by WSU and UI (Phys 571).

575 Advanced Solid State Physics 3 Prereq Phys 534, 542, 552 or c//, 563, 571. Quantum theory of solids; Green's functions, correlation functions and other field-theoretic methods; magnetism, superconductivity and transport properties.

581 Advanced Topics 3 May be repeated for credit; cumulative maximum 12 hours. Topics of current interest in advanced physics. Cooperative course taught jointly by WSU and UI (Phys 581).

590 Seminar 1 May be repeated for credit. S, F grading.

591 Seminar in Computational Physics 1 May be repeated for credit; cumulative maximum 4 hours. Computational physics; numerical methods and physical application to supercomputers, mainframes, mini- and microcomputers. S, F grading.

592 Wave Propagation Seminar 2 Prereq Math 440, 441. May be repeated for credit; cumulative maximum 4 hours. Waves in the continuum; elastic, plastic, and hydrodynamic waves; shock waves. S, F grading.

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. S, F grading.

594 Seminar in Solid-State Physics 1 May be repeated for credit; cumulative maximum 4 hours. Topics in the physics of solids; the experimental and theoretical study of the electronic and atomic structure of materials. S, F grading.

595 Seminar in Optical Physics 1 May be repeated for credit; cumulative maximum 3 hours. Current topics in experimental and theoretical aspects of optical physics. S, F grading.

598 Teaching Undergraduate Physics Laboratories 1 May be repeated for credit; cumulative maximum 4 hours. Principles and practices of teaching, planning and management of undergraduate physics laboratories; choice and care of equipment. S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

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

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

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

Schedule of Studies

This program of courses is appropriate for students who have had a good experience with the calculus and wish to get started with physics in the first semester. (If the high school experience is good enough the student may be placed in 172 and that would then replace the 171 in the first semester and move the Math sequence up one semester.) Upon consultation with the departmental adviser, modifications can be made in the list of required courses to fit the needs of individual students. A booklet describing programs of study in detail is available from the departmental office.

At least 40 of the total hours required for the bachelor's degree in physics must be in upper-division courses. The student must earn a C (2.0) or
better grade in each of the required physics courses.

Courses printed in Roman type are required for graduation; those in italics are optional.

**Freshman Year**

**First Semester**
- Engl 101 or placement 3
- GenEd 110 or 111 and/or GER
- Math 171 Calculus I 4
- Phys 201 Classical Physics 4

**Second Semester**
- Chem 105 (or 115) Principles 4
- General Education Requirement
- Math 172 Calculus II 4
- Phys 202 Classical Physics 4

**Sophomore Year**

**First Semester**
- Chem 106 (or 116) Principles 3
- Engl 301 or 402 3
- General Education Requirement
- Math 220 Linear Algebra 2
- Math 273 Math III 3
- Phys 303 Modern Physics I 3

**Second Semester**
- Cpt S 150 Program Design and Dev 4
- General Education Requirement
- Math 315 Differential Equations 3
- Phys 304 Modern Physics II 3
- Phys 330 Thermal Physics 3

**Junior Year**

**First Semester**
- General Education Requirements or Electives 6
- Math
- Phys 320 Mechanics 3
- Phys 341 Electricity and Magnetism 3
- Phys 443 Optics 3

**Second Semester**
- Math
- Phys 342 Electricity and Magnetism 3
- Phys 412 Modern Optics Lab 3
- Phys 415 [M] Quantum Lab 3

**Senior Year**

**First Semester**
- General Education Requirement
- Phys 410 Electronics Laboratory 3
- Phys 450 Quantum Mechanics 3
- Phys 461 Atomic & Molecular Physics 3
- Phys 490 [M] Seminar in Phys Lit 1
- Phys 499 Special Problems 1-4
- Phys 521 Classical Mechanics I 3

**Second Semester**
- Phys 463 Solid State Physics 3
- Phys 465 Nuclear Physics 3
- Phys 499 Special Problems 1-4
- Phys 533 Thermodynamics 3
- Phys 550 Quantum Theory I 3

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Minor in Physics

A physics minor requires Phys 201, 202 and Phys 303, 304 plus any two courses (6 credits) from the following list: Phys 320, 330, 341, 342, 410, 412, 415, 443, 450, 463, 465. This makes a total of 20 credits in Phys of which 12 are upper division. Students from outside the College of Sciences (i.e., College of Engineering) do not have to meet the extra graduation requirements of the College of Sciences.

Transfer Students

Transfer students receive credit for equivalent courses taken elsewhere, but must meet the requirements for graduation listed above.

Preparation for Graduate Study

Undergraduate students contemplating graduate work in physics should consider enrolling in Phys 443, 450, 521, 571, and additional math courses. At least one year of German, Russian, or French is also recommended.

**Department of Plant Pathology**


Plant pathology is the study of plant diseases, including causes, economic consequences, epidemiology, and control. Opportunities for graduates in plant pathology include positions in research and development, teaching, extension, and sales. Plant pathologists are employed throughout the world by industries, governments, educational institutions, and private foundations.

A limited undergraduate program is designed to provide a broad background in the biological, physical, and agricultural sciences. However, most opportunities in plant pathology require advanced degrees. Students who intend to terminate university training with a baccalaureate degree are encouraged to enroll in the integrated pest management curriculum.

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 botany, crop science, genetics, horticulture, forestry, and entomology. Students who expect to become professional plant pathologists are advised to include in their 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, crop science, genetics, horticulture, molecular biology, or similar areas as well as in plant pathology. Specialized areas of advanced study include mycology, nematology, virology, epidemiology, disease physiology, molecular biology of 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, fruit, 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. An interdisciplinary curriculum in integrated pest management is available to those whose interests span the areas of plant pathology and pest management. The curriculum is described under the entomology section of this bulletin.

**Description of Courses**

For explanation of symbols, see page 53.

**Plant Pathology**

**PI P**

331 Forest Pathology 2 (0-6) Prereq Bio S 103. Parasitic and nonparasitic diseases of forest and shade trees; life histories of fungi as related to diseases. (a/y)

421 General Mycology 4 (2-6) Rec Bio S 103 or Bot 120. The structure, life histories, classification, and economic importance of the fungi. (a/y) Cooperative course taught by WSU, open to UI students (PlSc 421). (g)

429 General Plant Pathology 3 (2-3) Rec Bio S 103 or Bot 120. Classification, symptoms, causes, epidemiology, and control of plant diseases. (g)

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

501 Diseases of Plants 4 (3-3) Prereq PI P 429. Principles and practical implications of plant disease epidemiology, disease control, and pathogen ecology. (a/y) Cooperative course taught by WSU, open to UI students (PlSc 506).

511 Viruses and Viral Diseases of Plants 4 (3-3) Prereq course in biochemistry or virology. Nature of plant viruses, vector-virus relationships and virus diseases of plants. Cooperative course taught jointly by WSU and UI (PlSc 511).

513 Nematodes and Nematode Diseases of Plants 2 (1-3) Prereq PI P 429. Anatomy, identity, and diseases caused by nematodes; techniques and control. (SS)
514 Phytopathology 4 (3-3) Prereq BC/BP 364; Micro 201. Isolation and characterization of bacteria having a saprophytic, symbiotic or pathogenic association with plants, molecular structure, function, and genetics. (a/y) Cooperative course taught by WSU, open UI students (PIsc 514).

515 Seminar 1 May be repeated for credit.

517 Plant Disease Epidemiology 3 Prereq PI P 429. Theory and practical implications of disease processes, incidence, and severity in plant population. (a/y) Cooperative course taught by UI (PIsc 517), open to WSU students.

522 Basidiomycetes 3 (2-3) Prereq PI P 421. Taxonomy, physiology, and reproduction of rusts, jelly fungi, smuts, and higher basidiomycetes. (a/y) Cooperative course taught by WSU, open UI students (Bot 575).

523 Ascomycetes and Fungi Imperfecti 3 (1-6) Prereq PI P 421. Taxonomy, phylogeny, physiology, reproduction of ascomycetes, and fungi imperfecti. (a/y) Cooperative course taught by WSU, open UI students (Bot 576).

524 Lower Fungi 2 (1-3) Prereq PI P 421. Taxonomy, phylogeny, physiology, and reproduction of aquatic and terrestrial phycymycetes and myxymycetes. (a/y) Cooperative course taught by WSU, open UI students (Bot 577).

534 Fungal Genetics 4 (3-3) Prereq GenCB 301. Classical and molecular approaches to genetic analyses in fungi. (a/y)

535 Molecular Genetics of Plant and Pathogen Interactions 2 Prereq BC/BP 364, GenCB 301. Genetic and molecular biological aspects of host-pathogen interactions. (a/y) Cooperative course taught by WSU, open UI students (PIsc 535).

541 Analytical Methods for Phytopathological Research 3 (2-3) Prereq Micro 201 or PI P 429. Survey of research techniques in plant pathology, including history and principles. (a/y) Cooperative course taught by UI (PIsc 541), open to WSU students.

600 Special Projects or Independent Study Variable credit. S. F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S. F grading.

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

Schedule of Studies

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

The following list includes the departmental requirements for the undergraduate plant pathology curriculum. Students should 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 Education Requirements.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Bio S 103, 104 Intro Biol</td>
<td>8</td>
<td></td>
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<tr>
<td>Bio S 372 Gen Ecol</td>
<td>4</td>
<td></td>
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<tr>
<td>Bot 120 Intro Botany</td>
<td>4</td>
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<tr>
<td>Bot 320 Intro Plant Phys</td>
<td>3</td>
<td></td>
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<tr>
<td>Bot 332 Intro Sys Bot</td>
<td>4</td>
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<tr>
<td>Chem 105, 106 Prin Chem</td>
<td>7</td>
<td></td>
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<tr>
<td>Chem 240 Elem Org Chem</td>
<td>4</td>
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<tr>
<td>Crops 305 Weeds</td>
<td>3</td>
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<tr>
<td>Econ 201 Contem Role Econ</td>
<td>4</td>
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<tr>
<td>Engl 101 Intro Wrtg</td>
<td>3</td>
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<tr>
<td>Engl 351 Creat Wrtg: Prose</td>
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<tr>
<td>Entom 340 Agric Entom</td>
<td>3</td>
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<tr>
<td>GenCB 301 General Genetics</td>
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<td>GenEd 110, 111</td>
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<tr>
<td>Math 107 Precalc Math</td>
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<td>Micro 101 Elem Bact</td>
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<td>Phys 101, 102 Gen Phys</td>
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<td>PI P 429 Gen Plant Path</td>
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<td>Soils 201 Soils</td>
<td>3</td>
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<tr>
<td>Stat 310 Agric Stat</td>
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<tr>
<td>Ag Electives</td>
<td>15</td>
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</tbody>
</table>

The following substitutions may be allowed with departmental approval: Ag Ec 201 for Econ 201; AgHE 205 for Engl 351; Chem 101/102 for Chem 105/106; Entom 343 for Entom 340; Math 171 for Math 107; Micro 201 for Micro 101.

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, genetics, and report writing or advanced composition.

Program in Plant Physiology


Graduate study leading to degrees of Master of Science in Plant Physiology and Doctor of Philosophy is offered as an interdepartmental program by the graduate faculty from the Departments of Crop and Soil Science, Biochemistry and Biophysics, Botany, Horticulture and Landscape Architecture, Plant Pathology, and the Institute of Biological Chemistry. The objectives of the program are to provide the graduate student with a broad knowledge in plant physiology and with research experience in a chosen area within this discipline. Specialization includes cellular and subcellular physiology, the molecular biology and biochemistry of plant-related processes, photosynthesis and photorespiration, nitrogen fixation, phytochemistry, the physiology of vascular plants, stress metabolism, plant pathogen interactions, hormonal interactions and regulation of growth, crop production physiology, and physiological ecology as well as related areas in agriculture and biology.

Students entering the program must have completed their baccalaureate degree with training in one year each of elementary biology or botany, and physics, chemistry through one semester of organic chemistry, one semester each of plant physiology and genetics, and mathematics (through calculus). Limited undergraduate deficiencies may be remedied by taking the appropriate courses upon enrollment in the graduate program on a provisional basis. Degree requirements for both the MS and PhD degrees include courses in advanced plant physiology, plant morphology and anatomy, and biochemistry. To meet the minimum requirements of core course credit in the Graduate School, elective courses are chosen as approved by the student’s adviser and the supervising committee of graduate faculty. There is no foreign language requirement. Policies and procedures of the Graduate School apply to all admissions. Interested students may direct their inquiries to plant physiology or to any participating academic unit. Should the latter route be followed, preference for the Program in Plant Physiology must be indicated and, if possible, the research area of interest identified.

The program offers flexibility for students with varied backgrounds in chemistry, biochemistry, plant physiology, molecular biology, botany, genetics, biology, and the agricultural sciences to pursue advanced training in plant physiology, with independent study and original research in areas of the student’s own interests as the single most important component. The interdisciplinary nature of the program assures the student of interaction with plant physiologists and plant scientists representing a wide range of research interests and provides the student with a broad choice of specialized facilities which are available in the cooperating academic units.

Financial support for students in the program is determined within the administering academic unit and not by plant physiology. Participating faculty may provide support through individual grants and contracts. Every effort will be made to inform applicants of these opportunities.

Course requirements are drawn from existing courses offered by cooperating departments and programs. In addition, a seminar is held weekly during each semester.

Department of Political Science

Department Chair, P. Hagner; Professors, T. Cook, M. Cottam, N. Lovrich, D. Nice, J. Pierce, C. Sheldon, T. Tsurutani; Associate Professor; C. Clayton, B. Steel; Assistant Professors, A. Appleton, D. Estrada, A. Mazur, M. Newman, A. Saine, S. Stehr, T. Preston.

Courses in political science are offered in political institutes (residency, congress, the courts, political parties, mass media), public policy formation and evaluation, public law, civil liberties, international relations (foreign policy, strategic policy, conflict resolution), comparative government (area studies, post-industrial societies, cross-national comparisons), political philosophy 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.

The department is the locus of the Criminal Justice Program, which offers courses of study leading to the Bachelor of Arts in Criminal Justice and the Master of Arts in Criminal Justice. For details, see the criminal justice section of this catalog.

Prelaw Studies

No specific major is required to be eligible for law school. The department’s Prelaw Advising Center assists all students interested in law school regardless of their intended major.

Through its prelaw curriculum, the department offers a selection of courses designed to prepare students adequately for law school and eventual careers in law. This curriculum reflects recommendations of the Association of American Law Schools. Students choosing other departmental options are also eligible to attend law school if they meet admission requirements.

Public Service

Government is the nation’s largest employer. Many public officials are political science graduates. The department advises students concerning training and career opportunities in federal, state, and local governments, the foreign service, and related occupations. Its extensive internship program places students in public agencies, political parties, and similar organizations. The department also encourages and advises students on study abroad as part of preparing for careers in international affairs.

Division of Governmental Studies and Services

The department’s Division of Governmental Studies and Services (DGSS) is an instrument for extending beyond the classroom and into public service the resources represented in the department’s teaching and research personnel. Functions of the division include 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 administering internship programs to provide practical experience in government. DGSS maintains a collection of specialized government publications and related materials and, in general, acts as a link between teaching and the conduct of public affairs.

Teaching

Students may obtain the bachelor’s degree in political science while meeting the requirements for a Washington teaching certificate. Further details can be obtained from the department.

Minor and Second Major

A minor in political science requires a minimum of 18 semester hours, half of which must be in upper-division courses. For a second major, a student must complete the requirements in one of the department’s options.

Preparation for Graduate Study

Students with some undergraduate course work in political science while majoring in such subjects as economics, business administration, history, criminal justice or sociology may readily pursue graduate study in political science. Undergraduates at other institutions or in other departments at this institution who contemplate graduate work in this department should acquire some training in political science. For graduate study and its graduate degree programs, the department clusters its courses in three subfields: American institutions and processes; foreign systems and world politics; and administration, justice, and applied policy studies.

Description of Courses

For explanation of symbols, see page 53.

General and Introductory Courses

Pol S


102 [S] Introduction to Comparative Politics 3 Nature of the state; fundamental problems of government and politics; ideological and institutional comparison of democracies and dictatorships.

103 [S] International Politics 3 Creation and operation of national, international, and supranational communities; major world problems since 1945.

198 [S] Political Science Honors 3

206 State and Local Government 3 Institutions, processes, and problems, with special reference to the state of Washington. Completes Washington teaching certification requirements.

Methodology

Pol S

301 Political Simulations 3 Prereq Pol S 101. Preparation for and participation in political simulations.

496 Computer-aided Research in Political Science 2 Mainframe and microcomputer applications for political science research; practical application. S, F grading.

503 (531) Introduction to Political Science Research Methods 3 Prereq 12 hours Pol S; Soc 321. Social science research design topics, measurement, sampling, data sources, experimental and quasi-experimental designs, field and historical designs, content analytic designs.

504 Introduction to Poliometrics 3 Introduction to applied statistical approaches to research questions in political science; introduction to applied computer applications in research enterprises.

539 The Political Science Profession 1 Methods, problems, and purposes of teaching, research, and vocation in political science. S, F grading.

Political Theory

Pol S

333 [S] Development of Marxist Thought 3 Marxism theory from the original writing of Marx and Engels to contemporary developments.

437 Classical Political Thought 3 The development of political philosophy from the pre-Socratics to Machiavelli. (g)

438 [M] Recent Political Thought 3 The development of political thought since Machiavelli. (g)

501 (530) The Scope of Political Science 3 Prereq 12 hours Pol S. Historical development and present status of the discipline; contemporary issues and future trends. Cooperative course taught by WSU, open to UI students (PolSc 530).

502 Seminar in Normative Theory 3 Elements of normative theory developments; examination of bases of controversies and approaches in the modern literature using historical sources.

Comparative Politics

Pol S

314 National States and Global Challenges 3 Comprehensive introduction to the processes of the economic and political integration of the European Union.

315 Topics in Canadian Studies 1 Same as Hist 315.

375 Chicano/Latino Politics 3 Same as CAC 359.

380 Canadian Political System 3 Political institutions and processes of Canada. Cooperative course taught by UI (PolSc 380), open to WSU students.

405 Comparative Criminal Justice Systems 3 Same as Crm J 405. Credit not granted for both Pol S 405 and 505.

412 [M] Government and Politics of the Former Soviet Union 3 Institutions and political processes of the former Soviet Union. (a/y)(g)

413 Latin American Governments 3 Institutions and political processes of selected Latin American republics. (a/y)

418 Human Issues in International Development 3 Same as Anth 418. Cooperative course taught by WSU, open to UI students (PolSc 462).

432 Comparative Public Policy 3 Processes of public policy formation and outcomes in postindustrial democracies, and how to analyze it in a comparative perspective. (g)

435 Politics of Developing Nations 3 Issues and problems of political development and modernization common among developing nations. Cooperative course taught by WSU, open to UI students (PolSc 501).


472 [M] Politics of Postindustrialized Nations 3 Government and politics of postindustrial societies, including West Europe and Japan.

474 [K] [M] African Politics 3 Same as CAC 439. (g)

476 Revolutionary China: 1800 to Present 3 Same as Hist 476. (g)

505 Comparative Criminal Justice Systems 3 Same as Crm J 505. Credit not granted for both Pol S 405 and 505.

534 (595) Seminar in Comparative Politics 3 May be repeated for credit; cumulative maximum 6 hours. Cooperative course taught jointly by WSU and UI (PolSc 595).

535 Advanced Issues in Comparative Politics 3 Advanced issues seminar in international and comparative politics.

536 Special Topics in Comparative Politics 3 May be repeated for credit. Advanced issues seminar in international and comparative politics.

537 Concepts and Methods in Comparative Poli-
448 Urban Politics and Policy 3 Urban political processes and policies; intergovernmental relationships; impact of urban reform.
450 The Legislative Process 3 Role of legislatures in a democratic system; problems of representation; election and tenure of lawmakers; legislative organization and procedures. (a/y)(g)
455 The Presidency 3 Organization and processes of executive institutions at the national level; uses and limits of executive power.
510 Seminar on American Institutions and Processes 4
511 Seminar in American Political Thought 3 May be repeated for credit; cumulative maximum 6 hours. The genesis and development of political thought in the United States.
512 Seminar in American Institutions 3 May be repeated for credit, cumulative maximum 6 hours. Origin, development, and contemporary issues in political organization and structure in the United States. S, F grading.
513 Seminar in American Political Behavior 3 May be repeated for credit, cumulative maximum 6 hours. Theoretical approaches to, and empirical analysis of, mass political behavior.
514 Governmental Policy and Program Analysis 3 Techniques used to analyze policy alternatives and to evaluate programs; developing program objectives, management by objectives, productivity analysis, program evaluation, and policy analysis. Cooperative course taught by UI (PolSc 556), open to WSU students.

Public Administration

Pol S
340 (440) Introduction to Public Administration 3 Prereq Pol S 101. Basic theories of administrative organization, relationships, and behavior.
443 Administrative Jurisprudence 3 Study of the origins, nature, and practice of justice and law in public administration. (g)
445 Public Personnel Administration 3 Development of American civil service systems and concepts; problems and techniques involved in selection and management of public employees. Cooperative course taught by WSU, open to UI students (PolSc 445). (g)
446 Public Budgeting 3 The government budget as an instrument of politics, planning and control; organizing for democratic accountability. (g)
447 Comparative Public Administration 3 Same as Pol S 447 above. (g)
455 The Presidency 3 Same as Pol S 445 above. (g)
540 Proseminar in Public Administration 3 Proseminar overviewing basic theories of administrative organization, relationships, and behavior.
541 Seminar in Criminal Justice Research Evaluation 3 Same as Crm J 540.
542 (592) Proseminar in Administration, Justice, and Applied Policy Studies 3 May be repeated for credit; cumulative maximum 6 hours. Prereq Pol S 340 or 445. Analytical perspectives and theoretical issues. Cooperative course taught jointly by WSU and UI (PolSc 592).
547 (501) Seminar in Public Administration 3 Cooperative course taught by UI (PolSc 501), open to WSU students.

Department of Psychology
OPTION II: Pre-Law

21 hours in Pol S. Required: Acctg 230, Econ 101, 102 (macro and micro), Engl 101; 201 or 301; 402 or other approved composition course (9 hours); Phil 201, Phil or other humanities (3 hours); Pol S electives; Pol S seminar recommended (with 3.0 or better g.p.a.) (3 hours); Pol S 101 (or 198), 102, 103, Pol S 300, 402, 404 [M], public speaking, argumentation or debate course.

OPTION III: Teacher Education

33 hours in Pol S, including 101, 102, 103, 206, 300, 420, 438. Required: Engl 201, 301, 402, or approved course (3 hours). Students in this option must also add education as a second major, preferably during their sophomore year, and must meet the specific requirements for that major as established by the College of Education.

Requirements for all options:

Writing Requirements:

Two writing in the major [M] courses (6 hours) from: Pol S 404, 412, 427, 438, 460, 472, 474. University Writing Portfolio (required no later than first semester after earning 60 credits)

For further information on degree requirements, please contact the Political Science Department.

Predential Curriculum

Associate Professor and Coordinator, D. F. Moffett; Associate Professor and Associate Coordinator, A. L. Schroeder; Advisers: Associate Professors, K. Kardong, D. King, A. Koch, D. Miller.

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. This is the strongly preferred alternative.

The following constitutes the minimum requirements:

1. One year (6 semester hours) of college English.
2. One year of college physics with lab.
3. One year of inorganic chemistry with lab.
4. One year of organic chemistry with lab.
5. One year of college physics with lab.
6. Mathematics through calculus.
7. One year of college biology. Additional courses in zoology and microbiology are recommended.

1. 21 or more hours of electives in the social sciences and humanities.

In addition, all premedical students must take the Medical College Admissions Test (MCAT).

Premedical students are strongly urged to include in their studies a good selection of non-science courses (e.g., history, English, philosophy, humanities, anthropology, foreign languages) of their own preference and choosing. Medical schools neither place restrictions on major area of interest nor encourage taking courses which overlap in subject matter with those 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 a superior scholastic record, good to excellent scores on the MCAT, and possession of personal qualifications appropriate to success in the medical profession. Medical schools neither place restrictions on major area of interest nor encourage taking courses which overlap in subject matter with those in medical school.

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 or with a minor in alcohol studies.

Alcohol studies offers an interdisciplinary sequence of courses designed to provide a broad knowledge concerning the etiology, development, treatment, and prevention of alcohol addiction and abuse. Students work on a baccalaureate degree of their choice while also completing the requirements for either the minor or the certificate in alcohol studies.

Upon completion of the academic requirements, students pursuing the certificate in alcohol studies must complete an internship in a state-approved alcoholism treatment facility (a potential job setting). The internship provides an opportunity for integration and application of knowledge, and acquisition and honing of skills necessary for effective assessment, intervention, and prevention of alcohol addiction and abuse.

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 either a specialization in clinical or 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, perception, animal behavior, physiological psychology, social interaction, and behavior modification. Departmental facilities also include the Human Relations Center, which is a training clinic. In addition, cooperative arrangements with other units of the university and with outside agencies and institutions 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 related fields.

Description of Courses

For explanation of symbols, see page 53.

Psychology

100 Seminar in Academic Self Management 2 Permission of instructor. Application of self-management procedures to the academic problems of at-risk students.1

101 Seminar in Learning and Academic Development 2 Permission of instructor. Application of behavior and cognitive learning procedures to the academic problems of at-risk students.1

105 [S] Introductory Psychology 3 Contemporary psychology; biological, social, and physical influences on normal and abnormal human behavior.

198 [S] Psychology Honors 3 May substitute for Psych 105 as a prereq to later courses.2

220 Psychology of Stress 3 Prereq Psych 105. Causes and characteristics of stress; stress prevention and management; psychological aspects of health and illness.

230 Human Sexuality 3 Prereq Psych 105. Sexuality in personal development; personal, cultural, biological influences on sexual identification and behavior; fertility, reproduction, sexual functioning, sexuality and personality.

1Open only to students in the EXCEL program.

2Open only to students in the Honors Program.

301 Seminar in Psychology V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq 6 hours Psych.

306 Industrial/Organizational Psychology 3 Prereq Psych 105. Individual and group goals; organizational structure and theory; leadership, design of jobs; personnel selection and training; engineering psychology.

307 Human Factors 3 Prereq Psych 105 or engr major. Human limitations and capabilities in architectural and engineering design; system analysis.

311 Elementary Statistics in Psychology 4 Prereq Math 101, 107, 140, 171, 201, 202, 210, or 222 with a C or better. Descriptive statistics, probability, and inference; design and interpretation of research.

312 [M] Experimental Methods in Psychology 4 (3-3) Prereq Psych 105; Psych 311 or Stat course. Designing, conducting, and reporting research in selected areas of experimental psychology.

321 Introduction to Personality 3 Prereq Psych 105. Theories, concepts, methods, discoveries in psychology of personality.

324 [S] Psychology of Women 3 Prereq Psych 105. Socialization and sex roles of women; a psychological perspective.

328 [M] Self Control 3 Prereq Psych 105. Analysis of self-control problems; application of behavioral principles to student-conducted projects.

330 Abnormal Psychology 3 Prereq Psych 321; 6 hours Psych. Problems of abnormality from traditional and evolving points of view; types, therapies, outcomes, preventive techniques.

350 [S] Social Psychology 3 Prereq Psych 105 or Soc 101. Attitude changes, conformity, interpersonal relations, groups and social influences explored to give a coherent view of social psychology.

361 Principles of Development 3 Prereq Psych 105. Major theories of development; contribution of biological and environmental factors; relationship of these factors to child-rearing memory and social issues.

363 Psychology of Aging 3 Prereq Bio S course; Psych 105. Psychological processes of aging; changes in sensory motor, cognitive motivational and personality characteristics; research methodologies for the study of aging.

365 Problems of Alcohol Addiction and Abuse 3 Prereq Psych 105 or Soc 101. Current theories of etiology and epidemiology of alcoholism and alcohol abuse; treatment and prevention.

366 Treatment Approaches in Alcohol Abuse/Alcoholism 3 Prereq Psych 365. Psychosocial, medical, pharmacological treatment modalities; criteria for assessment/diagnosis; treatment plan; case management; family involvement; different support systems; aftercare plans.

372 Introduction to Physiological Psychology 3 Prereq Bio S 102 or 103; Psych 105. Functional relationship between nervous system and behavior; integrated organism systems, sensory processes, and investigative procedures.

384 Psychology of Perception 3 Prereq Psych 105. Perception of size, depth, form, shape; illusions, contrast, historical and modern theories and research; applications and demonstrations.

400 [M] Historical Development of Psychology 3 Prereq Psych 312. Concepts, methods, theories, trends, and systems.(g)

412 Psychological Testing and Measurement 3 Prereq Psych 311. Assessment of behavioral variables in humans; individual differences. Cooperative course taught by WSU, open to UI students (Psych 412)(g).

440 Clinical/Community Psychology 3 Prereq Psych 333. Professional problems; theory, training, relations with clients, institutions, public.(g)

444 Basic Helping Skills 2 (0-6) Prereq 6 hours Psych; sophomore standing. By interview only. Training in basic skills to work with varied types of clients; didactic and role play instruction. S, F grading.

445 Undergraduate Practicum V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 6 hours. Prereq 6 hours Psych; sophomore standing. By interview only. Supervised experience in local and county agencies; application of psychological principles to para-professional counseling. S, F grading.(g)

455 Human Values 3 Same as Soc 355.

464 Psychological Disorders of Children 3 Prereq CCFS 240 or Psych 361; Psych 105. Intellectual and emotional disorders of children.(g)

466 Environmental Psychology 3 Prereq Psych 105. Psychological concepts applied to the mixture of positive and negative interactions individuals have with their physical environment.

470 Motivation 3 Prereq Psych 105. Different motivational systems; analysis of environmental and biological factors influencing motivation, with emphasis on human motivation.(g)


490 Cognition and Memory 3 Prereq 6 hours Psych. Human information processing, memory, and cognition.(g)

496 Cooperative Education Internship V 2-6 May be repeated for credit; cumulative maximum 12 hours. Off-campus cooperative education internship with business, industry, or government unit coordinated through the Professional Experience Program. S, F grading.

497 Instructional Practicum V 1-4 May be repeated for credit; cumulative maximum 4 hours. S, F grading.

498 Research Participation V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq 9 hours Psych including a lab course. By interview only. Participation in the current research of departmental faculty. S, F grading.(g)

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

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. S, F grading.

504 History of Psychology: Theoretical and Scientific Foundations 3 Roots of scientific explanation in psychology traced through various philosophical schools and psychological movements.

505 Teaching Introductory Psychology 3 May be repeated for credit; cumulative maximum 4 hours. Problems and techniques related to teaching introductory psychology.

507 Topics in Psychology 3 May be repeated for credit.

508 Special Topics in Psychology V 1-3 May be repeated for credit.

511 Advanced Statistics in Psychology 3 Prereq Psych 311. Probability, statistical inference, correlation and regression, multivariate applications; computer analyses.

512 Statistical Inference and Research Design 3 Prereq Psych 511. Psychology statistics used in the design and analysis of experiments.

513 Seminar in Quantitative Methods and Research Design 3 May be repeated for credit. Prereq Psych 512. Graded topics in specialized quantitative procedures and in design of research in psychology.
520 Theoretical Foundation of Psychotherapy 3 Major therapy systems.
521 Behavior Modification 3 (2-3) Prereq Psych 390, 520. Learning principles applied to modifying behavior of children and adults in institutions, clinics, and schools.
522 Applied Behavioral Research 3 Research theory and methodology on development of applied programs.
530 Professional Issues 3 Ethical and philosophical issues faced in the practice of psychology.
533 Psychopathology/ Psychopharmacology I 3 Theoretical and empirical approaches to etiology and treatment of mental disorders; emphasis on diagnostic issues, somatic treatment, and the major psychoses. Cooperative course taught by WSU, open to UI students (Psych 575).
534 Psychopathology/Psychopharmacology II Prereq Psych 533. Continuation of 533. Anxiety disorders, substance abuse, personality disorders, sexual disorders, and organic mental disorders.
535 Clinical Assessment 3 Interviewing procedures, case formulation, and case presentation.
536 Personality Assessment 3 Theories and methods of personality assessment.
539 Intelligence: Theory and Assessment 3 Theories and methods of appraising intelligence.
540 Group Psychotherapy 3 By interview only. Psychotherapies in the context of the group.
542 Community Psychology 3 Prereq one year graduate work. Community psychological concepts; consultation, training, and research roles for psychologists in community programs. Community project experience required.
543 Clinical Child Psychology 3 Behavior problems, diagnosis and treatment procedures with children.
544 Medical Psychology 3 Prereq Psych 533. Psychology in physical health and illness. Cooperative course taught by WSU, open to UI students (Psych 544).
545 Clinical Methods 3 (0-9) May be repeated for credit. Prereq 520, 530, 535, 536, 539, or c/l. By interview only. Supervised practice in the clinical application of psychology. S, F grading.
546 Advanced Clinical Methods V 1-3 May be repeated for credit; cumulative maximum 12 hours. Prereq Psych 545 or c/l. By interview only. Advanced practice in the clinical application of psychology; supervised practical training. S, F grading.
547 Seminar in Clinical Psychology 3 May be repeated for credit. Advanced current topics in clinical psychology.
548 Advanced Social Psychology 3 Theories, findings, and methods in group processes, interpersonal attraction, and personal perception. Cooperative course taught by WSU, open to UI students (Psych 520).
551 Interpersonal Dynamics 3 Theories and research in interpersonal dynamics; cognitive, learning, equity, and attributional concepts.
552 Cross-Cultural Issues in Psychology 3 Theories and research in cross-cultural psychology; cultural difference in psychopathology, assessment and treatment.
553 Personality: Theory and Research 3 Basic concepts in personality theory and research.
554 Physiological Psychology 3 May be repeated for credit. Neuroanatomical, neurochemical, and other biological cases of human and animal behavior.
556 Neuropsychological Assessment 3 Prereq Psych 574. Brain-behavior relations in humans and the assessment of behavioral changes accompanying cerebral injury.
557 Behavioral Pharmacology 3 Prereq Psych 574. Survey of drugs which affect brain function with emphasis on animal models and clinical applications.
559 Behavioral Neuroscience 3 Prereq Psych 574. Advanced topics in neurochemistry, neurophysiology, and neuroanatomy.
564 Sensory Bases of Behavior 3 Prereq Psych 384. Sensory and physiological aspects of vision, audition, and other senses.
565 Psychology of Visual Perception 3 Perception of size, distance, form, contrast, illusions; motivation, personality, information processing. Cooperative course taught by WSU, open to UI students (Psych 570).
566 Seminar in Physiological/Sensory Psychology 3 May be repeated for credit. Advanced current topics in physiological/sensory psychology.
569 Models of Learning 3 Historical and current theory and research in learning and cognition.
570 Cognition and Memory 3 Experimental approaches to human information processing, memory, and cognition.
573 Experimental Analysis of Behavior 3 Operant conditioning in relation to the experimental evidence currently available; examination of research strategies.
574 Seminar in Learning/Cognition 3 May be repeated for credit. Advanced current topics in learning/cognition.
575 Clinical Internship in Psychology V 2-16 May be repeated for credit; cumulative maximum 16 hours. Prereq passing of prelims and completion of course work for PhD. Clinical training in an internship approved by American Psychological Association or by WSU. S, F grading.
576 Special Projects or Independent Study Variable credit. S, F grading.
700 Master's Research, Thesis, and/or Examination Variable credit. S, F grading.
702 Master's Special Problems, Directed Study and/or Examination Variable credit. S, F grading.
800 Doctoral Research, Dissertation, and/or Examination Variable credit. S, F grading.
Alcohol Studies
499 Special Problems V 1-4 May be repeated for credit. S, F grading.

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 (and minor) program, in accordance with the needs of the individual student. A person may certify as a major after completion of 30 semester hours, math requirement with a C or better, and a cumulative g.p.a. of 2.5 or better. 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 Psych, 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 Psych courses.

Required Courses
Bio S 102 or 103* Math 140, 171, or 210 with a grade of C or better* Psych 105, 311, 312* Minimum of three courses from Psych 372, 384, 390, 401, 470, 473, 490 Minimum of two courses from Psych 321, 324, 333, 350, 355, 361, 363, 412, 464

Students must meet the graduation requirements of the College of Liberal Arts.

*To be completed during the freshman and sophomore years.

Recommended Courses
One 3-hour course from Psych 445, 497, 498, 499. Psych electives will be chosen in consultation with adviser.

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 Psych courses or supporting courses in other areas.

Students in the Honors Program and transfer students should ask about modifications in the above schedule for the Psych majors. Students interested in combining a Psych major with the certificate program in Alcohol Studies should inquire at the office of the Department of Psychology.

Minors
Minor in Psychology. The minor in Psych may be certified after the completion of 90 semester hours, at the beginning of the senior year. It requires 18 credit hours in Psych which at least 9 must be in upper-division courses.
Psych 105 or 198 and Psych 312 are required; electives must be chosen in consultation with a psychology adviser.

Teaching Minor in Psychology. For the Psych minor in secondary school teaching, see the Teaching and Learning section of this catalog.

Minor in Alcohol Studies (16 hour minimum). AlcSt 365, 366; AlcSt/Psych 444 or S W 493; PharP 217; Psych 321 or 333; Psych 440 or S W 393. Recommended electives: AlcSt 367, 499, Psych 220, 324, 350; S W 190, 393; Soc 360. Students must obtain a grade of C or better in each of the required and recommended courses taken toward completion of the minor in alcohol studies.

Certificate in Alcohol Studies. Students must complete all requirements for the minor in alcohol studies plus AlcSt 447 and S W 490 (10-15 credits). Students must obtain a grade of C or better in each of the required and recommended courses in order to enroll in S W 490 and to qualify for the alcohol studies certificate.

Preparation for Graduate Study

Students who contemplate work leading to advanced degrees are urged to confer 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.

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 eight options for specialized study: I. General Sociology; II. Social Research and Data Analysis; III. Law and Social Control; IV. Society, Environment and Technology; V. Personnel and Human Relations; VI. Business and the Economy; VII. The Family as an Institution; VIII. Social Welfare: Social Casework or Community Organization. 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 careers in professions such as architecture and community planning, counseling, law, medicine, the ministry, politics, or public administration. 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 of symbols, see page 53.

Sociology

Soc 101 [S] Introduction to Sociology 3 Human society and social behavior; effects of groups, organizations, cultures, and institutions.

102 [S] Social Problems 3 The structure of social institutions and cultural factors that constitute threats to society (crime, poverty, discrimination, drugs, family violence).

150 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] Introduction to Sociology Honors 3

270 Personal Identity and Social Interaction 3 Development of self concept in social interaction; attitudes, values, beliefs and behaviors; conformity and interpersonal influence.

300 [S] [M] Intersections of Race, Class and Gender 3 Same as WS St 300.

301 (201) Rural Sociology 3 Comparison of rural and urban societies; rural social change and implications for the future.


320 Introduction to Social Research 3 Methods of collecting data; surveys, experiments, field observations; organization and interpretation of data; reading social research.

321 Quantitative Techniques in Sociology I 4 Prereq Math 101, Soc 320, three semesters high school algebra, or equivalent skill level. Levels of measurement; measures of central tendency, dispersion and association; normal curve, statistical inference; logic of quantitative comparison and decision making.

342 Comparative Social Science 3 Same as WS St 342. Open only to students in the Honors Program.

330 Urbanization and Community Organization 3 Organization, function, change, development, and decline of communities; applications emphasizing urban or rural settings.

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.

332 Society and Environment 3 Prereq Soc 101. Society-environment relations, including environmental attitudes and behavior; the environmental movement and environmental politics and policy-making.


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 Social organization of work in America including historical and contemporary trends, bureaucracy, gender/racial inequality, technological affects, work/family relations.

345 Sociology of Sport 3 Sociological study of sport in America.


351 [S] The Family 3 Prereq Psych 105 or Soc 101. Family system and its interaction patterns; family life cycle from marriage through death; marital relations, divorce, sexuality, parenting crisis, abuse.

356 Sociology of Aging 3 Aging as a lifelong process; behavior, personality competencies, social relations changes over the life course; historical, social structural, demographics, contextual influences.

360 [S] Theories of Deviance 3 A survey of classical and contemporary theories of deviance.

361 Criminology 3 Crime and society, nature, types, and extent of crime; theories of criminality; control of criminal behavior.

362 Juvenile Delinquency 3 Sociological perspectives on delinquency; delinquent gangs and subcultures; delinquency causation and control; law and its enforcement; juvenile justice and corrections.

363 The Social Organization of Hate Crimes 3 Social organization of hate crimes and the larger context within which they occur.

364 [M] Law and Society 3 Prereq Crm J 101 or Soc 101. Various points of intersection of legal and social systems; special attention given to historical development.

365 Problems of Alcohol Addiction and Abuse 3 Same as Psych 365.

366 Treatment Approaches in Alcohol Abuse/Alcoholism 3 Same as Psych 366.

367 (465) Juvenile Justice and Corrections 3 Same as Crm J 365.

371 Small Group Analysis 3 Prereq Soc 101. Interpersonal relations in small groups; influence and social power.

372 The Sociology of Film 3 The social, economic, and political factors that influence film production and the impact of films on American culture.

373 Media, Culture and Society 3 The production of popular culture by media organizations and its effects on society.

374 [S] Collective Behavior and Social Movements 3 Prereq Soc 101. Social and cultural factors conducive to the rise of new movements; process by which movements are institutionalized as organizations.


389 Special Topics in Sociology V 1-3 May be repeated for credit; cumulative maximum 6 hours.
410 [M] Development of Social Theory 3 Prereq
Soc 101. Biographical accounts and original writings of both early sociological masters and contemporary sociologists; history of US sociology in social context.(g)

418 Human Issues in International Development 3 Same as Anth 518.

420 Sociological Methods and Techniques 3 Prereq Soc 320. Introduction to sociological research methods; research procedures; measurement, observation, experimentation, survey methods, sampling, questionnaire construction, analysis.(g)

421 Quantitative Techniques in Sociology II 3 Probability theory, inference theory, one and two sample tests; simple and multiple regression analysis.(g)


430 (310) [K] Sociology and Technology 3 Role of technology in social evolution; social impacts and shaping of technology.

446 Medical Sociology 3 Social factors related to health and illness; organization and change in health care; impacts of health care reform, rising costs, and aging. Credit not granted for both Soc 446 and 546.(g)

455 (355) Human Values 3 Prereq Psych 105 or Soc 101; Psych 350. The nature and measurement of values; relationship to attitudes, identities, and behavior; value development and change in self and society.


480 Sociology of Race Relations 3 Basic understanding of race relations; major sociological concepts and theories regarding minority and majority group relations. Credit not granted for both Soc 480 and 580.

490 [M] Senior Seminar 3 Prereq senior in Soc. Integration and synthesis of knowledge gained from major course work; emphasis on employment opportunity for sociologists.

491 Advanced Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours.(g)

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

501 Theories of Social Organization 3 Major theories of social organization in historical perspective.

512 Theory Construction and Formalization 3 Testing; formalization of theoretical systems; adaptation of general models to specific problems.

517 Seminar in Contemporary Sociological Theory 3 Recent developments in sociological theory, analysis, application and appraisal of specific theoretical systems.

519 International Development and Human Resources 3 Same as Anth 519.

520 Research Methods in Sociology 3 Methodology of social research at the professional level.

521 Regression Models 3 Prereq Soc 421. Simple and multiple regression, structural equation models, non-linear equations, applications for discrete dependent variables.

522 Advanced Sociological Methodology 3 May be repeated for credit; cumulative maximum 12 hours. Prereq Soc 521. Scaling theory, experimental design, measurement of association, multivariate analysis, current methods and techniques.

524 Sociology and Public Policy 3 Graduate-level counterpart of Soc 424; additional requirements. Credit not granted for both Soc 424 and 524.

525 Practicum in Survey Research 3 Prereq Soc 520. Practical experience in design and implementation of telephone and mail surveys; participation in all aspects of conducting a survey.

530 Demography 3 Population studies; causes, effects, and measurement 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.

532 Environmental Sociology 3 Societal-environmental interactions; impacts of human society on the physical environment; environmental impacts on human behavior and social organization.

533 Social Impact Assessment 3 Sociology’s contribution to environmental impact assessments; methods, contents, and contexts of assessing social impacts of proposed developments.

534 Energy and Society 3 Energy and societal evolution; energy consumption patterns and quality of life; social impacts of energy shortages and alternative energy systems.

542 Theories of Social Stratification 3 Marx, Dahrendorf, Weber, Sorokin, Mills, Pareto; problems of stratification research; social class and social policy.

543 Sociology of Religion 3 Role of religion in social structure, process and change; analysis of religious behavior.

545 Sociology of Community 3 Community stability and change; interaction processes; decision making; societal linkages; effects on well-being.

546 Medical Sociology 3 Graduate-level counterpart of Soc 446; additional requirements. Credit not granted for both Soc 446 and 546.

548 Political Sociology 3 Systematic survey of theories and the major research literature in political sociology.

550 Advanced Social Psychology 3 Same as Psych 580.

551 Comparative Family Systems 3 Comparative research on and theory of marital, family, and kinship relations and behavior.

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.

553 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.

554 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.

555 The Six Roles in Society 3 Same as H D 555.

556 Sociology of Aging 3 Theory and research on changes that individuals undergo as the life course as a function of socialization and maturation processes.

560 Problems of Deviance Theory 3 Development of theories of deviant behavior; new issues in the study of deviance.

561 Sociology of Law 3 Social factors affecting the development and maintenance of legal structures and the processes of administration of justice.

567 Seminar in Crime and Delinquency 3 Contemporary theory and research in crime and delinquency.

568 Adolescent Deviance 3 Contemporary sociological theory and research in adolescent deviance; action programs; and emerging issues.

571 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.

572 Socialization 3 Theories of childhood and adult socialization; personality development; symbolic interaction; learning; agents of socialization.

573 Group Processes 3 Sociological research and theory dealing with overt behavior in human interaction settings and its cognitive antecedents.

580 Sociology of Race Relations 3 Graduate-level counterpart of Soc 480; additional requirements. Credit not granted for both Soc 480 and 580.

590 Special Topics in Sociology 3 May be repeated for credit; cumulative maximum 9 hours.

591 The Sociology Profession 1 May be repeated for credit; cumulative maximum 2 hours. Requirements, operations, problems, and possibilities of the sociology profession. S, F grading.

592 Special Topics in Sociology 3 May be repeated for credit; cumulative maximum 9 hours.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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

Social Welfare and Public Policy

S W 190 Introduction of Social Work 3 Survey of practice; social workers and social service agencies, individual, group, and community practice. Cooperative course taught jointly by WSU and UI (SW 140).

340 Social Welfare Policy 3 Prereq S W 190; Soc 101, 102. Historical analysis of social issues and policies that have led to current social welfare practices. Field trip required. Cooperative course taught by UI (SW 340), open to WSU students.

345 Human Behavior in the Social Environment 3 Analysis of the social systems model and how it applies to social work practice with individuals, families, groups, organizations, and communities. Cooperative course taught by UI (SW 345), open to WSU students.

354 Cross-Cultural Factors in Social Work 3 Exploration of social work intervention as it applies to various cultural and ethnic groups. Cooperative course taught by UI (SW 355), open to WSU students.

365 Group Social Work 3 Social work processes for working with groups and dynamics of
group behavior. Cooperative course taught by UI (SW 365), open to WSU students.

390 Social Welfare History and Policy 3 Current social welfare programs; income maintenance, health services, criminal justice, public housing, child welfare; historical development of social welfare programs. Cooperative course taught by WSU, open to UI students (SW 390).

393 Social Work Methods in Community Organization 3 Social legislation creation and impact on delivery services by professional/para-professional social workers. Cooperative course taught by WSU, open to UI students (SW 393).

395 Child Welfare 3 Social work practice in child welfare; adoption, foster homes, child protection, group homes, day care, children's institutions, dependency, traditional and non-traditional family. Cooperative course taught by WSU, open to UI students (SW 342).

396 Social Work with the Aging 3 The aging process; accessing community resources for the elderly; applying social work methods to the elderly and their family systems. Cooperative course taught by WSU, open to UI students (SW 330).

400 Methods of Social Work 3 Prereq S W 190. The profession of social work; basic knowledge, values, and skills necessary for working with individuals, families, groups, and communities. Cooperative course taught by UI (SW 440), open to WSU students.

409 [M] Social Work Field Experience 10 or 15 Placement in social agency; knowledge in the helping relationship; decision making in applied settings. S, F grading.

422 Social Work Senior Seminar 3 Practicum preparation; practical advice about social work careers, resume writing, interviewing skills. S, F grading.

433 [M] Social Work Methods: Individual and Groups 3 Social work values, ethics; technical aspects of interviewing and working with client systems; communication; group work skills. Cooperative course taught by WSU, open to UI students (SW 493).

450 Social Work in Corrections 3 Applying social work methods to the field of corrections; community-based programs for adult offenders; interventions with juvenile offenders. Cooperative course taught by WSU, open to UI students (SW 495).

450 Social Work in Health and Mental Health 3 Applying social work methods to the fields of health and mental health with an emphasis on practical skills.

450 Special Problems V I-4 May be repeated for credit. S, F grading.

Schedule of Studies

Students must meet the graduation requirements of the College of Liberal Arts. They are encouraged to make a broad and balanced sampling of GER courses to meet the university’s goal for a general education, as well as to explore or confirm possible major and career interests.

Major

A bachelor’s degree in sociology requires a minimum of 31 hours in which students must maintain a C average. Students may choose one of the following eight options, depending upon personal interests. All majors (except those selecting the social welfare option) must complete five required core courses in sociology, as well as five required and/or elective courses in their chosen option areas. Soc 360 cannot be counted for sociology credit. In addition to the required courses and recommended electives in sociology, students must earn 30 hours in related fields, half of which must be in upper-division courses. Selection of related fields from an approved list of courses in consultation with a faculty adviser makes possible the individualization of a student’s major program according to personal interests and career goals.

Required Core Courses

The following five courses are required of all majors selecting Options I-VIII.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Soc 101 Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>Soc 320 Introduction to Social Research</td>
<td>3</td>
</tr>
<tr>
<td>Soc 321 Quantitative Techniques in Sociology I</td>
<td>4</td>
</tr>
<tr>
<td>Soc 410 Development of Social Theory</td>
<td>3</td>
</tr>
<tr>
<td>Soc 490 Senior Seminar</td>
<td>3</td>
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</tbody>
</table>

Option I. General Sociology

This track introduces students to the study of society and its effect upon individual behavior. It provides a general background adaptable to a variety of interests and occupational goals. Students may complete their major within this track or begin here and switch to a different track should their interests change. Five additional Soc courses.

Option II. Social Research and Data Analysis

The courses in this track prepare students who wish to take jobs in research and data analysis or who intend to continue their education in graduate school. The track places special emphasis upon the methods used in data collection as well as the foundations for sociological theory and analysis. Students who complete this track will be able to work as research assistants or pursue graduate work in sociology or any of the related social sciences.

Five recommended from the following, including two from Soc 315, 331, 430: Soc 315, 330, 331, 332, 364, 374, 424, 430.

Option V. Personnel and Human Relations

All kinds of organizations hire people who manage the utilization of human resources from initial recruiting, hiring, training and development to separation or planning for retirement. These personnel managers help to determine company policies, the design of work situations, and methods of developing more efficient and desirable work environments. They need to understand the operation of large bureaucracies and the impact organizations have on people who work within them. A personnel manager is only one example of a human relations worker who must understand employees’ and employers’ points of view and work to meet the needs of both groups.

Sociological knowledge about people and how they interact in groups as well as how individuals and groups are affected by their social environment is necessary for anyone who works in the general area of human relations. Other important skills needed for this work are the abilities to observe, analyze, evaluate, and change behavior as well as the ability to communicate accurately in writing and speaking.

Five recommended from the following, including Soc 350 (required): Soc 270, 343, 350, 351, 356, 365, 371, 384, 446, 455, 480.

Option VI. Business and the Economy

There are many jobs in the business world that sociologists graduate can fill very successfully. They are found in banks, insurance companies, health care organizations, hospitals, commercial recreation, merchandising and sales, real estate, as well as local government.

Individuals who want to work in any of these areas will be interested in the business and economy track in sociology. They will gain essential knowledge about complex organizations and society, professions and occupations, public opinion, social
inequality, population trends, and minority cultural groups. In addition to sociological knowledge, effective employees in business need good oral communication skills, an ability to write clearly, analytical and problem solving skills, the ability to relate to other people, and a broad understanding of how people interact in their social environments.

Five recommended from the following, including Soc 342 or 343 (required): Soc 330, 331, 340, 342, 343, 364, 373, 374, 384, 418, 424, 430, 446, 480.

Option VII. The Family as an Institution

This track focuses on the family as an institution and the social structure in which families are embedded. The information contained in the course work is designed to provide students with appropriate backgrounds to seek jobs in social service agencies. It also provides a foundation for further study in the areas of family counseling or social work. The recommended sociology courses provide knowledge related to marriage, family dynamics, gender issues and societal changes and institutions.

Five recommended from the following, including Soc 150 and 351 (required): Soc 150, 340, 351, 356, 384, 455.

Option VIII. Social Welfare

This track 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 sequences are provided below.

A. Social Casework

Preparing students to gain knowledge and attitudes appropriate to enable them to assist clients who wish to make behavioral change is of major importance in this sequence. The National Association of Social Workers has identified specific goals for which an individual social work practitioner needs specific knowledge in order to achieve. They are:

A. To enhance problem-solving, coping and developmental capacities of people;
B. To link people with systems that provide resources, services and opportunities;
C. To promote effective and humane operations of systems;
D. To develop and improve social policy.

During the first two years, students will be expected to concentrate on General Education Requirements. In the third year the student will complete required courses and in the fourth year will spend a full semester in an agency field placement.

Required Courses: S W 190; 390 or 393; 395 or 396; 490, 492, 493, 495; Soc 101, 320, 321, 340, 351.

B. Community Organization

This sequence is intended for the student who wishes to supplement the social welfare option with a specialization in the area of community organization. Graduates with these skills could be called upon within their local communities to provide leadership in major problem-solving tasks. Students intending to acquire a degree in this sequence could apply their skills in either employment or volunteer services. During the first two years, students are expected to concentrate on meeting GERs. In the third year the student will complete required courses and in the fourth year spend a full semester in an agency field placement.

Required Courses: S W 190; 390 or 393; 395, 490, 492, 493, 495; Soc 101, 320, 321, 330, 424.

Minors

The minor in sociology may be certified after completion of 90 semester hours. It requires a minimum of 18 credit hours in sociology, including Soc 101, 320, and at least 9 additional graded hours of upper-division courses. Any Soc or S W course may be counted toward the minor (subject to the above provisions) except S W 490. A g.p.a. of 2.0 is required for the minor.

Department of Speech and Hearing Sciences

Professor and Department Chair, G. D. Chermak; Professor, C. L. Madison; Professors Emeritus, J. R. Franks, R. E. Potter; M. E. Wingate; Associate Professors, J. M. Johnson; Assistant Professors, C. Jones, L. Power, N. Rickert-Evans, J. A. Seikel, N. E. Vaughan, L. Vogel; Program Coordinator, E. Inglebrit; Adjunct Lecturer, M. Mitchell; Courtesy Associate, K. Mitchell.

The Department of Speech and Hearing Sciences offers courses of study leading to the degrees of Bachelor of Arts in Speech and Hearing Sciences and Master of Arts in Speech and Hearing Sciences. Academic course work and clinical practicum offerings prepare professional personnel to meet the diagnostic and therapy needs of individuals of all ages evidencing a wide variety of speech, language, learning, and hearing problems.

Students are prepared, as speech-language pathologists and audiologists, to provide direct and consultative services in education and/or medical settings. The course of study emphasizes the physiological and psychological process of normal development, the fundamental communication process, and the disorders of communication. The analytic and independent judgment of course content to the clinical process is encouraged.

The Communication Disorders Clinic is the Pullman campus training facility for the Speech and Hearing Sciences Department. Speech/language/audiology services are available through the Communication Disorders Clinic.

The graduate program, located in Spokane, is a cooperative venture, combining faculty and resources of Washington State University and Eastern Washington University to form University Programs in Communication Disorders (UPCD). WSU students enroll through and receive their degrees from Washington State University. Opportunities to work with special populations and in medical settings are readily available in the Spokane area. A capstone internship program provides intensive practical experience in many clinical/educational settings.

The graduate program is accredited nationally by the Educational Standards Board of the American Speech-Language-Hearing Association and by the Board of Education of the state of Washington. State and national clinical and educational certification requires a master’s degree. Bachelor’s-level training in speech and hearing sciences is considered preprofessional.

Description of Courses

For explanation of symbols, see page 53.

Speech and Hearing Sciences

SHS 118 Accent Reduction for International Students 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.

205 Introduction to Speech-Language Pathology and Audiology 3 Defects of articulation, language, rhythm, and voice as they relate to public school and general populations.

250 Perspectives on Disability 3 Historical, international, socioeconomic, ethical and personal perspectives on disability; individual choices, societal values, and social responsibility.

281 Sign Language I 2 Instruction and practical training in sign language for communication with persons who are deaf.

371 Development of Speech and Language in Childhood 3 Normal development of the cognitive, linguistic, and pragmatic components of language; introduction to language disorders in children.

372 Hearing and Hearing Disorders 3 Acoustic and psychophysiological aspects of normal hearing and speech perception, and the nature and consequences of hearing disorders.

375 Phonetics 2 Acoustic and applied phonetics.

376 Clinical Methods in Articulation 3 Evaluation and management of articulation disorders of speech; delayed phonological acquisition, dysarthria, and dyspraxia.

377 Anatomy and Physiology of the Speech Mechanism 4 Analytical and physiological basis of speech production and the pathologies and aberrations that require the services of a communication disorders specialist.

450 Special Topics in Speech and Hearing Sciences V 1-3 May be repeated for credit; cumulative maximum 9 hours. Study of specialized topics in speech and hearing sciences.

460 Special Topics in Speech and Hearing Sciences V 1-3 May be repeated for credit; cumulative maximum 9 hours. Study of specialized topics in speech and hearing sciences.

461 Clinical Apprenticeship in Speech-Language Pathology and Audiology 1 (0-3) Prereq SHS 471 or cl. Pre-practicum preparation; observation of and assisting in therapy. S, F grading.

469 Sign Language II 3 Prereq SHS 281. Sign language systems; vocabulary and skill development in signing and interpreting signs.

470 Special Topics in Speech and Hearing Sciences V 1-3 May be repeated for credit; cumulative maximum 9 hours. By interview only. Study of specialized topics in speech and hearing sciences.

471 Speech-Language Pathology and Audiology
in Schools? Prereq SHS 460 or c/f. Therapy methods and procedures in speech-language pathology and audiologypathology and audiologypathology and audiologypeffects of auditory pathology. (g)

472 Audiology 3 (2-3) Prereq SHS 372. Principles and procedures in basic identification and assessment of hearing impairment; introduction to differential diagnosis of auditory pathologies. (g)

473 Language and Learning Disability 3 Diagnosis and remediation of language and learning disabilities in individuals manifesting disorders in understanding or using spoken/written language. (g)

474 Stuttering 3 Problems and solutions. (g)

475 [M] Clinical Practice 2 (0-6) or 3 (0-9) May be repeated for credit; cumulative maximum 9 hours. Prereq SHS 376 or c/f; 471 or c/f. Practicum in diagnosis and therapy for speech/language and hearing disorders. (g)

476 Internship in Speech-Language Pathology and Audiology V 1-15 Prereq 3.0 g.p.a. for the last 60 semester credit hours of graded course work; by interview only. Practicum in diagnosis and therapy for communication disorders.

477 Aural Rehabilitation 3 Prereq SHS 372, 472. Theories and methods involved in the aural rehabilitation of hearing impaired and deaf persons, use and care of hearing aids; counseling techniques. (g)

478 [M] Therapy for Language Delay and Disorders 3 Prereq SHS 371. Assessment and habilitation for the preschool and elementary-age child with language disorders. (g)

479 Neurology for Speech-Language Pathology and Audiology 3 Prereq SHS 377. Neuroanatomical and neuropsychological bases of speech production and audition; neuropathologies of speech, language, and audition

480 Special Topics in Speech and Hearing Sciences V 1-3 May be repeated for credit; cumulative maximum 9 hours. Study of specialized topics in speech and hearing sciences.

482 Diagnosis and Appraisal of Speech Language Disorders 3 Prereq SHS 376 or c/f; 475 or c/f; 478. Principles, techniques, and materials involved in exploring the nature of speech and language disorders; planning programs of therapy.

490 Special Topics in Speech and Hearing Sciences V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 9 hours. By interview only. Study of specialized topics in speech and hearing sciences. (g)

499 Special Problems 1-4 May be repeated for credit. S, F grading.

501 Research Methods in Speech and Hearing Sciences 3 Theory, methods, and practice of research.

502 (567) Computers in Clinical Practice 1 Microcomputer basics and hardware and software available for evaluation and treatment of speech and hearing disorders.


505 Special Topics in Speech and Hearing Sciences V 1-3 May be repeated for credit; cumulative maximum 9 hours. Study of specialized topics in speech and hearing sciences.

506 (560) Problems in Stuttering 3 Prereq SHS 474. Application of diagnostic and therapeutic problem-solving strategies applied to theoretical and clinical problems in stuttering. (a/y)

560 Special Topics in Speech and Hearing Sciences V 1-3 May be repeated for credit; cumulative maximum 9 hours. Advanced study of specialized topics in speech and hearing sciences.

561 Advanced Speech and Hearing Sciences 3 Prereq SHS 372, 377. Theory, measurement, and instrumentation in acoustics, normal speech production, and audition.

562 Neuromuscular Disorders 3 Prereq SHS 377. Underlying processes of neuromuscular control and feedback; results of damage and disease on neuromotor system. (a/y)

563 Dysphagia 2 Prereq SHS 377. Anatomy and physiology of swallowing; evaluation and treatment of swallowing disorders. (a/y)

564 Language of Children with Hearing Impairment 3 Prereq SHS 371, 477. Speech production and perception abilities and language development and intervention strategies with the hearing impaired. (a/y)

565 Augmentative Communication 3 Prereq SHS 478, 482. Augmentative communication theory; implementation, training strategies, ongoing adjustments, and evaluating effectiveness. (a/y)

566 Off-Campus Clinical Practice V 2 (0-6) - 6 (0-18) May be repeated for credit; cumulative maximum 15 hours. Prereq SHS 575. By interview only. Advanced clinical practice in off-campus setting; evaluation and treatment of speech, language, and hearing disorders.

570 Advanced Internship in Speech-Language Pathology and Audiology V 1-15 May be repeated for credit. Prereq SHS 566, 575, by interview only. Advanced practicum in diagnosis and therapy for communication disorders. S, F grading.

571 Seminar in Speech Pathology and Audiology 3 May be repeated for credit; cumulative maximum 9 hours. Exploration of ideas derived from current writings and research in speech pathology and audiology.

572 Hearing Aids and Advanced Rehabilitative Audiology 3 or 2 Prereq SHS 472, 477. Hearing and technology, evaluation and fitting; counseling in the habilitative/rehabilitative process; rehabilitative considerations for the geriatric population.

573 Cleft Palate 3 Prereq SHS 377. Speech and voice problems associated with clefts of the lip and palate.

574 Acquired Central Nervous System Disorders 3 Prereq SHS 377, 478. Speech and language disorders associated with brain injury.

575 Advanced Clinical Practice 2 (0-6) or 3 (0-9) May be repeated for credit; cumulative maximum 9 hours. Advanced clinical practice in evaluation and treatment of speech, language, and hearing disorders.

576 Voice Disorders 3 Prereq SHS 377. Functional and organic voice disorders resulting from various etiologies.


578 Professional Issues in Speech-Language Pathology and Audiology 3 May be repeated for credit; cumulative maximum 9 hours. Contemporary and professional issues in the field of communication science and disorders.

580 Special Topics in Speech and Hearing Sciences V 1-3 May be repeated for credit; cumulative maximum 9 hours. Advanced study of specialized topics in speech and hearing sciences.

582 Clinical Perspectives 3 Theory and clinical experience designed to assist students in integrating course work into a clinical perspective.

584 Advanced Audiometric Procedures 3 Prereq SHS 472. Behavioral and physiological principles and procedures in audiology for the differential diagnosis of auditory pathologies; considerations for geriatric clients.

585 Hearing Conservation in Industry and Society 3 Prereq SHS 472. Prevention and management of noise-induced hearing loss; interactions between noise and other ototoxic and physical characteristics of the individual. (a/y)

586 Pediatric Audiology 3 Prereq SHS 472. Auditory behavior and pathologies in children; procedures for assessment and application to other groups who are difficult to test.

587 Speech-Language Pathology in the Medical Setting 2 Report writing and charting, collaborating with the medical team, establishing prognosis and assessing efficacy of treatment, and third-party reimbursement.

588 Phonological Acquisition and Behavior 3 Prereq SHS 376. Current literature in articulatory development and deviancy; diagnosis and therapy. (a/y)

589 Professional Development in Speech-Language Pathology and Audiology 1 or 2 Prereq SHS 476 or 570. Planning and implementing a program of continuing education in speech-language pathology and audiology leading to the Continuing Level ESA Certificate from OSPSI. S, F grading.

590 Special Topics in Speech and Hearing Sciences V 1-3 May be repeated for credit; cumulative maximum 9 hours. By interview only. Advanced study of specialized topics in speech and hearing sciences.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

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. Successful completion of SHS 475 and 478 fulfills the university requirement of two writing in the major courses, designated [M].

The Speech and Hearing Sciences Department provides preparation for professional (graduate) training as a speech-language pathologist or audiologist.


Minor

A minor in the Department of Speech and Hearing Sciences requires a minimum of 16 hours including SHS 205, 371, 372, plus 8 hours upper-division courses excluding SHS 475, 476.

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 and hearing sciences, may be accepted for graduate study in this department.

Program in Statistics


Statistics is the science that deals with the collection, analysis, display, and interpretation of data. The Program in Statistics is an interdisciplinary, intercollegiate program that emphasizes the connection of statistics to its many areas of application, as well as the traditional connection to mathematics. The courses in statistics provide training in the application of statistical methods to the biological, physical, and social sciences, the theory of statistical methods, probability, and statistical computing. Opportunities for individuals trained in statistics abound in business, industry, government and academia.

Faculty in the program collaborate with researchers throughout the entire university community on statistical questions that arise in the researcher’s substantive discipline. In addition, faculty carry out active research programs in the discipline of statistics itself. The Program in Statistics currently offers an MS degree with applied and theoretical options. For specific requirements for this degree, please contact the Program in Statistics Office.

Description of Courses

For explanation of symbols, see page 53.

Statistics

Stat

205 [N] Statistical Thinking 3 Same as Math 205.
212 [N] Introduction to Statistical Methods 4 (3-3) Prereq Math 101 or satisfactory math placement test score. Interpretation and application of statistical methods.
360 Probability and Statistics 3 Same as Math 360.
390 SAS Programming 1 SAS system, primarily using the mainframe computer and CMS; main emphasis: SAS DATA STEP and INPUT statement. S, F grading.
392 SAS Special Topics 1 Prereq Stat 390 or working knowledge of SAS base system. May be repeated for credit. Special features of the SAS system including, but not limited to: SAS/GRAPH, SAS/ASSIST, SAS/IML, SAS/AC-CESS, SAS/FSP, advanced macros, complex inputs. S, F grading.
401 Statistical Analysis Concepts 3 Prereq Stat 212, 360, or 412. Analysis concepts and methods of statistical research including multiple regression, contingency tables and chi-square, experimental design and analysis of covariance. Cooperative course taught by UI (Stat 401), open to WSU students.
410 Topics in Probability and Statistics 3 Same as Math 410. Credit not granted for both Stat 410 and 510.
412 Biometry 3 Rec statistics course. Principles and methods of statistical analysis as applied to biological experimentation. Cooperative course taught by WSU, open to UI students (Stat 412). (g)
420 Statistical Analysis of Qualitative Data 3 Prereq Math 140, 171, 201, 202, or 220; statistics course. Binomial, Poisson, multinomial distribution; contingency tables, Fisher’s tests, log-linear models; ordinal data; applications in biology, business, psychology, and sociology. Credit not granted for both Stat 420 and 520. Cooperative course taught by WSU, open to UI students (Stat 420).
422 Sampling Methods 2 Prereq Stat 212 or 360. Simple and stratified random sampling; systematic sampling; cluster sampling; double sampling, area sampling. Cooperative course taught jointly by WSU and UI (Stat 422). (g)
428 Geostatics 3 Prereq Stat 360. Applications of random variables and probability in geologic and engineering studies; regression, regionalized variables, spatial correlation. Cooperative course taught by UI (Stat 428), open to WSU students. (g)
430 Statistical Methods in Engineering 4 Same as Math 430. (g)
442 Statistical Methods for Engineers and Scientists 3 Same as Math 442. (g)
443 Applied Probability 3 Same as Math 443. (g)
444 Introduction to Statistical Theory 3 Same as Math 444. (g)
472 Statistical Packages 3 (2-3) Same as Math 472. (g)
499 Special Problems V 1-4 May be repeated for credit. S, F grading.
504 Special Topics 3 Prereq Stat 444. Cooperative course taught by UI (Stat 504), open to WSU students.
510 Topics in Probability and Statistics 3 Graduate level counterpart of Stat 410; additional requirements. Credit not granted for both Stat 410 and 510.
512 Analysis of Variance of Designed Experiments 3 Prereq Math 360 or Stat 412; Rec Stat 390, 391. Principles of design with analysis and interpretation of data.
514 Nonparametric Statistics 3 Prereq Stat 512. Conceptual development of basic nonparametric tests including their power and efficiency. Cooperative course taught by UI (Stat 514), open to WSU students.
516 Time Series 3 Same as Dec S 516. Cooperative course taught by WSU, open to UI students (Stat 539).
518 Techniques in Sampling 3 Same as Dec S 518.
519 Applied Multivariate Analysis 3 Same as Dec S 519. Cooperative course taught jointly by WSU and UI (Stat 521).
520 Statistical Analysis of Qualitative Data 3 Graduate-level counterpart of Stat 420; additional requirements. Credit not granted for both Stat 420 and 520. Cooperative course taught by WSU, open to UI students (Stat 520).
530 Applied Linear Models 3 Prereq Stat 412 or 430. The design and analysis of experiments by linear models. (a/y)
531 Econometrics 3 Same as Econ 511. Cooperative course taught by WSU, open to UI students (Stat 531).
533 Theory of Linear Models 3 Prereq Math 420, Stat 430, or 444. Theoretical basis of linear regression and analysis of variance models; a unified approach based upon the generalized inverse. Cooperative course taught jointly by WSU and UI (Stat 533).
535 Regression Analysis 3 Prereq Stat 430 or 444. Conceptual development of regression; estimation, prediction, tests of hypotheses, variable selection, diagnostics, model validation, correlation, and nonlinear regression. Cooperative course taught jointly by WSU and UI (Stat 510).
542 Applied Stochastic Models 3 Same as Dec S 542.
544 Applied Stochastic Processes 3 Prereq Stat 430 or 443. Poisson and Markov processes; queuing theory; auto-covariance; stationarity; power spectra; harmonic analysis; linear mean-square predictions. Cooperative course taught jointly by WSU and UI (Stat 544).
547 Statistical Pattern Recognition 3 Same as Cpt S 547.
548 Statistical Theory I 3 Same as Math 548.
549 Statistical Theory II 3 Same as Math 549.
552 Advanced Econometrics 3 Same as Econ 512.
555 Statistical Ecology 3 Prereq Stat 443. Ecological stochastic models, population dynamics and genetics, sampling, spatial analysis, discrete/continuous distributions, birth-death processes, diffusion processes. (a/y) Cooperative course taught by UI (Stat/For 555), open to WSU students.
573 Reliability Theory 3 Same as Math 573.
586 Applied Multiple Time Series Analysis 3 Same as Dec S 586.
600 Special Projects or Independent Study Variable credit. S, F grading.
700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.
702 Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

Preparation for Graduate Study

As preparation for work toward an advanced degree in statistics, a student should have completed one or more courses in statistical methods, a course in probability and statistical theory, and mathematics through multivariable calculus and linear algebra. Advanced calculus is also strongly recommended. More important than the above specific courses is an indication of the student’s interest and ability in statistics. Virtually all U.S. graduate programs provide adequate opportunity to take prerequisite courses after admission to graduate school.
Learning


The Department of Teaching and Learning prepares teachers and other specialists for schools and colleges. Its programs are accredited by the National Council for Accreditation of Teacher Education (NCATE), the Northwest Association of Schools and Colleges and the State Board of Education. Courses of study are offered for the Bachelor of Arts in Education, Master of Arts in Education, Master of Education, Master in Teaching, Doctor of Education, Doctor of Philosophy, and for teacher certification.

The mission of the College of Education, through its inquiry-oriented model of learning, is to educate effective practitioners and scholars who possess the leadership and problem-solving skills necessary to meet the needs of citizens of the 21st century. The inquiry approach, in contrast to approaches that view the purpose of the teacher as merely transmitting knowledge, requires students to be active and critical participants in the formation of their own intellectual development in a life-long process and to evaluate their performance in terms of its effects upon children, schools, and society. It is our belief that teachers must be liberally educated, well grounded in human growth and development, informed and appreciative of cultural and linguistic diversity, committed to egalitarian ideals, capable of communicating and inspiring an interest in learning in others, competent in the technical aspects of teaching and managing group learning, and reflective about their own beliefs and actions. WSU’s inquiry-oriented climate provides students a challenging framework for examining their own experiences and learning in the formation of their perceptions and interpretations of the teacher preparation curriculum.

Teacher Certification

The College of Education prepares individuals to teach in two broad categories: elementary education (multiple subject, grades K-8) and secondary (single subject, grades 4-12 and K-12). The teacher certificate, awarded by the State Superintendent of Public Instruction upon recommendation by Washington State University, designates the grade level and subject area in which the certificate holder is qualified to teach. Teacher preparation and certification are available in Pullman as part of undergraduate or graduate programs, and at the branch campuses in Vancouver and Tri-Cities as part of a Master’s in Teaching (MIT) degree program.

In Pullman, K-8 elementary certification is attainable with the Bachelor of Arts degree in education, the Master of Education, and through the Bachelor of Arts degree in Human Development, early childhood teaching option. At the branch campuses, K-8 elementary certification is attainable as part of the MIT degree.

To prepare in a single subject, the candidate shall complete the baccalaureate degree/teaching option offered through the subject matter department, or in general studies. Single-subject preparation is available in the following endorsement areas: agriculture, anthropology, biology, chemistry, computer science, drama, earth science, English, English/language arts, foreign languages (French, German, Russian, Spanish), history, home and family life, journalism, mathematics, music (broad, choral, instrumental), physics, political science, science, social studies, and speech. All endorsements are for grades 4-12 except foreign languages and music which are valid for grades K-12. Specific course requirements for each primary endorsement are listed under 4-12 Certificare Programs and K-12 Certificate Programs at the end of this section.

To enhance employment opportunities it is highly recommended that all teaching certificate candidates prepare also to teach in a subordinate area by completing requirements for a supporting endorsement. The following supporting endorsements are available: anthropology, bilingual education, biology, chemistry, comparative religion, computer science, drama, early childhood, earth science, English, English as a second language, foreign languages (Classics, French, German, Japanese, Russian, Spanish), history, home and family life, journalism, mathematics, music (broad, choral, instrumental), philosophy, physics, political science, psychology, reading, sociology, special education, and speech. Specific course requirements for each supporting endorsement are listed at the end of this section.

Admission to Teacher Preparation

Applicants who meet the minimum requirements listed below are eligible, but not assured admission. Enrollment in the program is limited and admission competitive. Admission requirements may change during the life of this catalog. Current information and application materials for programs on the Pullman campus can be obtained from the Teacher Education Student Services Center. Inquiries relating to the Master’s in Teaching elementary certificate programs offered at WSU Vancouver and WSU Tri-Cities should be directed to the appropriate branch campus.

Minimum Criteria

1. Completion, within the last five years, of 80 hours of supervised work with children or youth in a diverse setting.
2. ACT, SAT, WPCT, or TETEP score which meets current state requirements. (Inquire at Teacher Education Student Services Center.) Those holding a bachelor’s degree and those 21 years of age or older with two years of successful college work are exempt.
3. Completion of at least 30 semester hours of course work.
4. Minimum cumulative g.p.a. of 2.50
5. Engl 201 or equivalent composition course with a minimum grade of C
6. SpCom 102 or equivalent public speaking course with a minimum grade of C
7. Elementary Majors: Math 251 and two of the three required science courses with minimum grades of C

Secondary Majors: Nine hours of course work in the primary endorsement area. Certified in major department; major department may have additional criteria for teaching option candidates.

8. An interview and writing sample may be required

All candidates must complete formal admission procedures and be admitted to teacher preparation prior to taking any professional education course work beyond T & L 300.

Admission to, or continued enrollment in, the teacher preparation program may be denied a candidate on the basis of review by the faculty.

Transfer and Postbaccalaureate Admission

Transfer students and postbaccalaureate applicants must meet the minimum admission requirements stated above. For the teacher certificate to be awarded through WSU, the candidate must complete a minimum of fifty percent of the total hours required in the elementary or secondary professional education core, in the K-8 endorsement (if applicable), and the full semester of student teaching at WSU. Candidates should consult with the Teacher Education Student Services Center regarding acceptability of transfer work.

Field Experiences

All WSU teacher certificate programs provide opportunities for teacher candidates to gain meaningful experiences by working directly with and observing children in school settings. It is our intent to ensure that individuals placed in K-12 classrooms are adequately prepared and that they possess those characteristics desirable for working with children and young people. The College of Education therefore reserves the right to refuse placement of any student in a field experience, or to terminate individual placements, if in the professional judgment of faculty or coordinating field personnel there is a cause for concern about the fitness of that individual to work with children in a classroom setting.

In all programs, field experiences are required of all candidates. In Pullman, each field placement is arranged by the Teacher Education Student Services Center with school districts in order to provide field experiences for WSU students. Students may not make their own placements. At the branch campuses, WSU personnel are designated to make field placements in school districts with which we have contracts.

In the Pullman program, three separate field experiences are provided. Students must apply for a practicum early in the semester prior to the desired experience.

Applications for student teaching must be made in the fall semester one full academic year prior to the actual student teaching semester. Application forms can be obtained from the Teacher Education Student Services Center. The following courses are designed as required field experiences:

T & L 300, Introductory Field Experience (1 credit) This first course in the certificate program engages the student in reflection upon the responsibilities and realities of the teaching profession. Subsequently, the student spends a full week (usually in January) participating and observing daily activities in a public or private school classroom.

T & L 315/316, Elementary Practicum or T & L 317/318, Secondary Practicum (2 or 3 credits) After gaining basic knowledge and skills in pedagogy and content, the teacher certificate candidate returns to a K-12 school setting to practice...
learned techniques and strategies under the careful
guidance of a certified classroom teacher who works
in collaboration with a university faculty supervisor.
During the practicum semester the student is also en-
rolled in courses in the professional education core
and/or the major to constitute a full load.
T & L 415, Directed Teaching (16 credits) The
program capstone is a semester of full-time partici-
pation in the teaching program of a public school.
The certificate candidate will be placed to student
work when: 1.) application has been made and cer-
tification fees paid, 2.) all course work for the
degree and teacher certificate is complete, 3.) noti-
fication of background clearance from the
Washington State Patrol, the FBI, and the Office of
Professional Practices is received by the Teacher
Education Student Services Center, and 4.) when, in
the professional judgment of the faculty, the candi-
date is ready for the student teaching experience.
In the MIT programs at the branch campuses, field
experiences are coordinated with academic work
throughout the year. Under this arrangement, aca-
demic work builds on students’ experiences in the
field, and likewise, debriefing sessions related to field
experiences are integral to the seminar that accompa-
nies the field-based courses. This ongoing dialogue includes the cooperating teacher as well as the field-based personnel and supports action-research projects conducted by the inter-cooperating teacher partners.
T & L 593, Pre-Internship and Seminar (2 credits) In the fall, students participate in a pre-in-
ternship in K-8 classrooms in which academic and field-site work are integrated seamlessly.
T & L 595, Internship and Seminar (10 cred-
its) During the spring semester, students spend an
increasing amount of time in classrooms, culminat-
ing their semester in a 10-week, full-time internship. Academic course work is addressed in condensed blocks of time in order to accommodate a schedule that supports the required full-time in-
ternship.

The Teacher Certificate will be awarded if the following provisions are met:

1. The candidate provides evidence of good moral
class and personal fitness to teach. Finger-
printing is required. Background investigations
are conducted by the Washington State Patrol,
the FBI, and the State Superintendent of Public
Instruction, Office of Professional Practices.

2. The degree is awarded and the professional
preparation program is satisfactorily completed
following these guidelines:
• All course work is in the professional core and in
each endorsement is taken for a letter grade. Pass, fail grading is not accepted.
• No more than 3 semester hours of corre-
spondence credit is permitted to fulfill pro-
cessional core requirements
• The candidate has earned no grade lower than C (2.0) for course work in the profes-
sional core, primary, and supporting en-
dorsements.
• The C minimum grade requirement also ap-
plies to Astr 135, Bio S 102, Chem 101, Geol
101, Math 251, 252, Ph S 250, Phys 101 for
K-8 endorsement candidates
• The cumulative g.p.a. and the g.p.a. com-
puted separately for course work in the profes-
sional core and each endorsement area

is not less than 2.5.
• The student has completed all work within
five years of admission to teacher prepara-
tion. Those not finishing within this time
limit will be subject to all new program
requirements.

3. The candidate has achieved a passing score on the
state-wide admission to practice examination.

4. The candidate has made application and paid
licensing fees.

Certificate Renewal/Continuing Certificate
Information is available upon request.

Description of Courses

For explanation of symbols, see page 53.

Teaching and Learning

T & L
100/101 (El/Se) Reading Efficiency and Study
Skills 1 Study reading; note-taking; time manage-
ment; learning styles; test taking; writing devel-
opment; orientation to university life; student
wellness.

300 (El/Se) Introductory Field Experience 1
(0-3) Supervised field experience for
preservice teachers designated as an orienta-
tion to education. S. F grading.

303 (El/Se) Teaching in Secondary Schools 3
Prerq admission to teacher prep program.
EdPsy 301, El/Se 300. Materials and general
methods for teachers.

304 (El/Se) Introduction to Middle Level Educa-
tion 2 Prerq T & L 300. Study of adolescents;
middle level organization and instructional
strategies including field component at Lin-
coln Middle School.

306 (El/Se) [M] Survey of Elementary Reading
and Language Arts 3 Prerq admission to teacher
prep program; EdPsy 301 or c/f; T & L
300. Attitudes, knowledge, and skills needed for
successful teaching of reading and language arts.

307 (El/Se) Survey of Children’s Literature 3
Prerq admission to teacher prep program;
EdPsy 301 or c/f; T & L 300. Types, sele-
ction of children’s literature; role of teacher in
facilitating children’s experiences with books.

308/309 (El/Se) Teaching Writing K-12 2 Prerq
admission to teacher prep program; EdPsy 301
or c/f; T & L 300. For preservice teachers. Im-
proving writing skills; preparing effective
writing lessons.

310/311 (El/Se) [M] Classroom Management 2
Prerq admission to teacher prep program;
T & L 300. Strategies for management of a
classroom or laboratory. For elementary edu-
cation majors.

315/316 (El/Se) Elementary Practicum and TESA
3 (0-9) Prerq admission to teacher prep pro-
gam; EdPsy 301; T & L 300, 306; 307, 352,
371, or 385. Extended classroom experience
prior to student teaching providing gradual
classroom involvement and teaching responsi-
bility including TESA (Teacher Expectations
Student Achievement) training. S. F grading.

317/318 (El/Se) Secondary Practicum and Semi-
nar 3 (1-6) Prerq admission to teacher prep
program; Ed Psy 301; T & L 300; c/f in T & L
328; 10 hours in subject-matter major. Extended
classroom experience prior to student teaching
providing gradual teaching responsibility in-
cluding TESA, ITIP, health concerns, abuse,
HIV/AIDS, reporting procedures, S, F grading.

319 (El/Se) Literacy Practicum 1 (0-3) Practicum for
students serving as literacy tu-
tors in school and agencies; methodologies,
at-risk issues and community-school partners-
ships. S. F grading.

320/321 (El/Se) Elementary Reading Methods 3
Prerq admission to teacher prep program; EdPsy
301; T & L 300, 306. Methods and materials for
teaching reading in elementary school.

324 (El/Se) Methods of Teaching Foreign Lan-
guages 3 Same as For L 340.

328 (El/Se) [M] Classroom Management 2 Prerq
admission to teacher prep program; EdPsy
301; T & L 300; c/f in 317/318. For secondary edu-
cation majors. Strategies for the effective man-
gagement of a classroom or laboratory.

330 (El/Se) Diversity in Schools and Society 3
Gender, linguistic, cultural and learning diver-
sity; concepts, issues, approaches to educat-
ing students in a diverse society.

333 (El/Se) Introduction to English as a Second
Language (ESL) 3 Foundations of ESL with
attention to basic concepts of second language
processing in educational settings.

335 (El/Se) Bilingual Bicultural Education 3
Same as CAC 356.

352 (El/Se) Teaching Elementary Mathematics 3
Prerq admission to teacher prep program;
EdPsy 301 or c/f; Math 252: T & L 300. Meth-
ods and materials for teaching mathematics in
elementary and middle school.

371 (El/Se) Teaching Elementary Science 3
Prerq admission to teacher prep program;
EdPsy 301 or c/f; T & L 300; science GERs.
Teaching methods and materials in elementary and
middle school science.

385 (El/Se) Elementary and Middle School So-
cial Studies 3 Prerq admission to teacher prep
program; EdPsy 301 or c/f; T & L 300. Teach-
ing methods in elementary and middle school
social studies.

390 (El/Se) Elementary School Art Education 2
(1-2) Prerq EdPsy 301 or c/f. Creative meth-
ods for utilizing art media in the elementary
classroom.

401 (El/Se) Practicum in Bilingual/Multicultural
Education 2 (0-6) Prerq T & L 333, 335, or
graduate standing. Work with students from
diverse cultural and linguistic backgrounds in
an educational setting.

403/404 (El/Se) Social Foundations of Curricu-
lim 3 Prerq admission to teacher prep pro-
gam; EdPsy 301, T & L 300. Public school
curriculum.

410 (El/Se) Theoretical Foundations for the
Schooling of Language Minority Students 3
Prerq T & L 333, 335, or graduate standing.
Theoretical foundations related to research and
instructional strategies for effective schooling
of language minority students. Credit not
granted for T & L 410 and 510.

411 (El/Se) Bilingual Methods and Materials
Across Content Areas 3 Prerq T & L 333, 335,
or graduate standing. Approaches, methods,
and materials across content areas for the bilin-
412 (El/Se) Language and Cultural Factors in Mathematics 3 Prereq T & L 352 or teaching experience. Research and instructional strategies related to linguistic and cultural influences on learning math. Credit not granted for both T & L 412 and 512.

414 (El/Se) ESL Across Content Areas 3 Prereq T & L 333, or teaching experience. Research and instructional methods related to English language acquisition across content areas. Credit not granted for both T & L 414 and 514.

415 (El/Se) Semester Directed Teaching V 6 (1-15) to 16 (1-45) Prereq 2.5 p.g.a. overall in primary, supporting, and professional education core courses; completion of all required course work. By interview only. Supervised teaching in public schools (full day, full semester), including a two-hour weekly seminar reflecting on effective teaching. S, F grading.

431 (El/Se) Innovations in Reading 2 Prereq admission to teacher prep program. Aspects of teaching reading; current programs and trends; activities and materials for enrichment.

433 (El/Se) Children’s Literature in the Curriculum 2 Prereq T & L 307 or teaching experience. Theory and classroom applications for selecting and using literature and storytelling in content areas; reading, writing, language development, the arts. Credit not granted for both T & L 433 and 532.

435 (El/Se) Women and Education 3 Myths and realities of educational issues in relation to women as student and as subject matter.

445/446 (El/Se) Educational Technology Used in the Schools 2 (1-3) or 3 (2-3) Prereq admission to teacher prep program; EdPsy 301, T & L 300. Consideration of all technologies in schools, applications for their use, some production techniques and instructional methodologies.

449 (El/Se) Communicating in a Multilingual Society 3 Prereq T & L 333, 335, or graduate standing. Study of language and educational context and its relation to cultural and linguistic diversity. Credit not granted for both T & L 449 and 549.

450/451 (El/Se) Content Literacy in Middle and Secondary Schools 2 or 3 Prereq admission to teacher prep program; EdPsy 301 or cts; T & L 300. Reading and writing in content areas, grades 4-12; integrating service learning and community of learners approaches in teaching literacy skills.

452 (El/Se) Content Area Reading and Study Skills Practicum V 1-3 May be repeated for credit; cumulative maximum 3 hours. Prereq T & L 320 or 450. Development and delivery of vocabulary, comprehension, and study skills.

455 (El/Se) Educational Uses of Microcomputers 2 or 3 Prereq admission to teacher prep program; EdPsy 301 or graduate standing; T & L 300. Types and functions of educational software, evaluation criteria, designing instructional programs and classroom considerations.

462/463 (El/Se) Corrective Reading in the Classroom 2 Prereq admission to teacher prep program; EdPsy 301; T & L 300. Investigation, formulation, application of informal and formal assessment for classroom instruction; specific needs of students with reading difficulties.

465 (El/Se) Teaching Critical Thinking to Language Minority Students 3 Prereq T & L 411 or graduate standing. Critical thinking skills development for language minority students.

472 (El/Se) Technology for Language Learning 3 Prereq T & L 333, 335, or graduate standing. Computer technologies addressing the needs of language minority students and their teachers (including audio, video, graphics, and text).

480 (El/Se) Multicultural Education in a Global Society 3 Multicultural and multilingual education from a global perspective; development of multicultural curriculum. Credit not granted for more than one of T & L 480, 580, 582.

483 (El/Se) School Health Instruction 2 Prereq certified senior.

485/486 (El/Se) Teaching Global Education and Geography 2 Methods, materials and programs in global education and geography.

490 (El/Se) Instructional Practicum V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 8 hours. S, F grading.

492 (El/Se) Designing Art Programs for the Public Schools 3 Prereq T & L 390, secondary art major, or teaching experience. Preparation of preservice and in-service educators in the development of arts programs (K-12) responsive to current needs and trends.

497 (El/Se) Topics in In-Service Education V 1-3 May be repeated for credit; cumulative maximum 9 hours. New developments and applications on selected in-service and staff development topics. S, F grading.

499 (El/Se) Special Problems V 1-4 May be repeated for credit, S, F grading.

504 (El/Se) Early Childhood Programs for Children at Risk Identification of children at risk; their needs, appropriate curriculum, and program evaluation; description of parent-teacher community relationship and outreach.

506 (El/Se) Multicultural Classroom Instruction and Management 4 Instructional and management strategies for maximizing students’ opportunities to learn in a multicultural setting.

507 (El/Se) Developing Literacy in a Multicultural Setting I 3 Thoretical foundations of language arts in a multicultural setting.

508 (El/Se) Teaching Literacy in a Multicultural Setting II 3 Prereq T & L 507. Applying research-based assumptions to teaching language arts in a multicultural setting.

510 (El/Se) Theoretical Foundations for the Teaching of Language Minority Students 3 Graduate-level counterpart of T & L 410; additional requirements. Credit not granted for both T & L 410 and 510.

511 (El/Se) Teaching Poetry to Children and Young People 3 Prereq T & L 303, 307, or teaching experience. Elements and forms of poetry for children and young people; selection and utilization in the school curriculum.

512 (El/Se) Language and Cultural Factors in Mathematics 3 Graduate-level counterpart of T & L 412; additional requirements. Credit not granted for both T & L 412 and 512.

513 (El/Se) Seminar in Middle School Education 3 Prereq teaching experience. Curriculum patterns and recent research regarding instruction and materials in the contemporary middle school.

514 (El/Se) ESL Across Content Areas 3 Graduate-level counterpart of T & L 414; additional requirements. Credit not granted for both T & L 414 and 514.

515 (El/Se) The Education of Language Minority Students 3 Prereq K-12 teaching experience. Issues in the education of language minority students.

520 (El/Se) Topics in Special Student Populations V 1-4 May be repeated for credit; cumulative maximum 6 hours. Recent research, developments, issues, and/or applications in selected areas of education.

525 (El/Se) Classroom Management Seminar 2 or 3 Contemporary issues in management of elementary, middle school, and secondary classrooms.

526 (El/Se) Research in Multicultural Education 3 Prereq T & L 515 or teaching experience. Research and instructional practices focusing on multicultural education.

527 (El/Se) Seminar in Teacher Education Instruction 1-4 May be repeated for credit; cumulative maximum 4 hours. Teacher preparation program components and rationale, university teaching strategies, and evaluation methods. S, F grading.

528 (El/Se) Content Area Reading Instruction: Theory and Practice 3 For teachers, supervisors, and administrators in elementary, middle, and secondary schools; influence of research on the design of reading strategies.

530 (El/Se) Innovations in Reading 2 Graduate-level counterpart of T & L 431; additional requirements. Credit not granted for both T & L 431 and 530.

532 (El/Se) Children’s Literature Across the Curriculum 1 Prereq T & L 320 or teaching experience. Graduate level counterpart of T & L 433; additional requirements. Credit not granted for both T & L 433 and 532.

534 (El/Se) Study Skills and Content Area Instruction 2 or 3 Research and practices related to time management, concentration and memory, note-taking, listening, comprehension and thinking skills; applications in subject-matter instruction.

537 (El/Se) Seminar in Language, Literacy, and Culture 2 or 3 Prereq T & L 411; graduate standing. Interrelationships between schools, literacy, and student cultural background.

538 (El/Se) Writing Across the Curriculum 3 Writing for learning at grade levels K-12.

539 (El/Se) Innovations in Language Arts 3 Prereq T & L 303, 320, or teaching experience. The most recent developments in language arts instruction for preservice and in-service teachers K-12.

540 (El/Se) Elementary School Social Studies 3 Prereq teaching experience. Elementary structures of various social sciences; research findings related to instruction; classroom applications and materials.


545 (El/Se) Oral Language Development: Roots of Literacy 3 Prereq teaching experience. Research on children’s oral language develop-
ment; applications to elementary school reading and writing.

546 (El/Se) Teaching Written Expression in Elementary School 3 Prereq teaching experience. Research on children's written language development; application to elementary school classrooms.

547 (El/Se) Teaching Folk Literature to Children and Adolescents 3 Prereq T & L 307 or teaching experience. Folk literature as a genre in child and adolescent literature; curriculum applications; reading, language development, social studies, creative expression. (SS)

548 (El/Se) Teaching Adolescent Literature 3 Prereq T & L 307 or teaching experience. Evaluating, selecting, and using literature for middle school and teenage students. (a/y)

549 Communicating in a Multilingual Society 3 Graduate-level counterpart of T & L 449; additional requirements. Credit not granted for both T & L 449 and 549.

551 (El/Se) Psychology of Reading 2 or 3 Prereq T & L 520 or 450/451; teaching experience. Psychological, perceptual, motivational, developmental and physiological aspects of reading. (a/y)

552 (El/Se) Diagnosis and Treatment of Reading Disability 4 (3-3) Prereq T & L 320/321 or 450/451. Remedial techniques for experienced teachers, remedial reading teachers, and reading consultants; causes of disability, testing, diagnosis, and remediation; tutoring.

554 (El/Se) Elementary School Reading 2 Theory and strategies of teaching reading in elementary school classrooms.

555 (El/Se) Seminar in Literacy Development 3 May be repeated for credit; cumulative maximum 6 hours. Current and historical research in reading/language arts, infancy through college and adult years; papers presented by faculty, invited speakers, and students.

556 (El/Se) Elementary School Language Arts and Literature 6 Theory and strategies of teaching elementary school language arts and literature.

557 (El/Se) Research in Reading 2 or 3 Prereq EdPsy 505; T & L 551; teaching experience. Reading research, theoretical and applied, related to the teaching of reading.

558 (El/Se) Improving Comprehension through Literature 3 Prereq teaching experience. Key theoretical concepts and their implications for improved comprehension instruction, using children's literature.

560 (El/Se) Research in Teaching 3 May be repeated for credit; cumulative maximum 6 hours. Prereq teaching experience. Recent developments in research on teaching; both quantitative and qualitative research methodologies emphasized.

561 (El/Se) Elementary School Mathematics 3 Prereq T & L 352; Math 252; teaching experience. Research on curriculum and instruction issues in elementary school mathematics.


563 (El/Se) Seminar in Precollage Mathematics Education 3 Prereq T & L 542 or 562. May be repeated for credit; cumulative maximum 6 hours. Research on curriculum and instruction in mathematics education in grades K-12.

564 (El/Se) Elementary School Science and Math 6 Teaching methods and material for science and math that emphasize method and content integration.

571 (El/Se) Elementary School Science 3 Prereq T & L 371; teaching experience. Theories and research underlying science programs with classroom implications.

574 (El/Se) Science for All: An Individual and Multicultural Perspective 3 Prereq teaching experience. Implications of cultural and individual diversity for understanding western scientific and mathematical thought; an activity-based, educational perspective.

577 (El/Se) The At-Risk Learner 2 Strategies for working with at-risk students.

578 (El/Se) School and Community Interventions for At-Risk Students 2 How schools and communities work together to meet the at-risk challenge.

580 (El/Se) Multicultural Education in a Global Society 3 Graduate-level counterpart of T & L 480; additional requirements. Credit not granted for more than one of T & L 480, 580, 582.

582 (El/Se) Multicultural and Global Perspectives in Education 2 Concepts, theories and applications of multicultural and global perspectives in teaching and learning. Credit not granted for more than one of T & L 480, 580, 582.


586 (El/Se) Issues in At-risk Education 2 or 3 School and community resources to assist at-risk students and families.

588 (El/Se) Action Research: Teachers as Researchers 3 Prereq teaching experience. Theoretical concepts, research, issues, models, and strategies for implementation of action research.

590 (El/Se) Internship V 2-6 May be repeated for credit; cumulative maximum 12 hours. By interview only. Internship in professional positions. S, F grading.

593 (El/Se) Pre-internship and Seminar 2 (1-3) Instructional practice in diverse classroom settings and reflection on that practice. S, F grading.

594 (El/Se) Module: Art and Music Education 2 Interdisciplinary self-study module covering the theory and classroom practice of art and music.


600 (El/Se) Special Projects or Independent Study Variable credit. S, F grading.

700 (El/Se) Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

702 (El/Se) Master’s Special Problems, Directed Study, and/or Examination Variable credit. S, F grading.

800 (El/Se) Doctoral Research, Dissertation, and/or Examination Variable credit. S, F grading.

Special Education

Sp Ed 301 Education of Exceptional Children 3 Classification, developmental characteristics, and etiology of exceptional children; research and methods of instruction in the classroom.

401 Teaching Students with Disabilities 3 Prereq Sp Ed 301; certified major; c/l in Sp Ed 490 for 2 credits or graduate standing. Intervention and monitoring strategies for managing academic, social, and problem behaviors in classroom settings. Credit not granted for both Sp Ed 401 and 501.

402 Assessment and Curriculum for Students with Disabilities 4 Prereq Sp Ed 301; certified major; c/l in Sp Ed 490 for 2 credits, or graduate standing. Methods of assessment, curriculum development, and modification, and instruction for elementary-age students with mild disabilities. Credit not granted for both Sp Ed 402 and 502.

403 Secondary Education for Students with Disabilities 3 Prereq Sp Ed 301; certified major or graduate standing. Overview of practice in the schools for secondary students with disabilities; assessment, methods, and curriculum development. Credit not granted for both Sp Ed 403 and 503.

404 Professional Skills in Special Education 3 Prereq Sp Ed 401 and certified major or graduate standing. Communication, problem solving, liability, record keeping, professional development, legal issues, and program evaluation. Credit not granted for both Sp Ed 404 and 504.

409 Early Childhood Special Education 3 Prereq Sp Ed 401. Assessment, curriculum, and instructional techniques for teaching young children with handicaps and their families in a variety of settings. Credit not granted for both Sp Ed 409 and 509.

420 Teaching in Inclusive Classrooms 3 Prereq Sp Ed 401; certified majors, or graduate standing. Methods for teaching students with disabilities in general education classrooms. Credit not granted for both Sp Ed 420 and 520.

430 Special Topics in Instruction V 1-3 May be repeated for credit; cumulative maximum 6 hours. New developments in research and practice in program development.

431 Special Topics in Program Development V 1-3 May be repeated for credit; cumulative maximum 6 hours. New developments in research and practice in program development.

440 Methods in Intensive Educational Supports 3 Prereq Sp Ed 301, certified major, or graduate standing. Assessment, curriculum development and modification, and instructional methods for students with severe disabilities. Credit not granted for both Sp Ed 440 and 540.

478 Career Services and Programs for Persons with Disabilities 3 Same as CoPsy 478.

490 Practicum in Special Education V 1-3 May be repeated for credit; cumulative maximum 8 hours. Supervised field experience in special education. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

501 Teaching Students with Disabilities 3 Prereq c/l in Sp Ed 590 for 2 credits. Graduate-level counterpart of Sp Ed 401; additional requirements. Credit not granted for both Sp Ed 401 and 501.

502 Assessment and Curriculum for Students with Disabilities 4 Graduate-level counterpart of Sp Ed 402; additional requirements. Credit not granted for both Sp Ed 402 and 502.

503 Secondary Special Education for Students with Disabilities 3 Graduate-level counterpart
Education

P-3 CERTIFICATE PROGRAM: EARLY CHILDHOOD
Candidates for the P-3 Early Childhood primary endorsement will satisfy degree requirements through the Department of Human Development. For certification purposes, the K-8 elementary education endorsement is required with the P-3 primary endorsement. The student should include the following course work within GER selections to meet prerequisite and admission to teacher preparation requirements: Engl 101, 201; FSHN 130, GenEd 110 and 111; Psych 105, Soc 101; SpCom 102; Math Proficiency (Math 251 and 252); 4 hours physical sciences and 3 hours sciences.

Early Childhood
Primary Endorsement/Major: 38 hours


Supporting Endorsement/Minor: 23 hours
This endorsement is available only to students completing the K-8 Elementary Education Certificate Program: H D 101, 201, 204, 302, 342, 344, 449, plus one from: H D 403, 410, 420.

K-8 CERTIFICATE PROGRAM: ELEMENTARY EDUCATION
Pullman campus undergraduate program:
Primary Endorsement/Major: 61 hours

Candidates for the K-8 elementary education primary endorsement undergraduate program will satisfy degree requirements of the Department of Teaching and Learning. The degree will be bachelor of arts. The student should include the following course work within GER selections to satisfy prerequisite, degree, and admission to teacher preparation requirements: Bio S 102, Chem 101 or Geol 101; Engl 101; 201 or 302; Math 251, 252; Ph S 250, Psych 105, T & L 300. In addition to GERs the department requires 6 additional elective hours from the arts, humanities, or social sciences. It is recommended that candidates for K-8 certification select a supporting endorsement from P-3, 4-12, or K-12 offerings.

Pullman campus graduate program:
Primary Endorsement/Major: 76-79 hours
Ed Ad 507, EdPsY 502, 505, 509, F A 390, H D 511, Kin 473, Math 251, 252, Mus 388, T & L 300, 315/316, 352, 415, 445/446, 483, 525, 528, 530, 532; 539 or 546; 540, 544, 547, 551, 571, 702.

Tri-Cities campus graduate program:
Primary Endorsement/Major: 45 hours
Ed Ad 506, EdPsy 503, 505, T & L 506, 507, 508, 532, 542, 564, 586, 593, 594, 595, 702

Vancouver campus graduate program:
Primary Endorsement/Major: 45 hours
Ed Ad 506, 511, EdPsy 503, 504, Kin 586, T & L 524, 540, 554, 556, 564, 593, 594, 595, 702

Supporting Endorsement/Minor: none

4-12 CERTIFICATE PROGRAM
Candidates preparing for 4-12 secondary, specific subject matter teacher certification must complete course work in the Secondary Professional Core and course work listed below for one of the 4-12 primary endorsement program areas. The candidate will certify a major with the subject matter department or in General Studies. In addition, the candidate must meet minimum admission requirements, make application, and be formally admitted to teacher preparation prior to enrolling in any professional education courses beyond T & L 300. It is recommended that candidates plan to begin professional education courses in the sophomore or junior year to meet sequencing requirements. Students should include the following courses within their GER selections to fulfill prerequisite and admission to teacher preparation requirements: Engl 201, 301, or 302; Psych 105, SpCom 102.

It is recommended that students complete a supporting endorsement/minor in addition to the primary endorsement/major.

All candidates preparing for a 4-12 certificate shall complete the following core of professional education course work:

4-12 PROFESSIONAL EDUCATION CORE
EdPsy 301, 402; T & L 300, 303, 317/318, 328, 404, 414, 420, 450/451, 499.

Agriculture
Primary Endorsement/Major: 52 hours
A S 101, Ag Ec 210; 340 or 350; Ag Ed 342, 345, 407, 440, 442, 471; AgTM 201, 402, CropS 101 or 201, 305 or upper-division CropS elective; Hort 201, 234, Soils 201, plus 21 additional credits in technical agriculture selected with adviser approval. Twenty credits in technical agriculture must be upper division. A valid first aid card is required for vocational certification.

The following 23-hour Biology Supporting Endorsement is limited to Agricultural Education majors only: Ag Ed 342; Bio S 103, 104, CropS 105 or PI P 429; Ectom 340; GenCB 301, NATRS 303 or Soils 301.

Anthropology
Primary Endorsement/Major: 30 hours
Anth 203, 230, 260; one from Anth 201, 301, 303, 309, 316; one from Anth 306, 307, 320, 327; one from Anth 231, 330, 333, 336, 370; one from Anth 304, 401, 402, 418, 419, 428; Anth 463 or 466; Anth 450 or 456; one from Anth 101 or 198; 130, 250, 256, 300, 336, 350, 355, 430, 435, 436, 446, 466.

Supporting Endorsement/Minor: 18 hours
Anth 101; one from Anth 203, 301, 303, 306, 316, 320; one from Anth 230, 231, 330, 336, 370; one from Anth 260, 463, 466; one from Anth 350, 355, 450; 3 credits upper-division Anth. Program must include 9 hours upper division.

Biology
Primary Endorsement/Major: 35 hours
BC/CP 364; Bio S 103, 104, 372, 430; GenCB 301, 450; Zool 405, 8 elective hours of biological sciences from bacteriology, Bot, GenCB and Zool.

Supporting Endorsement/Minor: 21 hours
Bio S 103, 104, 372, 430; GenCB 301; plus additional hours from the life sciences to equal or exceed 21 hours. Bot 332, Zool 251, 315 recommended.

Chemistry
Primary Endorsement/Major: 33 hours
Chem 105 or 115; Chem 106 or 116; Chem 220, 222, 340, 341, Hist 381 or 382, Ph S 430. Additional 9 hours from 300- and 400-level Chem courses. (Chem 331, 333 suggested.)

Supporting Endorsement/Minor: 17-21 hours
Chem 105 or 115; Chem 106 or 116; plus Chem 220, 222; 240 or 340, 341; Ph S 430.

Comparative Religion
Primary Endorsement/Major: None
Supporting Endorsement/Minor: 21 hours
Engl 335; Phil 101, 207; 314 or 315; one of Anth 303, Hist 273, 308, Soc 341; one of Phil 201, 220, 260, 460; one of Phil 300, 305, 310, 325, 335, 340, 420.

Computer Science
Primary Endorsement/Major: 39 hours
Cpt S 150, 153, 250, 350, 405; E E 214, 314; Math 216; 14 hours of electives from Cpt S courses except Cpt S 105.
Supporting Endorsement/Minor: 24 hours
Cpt S 150, 153, 250, 350, 405; E E 214, 314, Math 216.

Drama
Primary Endorsement/Major: 47 hours
Drama 163, 260, 264, 294; 296 or 496; 360 or 463; 361, 362, 363, 365, 366, 402, 460; 464 or 468; 467, 494.
Supporting Endorsement/Minor: 20 hours.
Drama 163, 260; 296 or 496; 361, 362; 365 or 366; 464 or 468.

Earth Science
Primary Endorsement/Major:
Student must receive a departmental degree in geology plus Astr 135, 390, C E 174, Ph S 430.
Supporting Endorsement/Minor: 22 hours
Astr 135, 390, C E 174; Geol 102, 306, 310, Ph S 430; plus one from Geol 201, 340, or 350.

English
Primary Endorsement/Major: 39 hours
Engl 209, 210, 302; 305 or 362; 323, 495 (or one from 492, 493, 494); two from Engl 255, 256, 354, 443, 458, Anth 250, 226, 350, 355, 450; Engl 380, 381 or 382; 383, 384, 385 or 386; 387, 388, or 389; 333, 334, 335, 339, 366, 368 or 370; 309, 311, 312, 321, 341, 345 or 346.
Supporting Endorsement/Minor: 21 hours
Engl 209, 210, 255, 302, 323, plus 6 additional hours from courses numbered above 300.

English/Language Arts
Primary Endorsement/Major: 57 hours
Engl 209, 210, 302; 305 or 362; 323, 495 (or one from 492, 493, 494); two from Engl 255, 256, 354, 443, 458, Anth 250, 226, 350, 355, 450; Engl 380, 381 or 382; 383, 384, 385 or 386; 387, 388, or 389; 333, 334, 335, 339, 366, 368 or 370; 309, 311, 312, 321, 341, 345 or 346. Plus at least 6 credits from each of the following groups: Journalism Com 295, 410 or 415; Jour 305, 330 or 425. Speech SpCom 102 or 302; 185, 235, 385 or 485; Com 245; 251 or 351; 324 or 344; Drama 163, 260, 296, 361; 362, 365 or 366; 396, 464 or 468.
Supporting Endorsement/Minor: None

History
Primary Endorsement/Major: 42 hours
36 hours of Hist of which 21 must be upper-division, including 6 hours of U.S., 6 hours of European, 6 hours of other fields (Africa, Asia, Canada, Latin America). Required courses: Hist 101, 102, 110, 111; one of Hist 230, 231, 270, 272, 273, 275; Hist 422, 469, 480 (not counted as part of the 36 hours); one from CAC 101, 111, 131, 151, 171, W St 200 or an approved substitute. A minor (18-21 hours) is required for a degree in history. It is suggested that this minor be one of the supporting endorsements for teacher certification.
Supporting Endorsement/Minor: 21 hours
Hist 101, 102, 110, 111; 422; 3 hours from Hist 230, 231, 270, 272, 273, 275; plus 3 hours of upper-division Hist.

Home and Family Life
Primary Endorsement/Major: 60 hours
Supporting Endorsement/Minor: 21 hours
AGMT 217; FSHN 120, 121; or 130; H D 101, 204, 320, 406, I D 101 or 202. The supporting endorsement qualifies students to teach home economics through eighth grade only.

Journalism
Primary Endorsement/Major: 36 hours
Students will be certified as majors in journalism if they earn a 2.7 g.p.a. in the following core courses and have a 2.5 cumulative g.p.a.: Com 101, 245, 270, 295. Upon certification the following core courses will be completed: Com 415, Jour 305, 330, 425, 475; one of Com 321, 410, 440, 450, 460, SpCom 324, 385, 401, 424; one of Com 409, 420, 470, 481, SpCom 435, 485, 488; plus one option from Jour 495 (6 credits) OR 495 (3 credits) plus 3 credits from Com Lit or Com Devel, OR 3 credits from Com Lit plus 3 credits from Com Devel.
Supporting Endorsement/Minor: 18 hours
Com 295, 410, 415; Jour 305, 330, 425.

Mathematics
Primary Endorsement/Major: 35 hours
Cpt S 153, Math 171, 172, 220, 273, 303, 315, 320, 330; 360 or 443; 398 plus one additional 3-hour Math course numbered above 300.
Supporting Endorsement/Minor: 19 hours
Math 171, 172, 220, 303; 325 or 360. In addition, the Math Department recommends Math 330.

Philosophy
Primary Endorsement/Major: None
Supporting Endorsement/Minor: 21 hours
Phil 101; 201; 260; 335 or 340; one from Phil 360, 365, 370, 460; two from Phil 300, 305, 310, 325, 420.

Physics
Primary Endorsement/Major: 30 hours
Astr 345 or Phys 380; Ph S 430; Phys 201, 202, 303, 320, 330 or 341; 410, 415, 499 (4 hours includes observing Phys 101 and 102.)
Supporting Endorsement/Minor: 21 hours
Ph S 430; Phys 201, 202, 303, 340, 499 (4 hours includes observing Phys 101 and 102.)

Political Science
Primary Endorsement/Major: 57 hours
Astr 345 or Phys 380; Phys 201, 202, 303, 304; 320, 330, or 341; 410, 415, 499 (4 hours includes observing Phys 101 and 102.)
Supporting Endorsement/Minor: 21 hours
Ph S 430; Phys 201, 202, 303, 340, 499 (4 hours includes observing Phys 101 and 102.)
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.

PREVETERINARY REQUIREMENTS

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>1. Arts and Humanities</td>
<td>6</td>
</tr>
<tr>
<td>2. Communication Proficiency</td>
<td>6</td>
</tr>
<tr>
<td>(3 hours must be in written communications)</td>
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</tr>
<tr>
<td>3. Intercultural Studies</td>
<td>3</td>
</tr>
<tr>
<td>4. Social Sciences</td>
<td>6</td>
</tr>
<tr>
<td>5. World Civilizations</td>
<td>6</td>
</tr>
<tr>
<td>6. Math Proficiency</td>
<td>3</td>
</tr>
</tbody>
</table>

Courses to meet the above requirements must be selected from the list under the General Education Requirements for Graduation section of this catalog.

7. Physical and Biological Sciences 34

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; physics; zoology or general biology; genetics.

8. Electives
   Totals Hours Required 60

BACHELOR OF SCIENCE DEGREE IN VETERINARY SCIENCE

The Bachelor of Science degree in Veterinary Science combines credits earned in both the preprofessional and professional programs. The degree is available only to students who have been admitted to the professional programs. This degree was designed to benefit veterinary medical students in obtaining employment, applying for scholarships, and qualifying for graduate-level course enrollments. A minimum of 120 semester hours is required for the degree. The minimum basic requirements are:

| Arts and Humanities, and Social Sciences (not less than 6 hours in each field) | 12 |
| Communication Proficiency                                                   | 6  |
| Intercultural Studies                                                        | 3  |
| World Civilizations                                                         | 6  |
| Mathematics Proficiency                                                     | 3  |
| Physical and Biological Sciences and recommended electives                  | 33 |
| 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 | |
| Total semester hours                                                       | 60 |

| Total semester hours | 120 |

Schedule of Studies

PROFESSIONAL CURRICULUM

The professional curriculum for the Doctor of Veterinary Medicine degree is outlined below. A total of 147 semester hours are required for graduation. All courses required in the professional program are upper-division courses.

First Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>V M 356 Professional Orientation</td>
<td>2</td>
</tr>
<tr>
<td>V M 401 Gross Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>V M 406 Cell Biology</td>
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Second Semester

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>V M 402 Gross Anatomy</td>
<td>2</td>
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<tr>
<td>V M 430 Immunology</td>
<td>3</td>
</tr>
<tr>
<td>V M 445 Pathology I</td>
<td>3</td>
</tr>
<tr>
<td>V M 517 Neuroscience</td>
<td>3</td>
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<tr>
<td>V M 518 Physiology</td>
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Second Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>V M 409 Epidemiology</td>
<td>2</td>
</tr>
<tr>
<td>V M 432 Bacteriology</td>
<td>4</td>
</tr>
<tr>
<td>V M 446 Pathology II</td>
<td>6</td>
</tr>
<tr>
<td>V M 460 Lab Diagnosis</td>
<td>3</td>
</tr>
<tr>
<td>V M 531 Pharm/Tox I</td>
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Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>V M 431 Virology</td>
<td>3</td>
</tr>
<tr>
<td>V M 451 Parasitology</td>
<td>5</td>
</tr>
<tr>
<td>V M 463 Small An Med I</td>
<td>4</td>
</tr>
<tr>
<td>V M 481 Radiology</td>
<td>3</td>
</tr>
<tr>
<td>V M 533 Pharm/Tox II</td>
<td>4</td>
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Third Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>V M 414 Appld Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>V M 433 Public Health</td>
<td>2</td>
</tr>
<tr>
<td>V M 457 Clin Anesthesies</td>
<td>2</td>
</tr>
<tr>
<td>V M 461 Large An Med I</td>
<td>6</td>
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<tr>
<td>V M 464 Small An Med II</td>
<td>5</td>
</tr>
<tr>
<td>V M 472 Surgery I</td>
<td>3</td>
</tr>
<tr>
<td>V M 474 Surgery Lab I OR</td>
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Second Semester

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<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>V M 414 Applied Nutrition</td>
<td>2 or 3</td>
</tr>
<tr>
<td>V M 462 Large An Med II</td>
<td>6</td>
</tr>
<tr>
<td>V M 473 Surgery II</td>
<td>2</td>
</tr>
<tr>
<td>V M 477 Theriogenology</td>
<td>4</td>
</tr>
</tbody>
</table>

Electives

Fourth Year

The fourth year begins immediately after the end of the spring semester of the third year (May) and continues for 12 consecutive months. Fourth-year professional students are required to enroll in course work for a minimum of 44 weeks of their final year. All students must participate in mandatory clinical rotations in the large- and small-animal clinics, including emergency services and anesthesia. In addition, each student must select a species-oriented curricular track for the fourth year. Each track has its own course requirements and elective opportunities. All students must prepare and present a senior paper under faculty supervision.

Honors Program in Veterinary Medicine for Selected Students

A new program for admission of highly selected and academically qualified students to the Washington State University College of Veterinary Medicine has been established. This program admits students directly to the university and the college upon graduation from high school. This is a six-year program leading to the Doctor of Veterinary Medicine degree after satisfactory completion of the curriculum. It consists of two years of a unique under-graduate preprofessional education and the four-year professional program. The first two years of this program are a combination of Honors Program courses and regular university classes which fulfill the preveterinary requirements. The last four years are the traditional Doctor of Veterinary Medicine program plus the completion of an honors thesis. Application should be made to the Honors Program as soon as students decide to enter WSU, because number of positions is limited.

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. Students 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


Description of Courses

For explanation of symbols, see page 53.

Veterinary Anatomy

V An 308 Functional Anatomy of Domestic Animals 3 (2-3) Prereq Bio S 104; Chem 102. For majors in the College of Agriculture and Home Economics. Macroscopic functional morphology of domestic animals.
413 Advanced Anatomy 3 (1-6) May be repeated for credit; cumulative maximum 6 hours. Prereq V M 402. Microscopic and gross anatomy of selected organ systems. Cooperative course taught by WSU, open to UI students (VS 413).(g)

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

513 Advanced Neuroanatomy 4 Prereq anatomy or physiology course that included neuroanatomy. Advanced gross and microscopic anatomy of the mammalian central nervous system.

592 Seminar 1 May be repeated for credit. Cooperative course taught by WSU, open to UI students (VS 592).

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. For MS in veterinary science only. S, F grading.

800 Doctoral Research, Dissertation, and/or Examination Variable credit. For PhD in veterinary science only. S, F grading.

Veterinary Medicine

V M

350 Skeletal Preparation 1 May be repeated for credit; cumulative maximum 3 hours. Technique of skeletal preparation is mastered by undertaking and completing project. Skeleton becomes property of student. S, F grading.

401 Gross Anatomy 5 (4-15) Prereq admission to Vet Med or graduate student in Vet S. Detailed macroscopic functional morphology of domestic animals. Cooperative course taught by WSU, open to UI students (VS 401).(g)

403 Veterinary Anatomy 2 F (0-6) Prereq V M 401. Detailed macroscopic functional morphology of domestic animals. Cooperative course taught by WSU, open to UI students (VS 403).(g)

406 Veterinary Cell Biology 10 (9-3) Prereq first year in Vet Med. Principles of veterinary microanatomy and physiology; relationships of cell morphology to function.(g)

511 Applied Anatomy of Large Animals 2 (1-3) Prereq V M 402. Applied anatomy of large animals including surgical anatomy. Cooperative course taught by WSU, open to UI students (VS 511A).

512 Applied Anatomy of Small Animals 2 (1-3) Prereq V M 402. Applied anatomy of small animals including surgical anatomy. Cooperative course taught by WSU, open to UI students (VS 512B).

517 Mammalian Neuroscience 3 (2-3) Prereq V M 406. Neuroanatomical and neurophysiological bases of veterinary neurology, emphasizing central and peripheral sensory and motor systems. Cooperative course taught by WSU, open to UI students (VS 517).

518 Veterinary Physiology 5 (4-3) Prereq V M 519. Physiology of domestic animals. Cooperative course taught by WSU, open to UI students (VS 518).

531 Pharmacology/Toxicology I 5 (4-3) Prereq third year in Vet Med. Pharmacology and toxicology of the systems of domestic animals.

533 Pharmacology/Toxicology II 4 (3-3) Prereq V M 531. Pharmacology and toxicology of the systems of domestic animals. Continuation of V M 531. Cooperative course taught by WSU, open to UI students (VS 533).

V Ph 465 Reverence for Life 1 or 2 Ethical and scientific issues relating to human responsibilities to all forms of life with emphasis on animals.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.(g)

501 Perspectives in Pharmacology and Toxicology 1 Prereq P/T major. By interview only. Historical perspectives, current characteristics and trends in pharmacology and toxicology. S, F grading. Cooperative course taught by WSU, open to UI students (VS 501B).

505 Design and Analysis of Biomedical Experiments 4 Prereq Math 107, statistics course. Design of experiments with application to clinical and basic biomedical research; choosing, applying, and evaluating appropriate data analysis methods.

507 Principles of Pharmacokinetics 3 Prereq P/T 506. Renal, gastrointestinal, endocrine, blood and central nervous system pharmacology; antibiotic and chemotherapeutic agents. Cooperative course taught by WSU, open to UI students (VS 507).

521 Cardiorespiratory Systems 3 (2-3) A system and quantitative treatment of physiological processes in the heart, blood vessels, and lungs. (a/y) Cooperative course taught by WSU, open to UI students (VS 521).

525 Special Topics in Veterinary and Comparative Pharmacology 1 (0-3) Prereq V M 531. Practical veterinary pharmacology techniques and clinical application.

528 Behavioral Mechanisms in Physiology 3 Examination of the physiological transduction mechanism which enables animals to interact behaviorally with their environment. (a/y)

529 Cellular and Molecular Neurobiology 3 Prereq biochem course. Basic biochemical processes in the nervous system and their significance for normal and abnormal function. (a/y) Cooperative course taught by WSU, open to UI students (VS 529).

530 General and Comparative Neurophysiology 4 Same as Zool 530.

534 Advanced Neurophysiology 3 Nervous system from molecular to the behavioral level; electrophysiology. (a/y)

535 Pathophysiology of Blood 3 (2-3) Physiology of erythron, hemostatic system and transfusion medicine. (a/y) Cooperative course taught by WSU, open to UI students (VS 535B).

536 Synaptic Organization of the Brain 3 Structure-function relations of synapses of local circuits of the mammalian brain. (a/y)

537 Physiology and Biochemistry of Neuropeptides 3 Prereq BC/BP 563, V M 517, or Zool 553. Synthesis and metabolism, use as neurotransmitters and neurohormones, mechanisms of receptor interactions. Cooperative course taught by WSU, open to UI students (VS 537B).

538 Neuroendocrinology 3 Role of the central nervous system in controlling reproductive functions, stress, growth, biological rhythm and behavior. Cooperative course taught by WSU, open to UI students (AnSc 538).

541 Biochemistry 3 Prereq Chem 342. Intermediate biochemistry; introduction to metabolism and the chemical and physical properties of biomolecules. Cooperative course taught by UI (Biochem 541), open to WSU students.

542 Biochemistry 3 Prereq Chem 342. Intermediate biochemistry; introduction to metabolism and the chemical and physical properties of biomolecules. Cooperative course taught by UI (Biochem 542), open to WSU students.

555 General and Cellular Physiology 4 (3-3) Same as Zool 555.

557 Advanced Mammalian Physiology 4 Same as Zool 557.

564 Brain-Endocrine Interaction 3 Neuroanatomy, physiology and neuropharmacology of the neuroendocrine and its role; the integrative regulation of endocrine and visceral functions. (a/y)

590 Seminar 1 May be repeated for credit; cumulative maximum 6 hours. Seminar by advanced graduate students and faculty both in VCAPP and around WSU on their research areas. S, F grading.

592 Research Topics in Physiology 2 May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies within a specific and highly focused domain of physiological research.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. For MS in veterinary science only. S, F grading.

Program in Neuroscience


Description of Courses

For explanation of symbols, see page 53.

Neuroscience

Neuro

505 Generation, Degeneration, Regeneration in the Nervous System 2 Same as Zool 505.

513 Advanced Neuroanatomy 4 Same as V An 513.

517 Mammalian Neuroscience 3 (2-3) Same as V M 517

528 Behavioral Mechanisms in Physiology 3
Same as V Ph 528.

529 Cellular and Molecular Neurobiology 3 Same as V Ph 529.

532 Nervous System 5 (4-3) Same as Med S 532.

534 Advanced Neurophysiology 3 Same as V Ph 534.

536 Synaptic Organization of the Brain 3 Same as V Ph 536.

537 Physiology and Biochemistry of Neuropeptides 3 Same as V Ph 537.

538 Neuroendocrinology 3 Same as V Ph 538.

539 Research Topics in Neuroscience 2 May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies within a specific and highly focused domain of neuroscience.

540 Neuropsychopharmacology 3 Automatic, neuro and behavioral pharmacology; basic information about drug classes, physiological and therapeutic effects.

561 Receptorology 2 Same as P/T 561.

564 Brain-Endocrine Interaction 3 Same as V Ph 564.

574 Physiological Psychology 3 Same as Psych 574.

577 Behavioral Pharmacology 3 Same as Psych 577.

579 Behavioral Neuroscience 3 Same as Psych 579.

584 Sensory Basics of Behavior 3 Same as Psych 584.

586 Seminar in Physiological/Sensory Psychology 3 Same as Psych 586.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. S, F grading.

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

Department of Veterinary Clinical Sciences


Description of Courses

For explanation of symbols, see page 53.

Veterinary Medicine

V M

409 Epidemiology 2 Minimally quantitative survey in which health is framed as a population phenomenon.

414 Veterinary Clinical Nutrition V 1-3 Same as A S 414.


460 Laboratory Diagnosis 3 (2-3) Prereq second year in Vet Med. Laboratory diagnostic procedures and interpretation.


468 Small Animal Transfusion Therapy 1 (0-3) Prereq V MS 460, 463, 469. Blood collection, storage, pretransfusion testing, component therapy and transfusion reactions.


473 Surgery II 2 Prereq V M 472. Large animal surgical techniques.

474 Surgery Laboratory I 1 (0-3) Prereq c// in V M 472. Surgical exercises using small animals.

475 Surgery Laboratory II 1 (0-3) Prereq c// in V M 472. Surgical exercises minimizing use of living animals.

476 Surgery Laboratory III 1 Prereq third year Vet Med. Surgical exercises using large animals.


478 Small Animal Soft Tissue Surgery Elective 1 Prereq V M 471, 474/475, c// in 472. Instruction of advanced surgical techniques, primarily involving canine and feline soft tissue.


485 Diseases and Management of Pet and Wild Birds 2 (1-3) Prereq third year Vet Med. Management and handling, diagnosis and treatment of various disease conditions of pet and wild birds.

486 Equine Lameness II 1 (0-3) Prereq V M 473, 483 or c//. Discussion and application of the principles of diagnosis and treatment of musculoskeletal disorders of the horse.


509 Analytic Epidemiology 2 (1-3) Prereq statistics course. Problem-solving methods related to health events and other occurrence phenomena.

521 Clinical Medicine II 4 (0-12) Prereq V M 462. Clinical medicine training in diseases of food animals and horses; clinic rounds and diagnostic procedures. (OSU)

522 Clinical Surgery II 4 (0-12) Prereq V M 473. Clinical surgery, treatment and care of food animals and horses; clinic rounds; surgery, lameness, and diagnostic procedures. (OSU)

523 Clinical Service II 4 (0-12) Prereq V M 460. Rotation through pathology, radiology, microbiology, and necropsy. (OSU)

524 Rural Veterinary Practice II 4 (0-12) Prereq V M 462. Farm calls provide on-the-farm instruction on food animals and horses; theriogenology and herd health instruction. (OSU)

525 Small Animal Medicine and Surgery Lab 4 (0-12) Prereq V M 462. Orthopedic surgery, soft tissue surgery, specialty medicine, and emergency medicine and intensive care. (OSU)

541 Avian Medicine V 1 (0-3) - 4 (0-12) Prereq fourth year Vet Med. Avian disease diagnosis of commercial and pet birds; field and necropsy laboratory participation.


561 Small Animal Medicine Elective V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq fourth year veterinary student. Elective clinical subjects (exotic animal medicine, neurology, local practice, referral medicine).


563 Anesthesia Case Management 4 (0-12) Prereq fourth year Vet Med. Physiology, pharmacology, and pathophysiology of disease as they affect the clinical practice of anesthesia in animals.

564 Clinical Neurology V 1 (0-3) - 3 (0-9) Prereq 4th year DVM student. Rotation will emphasize neuroanatomical localization, differential diagnosis, diagnostic testing, and treatments.

565 Small Animal Surgery 4 (0-12) Prereq fourth year Vet Med. Surgical cases in clinic, ward round, case discussions by students, seminars by faculty, designed surgical exercises.

566 Small Animal Surgery Elective V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq fourth year vet med. Elective clinical surgery subjects (orthopedic, soft tissue, etc.).

567 Small Animal Surgery 4 (0-12) Same as V M 565.

568 Pharmacy and Therapeutics I 1 (0-3) Prereq fourth year Vet Med. One-week overview of Washington and federal drug laws, inventory control, formulary management, therapeutics for a successful practice.

570 Large Animal Surgery 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq fourth year Vet Med. Clinical surgery, treatment and care of patients; clinical rounds; exercises in surgery, lameness and diagnosis procedures.

571 Equine Medicine and Surgery Elective V 1 (0-3) - 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq fourth year vet med. Elective clinical subjects in equine surgery and equine medicine.

575 Large Animal Medicine 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq fourth year Vet Med. Clinical experience

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in diseases of cattle, swine, and sheep; rotation through clinic, ambulatory and swine program.

576 Epidemiology of Diseases 2 (0-6) May be repeated for credit; cumulative maximum 8 hours. Prereq V M 409. Principles of disease outbreak investigations, host-agent-environment interactions, and intervention strategies in animal populations. Field trips required.

577 Theriogenology V 1 (0-3)-4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq fourth year Vet Med. Elective clinical theriogenology subjects in large and small animals.

578 Preventive Medicine V 1 1 (0-3)-4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq fourth year Vet Med. Preventive medicine and management practices related to control of animal diseases (Caldwell).

579 Food Animal V 1 (0-3)-4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Prereq fourth-year veterinary student. Elective clinical subjects in food animal diseases and herd health/preventive medicine.

580 Technical and Diagnostic Radiology V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 4 hours. Prereq fourth-year Vet Med. Laboratory exercises and instructional sessions to increase proficiency in clinical diagnostic radiology.

581 Clinical Pathology V 1 (0-3) - 4 (0-12) May be repeated for credit; cumulative maximum 4 hours. Prereq fourth year Vet Med. Clinical laboratory diagnosis and interpretation.

590 Externship V 1-4 May be repeated for credit; cumulative maximum 4 hours. Prereq fourth year Vet Med. Theory of practice of veterinary medicine in a non-university situation. S, F grading.

591 Guided Preceptorship 1 (0-3) or 2 (0-6) Prereq fourth year Vet Med. Guided preceptorship in an accepted extramural clinical or laboratory setting.

599 Advanced Clinical Elective V Prereq fourth year Vet Med. Advanced clinical subjects developed as courses for fourth year veterinary students.

Veterinary Clinical Medicine and Surgery

V MS

520 Accidents and Diseases 3 For majors in agriculture. Common diseases and injuries of farm animals. (a/y)

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

528 Seminar in Clinical Medicine 1 May be repeated for credit.

583 Advanced Anesthesiology V Prereq DVM degree. Advanced veterinary anesthesiology as applied to clinical practice.

584 Comparative Theriogenology 1 Prereq DVM degree. Lectures from WSU College of Veterinary Medicine and Department of Animal Sciences and from UI Department of Animal and Veterinary Sciences.

585 Selected Topics in Advanced Clinical Neurology 1 or 2 May be repeated for credit; cumulative maximum 10 hours. Prereq DVM degree. Advanced veterinary neurology as applied to clinical practice.

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. Cooperative course taught by WSU, open to UI students (VS 587).

589 Advanced Clinical Veterinary Medicine V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq DVM degree. Special topics.

591 Advanced Clinical Diagnosis V 1-3 May be repeated for credit; cumulative maximum 6 hours. Prereq DVM degree. Advanced course in systems clinical and laboratory examination.

592 Seminar 1 May be repeated for credit. Cooperative course taught by WSU, open to UI students (VS 592). S, F grading.

594 Advanced Small Animal Surgery 3 (2-3) May be repeated for credit; cumulative maximum 6 hours. Prereq DVM degree. Clinical experimental techniques.

595 Advanced Laboratory Diagnosis V 1-3 May be repeated for credit; cumulative maximum 6 hours. 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.

598 Surgery Residents Seminar 1 May be repeated for credit. Prereq DVM degree. Surgery residents’ and interns’ presentations of case reports, literature reviews and research. S, F grading.

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. For MS in veterinary science only. S, F grading.

800 Doctoral Research, Dissertation, and/or Examination Variable credit. For PhD in veterinary science only. S, F grading.

Department of Veterinary Microbiology and Pathology


Description of Courses

For explanation of symbols, see page 53.

Veterinary Medicine

V M

356 Professional Orientation and Ethics 2 (1-3) Orientation to and ethics of the veterinary medical profession for first year veterinary students. S, F grading.

430 Veterinary Immunology 3 (2-3) Prereq major in Vet Med or graduate student in Vet S. Immunology for the professional veterinary student. Cooperative course taught by WSU, open to UI students (VS 430). (g)

431 Veterinary Virology 3 Prereq major in Vet Med or graduate student in Vet S. Virology for the professional veterinary student. Cooperative course taught by WSU, open to UI students (VS 431). (g)

342 Veterinary Bacteriology 4 (3-3) Prereq second year Vet Med. Bacteria that produce disease in animals. Cooperative course taught by WSU, open to UI students (VS 432). (g)

433 Veterinary Medicine and Human Health 2 Prereq third year Vet Med. Preparation for veterinary students in public health and food hygiene. (g)

445 [M] Pathology I 3 (2-3) Prereq V M 518. Structural and functional alterations in disease; elementary oncology. Cooperative course taught by WSU, open to UI students (VS 445). (g)

446 [M] Pathology II 6 (5-3) Prereq V M 445. Principles of system and organ response to injury, and the effects of injury/disease on the animal host. Cooperative course taught by WSU, open to UI students (VS 446B). (g)

451 Veterinary Parasitology 4 (3-3) Prereq second year Vet Med. Arthropods, protozoa, and helminths of veterinary importance; their host-parasite relationship and control. Cooperative course taught by WSU, open to UI students (VS 451). (g)

454 Special Animal Medicine V 1-3 Prereq third year Vet Med. Handling, restraint, care, normative features, procedures and diseases of unusual animals as pets or those used in food production or research. Cooperative course taught by WSU, open to UI students (VS 454). (g)

541 Avian Medicine 4 (0-12) Prereq fourth year Vet Med. Laboratory diagnosis and pathology of avian (pet bird and commercial fowl) diseases.

581 Advanced Services 4 (0-12) Prereq fourth year Vet Med. Advanced study in diagnostic pathology, toxicology, and microbiology.

Veterinary Microbiology

V Mic

435 Disease Concepts for Wildlife Biologists 3 Biologic aspects of infectious diseases and environmental contaminants in wild mammalian and avian populations. Cooperative course taught by WSU, open to UI students (VS 435/WLF 444). (g)

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

531 Mechanisms of Immune Regulation in Laboratory and Domestic Animals 3 Prereq Micro 412. Analysis of immune regulation in vertebrates; ontology, phylogeny, immune regulation. Cooperative course taught by WSU, open to UI students (VS 531B).

532 Virology 3 Prereq BC/BP 364; Micro 414 or V M 431. Advanced topics in basic virology. (a/y) Cooperative course taught by WSU, open to UI students (VS 532B).

535 Advanced Readings in Veterinary Microbi-
ology 1 (0-3) May be repeated for credit. Prereq fourth year in Vet Med or graduate student in Vet S. Supervised reading program which peruses publications of intermediate technical difficulty and advanced textbooks. Cooperative course taught by WSU, open to UI students (VS 536).

536 Diagnostic Microbiologic Conference 1 (0-3) May be repeated for credit. Prereq graduate student in Vet S. Identification of animal pathogens in clinical material. Cooperative course taught by WSU, open to UI students (VS 536).

537 Diagnosis of Viral and Rickettsial Diseases of Domestic Animals 3 (1-6) Prereq V M 430, 431, 446. Clinical, pathological, and laboratory diagnosis of viral and rickettsial diseases of domestic animals. Cooperative course taught by WSU, open to UI students (VS 537A).

541 Advanced Diagnostic Microbiology 1 (0-3) May be repeated for credit; cumulative maximum 8 hours. Prereq V M 430, 431, 432. Microbiology laboratory for performing and interpreting virologic, serologic, and related tests for the diagnosis of animal diseases.

572 Advanced Topics in Microbiology, Parasitology, or Immunology V1-3 May be repeated for credit; cumulative maximum 4 hours. Advanced topics in microbiology, parasitology, or immunology presented in short-course, or workshop format.

591 Seminar in Diagnostic Microbiology 1 May be repeated for credit; cumulative maximum 8 hours. Seminar in diagnostic veterinary microbiology.

592 Advances in Immunobiology 1 May be repeated for credit. Cooperative course taught by WSU, open to UI students (VS 592).

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. For MS in veterinary science only. S, F grading.

800 Doctoral Research, Dissertation, and/or Examination Variable credit. For PhD in veterinary science only. S, F grading.

Veterinary Pathology

V Pa 410 Survey of Pathobiology 3 Overview of pathobiology experimental oncology, epidemiology, and aging that emphasizes detecting, understanding and preventing disease.

499 Special Problems V 1-4 May be repeated for credit. S, F grading.

525 Introductory Readings in Veterinary Pathology 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. Supervised introductory readings of publications, books, and research proposals.

542 Advanced Diagnostic Pathology V 1 (0-3) to 4 (0-12) May be repeated for credit. Prereq V M 446. Necropsy laboratory for techniques and skills in performing and interpreting necropsy material. Cooperative course taught by WSU, open to UI students (VS 542A).

543 Laboratory Animal Pathology 3 May be repeated for credit; cumulative maximum 6 hours. Prereq V M 454. Pathology of principal diseases of laboratory animals. (a/y) Cooperative course taught by WSU, open to UI students (VS 543).

544 Immunobiology 3 Prereq V M 445, V Mic 531. The role of immune processes in the pathogenesis of disease. (a/y) Cooperative course taught by WSU, open to UI students (VS 544).

445 Mechanisms of Disease 5 Prereq Micro 412 or V M 430, 445. Biochemical and immunological mechanisms involved in disease processes from the comparative standpoint. Cooperative course taught by WSU, open to UI students (VS 545A).

547 Advanced Veterinary Parasitology 3 Prereq graduate or advanced undergraduate. Mechanisms involved in host-parasite relationships important to control of parasitic infections. (a/y)

548 Introduction to Research 1 Introduction to research. Cooperative course taught by WSU, open to UI students (VS 548).

555 Research in Process Seminar 1 May be repeated for credit; cumulative maximum 8 hours. Presentation of on-going student research project results.

569 Research Proposal 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. Written preparation and oral presentation of a research proposal.

571 Advanced Topics in Pathology V 1-3 May be repeated for credit; cumulative maximum 4 hours. Advanced topics in pathology presented in short-course, or workshop format.

592 Anatomic Pathology Seminar 1 May be repeated for credit. Histopathologic description and diagnosis. Cooperative course taught by WSU, open to UI students (VS 592).

600 Special Projects or Independent Study Variable credit. S, F grading.

700 Master’s Research, Thesis, and/or Examination Variable credit. For MS in veterinary science only. S, F grading.

800 Doctoral Research, Dissertation, and/or Examination Variable credit. For PhD in veterinary science only. S, F grading.

Program in Women Studies

Director, J. Hockenbull; Assistant Professor, N. Sturgeon.

The Program in Women Studies offers an interdisciplinary study of women, with an emphasis on their lives, roles, and contributions. The program is designed to achieve four major objectives:

1. to provide students with a systematic knowledge of the multidisciplinary scholarship about and by women;

2. to enhance the qualifications of students preparing for careers in business, education, government, communications, the sciences and social sciences, among others;

3. to facilitate the understanding of continuing social change in gender-related activities; and

4. to further university and societal goals of sexual equality.

The program offers a minor in women studies. The minor requires a minimum of 16 hours of credit which must include W St 200, 391, 481. A Bachelor of Arts in Humanities, Social Sciences, or Liberal Arts, concentrated in Women Studies, is available through the General Studies Program.

Description of Courses

For explanation of symbols, see page 531.

Women Studies

W St

150 Marital and Sexual Life Styles 3 Same as Soc 150.

200 [S] Introduction to Women Studies 3 Multi-disciplinary perspectives on women and on their past, present, and potential contributions.

204 (247) Family Systems: Individual and Family Interactions 3 Same H D 204.

216 [H] Main Currents in American Culture 3 Same as Engl 216.

230 Human Sexuality 3 Same as Psych 230.

235 [I] African American History 3 Same as CAC 235.

250 The American Health Care System 3 Same as PharP 250.

290 Women and Work: Choices and Changes 3 Interdisciplinary approach to the complex relationship between women and work in contemporary America; including review of trends, issues, and policies.

298 [S] History of Women in American Society 3 Same as Hist 298.

300 [S][M] Intersections of Race, Class and Gender 3 Prereq CAC 101 or W St 200. Intersections between race, class and gender through case studies; experiences in interdisciplinary methods.

301 Topics in Women Studies V 1-3 May be repeated for credit; cumulative maximum 9 hours.

302 Contemporary Masculinity and Men’s Issues 3 Analysis of the development of masculinity in its biological and cultural forms.

305 [S] Gender and Politics 3 Same as Pol S 305.

306 [H] Introduction to Literary Criticism 3 Same as Engl 308.

307 Biology of Women 3 Same as Zool 307.

308 Women Artists I, Middle Ages-1900 3 Same as F A 308.

309 [H] Women Writers 3 Same as Engl 309.

310 Women Artists II, Twentieth Century 3 Same as F A 310.

315 Women in Management 3 Analysis of women’s historical and contemporary role in American management.

316 [K] Gender and Culture 3 Same as Anth 316.

320 (350) Resource Management and Problem Solving 3 Same as H D 320.

324 [S] Psychology of Women 3 Same as Psych 324.

330 Women and the Law 3 Historical base of women’s legal rights and obligations; analysis of legislative and judicial responses to sexual discrimination.

331 [S] Sociology of the Family 3 Same as Soc 331.

363 [H] Women of Note 3 Same as Mus 363.

380 [S] History of Medicine 3 Same as Hist 380.

382 Modern American Literature 3 Same as Engl 382.

384 [S] Sociology of Gender 3 Same as Soc 384.


398 [M] History of Women in the American West 3 Same as Hist 398.

402 Cross-Cultural Gender and Kinship 3 Same as Anth 402.

410 Internship 1-12 Prereq W St 200; 300 or 481 with B or better, by interview only. May be repeated for credit; cumulative maximum 12 hours. Supervised experience in approved campus or community agencies or projects focusing on women’s issues. S, F grading.

421 The Frontier and the American West 3 Same
Permanent Faculty

A

M. M. Abdel-Monem
PhD, University of Minnesota
Dean and Professor—College of Pharmacy

John H. Abell
M Arch, University of Utah
Assistant Professor—Architecture

Jose M. Acevedo
PGrad, Seminary of Yarumal, Medellin Columbia
Student Affairs Officer 1 Counselor—Multicultural Student Services

Robert E. Ackerman
PhD, University of Pennsylvania
Professor—Anthropology

Betty K. Adams
BS, Washington State University
MD, University of Washington
Student Affairs Officer 4 Counselor—Health and Wellness Services

Carolyn E. Adams
EdD, University of San Francisco
Associate Professor—Intercollegiate Center for Nursing Education

Edward B. Adams
PhD, Washington State University
Area Agent E-4—Cooperative Extension Agents

John Ernest Adams, Jr.
PhD, University of Washington
Director Profa Admin—Career Services

Verna M. Adams
EdD, University of Georgia
Assistant Professor—Pure and Applied Mathematics
Assistant Professor—Teaching and Learning

Ronald J. Adkins
PhD, University of Washington
Associate Professor—Program in Biology
Associate Professor—Zoology

Mohammad Ahmedullah
PhD, University of California, Davis
Associate Professor—Horticulture and Landscape Architecture
Associate Scientist Inst/Res—Horticulture and Landscape Architecture

Sung K. Ahn
PhD, University of Wisconsin
Assistant Professor—Management and Systems

Kassim Al-Khatib
PhD, Kansas State University
Assistant Scientist Inst/Res—WSU-Mt Vernon Research and Extension Unit
Cooperative Extension Specialist E-2—WSU-Mt Vernon Research and Extension Unit

Diane R. Albright
MA, University of Michigan
Associate Professor—Kinesiology and Leisure Studies

J. E. Alexander
MS, Washington State University
DVM, Ontario Veterinary College
Professor—Veterinary Clinical Science

Yousri K. Ali
MFA, Michigan State University
Assistant Professor—Apparel, Merchandising, and Interior Design

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Washington State University is located in Pullman, 80 miles south of Spokane and 285 miles east of Seattle. Airline and ground transportation is available into Pullman.
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